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ORIGINAL ARTICLE

RELATIONSHIPS BETWEEN AWARENESS, KNOWLEDGE, ATTITUDES AND COPING MECHANISMS IN EPILEPSY

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Abstract

Objective: The relationships between awareness, knowledge and attitudes (AKA) and coping mechanisms among people with epilepsy (PWE) have not been well-explored particularly in Asia. This study aimed to: identify preferred coping strategies, correlate between AKA and coping mechanisms and compare coping strategies of PWE with different AKA levels. **Methods:** A cross-sectional sample of epilepsy out-patients was recruited from the Neurology Clinic, Hospital Sultanah Nur Zahirah, Kuala Terengganu. The participants completed the *Malay AKA Epilepsy* and the *Malay Brief COPE* instruments. The data was analysed using non-parametric statistics. **Results:** Sixty out of 72 patients (response rate = 83.3%) consented participation (median age = 27.5 years; male = 53.3%; unmarried = 63.3%; Malay = 90.0%; SPM education = 54.2%; unemployed = 35.0%; rural residents = 70.0%). *Religion* was the most preferred coping strategy (93.3%), followed by *Emotional Support* (86.7%) and *Instrumental Support* (81.7%). Awareness was negatively correlated with *Instrumental Support* ($r_s = -0.268$; $p < 0.05$) while *Knowledge* was positively linked to *Humour* ($r_s = +0.267$; $p < 0.05$). Positive associations between *Attitudes* versus *Active Coping* and *Positive Reframing* were also detected ($r_s = +0.284$ to $+0.331$; $p < 0.05$). Patients with good AKA levels coped significantly better through *Self Distraction*, *Positive Reframing* and *Humour* ($p < 0.01$). **Conclusion:** AKA levels seemed to influence the type of coping strategies adopted by PWE in dealing with their illness suggesting that, efforts in improving AKA level should be combined with appropriate coping strategies to provide better health outcomes in epilepsy management. *ASEAN Journal of Psychiatry, Vol.12(2), July – Dec 2011: 131-142.*

Keywords: Epilepsy, Awareness, Knowledge, Attitudes, Coping

Introduction

Epilepsy is a common neurological disorder, affecting at least 0.5 to 1.0% of any population [1-3]. It is relatively unique among chronic neurological diseases as it has potentially significant influence on health-related quality of life (HRQoL). This medical morbidity often begins at a young age and may hinder social and cognitive development. Despite seizures only lasting

for a few seconds or a few minutes, they give rise to significant psychosocial repercussions to the patients and their family members [4,5]. Nevertheless, an epileptic seizure is still considered a mystical event, mostly in developing countries such as Malaysia [6]. Hence, it has often been regarded as one of the most stigmatizing medical impairments [7].

Awareness, knowledge and attitudes (AKA) regarding epilepsy have been shown to be important in reducing the impact of seizures, potentially harmful self-management practices and the emotional impact of both seizures and treatment. Increased AKA may also lead to an improvement in health-related quality of life (HRQoL) not only for patients but also for their families [7-13].

On the other hand, AKA alone is not adequate to deal with epilepsy and its consequences as patients still need to learn to cope with its misfortunes. In the literature on coping, various styles have been reported to be related to psychological, physical and social well-being [14,15]. In adjusting to this chronic condition the method of coping with epilepsy seems to be a significant determinant in the self-perceived severity of seizures [16-18]. Interestingly, coping strategies do not only play an important role in the psychosocial adjustment of individuals with disabilities but also influence the HRQoL of people with disorders [19]. Together with AKA, it becomes a vital factor in improving the ability to deal successfully with epilepsy by minimizing its impact on social and psychological functioning [9]. Coping is purported to have a direct effect on people with epilepsy (PWE)'s psychological adjustment which in this case could be linked to their AKA [20]. Furthermore, recent stress and coping research has also supported these proposed relations [21].

Unfortunately, PWEs' AKA in relation to their coping styles is a less studied topic. This study was carried out with the main intention of investigating the relationship between these two parameters.

Methods

Study design, sample selection and sampling method

This cross-sectional pilot study was carried out in the Neurology Clinic, Hospital Sultanah Nur Zahirah (HSNZ), Kuala Terengganu, Malaysia for a two-month

period which employed convenience sampling method. Under this sampling method, available epilepsy out-patients who satisfied inclusion criteria were recruited. The sample size was determined according to the descriptive observational cross-sectional design formula specific for pilot study [22]. