CONTENTS

Editorial

General Hospital Without Consultation-Liaison Psychiatrist 1-2

Zainal NZ, Editor-in-Chief

Original Paper

Anxiety Disorders among Incarcerated Drug Users 3-9

Jesjeet S Gill
Koh OH
Subash K Pillai

Reverse Culture Shock among Returnee High School Students 10-14

Siddiqua A

A Survey Of Urban Child And Adolescent Mental Health Problems In An Urban Malaysian Population 15-27

Teoh HJ

Comparison Of Family Environmental Scale (FES) Subscales Between Malaysian Setting With The Original Dimension Of FES 28-34

Adam B

Non-epileptic Hallucinations with Use of Levetiracetam - A Case Report 46-48

Rajdeep K
Harish A

Book Review

Schizophrenia-Biopsychosocial Approaches And Current Challenges (Second Edition) 49-53

Koh OH
Jesjeet SG
Pillai SK

Review Paper

Depression In Parkinson Disease: Clinical Features And Aetiology 54-64

Chan YF
Zainal NZ

Brief Communication

Evidence-Based Clinical Practice - A Critical Analysis Of Its Justification And Limitations 65-70

Koh OH
Ramli M
Jamaiyah H
Noor Azimah M
Khairani O

Nurturing Professionalism through Mental Health Community Project 71-76

Outcomes Of Dichotomizing A Continuous Variable In The Psychiatric Early Readmission Prediction Model 35-40

Rafidah B
Muhammad Najib MA

Ng CG

Case Report

A Case of Post-Stroke Mania 41-45

Koh OH
Azreen Hashim N
Jesjeet S Gill
Subash K Pillai
Most general hospitals in the country have a psychiatric department. According to the Malaysia Mental Health Regulations 2010, “a psychiatric facility shall ensure that each patient has a care plan for the management of the patient during the treatment and upon discharge of the patient”. However not every psychiatric department has a trained consultation-liaison psychiatrist. In Malaysia there are only a few numbers of psychiatrists that have undergone a formal sub-specialty training in Consultation-Liaison Psychiatry.

On the other hand, about 30% to 60% of hospital patients have diagnosable psychiatric disorders. The proportion is even higher if taking into account of those patients who have normal reaction like feeling depressed or anxious as a result of the physical illness. The service is highly needed as a major contribution to patient’s quality of life. A minimal service should have input from psychiatric nursing, psychiatric social worker, occupational therapy and clinical psychology. However due to the limitation of resources and without an in-house consultation-liaison psychiatrist, the general psychiatrist available in each psychiatric facility in the hospital must play a major role in offering the service.

It is emphasized that each patient to be managed in biopsychosocial approach. Patients should be assessed and managed by combining biological, psychological and social predispositions, precipitants and support. There are many reasons why physician refer a patient to psychiatrist. It can be due to mental status examination abnormalities, depression, anxiety, adjustment difficulties and unexplained physical symptoms. The patient may need emotional support or evaluation for transfer to psychiatric services. The physician may need advice on the use of psychopharmacological medications or assistance to determine patient’s mental competency or assistance with patient disposition.

To provide an effective psychiatric consultation, one is recommended to:
- perform a complete mental status examination and relevant portion of a physical exam.
- completely reviews the case notes.
- recommend radiologic and laboratory tests that are diagnostically helpful.
- consider a differential diagnosis among medical, neurologic and psychiatric disorders.
- arrive at a diagnosis based on signs, symptoms, laboratory values and epidemiologic knowledge.
- consider longitudinal and cross-sectional biological, psychological and social aspects of the patient.
- make treatment recommendations.
prescribes and conducts the appropriate psychotherapy when needed.

- follow the patient during the entire hospitalization.
- make appropriate post-discharge recommendations.
- communicate with the primary doctor.

Therefore in country like Malaysia where sub-specialty in consultation-liaison psychiatry is limited, the general psychiatrist can still provide the service in the general hospital.

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ORIGINAL PAPER

ANXIETY DISORDERS AMONG INCARCERATED DRUG USERS

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Abstract

The problem of illicit drug use has been a long standing problem in Malaysia. It is well recognized that drug mis-use is associated with many social, economic and health problems, including mental health problems. Anxiety disorders have consistently been cited as the commonest type of psychiatric disorder in drug users. In Malaysia, many drug users are incarcerated in rehabilitation centres and prison. They form a different type of population as compared to the drug user in the general population, due to the effects of incarceration. With this in mind, a study was carried out in a rehabilitation centre, looking at anxiety disorders. Utilizing the SCID, we found current and lifetime diagnoses for anxiety disorders at 63.4% and 67.6% respectively. Suggestions are made in regards to our findings.

Keywords: Anxiety disorders, drug user, incarceration.

Introduction

The issue of drug or substance use has been a longstanding global issue for centuries. Its use dates back thousands of years and has been used in various cultures for a variety of reasons including religious purposes, for recreation, to alter consciousness, and for medicinal purposes in obtaining relief from pain and stress. In Malaysia, though drug abuse dates back to the 8th century among Arab traders, the problem only escalated with the arrival of Europeans, especially during the British rule. Chinese migrant labourers, who were brought in to work in the tin mines, used opium in large amounts. Similarly, Indian migrants who were brought to work in plantations popularized the use of cannabis. Currently, there is estimated to be 400,000 to 800,000 drug users in Malaysia.

It is now well recognized that the problem of drug usage brings about a wide array of social, economic and health problems to a nation. Besides physical illnesses, the whole gamut of psychiatric disorders has been associated with drug use. The Epidemiologic Catchment Area (ECA) Study (1990) in the US with a study population of 20,291, that drew samples from the community as well as specialized treatment centers and prisons,
revealed that among those with a lifetime history of a drug (other than alcohol) use disorder, 53.1% had a lifetime psychiatric disorder, and were at 4.5 times the risk of having such a disorder compared to those without a history of drug use. The commonest psychiatric disorders seen among the drug users in this study were Anxiety Disorders (28.3%) and Affective Disorders (26.4%). This study found the odds ratio of having an Anxiety Disorder among the drug users were 2.5 as compared to the general population. As for the proposed explanations for the high rate of comorbidity between substance use and anxiety disorders, most research has focused on Panic Disorder, which has yielded the most evidence. Opioids in particular, are thought to have a significant role in the development of a Panic Disorder. Brooner et al (1997) found among opiod users who had a comorbid panic disorder, 21% were deemed to be opioid induced in nature. The current understanding of panic attacks in general is focused on the overactivity of the locus cereulus. It has been demonstrated that opioids, either in its endogenous or exogenous forms, inhibits the mammalian locus cereulus. Prolonged exposure to exogenous opioids leads to inhibition of not only the locus cereulus, but also the production of endogenous opioids. Sudden stoppage from exogenous opioids, with the concurrent current low endogenous opioids levels, leads to sudden release of inhibition within the locus cereulus, with a subsequent surge in its activity. This produces symptoms such as anxiety, fear, tachycardia, tachypnoea, restlessness and perspiration, all which can resemble the symptoms of a panic attack. There have also been case reports of panic attacks precipitated by the administration of naltrexone, an opioid antagonist. Therefore the panic attacks seen in opioid dependent individuals, may be the manifestation of sudden subtle opioid withdrawals that may occur in the day to day life in the drug user.

In contrast, the explanations behind the high rates of phobias such as specific and social phobias observed in drug users is mostly based on a “self medication hypothesis” rather than the “drug induced hypothesis” favoured for Panic Disorder. It has been observed that most of the cases of phobias in drug users had begun before drug usage, implying substances are taken as a form of self medication, rather than substances inducing the phobias. Another possible explanation is the inherent personality traits in these individuals may predispose them to both phobic illnesses and substance misuse.

In Malaysia, when a drug user is detained by police, many of them are sent to prison or government run rehabilitation centres (Pusat Serenti). There is a large number of substance misusers who are under compulsory detainment in these government run rehabilitation centres in all over Malaysia. This population which are detained within rehabilitation centres may differ from other drug users in their presentation of psychiatric symptoms, due to the fact that incarceration acts as a stressor and may lead to psychological and cognitive stress and an acute reactive state with depressed and anxiety symptoms. Unfortunately, most of the literature
available on psychiatric morbidity among drug users is not of this subtype of population (incarcerated drug users). This lack of data could be due to the fact that most countries worldwide do not practice compulsory detainment of drug misusers. Malaysia is one of only few countries worldwide to do so. Realizing these we sought to study the prevalence of Anxiety disorders in this population.

Methods

This study was carried out at the „Pusat Serenti Rawang” (Rawang Drug Rehabilitation Centre), which is located about 25 kilometres from Kuala Lumpur. All the drug offenders within the rehabilitation center during the duration of the study who were agreeable to a written consent and did not fulfill any of the exclusion criteria were included in the study. Those excluded were those who were undergoing detoxification (“cold-turkey”) who were inaccessible as they would be in confinement for two weeks (except those who complete their detoxification before the end of the study period) and those who were too confused or psychotic to be interviewed. A written consent was obtained from those who were agreeable.

Data was collected regarding demography, length of incarceration and prior incarceration. Current and lifetime diagnoses of the various anxiety disorders were made by utilizing the Structured Clinical Interview for DSM-IV Axis 1 Disorders-Clinical Version (SCID-CV).

Results

There were 171 drug offenders as of the start of the study in December 2000 at the study site (Rawang Drug Rehabilitation Centre). A further 9 were included in the study later in the month after they had completed their two weeks detoxification in confinement, producing a total of 180 drug offenders. However, 13 were not interviewed as they had absconded from the center during that month before they could be interviewed. 1 offender passed away during that month (a case of Acquired Immunodeficiency Syndrome) and another 1 was warded in hospital during the whole period. A further 23 offenders refused participation. Therefore, a total of 142 (78.9%) out of the 180 offenders were interviewed and were included in the study after their written consents were obtained. All could converse in either English or Malay, and none were too confused or psychotic to be interviewed.

The entire population sample was males, as the rehabilitation center was exclusively for males. The youngest was 22 years of age, and the oldest was 63 years old. The mean age for the entire sample was 36.8 years with a standard deviation of 8.07. Malays were the largest ethnic group interviewed, consisting of 119 (83.8%) offenders, followed by Chinese 12 (8%), Indians 10 (7%) and others 1 (1%). Only 36 (25.4%) of those interviewed were married. The remaining 106 (74.6%) were single; either never married 88 (62%), were widowed 6(4.2%) or currently divorced or separated 12 (8.4%).
Out of the 142 drug offenders interviewed, 106 (74.6%) had been in either a drug rehabilitation center or prison before, ranging from twice to eight times. The current length of stay at the time of interview, of each drug offender interviewed, ranged from a minimum of half a month to a maximum of 16 months, with a mean length of 5.23 months, and a standard deviation of 4.13 months.

A total of 90 (63.4%) subjects had a current diagnosis of an Anxiety disorder and 96 (67.6%) subjects had a lifetime diagnosis. Of these subjects, 10 (7.0%) out of the 142 drug offenders interviewed were suffering from a lifetime diagnosis of a Panic Disorder, 3 with Agoraphobia or 7 without Agoraphobia. As for a current diagnosis of Panic Disorder, 7 (4.9%) of them were currently still suffering from it. 5 were considered to be substance induced as they began within a month of substance intoxication or withdrawal, and did not persist longer than a month during abstinence after substance withdrawal in accordance with the Diagnostic And Statistical Manual of Mental Disorders – 4th Edition (DSM IV). The substance responsible was opioids in all cases.

As for the diagnosis of Obsessive Compulsive Disorder, 3 (2.1%) drug offenders fulfilled the criteria for a current and also lifetime diagnosis. Only 1 of them was considered to be substance induced as it arose during substance usage. There were 3 (2.1%) drug offenders with a lifetime diagnosis of Post Traumatic Stress Disorder. One subject developed symptoms after witnessing his childhood friend being run over by a train. Another had its onset after witnessing his friend being shot to death in a street fight. The third witnessed a close friend bleed to death from a needle puncture wound in his groin, and still suffers from the symptoms until now, therefore, also fulfilling a current diagnosis of it.

A total of 34 (24.4%) drug offenders fulfilled the criteria for a lifetime diagnosis of Social Phobia, of which nearly all, 33 (23.7%), still fulfilled a current diagnosis of it. All the cases were deemed not to be substance induced as they were present before the onset of substance use, and persist even if there are periods of prolonged abstinence for more than a month.

There were 25 (17.6%) drug offenders who fulfilled the criteria for a current and also lifetime diagnosis of a Specific Phobia, all of which began before any drug usage. 4 were of the “animal type”, 11 were of the “natural environment type, 9 were of the “blood-injury-injection type” and 1 was of the “situational type” (1).

There were 21 (14.8%) drug offenders who fulfilled the criteria for a current and also lifetime diagnosis of a Generalized Anxiety Disorder, of which 4 began during substance use but not considered to be substance induced in nature as it was reported that symptoms persist even during periods of prolonged abstinence for more than a month.

Discussion

This study found high rates of anxiety disorders (63.4% for a current diagnosis and 67.6% for a lifetime diagnosis) among the study population. This is extremely high
when one considers that the estimated prevalence of both depression and anxiety disorders in our local population is only 11%\(^9\). These rates are much higher than those found in the Epidemiologic Catchment Area (ECA) Study, where there was a current diagnosis rate of 28.3% for anxiety disorder.\(^2\) This may be explained by the fact that the majority of the sample population in these studies was community based and not incarcerated. High levels of psychological and cognitive distress may occur upon entry into an incarcerated environment, due to abrupt changes in social networks and uncertainty about the future.\(^9\) This may explain the extremely high rates seen in our study. It is important to note that the majority of our sample population had been incarcerated before, some numerous times. Therefore the stress associated with incarceration here is not a one off phenomenon for them, but a recurrent one throughout the lives of most of them.

As for Panic Disorder, 10 (7.0%) of the drug offenders interviewed were found to have a lifetime disorder. This is higher than what is found in the general population where epidemiological studies have produced lifetime rates ranging from 1.5% to 5%.\(^10\) Our findings are similar to the figures found by Darke et al (1997) who found a lifetime rate of 7%\(^11\), and to the figure of 6.6% obtained by Ross et al (1988)\(^12\). Out of these 10 drug offenders, 5 were thought to have a panic disorder than is opioid induced. This high rate of opioid induced panic disorder is not surprising given the fact that most of the drug offenders interviewed was opioid users, and the strong evidence available on the role of opioids in the etiology of panic attacks, as has been discussed in the „Introduction” section.

The lifetime rate of Social Phobia obtained in this study was 24.4% and for Specific Phobia the rate was 17.6%. These rates are high when compared to what is estimated in the general population, where the lifetime rates of social and specific phobias are estimated to be 3-13% and 11% respectively.\(^10\) However the rates in our study are comparable to those obtained in studies looking at substance users. Darke et al (1997) found lifetime rates of 39% and 33% for social and specific phobias respectively (27), and Ross et al (1988) found a lifetime rate of 28.7% for phobias in general.\(^12\)

As for Generalized Anxiety Disorder, we found a lifetime rate of 14.8%. This high rate is expected, considering the fact that Generalized Anxiety Disorder is said to a disorder most often coexisting with another mental disorder, particularly depression, panic disorder, social phobia and specific phobia\(^10\), all of which were present with high rates in this study.

Only 3 (2.1%) drug offenders were diagnosed with a lifetime diagnosis of an Obsessive Compulsive Disorder, a rate which is in keeping with the estimated rate in the general population of 2-3%.\(^10\) Other studies had also yielded non elevated rates, for example, Brooner et al (1997) obtained a lifetime rate of 0.7%\(^13\) and Rounsaville et al (1982) quoted a figure of 1.9%.\(^14\) In contrast to the disorders discussed earlier where elevated lifetime rates were obtained, the
normal lifetime rate obtained for Obsessive Compulsive Disorder in this study implies that there is probably no significant correlation between it and this population.

As for the diagnosis of Post Traumatic Stress Disorder, this study revealed a lifetime rate of 2.1%, where 3 drug offenders were diagnosed to have had a lifetime diagnosis of it. This is in keeping with the estimated prevalence in the general population of 1-3%.10 However what is interesting to note is that the events which is assumed to be responsible for the development of this disorder in 2 out of the 3 drug offenders appears to be related to their “drug user” lifestyle. One drug offender’s symptoms began after he witnessed a close friend bleed to death from a needle puncture wound in his groin, while the other suffered from symptoms after witnessing his friend shot to death in a street fight. Therefore, one can possibly assume that they lifestyle a drug user leads, especially the „hardcore” ones, may expose them to catastrophic events that can lead to a Post Traumatic Stress Disorder.

In conclusion, several recommendations can be suggested based on the findings of this study. Identification and treatment of co-morbid anxiety disorders in this population is of upmost importance, due several reasons. Firstly, it is unethical not to screen and treat for them in this population, and cause unnecessary suffering, knowing very well the rates are high. Failure to identify co-morbid psychiatric illnesses here means an opportunity for treatment is lost in a population that is otherwise difficult to reach in the community.

Secondly, identification and treatment of psychiatric illnesses, including anxiety disorders, must be addressed as the central role in relapse prevention of substance use as co-morbid psychiatric illnesses are often associated with high rates of continued substance usage after treatment.13

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ORIGINAL PAPER

REVERSE CULTURE SHOCK AMONG RETURNEE HIGH SCHOOL STUDENTS

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Abstract

Objective: The purpose of the present study was to identify reverse culture shock among returnee high school students. Methods: It was an observational study conducted at an International High School of Islamabad, Pakistan on overseas-experienced returnee Pakistani students. A 15 statements questionnaire was used to measure reverse culture shock. Results: Mean index score on survey questionnaire was 4 indicative that these returnees were experiencing high reverse culture shock. Conclusion: For being feeling different in own cultural setup the returnees usually suffer from reverse culture shock and develop personal problems associated with it.

Key words: reverse culture shock, returnee, personal problems.

Introduction

Kalervo Oberg in 1950 introduced term ‘culture shock’ for the emotional distress caused by a foreign culture. This individual distress is brought about by encountering unexpected or perturbing differences of behavior and social viewpoint, and by difficulties in communication. Some people, amazingly, experience equal or even greater disorientation on return to their own culture, reverse culture shock a condition which shows the profundity of personality change that is brought about by adapting to a new culture.1

Reverse culture shock is the process of retuning, reunderstanding and reabsorbing into one's own home culture after living in a different culture for a significant period of time. People experience reentry in different ways; some individuals may experience few effects of reentry, while others show problems ranging from few months to a year or longer.2-3 The literature states that no returnee is exempted from reverse culture shock. Research suggests that incident of reverse culture shock experienced by children and adolescents are of greater severity than adults as a reaction to reentering the home culture.4-6

Research conducted on overseas American college students examined the reentry experiences and established that reverse culture shock did influence the severity of the problems of the returnees. Rogers and Ward (1993) in their study of 20 overseas-returned secondary school students, reported positive significant correlations between reentry difficulties and depression (r=0.37) and anxiety (r=0.52).8

Comparative study carried out on Turkish migrant students and their "resident" peers also revealed less academic achievement and adjustment issues and significantly higher scores on depression and anxiety.
Another investigation compared reentry adjustment experiences of American returnees students after an extended stay abroad to domestic travelers, findings indicated that the returnees from abroad experienced much greater reentry adjustment problems. The intention of this study was to document reverse culture shock experienced by the Pakistani returnee students. Returnees were students who spent at least 2 years abroad between the ages 5 and 18 due to their parents’ occupation. The overseas-experienced returnee students may experience reverse culture shock, if so, these students are likely to experience low mood leading to depression, generalized anxiety, estrangement, segregation, loneliness, friendship difficulties and adjustment problems into very own culture.

**Method**

**Participants**

It was an observational study. The participants in this study consisted of 60 overseas-experienced returnee Pakistani students attending an International High School of Islamabad, Pakistan. Duration of the study was from August 2008 to June 2009. Purposive sampling technique was used to recruit sample for the study. Sample was drawn from the senior section students of both sexes 13 to 18 years of age after getting informed consent. Only nine students who were unwilling to participate and 12 students who were not Pakistani were excluded.

**Materials**

The material for present study consisted of questionnaire with 15 statements. The 15 statements in the survey measured reverse culture shock (Table 1). These statements were based on a 5-point Likert scale with the anchors being 1. Strongly Disagree, 2. Disagree, 3. Neutral, 4. Agree, 5. Strongly Agree. The 5-point scale ranged from 1 (strongly disagree) to 5 (strongly agree); the mid-point value is 3 (Neutral). The questionnaire was scored by totaling the item scores and then dividing by 15, producing an index score ranging from 1 to 5. An index score of 5 indicated the subject was experiencing extreme reverse culture shock and an index score of 1 suggested that the subject was experiencing no reverse culture shock. The instrument was developed by the researcher based upon the literature. In addition demographic profile of the subjects was also obtained. A pilot study was conducted with selected participants (referred to the students counselor of the institution) to determine the quantity and content of the questions and length of time needed to complete the questionnaire.

<table>
<thead>
<tr>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have low mood.</td>
</tr>
<tr>
<td>2. I feel anxious.</td>
</tr>
<tr>
<td>3. I feel lonely and isolated.</td>
</tr>
<tr>
<td>4. I have feelings of inferiority.</td>
</tr>
<tr>
<td>5. I have feelings of alienation.</td>
</tr>
<tr>
<td>6. I have feelings of shyness.</td>
</tr>
<tr>
<td>7. I have trouble making friends.</td>
</tr>
<tr>
<td>8. I have relationship problems.</td>
</tr>
<tr>
<td>9. I have personal/ethical dilemmas.</td>
</tr>
<tr>
<td>10. I have academic performance difficulties.</td>
</tr>
<tr>
<td>11. I feel boredom.</td>
</tr>
<tr>
<td>12. No one wants to hear.</td>
</tr>
<tr>
<td>13. I can not explain myself.</td>
</tr>
<tr>
<td>14. People misunderstand me.</td>
</tr>
<tr>
<td>15. I have loss of sleep.</td>
</tr>
</tbody>
</table>

**Procedure**

The researcher individually tested 60 subjects and told them about the general purpose of the study that was to assess
individuals’ personal problems. Once the subject finished reading the brief description of the study and signed the informed consent form, the investigator presented the subject with the questionnaire. Subject was allotted 15 minutes to respond to 15 statements of reverse culture shock survey questionnaire. Once completed, the questionnaire was collected, and the participant was debriefed about the main purpose of the study.

Results

Demographic characteristics of the students (Table 2 & 3) showed that mean age of the students was 16.5± 0.8. Thirty three (55%) students were male and 27(45%) were female. All the students were from upper socioeconomic class. Fifty eight (96.6%) were day scholars and were living with their parents, only 2 (3.3%) female students were living in hostel as their parents were still living abroad.

Table 2 The grades in which students were studying at an International School

<table>
<thead>
<tr>
<th>Grade level</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>7th</td>
<td>11 (18%)</td>
</tr>
<tr>
<td>8th</td>
<td>9 (15%)</td>
</tr>
<tr>
<td>9th</td>
<td>10 (17%)</td>
</tr>
<tr>
<td>10th</td>
<td>10 (17%)</td>
</tr>
<tr>
<td>11th</td>
<td>9 (15%)</td>
</tr>
<tr>
<td>12th</td>
<td>11(18%)</td>
</tr>
</tbody>
</table>

Table 3 The length of stay for which students’ had lived abroad.

<table>
<thead>
<tr>
<th>Length of stay abroad</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 years to 5 years</td>
<td>31 (51.6%)</td>
</tr>
<tr>
<td>6 years to 9 years</td>
<td>16 (26.6%)</td>
</tr>
<tr>
<td>10 years to 13 years</td>
<td>10 (16.6%)</td>
</tr>
<tr>
<td>14 years to 17 years</td>
<td>3 (5%)</td>
</tr>
</tbody>
</table>

Twenty three (38.3%) students were born in Pakistan, 37(61.6%) were born abroad. When asked about the present length of stay in Pakistan (home country) 46(76.6%) students reported that they are in home country for 1 to 4 years, 10(16.6%) said for 5 to 8 years, and 4(6.6%) for 9 to 10 years.

The study examined the reverse culture shock reported by these returnees. The reverse shock was quantitatively measured by using 15 items reverse culture shock survey questionnaire. The mean index score of the students on the reverse culture shock survey questionnaire was 4 + 1. It was acquired by adding up the total index score of all the students (N=60) on reverse culture shock survey questionnaire and dividing by 60. Forty seven (78.3%) students obtained the index score ≥ 4 while 13 (21.6%) acquired index score < 4. Index score was got by totaling the item scores of each student on the reverse culture shock survey questionnaire and then dividing by 15.

Discussion

Feeling poles apart was a key factor in the returnee students’ experience. For being dissimilar they did not conform to the conventional culture and faced common cost of rejection by resident peers, therefore, developed personal problems associated with reverse culture shock. Students experienced academic problems, such as trouble studying, academic performance concerns, problems about adjustment to the school environment, cultural identity conflict, interpersonal difficulties, social withdrawal, anxiety and low mood. Similar kind of researches conducted previously also accomplished that returnees had less achievement as compared to local students and higher level of depression and anxiety. Studies conducted on American and Japanese expatriate students also acknowledged variables like lower grades in school, and anxiety as the predictors of culture shock over return to own country.
Findings of other researches also indicated that the returnees from abroad experienced much greater reentry adjustment problems. 12,14,15,16

It is recommended that parents, teachers and school counselors should focus on the adjustment process of the young returnees and support them in re-adapting and re-adjusting to their own home culture. As they had lived and brought up in another cultural environment they usually get caught between the two cultures of host country and home country. School counselors’ should approach the returnee from this viewpoint and develop intervention strategies that are sensitive to the returnee experience and support the returnee's personal academic and cognitive development.

Limitations

There are several limitations to this study, the results must be considered and applied carefully. The sample size for this study was small, and was limited to one campus, and used only senior section overseas experienced returnee students. Finally, this study used self-report questionnaire, a method which is subject to respondent misrepresentation.

References


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ORIGINAL PAPER

A SURVEY OF URBAN CHILD AND ADOLESCENT MENTAL HEALTH PROBLEMS IN AN URBAN MALAYSIAN POPULATION

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Abstract

A total of 307 Malaysian children and their parents were surveyed to ascertain the prevalence of mental health problems amongst urban primary and secondary school children. The results indicated that secondary school children report slightly higher rates of depressive symptoms, whereas primary school children report higher rates of social problems. There was also a discrepancy between child and parents reports of children’s emotions and behaviours. Children’s self-reports of aggressive behaviours where higher than their parents’ reports. Alternatively, parents reported lower levels of their children’s emotional problems, as compared with the childrens’ self-report. When gender was taken into consideration, females were reported to be more aggressive, withdrawn, and have more attention problems when compared with males.

Key words: Children, Adolescents, Mental Health

Introduction

Many developments have taken place in Malaysia, be they social, economic, political or religious. These developments have rapidly impacted on the physical, moral and familial environment of our urban society. The modes of change have been via physical changes, government policies, ideologies and the media. In the midst of all the changes are children, the future of our country. Growing up in a rapidly changing urban society must indeed be a bewildering experience for these children, so many ideas, so many attitudes and so many role models to emulate. All these experiences must somehow impact on the child’s attitudes, beliefs and actions about self and society. These eventually impact on their mental health. This study is about the lives of children and their families. It seeks to find out what the state of the child’s mental health is.

Measures of children’s mental health vary from study to study. Some researchers see mental health as encompassing a combination of outcomes such as the child’s self-concept, reading ability and life skills [1]. Other researchers have chosen academic indicators of performance such as reading, mathematical ability and behavioural problems [2, 3]. Anxiety, depression and delinquency which are indicators of mental health problems have been used [4, 5]. Finally, others also consider anti-social behaviours such as sexual problems and drug involvement to be
indicators of children’s adjustment [6]. For the purposes of this review, children’s mental health problems will be defined as encompassing both internalising and externalising behaviours [32]. Academic performance is generally not included as a measure of mental health problems given that Patterson [7] empirically developed a model which indicated that inept discipline predicted anti-social behaviours in children, which in turn predicted poorer academic performance. Hence, as children’s’ behavioural problems have been found to affect academic performance rather than vice-versa, emotional and behavioural indicators of children’s’ mental health rather than their academic abilities will be used.

A previous large scale survey has shown that the prevalence rate of mental health problems amongst Malaysian children has been observed to be similar to those of other countries. In Malaysia, the prevalence was found to be 13%, of which the prevalence was 10.5% in urban areas and 15.5% in rural areas [8]. Teoh [9] observed that the prevalence rate of depression in a population of 243 Malaysian lower secondary school girls was 14%. An earlier study of coping style amongst 401 Malaysian lower secondary school girls observed that the prevalence of low self-esteem amongst this population was 16.7% [10]. Elsewhere, the overall rates of Mental Health problems in children was found to be 17.7% in Australia [11], 18.1% in Canada [12], 17.6% in New Zealand [13], 26% in The Netherlands [14] and 17.9% in Puerto Rico [15].

Several specific mental health problems have been commonly cited by mental health surveys. In Malaysia, the most common mental health problems cited can broadly be categorised into either the learning disabilities or affective disorders [8]. In Australian samples, by far the most prevalent disorders amongst children are delinquent (9.5%) and thought problems (8.6%) [11]. Amongst U.S. children, the most commonly cited disorders are disruptive behaviour disorders, separation anxiety, overanxious disorder and depression [16]. In New Zealand, Anderson [13] reported that the most commonly diagnosed disorder was attention deficit disorder (6.7%), followed by oppositional disorder (5.7%).

While the Malaysian studies yield some useful information about the overall prevalence of mental health problems amongst children, a major flaw involves whom the data is collected from. In all studies, the data obtained has originated from a single source, either from the parent [8], or from the child [10], but never from both. Obtaining data on children’s adjustment from a single source can be problematic, particularly as several studies report very little relation between reports by parents, children and teachers on a variety of child related issues. Pedro-Carroll [5] found that while parents reported more overall adjustment problems amongst their children, teachers did not report any behavioural problems. They also found that while children reported emotional problems such as anxiety and low self-confidence, parents did not report their children as having higher levels of these internalising problems. Similar observations were made by Stolberg and Mahler [17] who indicated that while teachers did not report any externalising behaviours, parents did. Parent’s reports of other child-related factors such as the stressfulness of negative life events and amount of social support received, has also been found to differ from their children [18, 19, 20]. There are disadvantages to collecting data either from a single source and advantages to collecting data from multiple sources. Collecting data from a
single source may be biased as parents may be aware of their children’s behaviours, but may not be aware of their children’s emotional state. A study documented low correlations between children’s and parent’s reports of children’s depression [21]. Furthermore, parent’s reports of their children’s behaviours may be affected by the parent’s emotional state [19, 22]. Therefore, it is recommended that data be collected from multiple sources, which includes the parent or care-giver and the child.

In Malaysia, more males, as compared with females were found to have psychiatric problems (14.1% vs. 11%) [8]. Similar results have been obtained in Australia where the Western Australian Child Health Survey observed that more males as compared with females (20% vs. 15.4%) had more mental health problems [11]. Other Australian surveys have shown that boys, compared with girls, are more likely to be aggressive, delinquent, have attention, thought and social problems [23]. American studies have indicated that generally, boys are referred more often than girls for conduct disorder type problems such as aggression and delinquency [24], at ratios of 4:1 to 12:1 [24]. In addition more attention problems have been reported amongst boys than girls [25]. Generally, boys are more vulnerable than girls, and thus further work needs to be conducted on the effects of family processes on boys. Previous studies provide some indication that boys have poorer temperaments and are more likely to be subject to harsher forms of discipline, however the effects are relatively minor [23]. These results may be due to the study sample consisting of a non-clinical population.

When age is taken into consideration, we notice that the prevalence of mental health problems differs according to age. In Malaysia, the age group reported to have the most problems were the 10-12 year olds (15.5%), followed by the 13-15 year olds (16%) [8]. The age group with the least reported psychiatric problems were the 5-6 year olds (9.7%). In Australian samples, younger children (4-11 years) were reported by their parents to be have more delinquency type problems, whereas older children (12-16 years) were found to have more thought problems [11]. Older children were also found to have more behavioural and emotional problems, when compared with younger children. Many other large scale studies (i.e., Australian, Canadian, British) also indicate that younger children (ages 5-10 years), as compared with older children (ages 11 - 18 years) appear to be more vulnerable to developing anxiety, depression and delinquent behaviours [23, 26, 27]. Esser et al [28] found in a German sample that the prevalence of conduct disorder increased from 1.8% at age 8 to 8.4% at age 13. However did not find any change in the rates of emotional problems (7-8%).

The prevalence of mental health problems also appears to differ according to race, socio-economic status and location of household in Malaysia. Of the main racial groups, the Indian community had the highest rate of psychiatric morbidity (24.6%), followed by other non-Malay ethic groups (23.6%), then the Malays (11.9%) and lastly the Chinese (3.6%) [8]. The lower the household income, the greater the amount of reported psychiatric problems. Furthermore, the prevalence was higher in rural, as compared with urban areas (10.5% and 15.5%). Studies conducted elsewhere have also observed that lowered socio-economic status has also been found to predict poorer children’s adjustment [29].
However, Zubrick [30] found that low income in divorced families predicted children’s adjustment, whereas low income in non-divorced families did not affect adjustment. This suggests that additional hardships in addition to low parental income, is the factor that predicts children’s mental health. Zubrick [30] suggests that the lack of opportunities which income normally provides is a contributing factor to poor mental health.

**Methods**

The aim of this study was to estimate the prevalence of mental health problems amongst children and adolescents in an urban setting. To answer the research questions, a single survey, employing a cluster convenience sample, was employed. This was part of a larger study that sought to understand the social and family factors that predicted mental health problems amongst children. Criteria for subject selection and choice of questionnaires were based on issues identified in the literature.

**Sample Description**

307 Malaysian children and their parents were involved in the study. Permission was first obtained from the Ministry of Education and the Heads of Schools to include their schools in the survey. In total, there were two secondary and two primary schools in Kuala Lumpur involved in the study. It was impossible to control this study for gender, or race. As there were two school age-groups being studies (i.e., primary and secondary school), and a total of 10 internalising and externalizing variables, a minimum of 10 subjects per cell was used as a standard. This would have required at least 100 subjects per school age-group. However, more students than the minimum number were obtained.

Children in this study were asked to complete the questionnaires in groups, of between 40 to 50 students, in their respective schools. The children were aged between 11-16 years old (M = 13 years 7 months, 155 females, 152 males) (see Table 1). Of this number, 152 children were from two primary schools (M = 11 years 8 months, 58 females, 94 males) (Standard 4-6), and 155 children were from two secondary schools (M = 15 years 6 months, 97 females, 58 males) (Form 1-3) (see Table 1). Eight years of age is viewed as the lower age limit for accurate self-reports [31].

The demographic data indicated that the number of years since parental separation ranged from 1.2 months to 11 years (M = 3 years 11 months). Prior to separation, the separated parents had been married for an average of 4 years 2 months and the non-separated parents for an average of 15 years 5 months (see Table 2). Of this number, 246 (80.1%) were Malay, 30 (9.8%) Chinese, 24 (7.8%) Indian and other races were 7 (2%). Religion wise, 250 (81.4%) were Muslim, 8 (2.6%) Christian, 27 (8.8%) Buddhist, 20 (6.5%) Hindu and 2 (0.6%) reported no-religion. The marital status of the parents were 45 (14.7%) single-parents, 221 (72%) married, 5 (1.6%) widowed, 6 (2%) divorced and 18 (5.9%) living together (see Table 2). The sample was an urban sample made up of 4 schools selected from the Klang Valley (i.e., Selangor / Wilayah Persekutuan).
Table 1: Number of Subjects According to Gender and School Age Groups

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td>94</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>Sub-total</td>
<td></td>
<td>152</td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td>97</td>
</tr>
<tr>
<td>Sub-total</td>
<td></td>
<td>155</td>
</tr>
</tbody>
</table>

Table 2: Demographic Data for the Primary, Secondary and Parent's Marital Status, Religion and Racial Breakdowns

<table>
<thead>
<tr>
<th>Description</th>
<th>Primary</th>
<th>%</th>
<th>Secondary</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-parent</td>
<td>27</td>
<td>17.8</td>
<td>18</td>
<td>11.6</td>
<td>45</td>
<td>14.7</td>
</tr>
<tr>
<td>Married</td>
<td>104</td>
<td>68.4</td>
<td>117</td>
<td>75.5</td>
<td>221</td>
<td>72.0</td>
</tr>
<tr>
<td>Widow or widower</td>
<td>0</td>
<td>0</td>
<td>5.0</td>
<td>4.0</td>
<td>5.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Divorced</td>
<td>3</td>
<td>2.0</td>
<td>3.0</td>
<td>1.9</td>
<td>6.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Staying together</td>
<td>11</td>
<td>7.2</td>
<td>7.0</td>
<td>4.5</td>
<td>18</td>
<td>5.9</td>
</tr>
<tr>
<td>Unknown</td>
<td>7.0</td>
<td>4.6</td>
<td>5.0</td>
<td>4.0</td>
<td>12</td>
<td>3.9</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td>102</td>
<td>67.1</td>
<td>152</td>
<td>98.1</td>
<td>250</td>
<td>81.4</td>
</tr>
<tr>
<td>Christian</td>
<td>8.0</td>
<td>5.3</td>
<td>0</td>
<td>0</td>
<td>8.0</td>
<td>2.6</td>
</tr>
<tr>
<td>Buddhist</td>
<td>25</td>
<td>16.4</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>8.8</td>
</tr>
<tr>
<td>Hindu</td>
<td>15</td>
<td>9.9</td>
<td>4.0</td>
<td>1.9</td>
<td>20</td>
<td>6.5</td>
</tr>
<tr>
<td>Other</td>
<td>2.0</td>
<td>1.3</td>
<td>0</td>
<td>0</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>101</td>
<td>66.4</td>
<td>152</td>
<td>98.1</td>
<td>246</td>
<td>80.1</td>
</tr>
<tr>
<td>Chinese</td>
<td>30</td>
<td>19.7</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>9.8</td>
</tr>
<tr>
<td>Indian</td>
<td>20</td>
<td>14</td>
<td>3</td>
<td>1.9</td>
<td>24</td>
<td>7.8</td>
</tr>
<tr>
<td>Bumiputera (other than Malay)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.0</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1.0</td>
<td>0.7</td>
<td>0</td>
<td>0</td>
<td>5.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Measurement Instruments**

The questionnaires were all translated from English into Bahasa Malaysia by a Clinical Psychologist and further back translated by another Clinical Psychologist and three other Clinical Psychology interns who were all fluent in Bahasa Malaysia and English.
Corrections for meaning were carried out to ensure that the English and Bahasa Malaysia translation were of equivalent meanings.

The children’s mental health measures included the:
- Child Behaviour Checklist - parent reported
- Braver Aggressiveness Scale - child reported
- Center for Epidemiological Studies of Depression Scale - child reported

The Child Behaviour Checklist (CBCL) [32] comprises 118 statements of problem behaviours, which can be broken up into a total behaviour problems score comprising nine sub-scales scores [32]. Sexual problems are also measured by the CBCL, but are not included in the analyses as the scale items have low prevalence rates in a general population and most children have very low scale scores [32]. Coefficient alphas for the individual sub-scales are reported to range from .68 to .92. Average test-retest reliability has been reported as .95 [32].

The Braver Aggressiveness Dimension Scale [33] is a child self-report measure of the child’s aggression. The scale consists of 14 items with three responses. The scale items are based on the CBCL [32] and has high internal consistency reliability, alpha = .83.

The Centre for Epidemiologic Studies Depression Scale for Children (CES-D) [21] is a child self-report measure of depression. It consists of 20 items which have four answer choices. Weissman [21] found that the CES-D correlated reasonably well with the Children’s Depression Inventory (34).

Procedure

A single survey was used to obtain the information from the subjects. Children in this study were asked to complete the questionnaires in groups, of between 40 to 50 students, in their respective schools. All parents and students were required to sign a consent form. A letter, and consent form, describing the study was sent to the parents via the students, and subsequent returned to the class teacher by the students. In class, the children’s questionnaires were administered by one Clinical Psychologist and six Master of Clinical Psychology interns. Children were required to complete measures of internalising and externalising behaviours, temperament, social support, their perceptions of child-parent relationship and inter-parental conflict and coping style. Parents were required to complete questionnaires on the child’s behaviours, disciplining style, their social support and their mental health. In all cases, the questions were read out to the subjects by the questionnaire administrators to ensure that all questions were answered, and that children had the opportunity to clarify the meaning of the questions. Questionnaires that the parents completed were sent to them by post and they were returned by post to the researcher.

Results

This section describes the prevalence of children’s mental health problems according to gender and school age.

To find out the prevalence of mental health problems amongst children in this sample, and also to ascertain the role that gender and age plays, three levels of analyses were undertaken. Broadly, these analyses were categorised into developmental levels and clinical levels. Where the developmental levels were concerned, the mean scores of
each mental health sub-test were obtained and comparisons were done across school age. Where the clinical levels were concerned, initially the clinical cut-off scores for each sub-test was obtained, following that the prevalence of mental health problems was observed across gender and school-age groups. The descriptive statistics are in Table 3 and 4.

Table 3: Descriptive Statistics of Primary School Children’s Self and Parent Reported Mental Health Problems

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child-Reported</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggressiveness</td>
<td>6.89</td>
<td>5.03</td>
<td>0.0</td>
<td>22.0</td>
</tr>
<tr>
<td>Depression</td>
<td>232</td>
<td>8.45</td>
<td>3.0</td>
<td>49.0</td>
</tr>
<tr>
<td><strong>Parent Reported</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggression</td>
<td>56.32</td>
<td>6.73</td>
<td>50.0</td>
<td>84.0</td>
</tr>
<tr>
<td>Delinquency</td>
<td>56.89</td>
<td>6.33</td>
<td>50.0</td>
<td>79.0</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>57.54</td>
<td>8.79</td>
<td>50.0</td>
<td>97.0</td>
</tr>
<tr>
<td>Anxiety</td>
<td>57.57</td>
<td>7.64</td>
<td>50.0</td>
<td>89.0</td>
</tr>
<tr>
<td>Attention problem</td>
<td>59.41</td>
<td>7.68</td>
<td>50.0</td>
<td>89.0</td>
</tr>
<tr>
<td>Social problem</td>
<td>59.63</td>
<td>7.24</td>
<td>50.0</td>
<td>83.0</td>
</tr>
<tr>
<td>Thought disorder</td>
<td>60.11</td>
<td>8.59</td>
<td>50.0</td>
<td>97.0</td>
</tr>
<tr>
<td>Somatic Complaint</td>
<td>61.20</td>
<td>9.84</td>
<td>50.0</td>
<td>95.0</td>
</tr>
</tbody>
</table>

Table 4: Descriptive Statistics of Secondary School Children’s Self and Parent Reported Mental Health Problems

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child-Reported</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggressiveness</td>
<td>6.82</td>
<td>4.07</td>
<td>.000</td>
<td>17.000</td>
</tr>
<tr>
<td>Depression</td>
<td>26.38</td>
<td>7.17</td>
<td>11.000</td>
<td>43.000</td>
</tr>
<tr>
<td><strong>Parent Reported</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggression</td>
<td>56.18</td>
<td>7.02</td>
<td>50.000</td>
<td>78.000</td>
</tr>
<tr>
<td>Delinquency</td>
<td>57.03</td>
<td>6.68</td>
<td>50.000</td>
<td>78.000</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>57.50</td>
<td>6.59</td>
<td>50.000</td>
<td>85.000</td>
</tr>
<tr>
<td>Anxiety</td>
<td>57.79</td>
<td>6.75</td>
<td>50.0</td>
<td>81.0</td>
</tr>
<tr>
<td>Attention problem</td>
<td>58.35</td>
<td>7.15</td>
<td>50.000</td>
<td>81.000</td>
</tr>
<tr>
<td>Social problem</td>
<td>59.42</td>
<td>9.18</td>
<td>50.0</td>
<td>93.0</td>
</tr>
<tr>
<td>Thought disorder</td>
<td>60.65</td>
<td>8.66</td>
<td>50.000</td>
<td>88.000</td>
</tr>
<tr>
<td>Somatic Complaint</td>
<td>65.50</td>
<td>8.27</td>
<td>50.0</td>
<td>84.0</td>
</tr>
</tbody>
</table>
Table 5: Comparison of Children’s Self and Parent Reported Mental Health Problems by School Age Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Scores</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary</td>
<td>Secondary</td>
</tr>
<tr>
<td><strong>Parent’s of Reports Children’s Mental health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggressive Behaviour</td>
<td>56.32</td>
<td>57.02</td>
</tr>
<tr>
<td>Anxiety</td>
<td>57.57</td>
<td>57.79</td>
</tr>
<tr>
<td>Attention Problems</td>
<td>59.41</td>
<td>58.34</td>
</tr>
<tr>
<td>Delinquent Behaviour</td>
<td>56.88</td>
<td>56.18</td>
</tr>
<tr>
<td>Social Problems</td>
<td>59.63</td>
<td>57.49</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>61.20</td>
<td>65.50</td>
</tr>
<tr>
<td>Thought Problems</td>
<td>60.10</td>
<td>60.65</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>57.54</td>
<td>59.42</td>
</tr>
<tr>
<td><strong>Child Reported Mental health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>232</td>
<td>26.38</td>
</tr>
<tr>
<td>Aggression</td>
<td>6.89</td>
<td>6.82</td>
</tr>
</tbody>
</table>

*  \( p < .05 \)

**  \( p < .01 \)

The mean score for each of the mental health sub-scales was computed and the differences between primary and secondary school-aged children’s mental health problems were observed using a series of univariate Analyses of Variance (see Table 5). The dependent variables were children’s mental health problems and the independent variables were the two groups (i.e., primary vs. secondary school). From a developmental perspective, significant differences were reported by parents on measures of Social problems [\( F (1, 305) = 7.3, p < .05 \)] and Somatic Complaints [\( F (1, 305) = 4.3, p < .01 \)], children on measures of depression [\( F (1, 305) = 15, p < .01 \)]. While primary school children were found to have higher levels of Social problems, secondary school children were found to have higher levels of Somatic Complaints and Depression.

To obtain the clinical ratings for the various mental health problems, the following cut-off scores were used. For the Centre for Epidemiological Studies of Depression scale, a score of 32.75 and for the Braver Aggressiveness Scale a score of 11.42 was used as the clinical cut-off scores, as used previously by the scale developers [21, 33]. Where the Child Behaviour Checklist was concerned, a T-score of 67 was used as the cut-off score as specified by Achenbach [32]. All three scales are widely used in the field of child psychiatry as benchmark standards for assessing internalizing and externalizing behaviours in children.

To obtain the association between rates of clinical disorder in children’s mental health and gender and school age, Chi-Square tests were used. An alpha level of .01 was used for all statistical tests.
Table 6: Prevalence of Clinical Levels of Children’s Self-Reported and Parent Reported Mental Health Problems according to Gender

<table>
<thead>
<tr>
<th>Mental Health</th>
<th>Frequencies and Proportion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (%)</td>
<td>Female (%)</td>
</tr>
<tr>
<td>Child-Reported</td>
<td>N=152 (100%)</td>
<td>N=155(100%)</td>
</tr>
<tr>
<td>Aggressiveness</td>
<td>28 (18.4%)</td>
<td>26 (16.8%)</td>
</tr>
<tr>
<td>Depression</td>
<td>20 (14%)</td>
<td>32 (20.6%)</td>
</tr>
<tr>
<td>Parent Reported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggression</td>
<td>5 (5%)</td>
<td>16 (10.3%)*</td>
</tr>
<tr>
<td>Delinquency</td>
<td>6 (3.9%)</td>
<td>12 (7.7%)</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>18 (11.8%)</td>
<td>32 (20.6%)*</td>
</tr>
<tr>
<td>Anxiety</td>
<td>9 (5.9%)</td>
<td>13 (8.4%)</td>
</tr>
<tr>
<td>Attention problem</td>
<td>11 (7.2%)</td>
<td>22 (14.2%)*</td>
</tr>
<tr>
<td>Social problem</td>
<td>23 (15.1%)</td>
<td>13 (8.4%)</td>
</tr>
<tr>
<td>Thought disorder</td>
<td>23 (15.1%)</td>
<td>26 (16.8%)</td>
</tr>
<tr>
<td>Somatic Complaint</td>
<td>47 (30.9%)</td>
<td>38 (24.5%)</td>
</tr>
</tbody>
</table>

*p < .05

The total number of subjects was 307, which included 152 males and 155 females. Amongst males, the highest number of clinically significant mental health problems was parent-reported Somatic Complaints (30.9%), child-reported Aggression (18.4%), parent-reported Social problems (15.1%) and Thought disorder (15.1%) (see Table 6). The least reported problems were parent-reported Delinquency (5%), Aggression (5.9%) and Anxiety (8.6%).

When the prevalence of clinically significant mental health problems amongst females was scrutinised, it was observed that parent-reported Somatic Complaints (24.5%), Withdrawal (20.6%), Thought disorder (16.8%) and child-reported Aggression (16.8%) were amongst the highest (see Table 6). Whereas parent-reported Anxiety (8.4%) and Social problems (8.4%) were the least reported mental health problems.

Table 7: Prevalence of Clinical Levels of Children’s Self-Reported and Parent Reported Mental Health Problems according to School Age

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequencies and Proportion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary (%)</td>
<td>Secondary (%)</td>
</tr>
<tr>
<td>Child-Reported</td>
<td>N=152 (100%)</td>
<td>N=155 (100%)</td>
</tr>
<tr>
<td>Aggressiveness</td>
<td>30 (19.7%)</td>
<td>24 (15.5%)*</td>
</tr>
<tr>
<td>Depression</td>
<td>16 (10.5%)</td>
<td>36 (24%)*</td>
</tr>
</tbody>
</table>

Parent Reported

<table>
<thead>
<tr>
<th></th>
<th>Primary (%)</th>
<th>Secondary (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggression</td>
<td>9 (5.9%)</td>
<td>12 (7.7%)</td>
</tr>
<tr>
<td>Delinquency</td>
<td>5 (5%)</td>
<td>13 (8.4%)</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>22 (14.5%)</td>
<td>28 (18.1%)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>13 (8.6%)</td>
<td>9 (5.8%)</td>
</tr>
<tr>
<td>Attention problem</td>
<td>19 (12.5%)</td>
<td>14 (9%)</td>
</tr>
<tr>
<td>Social problem</td>
<td>26 (17.1%)**</td>
<td>10 (6.5%)</td>
</tr>
<tr>
<td>Thought disorder</td>
<td>23 (15.1%)**</td>
<td>26 (16.8%)</td>
</tr>
<tr>
<td>Somatic Complaint</td>
<td>42 (27.6%)</td>
<td>43 (27.7%)</td>
</tr>
</tbody>
</table>

**p < .01

When comparing males and females on the prevalence of different categories of clinical levels of mental health problems, there are generally not much differences in levels (see Table 6). The only exception are parent reported aggression [10.3% vs. 5%; \(\chi^2(1, N = 307) = 5.95, p < .05\)], attention problems [14.2% vs. 7.2%; \(\chi^2(1, N = 307) = 3.87, p < .05\)] and withdrawn behaviours [14.2% vs. mental health problems are parent reported Somatic problems (27.6%), followed by child-reported Aggression (19.7%) and parent-reported social problems (17.1%) (see Table 7). The least reported problems are parent-reported Delinquency (5%), Aggression (5.9%) and Anxiety (8.6%). It is
important to note at this point that there seems to be some degree of conflict between parent and child reports of aggression, with children reporting that they are more aggressive than their parents realise. This observation lends support to earlier findings that inconsistencies often exist between parents and child’s reports [22, 35, 20]. This further strengthens the argument for multiple sources of information when any research is conducted on children’s mental health.

When the prevalence of clinical levels of mental health problems amongst Secondary school-aged children was scrutinised, parent-reported Somatic Complains (27.7%) ranked the most prevalent problem (see Table 7). This was followed by child-reported Depression (24%) and parent-reported Withdrawal (18.1%). The least reported problems were parent-reported Anxiety (5.8%), Social (6.5%) and Attention problems (9%).

When comparing primary and secondary school-aged children on the prevalence of different categories of clinical levels of mental health problems, there is generally not much difference in levels (see Table 7). The only exception are parent reported social problems [17.1% vs. 6.5%; \( \chi^2 (1, N = 307) = 8.41, p < .01 \)] and child-reported depression [24% vs. 10.5%; \( \chi^2 (1, N = 307) = 8.79, p < .01 \)]. While secondary school children were found to have higher incidences of depression, primary school children were found to have higher incidence of social problems.

**Discussion**

In this study, the prevalence of children’s mental health problems varied according to the disorder being examined. The prevalence ranged from between 5% (Aggression) to 30.9% (Somatic Complaints). The overall prevalence of depression in females was slightly higher than previous studies. In this study, the prevalence of self-reported depressive symptoms was 20.6%, whereas in an earlier Malaysian study of urban lower secondary school girls, using identical instruments, the prevalence was 14% [9]. Where parent reported data is concerned, this trend is repeated as slightly higher levels withdrawn behaviours are reported.

When gender is taken into consideration, females were reported to be more aggressive, withdrawn and have more attention problems compared to males. These results are contrary to that of most other studies that have observed that males generally have more aggressive compared to females [24, 25]. As many mental health problems are caused by social and family factors, such as the media and family upbringing. These would require a re-examination of how these factors affect females as compared with males.

Where age is concerned, some differences are observed between the prevalence of mental health problems between primary and secondary school children. Secondary school children report higher rates of depression, whereas primary school children report higher rates of social problems. In this respect, the observations are similar to those of other studies where younger children are generally reported to have more externalising behavioural problems, and older children have more internalising behavioural problems [11].

While this study provides useful insights into children’s mental health status, it is subject to lots of limitations. Firstly, the age range of this sample is rather limited and there is no information about the lower
primary and upper secondary age group of children. The age range covered in this study would be classified by some authorities as an adolescent sample, despite the distinction between primary and secondary school. Future studies would do well with expanding the sample to a broader population. The respondents of this study were limited to children and their parents. Future studies might do well in also including teachers as observers of the child’s mental health. Once at school, the time that urban working parents spend with their children may be rather limited, thus including teachers as respondents may help to further verify the reports of children’s mental health.

This study was limited to urban children, but what of rural children? The Malaysian National Morbidity survey reports that mental health problems may be slightly higher in rural areas. Despite being an urban-based study, this study was limited to a small number of schools. Perhaps future studies might include a larger number of schools across a wider socioeconomic base in the city.

Finally, for this study to be able to confidently state that it is representative of the population, it must be racially and socioeconomically proportionally representative of the population. Given that the sample was a voluntary convenience sample, the distribution is rather biased as the majority of the subjects are Malay; as such Indians and Chinese are poorly represented. Future sampling methodology might benefit from collaboration with the Department of Statistics in the selection of the sample based on the National Census and Enumeration Blocks.

To conclude, the numbers of children having symptoms of mental health problems are noticeable. With these problems, the social and emotional well-being of children needs to be a prime concern when developing health care policy. Given this situation, more research on the factors predicting children’s mental health, and more services may be required to promote children’s mental health and well-being.

References


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Fax: 603-5635 8633
COMPARISON OF FAMILY ENVIRONMENTAL SCALE (FES) SUBSCALES BETWEEN MALAYSIAN SETTING WITH THE ORIGINAL DIMENSION OF FES

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1Clinical Research Centre, Ministry of Health
2Kulliyah of Medicine, International Islamic University Malaysia
3Faculty of Medicine, UKM Medical Centre

Abstract

Introduction: Family Environment Scale (FES) was developed by Moos1, has ten subscales and was categorized into three dimensions. Objective: The objective of this study was to develop factor structure for the Malay-translated version of the FES subscales. Methodology: The study used Malay translated version of FES by Khairani et. al2. This study was a multi centre, cross-sectional study, involving four secondary schools consisted of adolescents, aged between 12-17 years old and a total of 295 participants were enrolled in this study. Exploratory factor analyses was done across two groups of analysis set on the subscales with Cronbach’s alpha more than 0.50 and 0.53 respectively. Results: Two distinct factors were extracted across the four subscales consisted of Cohesion, Conflict and Organization in factor 1 and only Control in factor 2. Conclusion: The finding indicated that element of Cohesion, Conflict and Organization has a good indicator of a good family relationship.

Keywords: FES, subscales and factor structure

Introduction

Family Environmental Scale is an instrument used to measure many family aspects such as family integrity, family dynamics, communication, closeness, and functions of each family member. Previous studies have already confirmed that it is also an effective instrument to differentiate between functional families and families with problems3, 4, 5. In particular, the FES was developed to assess the interpersonal atmosphere within a family with respect to its relationships, patterns of growth, and its organizational features6.

The FES comprised 10 subscales that measure the social environment of families. The author of original FES constructed these 10 subscales based on conceptual framework which assess three underlying sets of dimensions (see Table 2).

The conceptualization framework might differ if it is tested using different population for example the Malaysian population. Thus, the objective of this study was to examine factor structure using appropriate statistical analysis on the translated Malay version of the FES subscales to describe family function in a
Malaysian setting. The finding then was compare to FES dimensions in original version.

**Methods**

There are three separate forms of the FES available that correspondingly measure different aspects of dimensions (Real, Ideal and Expectation). In this study, the ‘Real’ form was chosen and translated into the Malay language. The Real Form (Form R) measures people’s perception of their actual family environments. This could help investigators to understand individuals’ perceptions of their conjugal and nuclear families and would be beneficial to facilitate family counselling or educational programs7. The detail of the translation process was written by Khairani et. al1. The translated Malay version was self-administered to adolescents, aged between 12-17 years old. This study applied convenient and quota sampling. A convenience selection was made on the schools with the assumption that the characteristic of the students in normal public schools were homogenous. The respondents were selected using quota sampling to obtain a representative Malaysian population in respect to racial proportion among Malay, Chinese and Indian with the ratio of 6: 3: 1 respectively. A total of 295 students were enrolled from four different schools located within the Klang Valley. The translated FES was distributed randomly and self-administrated to avoid interviewer bias. This was an observational research which was unlikely to impact on the safety and well being of the human subjects involved and therefore a waiver on written informed consent was taken from study subjects and verbal consent was sufficient.

**Statistical Analysis**

All statistical analyses were conducted using software package SPSS version 14.08 for Windows. The descriptive statistics were analyzed for demographic characteristics of the respondents. Internal consistency was evaluated by means of Cronbach’s alpha to confirm the assumption for factor analysis. Subscales with internal consistency (Cronbach’s alpha) more than 0.50 is acceptable9,10. Factor structure was constructed using exploratory factor analysis based on Principle Component Analysis (PCA) extraction method with Varimax rotation. The main purpose of this procedure was to group the acceptable subscales into meaningful distinct factor. Subsequently, the reliability and correlation test of the new factors were performed.

**Results**

In this study, the ethnic and gender distribution of the samples were approximately proportionate to the Malaysian population as presented in Table 1 (based on the Malaysian Statistics Department11). The majority of the respondents were Malays (63.1%), followed by Chinese (28.5%) and Indians (6.8%). There were 47.0% male and 53.0% were female.
Cronbach’s alpha coefficients for internal consistency are presented in Table 2. Values for the two subscales, Cohesion and Conflict were good (alpha=0.70 and 0.63 respectively). Cronbach’s alpha for all other subscales ranged between 0.10 and 0.58. Cronbach’s alpha coefficient values less than 0.50 were: Expressiveness, Independence, Achievement orientation, Active recreational orientation and Moral-religious emphasis. Cronbach’s alphas with more than 0.5 were Cohesion, Conflict, Intellectual-cultural orientation, Organization and Control. The statistical analysis determined that half of the subscales were invalid because of the inconsistency problems (Cronbach’s alpha < 0.5), thus only half of the subscales were valid to be analyzed using the factor analysis.

As presented in Table 3 and Table 4, exploratory factor analysis was used to obtain construct validity for the subscales with Cronbach’s alpha consistency values of more than 0.50 and 0.53 respectively. Another five subscales with low internal consistencies (alpha<0.5), was not appropriate to conduct factor analysis and were excluded. Using Varimax rotation, two distinct factors were developed (subcales with Cronbach’s alpha >0.5) based on Principle Component Analysis (PCA) methods. Two distinct factors were identified based on five subscales consisted of Cohesion, Conflict and Organization in factor 1 and in factor 2 were Control and

### Table 1. Socio-demographic of respondents.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-13</td>
<td>21</td>
<td>7.1</td>
</tr>
<tr>
<td>14-15</td>
<td>168</td>
<td>57.0</td>
</tr>
<tr>
<td>16-17</td>
<td>106</td>
<td>35.9</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>138</td>
<td>46.8</td>
</tr>
<tr>
<td>Female</td>
<td>157</td>
<td>53.2</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>186</td>
<td>63.0</td>
</tr>
<tr>
<td>Chinese</td>
<td>84</td>
<td>28.5</td>
</tr>
<tr>
<td>Indian</td>
<td>20</td>
<td>6.8</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>192</td>
<td>65.3</td>
</tr>
<tr>
<td>Christian</td>
<td>15</td>
<td>5.1</td>
</tr>
<tr>
<td>Hinduism</td>
<td>13</td>
<td>4.4</td>
</tr>
<tr>
<td>Buddhist</td>
<td>72</td>
<td>24.5</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>0.7</td>
</tr>
</tbody>
</table>

### Table 2. Descriptive statistics, internal consistency and corrected average item subscales correlation (CAISC) of the Malay translated version of the Family Environment Scale (FES)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Subscale</th>
<th>Cronbach’s alpha</th>
<th>CAISC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship</td>
<td>Cohesion</td>
<td>0.70</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>Expressiveness</td>
<td>0.22</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>Conflict</td>
<td>0.63</td>
<td>0.31</td>
</tr>
<tr>
<td>Personal growth</td>
<td>Independence</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>Achievement orientation</td>
<td>0.24</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>Intellectual-cultural orientation</td>
<td>0.51</td>
<td>0.23</td>
</tr>
<tr>
<td></td>
<td>Active-recreational orientation</td>
<td>0.33</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td>Moral-religious emphasize</td>
<td>0.45</td>
<td>0.20</td>
</tr>
<tr>
<td>System maintenance</td>
<td>Organization</td>
<td>0.58</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>0.54</td>
<td>0.25</td>
</tr>
</tbody>
</table>

*CAISC - Corrected Average Item-Subscale Correlations
Intellectual – cultural. Alternatively, four subscales with Cronbach’s alpha value > 0.53, the Principle Component Analysis had developed two distinct factors which comprised of Cohesion, Conflict and Organization in factor 1 and only one subscale which was Control in factor 2. The most favorable result based on the four subscales had produced higher range of communalities (0.657 – 0.955), higher total cumulative of variance (75.3%) and factor loadings higher than ± 0.78. The Cronbach’s alpha values for the three subscales were 0.730 and the correlations between them were in the range of ± 0.374 to 0.510. The tapping of the subscales were almost similar to the original FES7 except for Organization that should be grouped together with Control.

Table 3. Comparison of Principle Component Analysis (PCA) methods using Varimax rotation in factor analysis (subscales for Cronbach’s alpha value > 0.5 and 0.53)

<table>
<thead>
<tr>
<th>Method 1 (Cronbach’s alpha &gt; 0.50)</th>
<th>Method 2* (Cronbach’s alpha &gt; 0.53)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KMO (P-value)</td>
<td>0.708 (&lt;0.001)</td>
</tr>
<tr>
<td>Degree of freedom</td>
<td>10</td>
</tr>
<tr>
<td>Communalities</td>
<td>0.524 – 0.804</td>
</tr>
<tr>
<td>Total cumulative of variance</td>
<td>66.7%</td>
</tr>
<tr>
<td>Factor 1</td>
<td>Cohesion, Conflict and Organization</td>
</tr>
<tr>
<td>Factor 2</td>
<td>Control and Intellectual-cultural</td>
</tr>
</tbody>
</table>

*Method 2 was analyzed without Intellectual-cultural subscale

Table 4. Comparison of Principle Component Analysis (PCA) methods using rotated factor matrix in factor analysis. (subscales for Cronbach’s alpha value > 0.50 and 0.53)

<table>
<thead>
<tr>
<th>Method 1 (Cronbach’s alpha &gt; 0.50)</th>
<th>Method 2* (Cronbach’s alpha &gt; 0.53)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1</td>
<td>Factor 2</td>
</tr>
<tr>
<td>Cohesion</td>
<td>0.8474</td>
</tr>
<tr>
<td>Conflict</td>
<td>-0.7821</td>
</tr>
<tr>
<td>Organization</td>
<td>0.7510</td>
</tr>
<tr>
<td>Control</td>
<td>0.8944</td>
</tr>
<tr>
<td>Intellectual-cultural</td>
<td>0.5148</td>
</tr>
</tbody>
</table>

*Method 2 was analyzed without Intellectual-cultural subscale
Discussion

This study emphasize sample proportion based on ethnicity to indicates that this sample can represent Malaysian population so that the finding of Malay translated version of FES can be applied at least in these three major ethnicity.

Results of this study clearly indicate that culture and lifestyle play very important roles in understanding the concept of the subscales. These poor internal consistencies in the subscales could be explained by the fact that our local adolescents have different socio-cultural concepts. Previous studies have also found that the reliabilities of some subscales in their studies were lower in comparison to those initially reported of the original FES. Consequently, only a limited amount of subscales were valid for testing using factor analysis. Out of the four and five subscales (Cronbach’s alpha > 0.50 and 0.53) that were involved in the factor analysis, result which based on four subscales produced better results in terms of range of communalities, total cumulative of variance and factor loadings.

In the original version, Cohesion and Conflict were in the same Relationship Dimension while Organization and Control were in another dimension of System Maintenance. However, in this study the Organization falls under the Relationship Dimension. This difference in categorization may be attributed to the relationship among family members, which influenced the organization of the family. Findings from this study was supported by Down and Theodore which found that Cohesion, Conflict and Organization categorized under the same dimension while Control belongs to a different and unique dimension. Hence the results of this study concluded that Factor 1, which comprised of Cohesion, Conflict and Organization, can be labeled as Relationship Dimension and Factor 2 which includes Control can be labeled as Control Dimension. However, the analysis with limited number of subscales might be insufficient to explain the overall dimensions of a family function.

According to Moos, Cohesion refers to the degree of commitment, help and support family members provide for one another. Conflict stands for the amount of openly expressed anger and conflict among family members while Organization meant for the degree of importance of clear organization and structure in planning family activities and responsibilities. For Relationship Dimension factor, Cohesion and Organization resulted the highest mean score of 6.93 (2.02) and 6.67 (1.78) respectively while Conflict has resulted the lowest mean score of 3.04 (2.09). Study results have revealed positive direction of family functioning considering the study took normative sample. On the other hand, effective family in relation to Cohesion and Organization will lead to less Conflict in a family. The results also demonstrated that, there were good connections among all three subscales with Cronbach’s alpha of 0.730 and the correlation between them were within the range of ± 0.374 to 0.510.

For recommendation, element of Cohesion and Organization need to be stressed but conflict in a family need to be avoided to maintain a good relationship in a family. FES need to be revised to suit for Malaysian setting and once validated FES was found, the factor structure for FES subscales need to be tested again to get overall picture of family functioning. Besides that, FES has to be tested in a problematic family to have justification on discriminative validity.

Several limitations were found in this study. The inconsistency problems resulted from
the study has caused only few subscales to be included for factor analysis. Thus, the findings of this study do not represent the adequate family functioning as overall. The inconsistency problems might be due to the differences in cultural adaptations of the local respondents1. Apart from that, there was expected a possibility of random sampling error since by logistic, the study used convenient sampling.

Conclusion

Only two dimensions were developed using factor analysis based on four subscales and the dimensions were Relationship and Control Dimensions. With regards to Malaysian setting, the two dimensions were not adequate to explain family functioning as a whole. However, the finding indicated that element of Cohesion, Conflict and Organization are good indicators of a good relationship in a family. In order to improve the factor structure of the Malaysian FES, it is proposed that a new scale for family environment in a family population is developed as the most rational solution to this issue. The rational for the new scale is due to the differences in the family setting, family concept and family understanding between Asian and Western countries.

Acknowledgement

We extend our deepest gratitude to the National Institute of Health, Ministry of Health Malaysia for grant conferment. We also thank the dedicated research assistants; Ms Azdayanti Muslim, Ms Gunavathy Selvaraj, Ms Norwani Rosli and Ms Nurul Husna Mohammad Patel for their endless kind cooperation and also special appreciation to Prof. Dr. Rudolf Moos, for his kind advices.

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OUTCOMES OF DICHOTOMIZING A CONTINUOUS VARIABLE IN THE PSYCHIATRIC EARLY READMISSION PREDICTION MODEL

Ng CG

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Abstract

Objective: To illustrate the results of dichotomizing a continuous variable in a prediction model. Method: 202 patients who were discharged from the psychiatric ward, University Malaya Medical Centre (UMMC) from 27th August 2007 to 15th April 2008 were recruited. The general psychopathology was measured with Brief Psychiatric Rating Scale (BPRS-24). The information on age, gender, race, marital status, occupation, psychiatric diagnosis, first onset, electroconvulsive therapy, substance use, oral treatment and depot injection were collected. On follow up, the patients who had early readmission (<6 months) were identified. Univariate analysis of early readmission using independent t-test for continuous BPRS scale and Chi square test for dichotomized BPRS scale were conducted. Logistic regression model to determine early readmission based on all variables with BPRS score as continuous and dichotomized scale was compared. Result: Both univariate tests showed that BPRS score was significantly associated with early readmission. The power of the test reduced from 0.97 to 0.65 after dichotomizing the BPRS score with alpha of 0.05. The performance of the logistic regression model decreased (AUC: 0.749 to 0.728; Nagelkerke R2: 0.244 to 0.211) and significance of hypothesis testing reduced (P value: 0.002 to 0.036) after dichotomization. Conclusion: Dichotomizing a continuous variable in statistical analysis leads to underpowered of a test and reduced performance of a prediction model.

Keywords: Dichotomizing, prediction model, continuous variable

Introduction

Dichotomizing continuous variables is commonly practiced by researchers in various medical studies. The study subjects are categorized based on either the sample median, priori fixed point or an optimal cutoff point estimated from previous literatures. The underlying reasons of the dichotomizing practice are not fully studied but the common argument is relied on
simplicity.\textsuperscript{1,3} Most researchers assume that by categorizing the subjects into two groups (e.g., high and low or severe and mild) will create simplicity in statistical analysis and also lead to easy interpretation of the result.\textsuperscript{3}

This practice is strongly against the methodologist’s advice where a considerable amount of literature has proven the negative consequence of dichotomization.\textsuperscript{1,3,6-9} A high cost has to be paid for the excuse of simplicity. A substantial proportion of data is discarded when dichotomizing a continuous variable. It leads to the loss of information. The effect becomes more severe in studies with small sample size. Inevitable, it will cause the underpowered of the test or increase probability of false negative result.\textsuperscript{3,10} It was also demonstrated that categorization of a continuous confounder in a logistic regression analysis will lead to the inflation of type I error.\textsuperscript{8}

The aim of this paper is to illustrate the result of dichotomizing a continuous variable in a psychiatric early readmission prediction model. The empirical sample used was extracted from a study conducted in the psychiatric ward, University Malaya Medical Centre in 2008.

**Method**

**Study sample**

A series of 202 non duplicated, conservative patients who were discharged from the psychiatric ward, UMMC from 27th August 2007 to 15th April 2008 were included in the study. Prior to discharge, the general psychopathology of the patients was assessed using brief psychiatric rating scale (BPRS-24). The information on age, gender, race, marital status, occupation, psychiatric diagnosis, first onset, electroconvulsive therapy, substance use, oral treatment and depot injection were collected. On follow up, the patients who had early readmission (less than 6 months) were identified.

**Study Model**

Logistic regression model was constructed using early readmission as dependent variable; age, gender, race, marital status, occupation, psychiatric diagnosis, first onset, electroconvulsive therapy, substance use, oral treatment, depot injection and BPRS score as independent variables (race was categorized as Malay, Chinese, Indian and others; marital status was categorized as single, married, separated, divorced and widow; occupation was categorized according to social class 0, I, II, III, IV, V; psychiatric diagnosis was categorized as psychotic disorders, major depression, bipolar disorder and others; first onset was categorized according to whether the current admission was the first onset or not; oral treatment was categorized as conventional, atypical and mixed treatment; depot injection was categorized as conventional and atypical).

BPRS score was used as a continuous scale in the first model and dichotomized scale in the second model.

**Brief psychiatric rating scale (BPRS-24)**

The BPRS developed by Overall and Garham in the early 1960s.\textsuperscript{11,12,13} It is the most established questionnaire scale for rapid clinical assessment that measures
major psychotic and non-psychotic symptoms in individuals with major psychiatric disorders. The version of 24 items was adapted by Ventura et al in 1993. The rating is based upon observation made by the clinician or rater during a 15 to 30 minutes interview (items which measure tension, emotional withdrawal, mannerisms and posturing, motor retardation and uncooperativeness), and subject verbal report (items which measure conceptual disorganization, unusual thought content, anxiety, guilt feeling, grandiosity, depressive mood, hostility, somatic concern, hallucinatory behavior, suspiciousness and blunted affect). Additional to the scale were eight additional items of suicidability, elated mood, bizarre behavior, self neglect, disorientation, excitement, distractibility, motor hyperactivity. Each item is defined by 1-2 sentences of clinical description. The scale points are not defined beyond not present, very mild and up to extremely severe.

Statistical Analysis

Univariate analysis of the association between the BPRS score and early readmission was conducted. Independent t-test was used for the analysis of continuous BPRS scale and Chi square test for the dichotomized BPRS scale. The power for both test were estimated. They were based on the estimated means, standard deviation and subgroup size for the t-test; and estimated rates and subgroup size for the Chi square test. Both power were estimated at the alpha level of 0.05.

Multivariate analysis using the logistic regression model for both continuous and dichotomized BPRS scale were conducted and compared. The predicted probabilities of both models for all subjects were determined. ROC was derived for each model by plotting the sensitivity versus one minus specificity for all possible predicting probabilities. The areas under the plots, AUC were then determined.

Result

Table 1 Independent t-test analysis of BPRS score with early readmission

<table>
<thead>
<tr>
<th>Readmission</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>P value</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>137</td>
<td>36.86</td>
<td>9.42</td>
<td>&lt;0.01</td>
<td>-10.23, -3.50</td>
</tr>
<tr>
<td>Yes</td>
<td>65</td>
<td>43.72</td>
<td>14.57</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SD = standard deviation
CI = confidence interval

The BPRS score was significantly associated with early readmission (p<0.01). The estimated power of the test was 96.6% with alpha of 0.05.
Table 2 Chi square analysis of the dichotomized BPRS scale with early readmission

<table>
<thead>
<tr>
<th>BPRS score</th>
<th>Early readmission</th>
<th>Total N (%)</th>
<th>OR</th>
<th>P value</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 36 (median) &amp; No N (%) &amp; Yes N (%) &amp; 86 &amp; 1.89 &amp; 0.04 &amp; 1.02-3.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 36 (median) &amp; 72 (62.1) &amp; 44 (37.9) &amp; 116 &amp; 2.204 &amp; 0.036 &amp; 1.051-4.620</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OR = odds ratio
CI = confidence interval

The median of the study sample BPRS score was 36. The subjects were dichotomized at the median point. The Chi square analysis showed that the dichotomized BPRS scores were significantly associated with early readmission with the odds ratio of 1.89 (p<0.05). The estimated power of the test was 65.4% with alpha of 0.05.

Table 3 Comparison of the logistic regression model with BPRS as continuous and dichotomized scale

<table>
<thead>
<tr>
<th>Model</th>
<th>AUC</th>
<th>SE</th>
<th>Exp (B)</th>
<th>P value</th>
<th>95% CI</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous</td>
<td>0.749</td>
<td>0.038</td>
<td>1.050</td>
<td>0.002</td>
<td>1.018-1.084</td>
<td>0.244</td>
</tr>
<tr>
<td>Dichotomized</td>
<td>0.728</td>
<td>0.040</td>
<td>2.204</td>
<td>0.036</td>
<td>1.051-4.620</td>
<td>0.211</td>
</tr>
</tbody>
</table>

AUC = area under the receiver operating characteristic curve
SE = standard error
CI = confidence interval
R² = Nagelkerke R square

The logistic regression analysis showed that BPRS scores were significantly associated with early readmission either as continuous scale (p=0.002) or dichotomized scale (p=0.036).

Discussion

The purpose of this study is to illustrate the results of dichotomizing a continuous variable in a prediction model. It does not aim to develop a prediction model for early readmission. The variables used were extracted from a full dataset of a previous study. As a result, the performance of the model was relatively low in this study as represented by the low Nagelkerke R square values. Many researchers prefer to dichotomize the continuous variables in statistical analysis instead of making use of a wide range of more suitable available analytical methods.
A series of unintended consequences must be bear in mind while applying dichotomization for the reason of simplicity.\textsuperscript{1,3,6-9}

In this study, the power of the test for null hypothesis was 0.97 prior to dichotomization. It was based on the estimated means, standard deviations and subgroup sample size of the t-test and at the alpha of 0.05.\textsuperscript{1, 16} After dichotomization, the power reduced to 0.65. If the study was conducted without dichotomizing the BPRS scale, the estimated sample size required to achieve the power of 0.65 was only 10 subjects per subgroup. This means that the reduction of power from 0.97 to 0.63 equal to discarding a large number of study subjects.\textsuperscript{1}

In multivariate analysis, the logistic regression model using continuous BPRS scale had higher predictive capability than model using dichotomized BPRS scale. It was showed by the decrease of AUC from 0.749 to 0.728. It reduced the discriminatory ability of the model. Although BPRS score was significantly associated with early readmission in both model, the significance of the hypothesis testing was reduced after dichotomization. It was indicated by the increase of p value from 0.002 to 0.036. The decrease performance of the model with dichotomized BPRS scale was also shown by the lower Nagelkerke R2 value. Lastly, the precision of effect estimation was much reduced after dichotomizing the continuous variable. It was illustrated from the change of 95% confidence interval for the Exp (Beta) from 1.018-1.084 to 1.051-4.620.

**Conclusion**

Dichotomizing a continuous variable is a bad idea in statistical analysis. A large amount of information of the data is discarded from this practice. It reduces the power and precision of the test. Furthermore, the performance and predictive ability of a model are decreased.

**References**


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CASÉ REPORT

A CASE OF POST-STROKE MANIA

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Abstract

It has been long known that affective disorders as a result of organic brain diseases are not uncommon. Neurological disorders seem to be significant as risk factors for newly diagnosed mania in the elderly. It has been theorized that lesions in the right cerebral hemisphere and limbic structures may produce symptoms suggestive of mania. Even though specific areas of involvement had not been determined, this case discussed below clearly reports a right sided lesion. One of the reasons why not much is known yet about this clinical entity is the rarity of this occurrence. In fact, in one large scale study, only 2 patients out of 700 were identified with mania.

Keywords: Right hemisphere lesions, mania, stroke

Introduction

Bipolar disorder is not unusual in the general population and the lifetime prevalence rates in Malaysia and even Asia may not be too different than the rates seen elsewhere. Generally, the problems faced by clinicians everywhere are diagnostic in nature whereby patients are diagnosed with some other condition due to a number of reasons. Bipolar disorder is usually under-recognized and misdiagnosed. (1) Many of the patients currently diagnosed may receive incorrect bipolar disorders categorization.

One of the reasons for this, at least in Malaysia would be a lack of manpower where the number of psychiatrists is approximately 200 or so and the total population in Malaysia is “only” 27 million people. Hardly an issue some would say but in terms of time spent with a patient, on average it’s definitely inadequate. However, if a medical condition is added to the equation, the task of identifying the mood disorder is made more difficult. Secondary mania as we know has not been widely described and the demographics remain as mysterious as the intricate configuration of the human mind. Functional bipolar disorder usually manifests in a chronic and recurring pattern but in secondary mania, episodes may be acute in nature. (2) How it differs is mainly through a careful history taking to determine the temporal correlation between the organicity and the mania.

However, neurological mania is more likely to be one off rather than running a chronic relapsing course as in classical mania. The case highlighted after this is an example of how a patient who had a stroke developed...
Mania and due to the scarcity of such a thing occurring, especially in an Asian setting, this may help us to understand this condition better.

Case Study

Miss E. E. is a 72 years old single lady who was admitted to the neurology ward with an acute onset of weakness and numbness of the left side of the body. She was previously healthy until 6 months ago when she started to experience episodes of chest pain which was described as heaviness in the chest that came about after some exertion like doing house chores or climbing stairs. It usually lasted for about 5 minutes and it was associated with sweating and palpitations that subsided after rest. She ignored it until a month ago when she started having bilateral ankle oedema associated with shortness of breath even with slight exertion. She also had orthopnoea. A general practitioner provided her with symptomatic treatment. However, a week prior to admission, she was at home resting when she felt nauseous. When she got up to vomit, she felt giddy suddenly and she fell. After that, she could not get up as she felt weak and numb over the left half of her body. Her sister found her and brought her to University Hospital for help following which she was admitted. On the third day of admission, she started having visual hallucinations of chimpanzees scampering about near the door and alligators writhing on the ceiling as well as children crossing the road. She also had auditory hallucinations where she heard her nephew calling her name as well as elementary hallucinations of bells ringing. Relatives who visited her noticed that her behaviour had changed where she had become talkative with increased goal directed ideas and plans such as opening a supermarket and buying some new houses because she believed she was rich with lots of cash stashed away secretly. She had also wanted to make generous donations to the poor and needy. She had also become easily irritable and restless and pulling out her IV lines. She also had reduced need for sleep where she slept for only 1-2 hours and yet still felt full of zest and energy and wanted to be discharged so she could bring her plans into fruition. She was extremely cheerful as if she was on top of the world. However, at times, she had difficulty recognizing relatives who dropped by for a visit. There were no similar symptoms in the past. There were no depressive episodes nor were there any instances of forgetfulness or altered behaviour before.

She has 10 siblings. There was no history of mental illness or dementia in the family. She herself had no past history of any psychiatric illness.

On examination, she was found to be alert and conscious. There was no facial asymmetry or slurred speech. Her blood pressure was normal and her heart rate was 80 beats per minute but it was irregularly irregular. There were no audible murmurs. Her lungs were clear. Her abdominal examination was normal. Neurological examination revealed a full Glasgow Coma Scale score. Her cranial nerves were intact. Her power was reduced on the left side but the tone was increased. Tendon reflexes were brisk on the left with positive Babinski’s on the same side. Sensations were intact bilaterally. Her fundi were normal bilaterally.

Mental state examination showed an elderly lady who was cooperative but overfriendly and she was neatly attired in hospital clothes. She maintained good eye contact but however, she was easily distractible. She spoke in fluent English which was increased...
in amount but the rate and volume were normal. Her speech was also slightly pressured. The speech was coherent but irrelevant at times. There were flight of ideas and some perseveration as well. She described her mood as “very happy” and she appeared elated. She was grandiose believing that she was wealthy. She was not hallucinating at that time. Cognitively, her Mini Mental State Examination yielded a score of only 12.

Investigations

A CT brain was done at presentation which was reported as multifocal recent cerebral infarctions but no evidence of intracranial bleeding. There were multiple ill defined hypodense lesions over the right parieto-occipital, anterior and posterior limbs of right internal capsule, left external capsule and basal ganglia. There was no midline shift or mass effect. A CT thorax did not show any evidence of thrombus within the thoracic aorta.

A repeat CT brain 3 days later showed new hypodensities within right posterior parietal region in keeping with hemorrhagic transformation. A trans-oesophageal echocardiogram showed a dilated left atrium but no evidence of thrombus but there was a thrombus or flap overlying the descending aorta.

A CT brain one week later was reported as right middle cerebral territory infarct with resolved hemorrhagic transformation. Troponin T test was negative and the thyroid function was normal. Her lipids were raised. ECG showed atrial fibrillations.

Diagnosis: Right Cerebro-vascular Accident with Left Hemiparesis with Post-stroke Mania.

She was treated with Warfarin 2mg daily, Frusemide 40mg daily, Digoxin 0.125mg daily, Simvastatin 20mg daily, Propranolol 20mg bid, Slow K 2 tablets daily. For her mania, she was started on Quetiapine 50mg in the morning and 100mg at night.

Discussion

Bipolar illness is common in the general population, with a lifetime prevalence rate between 1-3 % (1). In medically ill patients, it is often mistaken for delirium. The course of organic mania is not clear and its prevalence and incidence are not known. The onset may be within hours or days of the organic insult. Patients with organic mania may have some cognitive dysfunction in contrast to patients with primary mania. The likelihood that mania is secondary is greater when there is no prior personal or family history of bipolar disorder, when cognitive dysfunction or focal neurological signs are present, or when affective symptoms fail to respond to treatment (3). Secondary mania has been attributed to various conditions, including drug use, CNS trauma, neoplasms, vascular and degenerative diseases, epilepsy, infections and metabolic conditions (4, 5, 6).

It has been long known that affective disorders as a result of organic brain diseases are not uncommon. Neurological disorders seem to be significant as risk factors for newly diagnosed mania in the elderly (7). It has been theorized that lesions in the right cerebral hemisphere and limbic structures may produce symptoms suggestive of mania (8). However, specific lesion locations have not been clearly established in mania secondary to neurological diseases (8). This is because secondary mania associated with stroke is
believed to be a reasonable rarity (9, 10). In one study, only 2 cases of mania were observed among more than 700 consecutive stroke patients (9). In terms of treatment, medications that are recommended are essentially the same as those used in primary mania. Newer antipsychotics seem to have antimanic effects and may provide mood stability. In acute secondary mania, especially when it is expected to be temporary, antipsychotics may be more helpful than lithium and anticonvulsants because of faster onset and lower risk of EPS (11, 12).

To date, still very little is known about stroke induced mania. A study by Tang et al in Hong Kong demonstrated that among 157 first time Chinese patients that had suffered a stroke, mania was not one of the psychiatric morbidities identified (13). Further attempts to unveil other clinical data regarding this entity in the Asian region have been unsuccessful.

Therefore, more research is definitely needed in this area so as to understand this condition better. However, with the condition being a rarity, this is easier said than done but attempts must be made to enable clinicians to identify this entity better to aid in the overall management of the individual. The lives of stroke patients are already devastated, the last thing they need is to be ruined further by mania.

References


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CASE REPORT

NON-EPILEPTIC HALLUCINATIONS WITH USE OF LEVETIRACETAM - A CASE REPORT

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Abstract

We report a 35 years old Indian male who presented with history of complex partial seizures since 2001 and was being treated with carbamezepine sustained release tablets of 400 mg thrice daily for the last eight years. Due to lack of control of seizures, levetiracetam was added as an augmentation drug in dosage of 500 mg twice daily over a period of 3 weeks. With gradual increase in dosage of this drug, patient experienced visual hallucinations. EEG was done during periods of visual hallucinations and EEG studies were normal. All other laboratory investigations were also normal including MRI brain which clearly indicated the role of levetiracetam in development of visual hallucinations. With decrease in dose of this drug, hallucinations resolved shortly afterwards within 3 days. Patient was managed with tablet clonazepam(30mg/day) meanwhile temporarily to prevent any fit at that time and later was put on another safer antiepileptic drug.

Keywords: Levetiracetam, epilepsy, visual hallucinations

Introduction

Levetiracetam, a new antiepileptic drug with a novel mechanism of action, shows safe and proven efficacy in complex partial seizures, generalized tonic clonic seizures and myoclonic seizures. It is widely used as add-on therapy in patients with epileptic disorders. It has a favorable pharmacokinetic profile, lack of known pharmacologic interactions, good tolerability.1 Several neuropsychological symptoms may develop during antiepileptic drug treatment; however, there are few reports in the literature regarding the association of Levetiracetam with psychosis.2-4 This is a case report of levetiracetam-induced hallucinations in a patient suffering from epilepsy.

Case Report

Patient is a 35–year-old male with no past psychiatric history, diagnosed with complex
partial seizures in 2001 and treated with carbamezapine sustained released preparation 400 mg thrice daily for last 8 years. Because of uncontrolled seizures despite of regular treatment, he was put on levetiracetam as an augmentation therapy in dosage of 500 mg twice daily after progressive increase in dosage of levetiracetam over a period of 3 weeks. After the dose increase, he described experiencing visual hallucinations of seeing a person standing in front of him, becoming fearful of him and started screaming many times in a day. None of the episodes were associated with any EEG changes and the EEG remained normal throughout the 3-days testing. Physical examination was unremarkable, and laboratory results, including urinalysis, complete blood count, liver function tests and kidney functions were within normal limits. Urine drug screen was negative, and he denied using any substance. The brain MRI was normal.

The dose of levetiracetam was decreased to 500 mg in two divided doses in a day and the hallucinations resolved shortly afterward within 3 days with no need for antipsychotics.

Discussion

As per history, it can be assumed that my patient had levetiracetam-induced visual hallucinations. With the advent of new antiepileptic medications in the market, drug information regarding side effects and benefits are often limited because of lack of experience with a sufficient number of patients. Controlled clinical trials have reported a wide margin of tolerability, with infrequent and mild adverse events for levetiracetam. During long-term treatment, behavioral disturbance was noted in 2% of patients. Clinical studies have indicated a higher prevalence of psychiatric adverse events, ranging between 13.5% and 16%, and prevalence rates of levetiracetam-induced psychosis range from <1% to 1.4%. Data about psychosis are available only as case reports. Risk factors for the development of psychosis are previous history of status epilepticus, previous psychiatric history, add-on therapy, and rapid titration when there is an underlying neurological disease.

The lack of EEG changes during hallucinations in our patient makes epileptic seizures a highly unlikely cause. Further evidence against the hallucinations being caused by seizures is the fact that the symptoms resolved as the drug was discontinued. The content of hallucinations was that voices were discussing about the patient among themselves and also commenting on patient’s behaviour during interictal phase. This demonstrates symptom like first rank symptom of schizophrenia.

This observation is important because it demonstrates that hallucinations can have multiple causes, even when there is an otherwise normal mental status. The therapeutic dose of Levetiracetam ranges from 1000 mg – 3000 mg/day. Psychotic symptoms arising during initiation or titration of pharmacotherapy in patients should not be automatically attributed to a neurological disorder, and abnormal perceptual experiences should be monitored in future studies. Until then, clinicians need
to be aware of this possible complication associated with levetiracetam.

References


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BOOK REVIEW

SCHIZOPHRENIA-BIOPSYCHOSOCIAL APPROACHES AND CURRENT CHALLENGES (SECOND EDITION) EDITED BY SIEGFRIED KASPER AND GEORGE N. PAPADIMITRIOU, INFORMA HEALTHCARE UK LTD.
LONDON 2009, 386 PAGES

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A lot has been written about schizophrenia but every once in a long while, a gem of a book will appear that will make the reader sit up and take notice. This is such a book with important contributions by numerous experts in the field globally. The management of schizophrenia or even any other psychiatric illnesses is always discussed along the lines of a biopsychosocial model. This book offers an insight into the latest trends and developments in schizophrenia treatment as well as challenges clinicians face on a daily basis when dealing with schizophrenics such as social stigma and violence associated with the illness.

This book has 5 parts to it with numerous contributors to each chapter for each part and the contributors are all reputable experts in psychiatry. Each contributor will be acknowledged at the beginning of the book whereby their names and place of practice are listed.

Part 1-Diagnosis and Psychopathology

Following a short introduction by the editors, the first part of the book kicked off spectacularly with its first chapter out of seven that looked at the historical roots and a brief review of recent developments in schizophrenia research. For trainees and young psychiatrists everywhere who may not be aware of the tale behind this crippling illness, this chapter is essential for them to be enlightened. However, for those who knew but have forgotten this will serve as a timely reminder of how this illness came about and how different cultures influenced the inception of the illness. Research developments highlighted are mainly concerned with neurogenetics and neuroimaging which is again an area that young psychiatrists and trainees should venture into especially in developing countries.

The second chapter in Part 1 discussed briefly on the epidemiology of schizophrenia as well as updates on gender effects on it and where the future lie in terms of research.

The third chapter is a very important chapter particularly for trainees since it describes the various aspects of interviewing schizophrenic patients from the goals of interview until the last ‘Thank you’. As such, this chapter serves as a guide to conduct an interview in a competent fashion.

The fourth chapter is again a chapter that is so vital that it will render this book obsolete without it. It provides details on the evaluation of the symptomatology of schizophrenia using valid and reliable scales that have been specifically designed. It also
describes the evaluation of other clinical aspects such as quality of life, functioning and depressive symptoms of schizophrenia and all these helps to monitor changes clinically and evaluate outcomes.

The fifth chapter talks about one of the most interesting topics to emerge in recent times namely first-episode schizophrenia. It describes the clinical characteristics of first-episode schizophrenia and certain high-impact outcome studies and their results that again could serve as an inspiration to young scientists to replicate these studies in our setting since Malaysia is a melting pot of opportunity with its diverse cultures and smorgasbord of potential genetic information.

The sixth chapter provides detailed information about the differential diagnosis as well as comorbidities that can be seen concurrently. It even provides a table of differentials for easy reference. Each differential and comorbidity is described briefly and this I believe will be very helpful not only clinically but for exam going candidates. The seventh chapter deals with neurocognition and schizophrenia which is again an important aspect since cognitive deficits represent a core feature in schizophrenia and may have substantial influence on the progression of the illness, compliance and psychosocial functioning. This is another area which is important to look into and conduct research on since new agents to treat this illness should be tested for their efficacy in terms of minimizing cognitive deficits and enhancing psychosocial functioning.

Part II - Neurobiology

The second part deals mainly with neurobiology and it started with the eighth chapter in the book which discusses about genetic and epigenetic factors in schizophrenia. This chapter has been explained clearly and in a manner that will be easily assimilated. It also provides information on genes that could be responsible for the illness such as Neuregulin and Dysbindin.

The ninth chapter dwells on brain abnormalities in schizophrenia. Neuroimaging studies have demonstrated structural changes in the brains of schizophrenics and this chapter describes the changes seen in different crucial areas of the brain and the information provided are tabulated as well. The immune hypothesis of schizophrenia is also highlighted in this chapter.

Chapter 10 gives an insight into imaging in schizophrenia with examples of some neuroimages. With the availability of CT and MRI scans, interest in neuroimaging is accelerating at an advanced rate. Biochemistry of schizophrenia is the next topic of discussion in chapter 11. All the relevant neurotransmitter systems are described here to enable the reader understand the pathophysiological processes in schizophrenia. Chapter 12 is just an extension of the previous chapter but it concentrates solely on dopamine dysregulation and it renewed the age old debate whether this could explain the psychopathology of schizophrenia especially the positive and negative symptoms.

Chapter 13 is the last in Part II and it discusses about neuropsychological markers and social cognition in schizophrenia. Based on the gathered proof that cognitive decline is a core manifestation of schizophrenia, it’s more specific for schizophrenia rather than affective psychosis and this correlates well with structural and functional anatomical
deficit and could influence functional outcomes.

**Part III—Pharmacological treatment strategies**

We were welcomed to Part III of this book by Chapter 14 which provides an update of some meta-analyses on second generation antipsychotics for schizophrenia. This has always been interesting as debates continue with regards to the supremacy of atypicals over conventional antipsychotics. Therefore, this chapter is a must for those who are convinced about this and for skeptics alike. For fence sitters, well this chapter should help to sway them one way or the other.

Maintenance pharmacotherapy has always been a constant battle for clinicians especially with concerns such as non-adherence due to whatever reasons, adverse effects and the list continues. The next chapter in this book addresses this predicament as it is absolutely imperative to get our patients to stay on treatment since at least 40% of patients with this illness are poorly compliant. Various clinical data and strategies are highlighted here which may help us in our daily practice to enhance the lives of patients that had already been ravaged by the illness.

Chapter 16 provides an in-depth look into another aspect of schizophrenia that is part and parcel of our practice; namely treatment resistance. It has been estimated that 20-45% of patients with schizophrenia are only partially responsive to treatment and 5-10% derive absolutely no benefit whatsoever. Therefore, data on Clozapine and other atypicals are shared here. In addition to these, other alternatives such as Lithium, anticonvulsants, benzodiazepines and ECT are also discussed here.

Chapter 17 delves into pharmacotherapy for First episode schizophrenia which I believe is an indispensable inclusion in this book as there have been controversies over this. For example; should we wait and see or should we start treatment and if treatment is started, how long should patients be on treatment.

The following chapter is a very good chapter and highly recommended for trainees to prepare themselves for exams. The pharmacological profiles and pharmacogenetic approaches of antipsychotics are adequately provided in this chapter. Chapter 19 tells us about the various side effect profiles as well as the other burdens associated with these medications. Each individual side-effect is discussed here including metabolic syndromes and drug-drug interactions as well as the strategies to manage them. I personally found this chapter to be of particular interest and use as it is well written and discussed.

**Part IV—Nonpharmacological treatment**

Psychiatry has always been misunderstood by laymen and other health professionals alike as they believe that psychiatry is all about giving drugs. In reality, that could not have been further from the truth. In psychiatry, medication only plays a role and is not the lead actor in the drama. Nonpharmacological aspects of management can never be excluded and this point can never be stressed urgently enough. Therefore, I believe the significance of the next few chapters should not be underestimated in any way.

Part IV is ushered in by chapter 20 that talks about rehabilitation in schizophrenia namely social skills training and cognitive remediation. Schizophrenia has evolved beyond just symptom control and relapse
prevention. Rehabilitation starts as soon as the therapist laid eyes on the patient. We can no longer afford to wait and rehabilitate later as there are enough evidence to suggest structural and functional ruin if there is no intervention and these destruction could prove irrevocable. Chapter 21 continued in the same vein by providing evidence-based psychosocial interventions for schizophrenia. This is helpful for those who are keen to follow the latest trends in rehabilitative psychiatry and online resources are provided here as well.

Chapter 22 is a short account of transcultural psychiatry and schizophrenia. This is especially relevant to us as we reside in a multi ethnic civilization that is rich in cultural and practical diversity. Chapter 23 deals with another aspect which attracts debate and controversy: ECT in schizophrenia. Many clinicians are still highly averse to using ECT for schizophrenia. Even the public has a negative overview of the treatment modality but the fact remains that ECT has come a long way since Cerletti and Bini experimented with it and now it is a safe and highly effective treatment option. Whether this chapter can have the desired outcome remains to be seen.

Part V-Schizophrenia and society

Coming to the last part of this book, it must be said that psychiatry has advanced in leaps and bounds but the question remains? Is our patients’ welfare improving at the same rate? Society still stigmatizes and ostracizes our patients. Certain quarters of our noble profession unfortunately treats them the same way. Therefore, this part is a very important read for all. Chapter 24 starts out inevitably with schizophrenia and stigma which is an old problem but remain as challenging if not more than ever. It defeats the purpose of having the latest atypical antipsychotics but socially, our patients are still viewed with disgust, distrust and disdain. If anyone wants to read only a chapter from this book, let this be it.

Chapter 25 discusses about another pertinent issue that is patient rights in terms of ethics and clinical care. I have been in the service long enough to know our patient rights are not protected and even if they are, it’s not protected enough. How many of us have seen our patients coming to us with heart-wrenching accounts of how they lost their jobs because their employers found out they are on psychiatric follow-up? Some of these patients are not even schizophrenics but recovered depressed individuals. How about those who are not getting insurance coverage, workmen’s compensation? And the list hideously goes on and on. How many of them are getting mistreated and abused? This chapter again needs to be read to open the eyes of people to see what they must see and not what they want.

Chapter 26 is about genetic counseling which is another important chapter. The next time a carer asks us a question pertaining to this, reading this chapter will arm and prepare us to address it. Chapter 27 discusses in detail about violence in schizophrenia. In terms of risk factors and how to perform assessments, this is a good chapter as it gives us a guide on looking out for those risk factors and how to prevent violence.

Chapter 28 is the penultimate chapter that talks about schizophrenia and how it affects economy. We all know about the direct, indirect and intangible costs of treating schizophrenia and sometimes not treating it. With the availability of all the latest atypical antipsychotics, it will be a monumental
challenge for us to find a treatment that is not only effective but cost effective as well.

All good things must come to an end. With a heavy heart, this review has to be concluded with chapter 29 that entails transcultural aspects of schizophrenia and age-old schizophrenia. Transcultural aspects of psychiatry are especially pertinent to our practice as we live in a multicultural society as mentioned earlier. This chapter describes different symptoms of schizophrenia according to different cultures and ethnicity. A lot has been said about early psychosis but late onset psychosis is also an issue to be discussed. What happens to these patients and how they differ in clinical presentations are described in this chapter including the treatment options as well.

In summary, this is an excellent book which will be a valuable addition to any library. It not only combines all the elements of schizophrenia into a single volume but information within are conveyed to the reader like a breath of fresh air. This book comes highly recommended and is a must for all trainees and psychiatrists alike.

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DEPRESSION IN PARKINSON DISEASE: CLINICAL FEATURES AND AETIOLOGY
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Abstract

Parkinson Disease (PD) is a neurodegenerative disorder of the central nervous system that often impairs the patient’s motor skills, speech and other functions. The four cardinal signs of parkinsonism are resting tremor, bradykinesia, cogwheel rigidity and postural instability. The prevalence of depression in PD ranges from 4% to 75%. However depression in PD is often mistakenly as the presentation of the disease itself. Therefore this paper reviewed the clinical feature of depression in PD and explored the aetiology of depression in PD.

Keywords: Parkinson Disease, depression, psychiatric morbidities, associated factors

Introduction

Parkinson Disease (PD) is a neurodegenerative disorder of the central nervous system that often impairs the patient’s motor skills, speech and other functions. Neurologists accepted that the diagnostic criteria for Parkinson disease based on clinical signs. There are four cardinal signs for parkinsonism i.e. resting tremor, bradykinesia, cogwheel rigidity and postural instability1.

There is no specific diagnostic procedure or laboratory test to establish the diagnosis of PD. However, computer tomography (CT) and magnetic resonance imaging (MRI) maybe performed to look for a structural disorder that maybe the cause of these symptoms. Idiopathic PD is caused by a characteristic motor phenotype2 and a distinctive neuropathology and progressive loss of dopaminergic neurons from the substantia nigra associated with the presence of alpha-synuclein-positive inclusions in the cell body (Lewy bodies) and processes (Lewy neurites) of specific neurons of the brainstem. Secondary parkinsonism may be caused by drugs (eg. antipsychotic drugs), infections (eg. encephalitis) or cerebrovascular disease.

Clinical Features of Depression in Parkinson Disease

Depressive symptoms occur in approximately half of PD patients and are a significant cause of functional impairment. Estimates of the prevalence of co-morbid depression vary widely, from 4% to 75%, and there are few prospective epidemiologic studies3,4. The surveys that are available suffer from a number of methodological flaws, including inaccurate sampling methods and
imprecise tools to quantify depressive symptoms. The word “depression” has been loosely defined before. Diagnosis of depression has been based on various measuring tools, including self report rating scales, non standardized clinical interview, resulting in questionable diagnostic validity. Surveys in research centres diagnose depression in 40% to 50% of patients compared to community-based studies which have rates of depression that are less than 10%. Rates of depression have also been shown to vary widely between different countries. The Global Parkinson’s Disease Survey, in five countries including the United States, found that approximately half of PD patients had depressive symptoms that significantly impacted their daily functioning. Surveys in Norway and China found the rates of major depression were 7.5% and 16.5%, respectively.

Nevertheless, the prevalence rate of around 40% is general acceptable, with one half of the patients is major depressive disorder and another half is dysthymia. Depression in PD is associated with increased disability and reduced quality of life. However, several studies have found that clinically significant depression in PD is under diagnosed, in part because symptoms of depression such as fatigue and insomnia may be attributed to PD. Because of the overlapping between symptoms of PD and symptoms of depression, the recognition and impact of depression in PD may vary throughout the course of Parkinson disease.

The diagnosis of depression among PD patients is not easy because clinical symptoms of depression can overlap with or be mistaken for those of Parkinson disease, such as the flat affect, inability to work, fatigue, psychomotor slowing, preoccupation with ill health, loss of desire, and reduction in libido. PD patients can appear withdrawn from social activities, because they are unable to participate due to disabling dyskinesias and are socially uncomfortable with their appearance. Some of the PD patients may have a suicidal plan, not because they are depressed but because they know the inevitable course of their illness. The clinical presentation of a patient with PD (e.g., bradykinetic movements and flat facies) is almost same as patients with a severe melancholic depression. Besides that, dementia symptoms among PD patients may cloud the diagnosis of depression in PD. Apathy, concentration, attention, and memory impairment associated with dementia can be misdiagnosed as comorbid depression. Moreover, depression in patients with PD is qualitatively different from major depressive disorder in the aspects of self blame, guilt, delusions, a sense of failure, self destructive thoughts. Suicidal incidences are less frequent.

The diagnosis of a Major Depressive Episode in Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) requires at least five out of the nine depressive symptoms i.e. depressed or irritable nearly every day for most of the day; markedly diminished interest or pleasure in previously enjoyed activities; weight loss or weight gain; changes in sleep pattern; psychomotor agitation or retardation; fatigue or loss of energy; feelings of worthlessness or excessive or inappropriate guilt; indecisiveness or diminished ability to concentrate; and recurrent thoughts of death. The symptoms should be present during a two-week period, and one of the symptoms must be either depressed mood, or a marked diminished interest or pleasure in all or almost all activities.
Aetiology of Depression in Parkinson Disease Patients

Age and Age of Onset

Majority of the earlier studies showed no relationship between depression and the patient’s current age during study, or with the patient’s age of onset of Parkinson’s disease. Some found that depressed patients with PD tend to be younger at the time of onset of parkinsonian symptoms but there are PD patients diagnosed with major depression at older age.

Duration of Parkinson’s Disease

The duration of onset was initially expected to affect the rate of depression, but most researchers found no significant relationship between length of illness and depression in Parkinson’s disease patients.

Gender

Several studies have found a higher prevalence of depression among women with Parkinson disease. Nevertheless a larger proportion of studies could not find relationship between gender and depression in PD. Most studies in the general population mentioned female gender as a risk factor for depression. Being a female may be a risk factor for depression among general population, but the consensus was lacking for PD.

Previous History of Depression

Two studies have identified a previous history of depression as a risk factor for developing major depressive disorder after the onset of PD. The above observation could be interpreted as those individuals who are susceptible to depression are more likely to develop depression after the onset of Parkinsonism symptoms, or depression and PD have a linked neurobiology and either may express temporal precedence.

Family History of Depression

Although a positive personal and family history of depression established risk factors for depression in the general population, they have hardly been studied as markers of depression in PD. However, there were studies that assessed the influence of family history of psychiatric illness on PD but there was no significant higher rate of psychiatric illness in the family members of patients with PD, or more specifically, not a higher rate of mood disorder in the family of patients with PD. Those evidences suggest that depression in PD patients is not independently inherited familial disorder.

Biological Factors

Numerous studies show that the mesolimbic and mesocortical dopaminergic pathways arise from neurons in the ventral mesencephalon near the substantia nigra and project to limbic and cortical structures that mediate cognition, emotions, and reward-seeking behaviour. These structures have been implicated in apathy, anhedonia, and depression of PD. Dopamine neurons in the ventral tegmental area (VTA) deteriorate in the course of PD and may contribute to depressed mood.
Depression is also believed to be caused by a decrease in the activity of serotonin and noradrenaline. Levels of 5-HIAA were significantly lower for depressed PD patients (major depression or dysthymia) than nondepressed PD patients or control subjects\(^{21}\). In addition there are more severe reduction of dorsal raphe nucleus serotonergic neurons in the brains of PD and depressed patients than nondepressed PD patients\(^{33}\). Changes in the number and the activity of serotonin neurons of the dorsal raphe nucleus may be responsible, in part, for the development of various neurotic disorders eg. depression, anxiety, and panic disorders in PD patients\(^{34}\).

In Parkinson disease, a decrease in the activity of noradrenaline is related to a decrease in the number and activity of noradrenaline neurons in the locus coeruleus\(^{35}\). This decrease is more prominent in depressed patients. The locus coeruleus is the main noradrenaline outflow system with connections to mesolimbic and mesocortical regions, including the anterior cingulate gyrus, the amygdala, the hippocampus, the ventral striatum and nucleus accumbens. However, this finding is not consistent in other study\(^{33}\).

**Genetic Factor**

As Parkinson’s disease progresses, as the loss of noradrenaline neurons increases, a genetic predisposition may, in some patients, more easily trigger depression. A depression predisposition locus has been identified on chromosome 12\(^{36}\). This is the first such locus to be identified. The finding of this gene, and genes associated with other loci may change the current understanding of depression in the future.

**Neurodegeneration of Parkinson Disease**

Researchers found numerous evidences that depression in PD is the result of the neurodegenerative process of brainstem monoamine and indolamine afferents and variable involvement of a number of subcortical nuclei\(^{37}\). Parkinson’s disease is characterized by degeneration of the subcortical nuclei, some of which have been implicated in depression, such as the ventral tegmental area (VTA), hypothalamus, dorsal raphe, and locus coeruleus. The relationship between the neurodegenerative process and comorbid depression is demonstrated in the correlation of depressive symptoms with specific clinical features of PD\(^{38}\).

In spite the evidences above, researchers find that the most convincing evidence of the association of mood symptoms with the neurodegenerative process are postmortem and imaging studies that have correlated clinical symptoms of depression with the nonmotor basal ganglia-thalamic-frontal cortex circuit. Degeneration of the VTA and substantia nigra (SN) that project to the striatum and mesocortical and mesolimbic areas can result in depletion of dopamine (DA), serotonin (SER), and noradrenaline (NA)\(^{39}\). Decreased metabolism in the frontal cortex-basal ganglia thalamic loop of PD patients is similar to the pattern shown in metabolic studies of non-PD patients with major depression\(^{40}\).

The variable degeneration of subcortical neurons, including dopamine, serotonin, and norepinephrine, may explain the variable occurrence of depression and other nonmotor symptoms in individual patients. Changes in both the serotonin and dopamine systems have been implicated in depression\(^{32,33}\). The variable degeneration of subcortical structures may account for
the different clinical presentations of the nonmotor syndromes of PD, including dementia, depression, and psychosis\textsuperscript{41}.

**Psychological Factors**

In addition to the abnormalities of neurochemistry in PD, psychological factors play a role in Parkinson disease depression. Researchers believe that there are two theories related to the aetiology of depressive symptoms in PD. First theory mentioned that depression is caused by neuroanatomical changes that occur in PD and is a symptom of the underlying neurodegeneration, which was discussed earlier above. Second theory stated that depression is “reactive” and secondary to the psychosocial stress of a chronic disease and the associated disability.

PD patients and their family members clearly have to adjust to a chronic disabling illness that may result in the unemployment, marital discord, or increasing withdrawal and isolation because of their physical disability. They have to face the fact that there is no cure for the illness at this moment. The antiparkinson treatments are mostly palliative and tend to become less effective with time. There is some aspect of a reactive depression in a lot of patients, particularly at the time of initial diagnosis. And patients with early-onset PD (age less than 65) do have increased rates of depression\textsuperscript{42,43} perhaps because they have more significant career and financial disruptions\textsuperscript{44}. There is an increased likelihood of early onset depression when PD begins before age 55, even though symptoms may not be severe at this younger age\textsuperscript{16}. There is also possibility that the degree of disability resulting from the PD itself may convey a greater risk of depression in PD patients. However, the high rates of depression in PD are not completely explained as a reaction to the stress of the illness. The physical improvement in PD symptoms per se does not predict a concomitant reduction in depression\textsuperscript{45}. It may be argued that although PD depression and PD disability from physical symptoms of PD are strongly correlated, this association may be more an indication of the severity of underlying neurochemical abnormalities than a psychological depressive reaction to the physical limitations of Parkinson disease\textsuperscript{19}.

**Other Factors Associated with Depression in Parkinson Disease**

**Severity of Parkinson Disease**

The relationship between severity of PD and depression was studied over the past 20-30 years in numerous studies. Some of the researchers have found that depression is significantly and positively correlated with disability and advancement in PD\textsuperscript{8,17,19,46,47}. While others have produced negative or inconclusive findings Mayeux et al (1981) Starkstein et al (1990) However, depression does not improve in PD patients once disability is reduced following levodopa therapy\textsuperscript{48}.

The association between depression and increased disease severity in PD could be attributed to several mechanisms. Increased severity may be related to “reactive” depression. However, there is limited evidence suggesting that depression in PD may be secondary to physical impairment\textsuperscript{49}. Some researchers argued that increased PD severity in patients with depressive symptoms is associated with more severe and widespread neurochemical changes that may in part aggravate the preexisting pathophysiology underlying Parkinson’s disease.
Quality of Life

The health related quality of life among PD patients consists of 3 main elements i.e. physical, emotional and social functioning. The health related quality of life scales used in PD has differences among them, but they measure motor and non-motor features, physical functioning, emotional reactions, social isolation and energy. Other domains of impairment in the health related quality of life among PD patients includes bodily discomfort, pain, self image, cognitive function, communication, sleep, role function, and sexual function. Overall, patients with PD scored lower than age-matched controls or patients with diabetes mellitus across all domains of health related quality of life.

A number of studies have addressed factors associated with poor health related quality of life in PD in cross-sectional studies. The impact of Parkinson’s disease on quality of life was greater in advanced stages compared to early stages.

Studies also reported that patients with off-periods, freezing, unpredictable on-off fluctuations, night-time akinesia and early morning akinesia, dystonia, dyskinesia, falls, levodopa dose, insomnia, cognitive impairment, depression, and dissatisfaction with how the diagnosis was communicated and low level of optimism have worse health related quality of life scores than those without these features. If those studies that used multivariate analysis are considered, it is clear that the main factor correlated with worse health related quality of life scores in Parkinson’s disease is depression.

Antiparkinson Drugs

Dopamine agonists (e.g., levodopa and amantadine) are only weak antidepressants but they can cause other psychiatric symptoms, including hallucinations, agitation, restlessness, and delirium. The monoamine oxidase type B (MAO-B) inhibitor selegiline has weak antidepressant properties but is much less effective than the nonspecific MAO inhibitors (e.g., phenelzine). The D2 dopamine receptor agonist pramipexole is effective in treating non-PD depression. In contrast, there is a relationship between depression and either medications that deplete dopamine (e.g., reserpine) or the loss of dopaminergic innervation to the limbic system. Since the replacement of dopamine does not treat depression in all PD patients, it is unlikely that dopamine deficiency is the only explanation for co-morbid depression.

PD patients commonly encounter two phases of motor response to levodopa, commonly referred to “on” and “off.” During the “off” phase, there is a loss of the therapeutic effects of levodopa that occurs before the next dose of levodopa. The symptoms e.g. increasing rigidity, akinesia, and bradykinesia may occur. The “on” phase is caused by the peak effect of levodopa which may lead to excessive involuntary movement or dyskinesias (i.e. choreoathetoid arm/legs movement and with akathisia). With the progress of the illness, the “on” and “off” phase may become very unpredictable. The PD patients may end up with “frozen” (unable to move) or excessive involuntary movement. As a result of “on” and “off” phase irregularity, PD patients had a tendency to develop depression.
Although some have argued that mood fluctuations in PD are the result of severe motor fluctuations\textsuperscript{60,61} there is evidence that the mood and motor fluctuations may be two different clinical manifestations which is not related to each other. The subjective mood changes experienced by the patient did not correlate with either a psychological reaction to turning “on” or a physiologic reaction to the administration of dopamine\textsuperscript{55}.

**Conclusion**

Clinical depression in Parkinson Disease patients is not easy to be recognized due to the similar presentation of the disease itself. However, one cannot ignore the occurrence of depression in PD. Furthermore, understanding how to diagnose depression and to identify its associated factors in PD will certainly help physician to manage PD patients better.

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BRIEF COMMUNICATION

EVIDENCE-BASED CLINICAL PRACTICE - A CRITICAL ANALYSIS OF ITS JUSTIFICATION AND LIMITATIONS

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A lot has been said and debated about evidence-based clinical practice. What is it really and why so much of significance is attached to it? Is all the evidence from clinical trials relevant and reliable? How about experience-based clinical practice? How much of our practice is influenced by clinical data and how much of it by years of practice and number of patients managed? The clinician will still need to exercise common sense when treating patients and they must always remember that each individual patient is unique and a clinician’s approach will have to be catered to their needs. After all, the caveat is that we are treating individuals with feelings and emotions and not textbooks or journal articles.

Keywords: Evidence-based, clinical practice, justifications, limitations

Introduction

Evidence-based clinical practice is an organized mean to obtaining clinically essential information about the causes and diagnoses of illnesses, their outcomes and management.

It integrates the best research evidence with clinical expertise and patient values:

• **Best research evidence** means clinically relevant research, often from the basic sciences of medicine, but especially from patient oriented clinical research into the accuracy and precision of diagnostic tests (including the clinical assessment), the power of prognostic markers, and the efficacy, safety and tolerability of therapeutic, rehabilitative and preventive interventions. New evidence from clinical research both invalidates previously accepted diagnostic tests and treatments and supplants them with new ones that are more powerful, more accurate, more efficacious, and safer.

• **Clinical expertise** refers to the ability to use our clinical skills and past experience to rapidly identify each patient’s unique health state and diagnosis, their individual risks and benefits of potential interventions, and their individual values and expectations.

• **Patient values** refers to the unique preferences, concerns and expectations each patient will have during a clinical consultation and which must be integrated into clinical decisions if they are to serve the patient.
When these three elements are integrated, clinicians and patients form a diagnostic and therapeutic alliance that can possibly optimize clinical outcomes and enhance quality of life.

The evidence based approach is a process in which the following steps are applied:

- Formulation of an answerable clinical conundrum
- Identification of the best evidence
- Critical appraisal of the evidence for validity and utility
- Implementation of the findings
- Evaluation of the performance

The principles of evidence based clinical practice can be applied to a variety of medical procedures. For psychiatry, its main use in this day and age is assessing the value of therapeutic interventions.

Other uses for evidence-based clinical practice have been recognized:

- It reinforces the need for, and mastery of the clinical and communication skills that are required to gather and critically appraise patients’ narratives, symptoms and signs and to identify and incorporate their values and expectations into therapeutic alliances
- It fosters generic skills for use in finding, appraising and implementing evidence from the basic sciences and other applied sciences
- It provides an effective, efficient framework for postgraduate education and self-directed, lifelong learning; when coupled with “virtual libraries” and distance learning programmes, it supplies a model of worldwide applicability.
- Although not its primary purpose, by identifying the questions for which no satisfactory evidence exists it generates a immensely practical agenda for applied health research.
- It provides a common language for use by multidisciplinary teams whose effective collaboration is essential if patients are to benefit from new knowledge.

The fundamental assumption of evidence-based practice is that some kinds of evidence are better (that is more valid and of greater clinical applicability) than others. This view is most easily elaborated for questions about therapy. A commonly used hierarchy is as shown below:

Hierarchy of research for treatment studies:

I(a). Evidence from a systematic review of randomized controlled trials
I(b). Evidence from at least one randomized controlled trial
II(a). Evidence from at least one controlled study without randomization
II(b). Evidence from at least one other type of quasi-experimental study
III. Evidence from non-experimental descriptive studies, such as comparative studies, correlation studies and case control studies
IV. Evidence from expert committee reports or opinions and/or clinical experience of respected authorities.

In this hierarchy, randomized evidence is regarded as more valid than non-randomized evidence with systematic review of randomized trials seen as the gold standard for answering clinical questions in the most objective way possible (1). This assumption has itself yet to be tested systematically but
at present seems likely to be true. It is important that clinicians are trained in
critical evaluation of systematic reviews before applying them to their clinical
practice (2).

Why the sudden interest in evidence-based clinical practice?

These ideas have been around for a long time. This is evident from post-revolutionary
Paris (when clinicians like Pierre Louis
rejected the pronouncements of authorities
and sought the truth in systematic
observation of patients. For us, Louis’s most
dramatic rejection was the authoritarian
pronouncement that venesection was good
for cholera), and a colleague has nominated
a much earlier origin in ancient Chinese
medicine. During the reign of Emperor
Qianlong, the method of “kaozheng”
(“practising evidential research”) was used
to interpret ancient Confucian texts (3). In
the current era, they were consolidated and
named EBM (evidenced-based medicine) in
1992 by a group led by Gordon Guyatt at
McMaster University in Canada(4). Since
then, the number of articles about evidence-
ated practice has grown exponentially
(from 1 publication in 1992 to about a
thousand in 1998) and international interest
has led to the development of 6 evidence-
based journals (published in up to 6
languages) that summarize the most relevant
studies for clinical practice and have a
combined world-wide circulation of over
175,000.

The subsequent rapid spread of EBM has
arisen from 4 realizations and is made
possible by 5 recent developments. The
realizations, attested to by ever-increasing
numbers of clinicians, are:

1. Our daily need for valid information
about diagnosis, prognosis, therapy and
prevention (up to 5 times per in-patient (5)
and twice for every 3 out-patients (6).

2. The inadequacy of traditional
sources for this information because they are
out-of-date (textbooks)(7), frequently wrong
(exerts)(8), ineffective (didactic continuing
medical education)(9) or too overwhelming
in their volume and too variable in their
validity for practical clinical use (medical
journals)(10).

3. The disparity between our diagnostic
skills and clinical judgement, which increase
with experience, and our up-to-date
knowledge (11) and clinical performance
(12) which decline.

4. Our inability to afford more than a
few seconds per patient for finding and
assimilating this evidence (13) or to set
aside more than half an hour per week for
general reading and study.(14)

Until recently, these problems were
insurmountable for full-time clinicians.
However, 5 developments have permitted us
to turn this state of affairs around:

1. The development of strategies for
efficiently tracking down and appraising
evidence [for its validity and relevance].(15)

2. The creation of systematic reviews
and concise summaries of the effects of
health care (epitomized by the Cochrane
Collaboration (16).

3. The creation of evidence-based
journals of secondary publication [that
publish the 2% of clinical articles that are
both valid and of immediate clinical use].

4. The creation of information systems
for bringing the proceeding to us in
seconds.(13)
5. The identification and application of effective strategies for life-long learning and improving our clinical performance. (17)

**Justifications for evidence-based clinical practice**

There are two main related problems in clinical practice which can be helped by the application of evidence-based practice:

- The difficulty in keeping up to date with clinical and scientific advances
- The tendency for practitioners to work in peculiar ways that are not justified by available evidence

With the swelling number of clinical scientific journals, it’s impossible even for the most diligent of clinicians to keep up to date with all relevant articles let alone the field of his specialty. Clinicians therefore have to rely on information gathered from other sources which might include, for example, unsystematic expert reviews, opinions of colleagues, information from pharmaceutical representatives and their own clinical experiences and beliefs. This can lead to wide variations in practice, for example, those described for the use of electroconvulsive therapy and various kinds of drug treatment. (18; 19)

**Limitations of evidence-based clinical practice**

The examination of the concepts and practice of evidence-based practice by clinicians and academics has led to negative as well as positive reactions. The resulting discussion and debate has reminded us of three limitations that are universal to science (regardless of basic or applied) and medicine—

- The shortage of coherent, consistent scientific evidence
- Difficulties in applying any evidence to the care of individual patients
- Barriers to any practice of high quality medicine.

The debate has also identified certain limitations that are unique to the application of evidence-based clinical practice:

- The need to develop new skills in searching and critical appraisal can be daunting, although evidence based care can still be applied if only the former has been mastered and directed towards pre-appraised sources.
- Busy clinicians have limited time to master and apply these new skills, and the resources required for instant access to evidence are often pathetically inadequate in clinical settings.
- Evidence that evidence-based clinical practice works has been late and slow to come.
- Publication bias. Evidence indicates that studies showing positive treatment effects are more likely to be published than negative studies. If negative studies are not included, the effect of treatment will be inflated.
- Duplication of publications. Just as negative studies may go unpublished, positive studies may be published several times in different forms, sometimes with different authors. This, again, will falsely elevate treatment effects if the same study is included more than once.
- Heterogeneity of studies. As noted above, individual studies may vary widely in the results obtained because of subtle differences in study design, quality and patient population. If such heterogeneity is
not recognized and accounted for, misleading conclusions will be drawn.

On the other hand, the ensuing discussion and debate has clarified some “pseudo limitations” that arise from misunderstandings of the definition of evidence-based clinical practice. An examination of the definition and steps of evidence-based clinical practice quickly dismisses the criticisms that it devalues clinical expertise, is limited to clinical research, ignores patient’s values and preferences, or promotes a cookbook approach to medicine. Moreover, it is not an effective cost-cutting tool, since providing evidenced-based care directed toward maximizing patients’ quality of life often increases the costs of their care and raises the displeasure of health economists. In addition, the self-reported employment of the inquisitive approach by a great majority of front-line GPs dispels the notion that evidenced-based clinical practice is an ivory tower concept. Lastly, concerns that evidence-based clinical practice leads to therapeutic nihilism in the absence of randomized trial evidence has been put to rest.

Finally, does providing evidence-based care improve outcomes for patients? No such evidence is available as yet. On the other hand, population-based outcomes research has repeatedly documented that those patients that do receive evidence-based therapies have better outcomes than those who don’t.

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BRIEF COMMUNICATION

NURTURING PROFESSIONALISM THROUGH MENTAL HEALTH COMMUNITY PROJECT

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Abstract

Medical professionalism is now more crucial than ever. Recently, more and more misconduct among doctors widely portrayed and unashamedly publicized by the popular press. Medical Schools in Malaysia are working hard to rectify their weaknesses so that their products are competent and professional doctors. Cyberjaya University College of Medical Sciences (CUCMS) certainly views this matter seriously and has incorporated professionalism training or as we call it Affective Domain Training into the curriculum implemented in all phases of the medical education. An example is the innovative inclusion of Community Project in the curriculum of undergraduate psychiatry. Although it started off with wanting to get students involved in creating awareness amongst the public about mental illness, but through it, students attained exposure in leadership, teamwork and communication skills as well as what it means to be altruistic, to work under stress, to be empathic and many more. The students themselves enjoyed it. Although the downside includes extra time, money and manpower, it can be safely concluded that having a community project in psychiatry undergraduate curriculum or other specialties for that matter could be an innovative and enjoyable way to nurture medical professionalism.

Keywords: professionalism, mental health, medical education.

Introduction:

The concept of professionalism is not a modern one. In fact, the word can be traced back to the times of the Roman when a physician named Scribonius used it to refer to “a commitment to compassion or clemency in the relief of sufferings (1). It means that, while the society rewards the medical professions by awarding it financial remuneration, prestige and status, relatively
autonomous practice and the freedom to self-regulate, in return society expects the members of the profession to be altruistic, demonstrate honesty and integrity, competent and benevolence (2). While some of the less significant content of this societal contract has changed, the major ones remain the same.

The task of training medicine and thus professionalism has now fallen into the hands of medical schools and universities. While in the past the teaching of professionalism to medical students relied solely on replicating the behaviours of their teachers, it is now universally agreed that this is inadequate (3). In America, the single most common cause for disciplinary action against medical students, house officers and practitioners is unprofessional conduct (4). As a result, leading medical organisations in America has included professionalism as one of the areas of competency in its medical curriculum (Table 1). This phenomenon is not only confined to the United States of America. It is also true elsewhere around the globe and Malaysia is not excluded.

Table 1: Description of Professionalism from the Association of American Medical Colleges and National Board of Medical Examiners (5).

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<td>Altruism</td>
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<td>Caring and Compassion</td>
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<td>Excellence and Scholarship</td>
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The Cyberjaya University College of Medical Sciences (CUCMS) in Selangor, Malaysia takes the teaching of medical professionalism very seriously. This is reflected through its philosophy (figure 1) and curriculum. In its medical curriculum, professional attributes are nurtured through the Affective Domain Training and Assessments, which goes hand in hand with the other domains of cognitive (knowledge) and psychomotor (clinical skills) (figure 2). The nine outcomes of this domain are spelt out by the mnemonic “Just Noble CUCMS DR” (figure 3) (5).

Figure 1: The philosophy of CUCMS

Figure 2: Three Domains of Education

Figure 3: CUCMS Learning Outcomes
For two years running, the Department of Psychiatry in the Faculty of Medicine, CUCMS has dedicated a session for community project in its Mental Health, General and Military Psychiatry Posting. Designed at first to involve fourth year medical students in creating awareness in the Malaysian public on mental health and de-stigmatize mental illness, its value in nurturing professionalism abreast with the university’s Affective Domain curriculum has only recently surfaced and understood. In this paper, the authors will demonstrate how a community project in mental health posting can be used to train students in aspects of professionalism.

Method

At the beginning of the posting the students are briefed on the community project and what is expected of them. The students will then elect the project leader among them and delegate the rest of the work together. The time to hold the event as well as the preparation sessions is time-tabled. The objective of the project is to create awareness amongst the public on the importance of mental health and to de-stigmatize mental illness. However, the students will then choose what topics to focus on and the themes. Past topics have been on stress, depression and others. The venues are usually suggested by the lecturer, but then the students will have to liaise with personnel at the site themselves including sometimes going to the local authority. In the past, we have done projects in army camps, a Community Hall and during the recent F1 Sepang International Circuit. The lecturer as supervisor will only play a facilitator role. The students will do everything themselves.

What aspects of professionalism are being addressed here? As individual, we hope to instil the values of altruism by taking part in the community project, honesty and integrity in interacting with the public, and having good communication skills both with medical personnel and the members of the community at large. As a group, their teamwork skills are tested, leadership ability is polished and again communication skills being refined. Although we have allocated a sum of money for the project, the students are encouraged to sharpen their entrepreneurial skills to come up with additional funds.
Feedback

In the two years running the programme, all of the students group have enjoyed the activity. They felt that they have contributed something to the community, learnt how difficult it is to communicate to laypeople that came from different background, understood how important it is to work as an organized group and their ability to manage their finances were put to the test. On the other hand, they were able to now appreciate better how much stigma is associated with mental illness and the denial our community exhibited to the aspect of mental health.

Feedback from the community has also been very encouraging. Participants from most of the sites found the programme helpful in updating them with issues regarding mental health and stress management. And all of them would welcome the same project to be conducted again at their sites.

Conclusion

Although having a community project in an undergraduate medical course is an innovation, from our experience, it is a valuable instrument in nurturing the very important aspect of professionalism in the curriculum. Feedback obtained from the students is positive, in which students liked the activity and it had been beneficial for them. It may need more refining to make it a more worthwhile addition to the undergraduate medical curriculum.

References


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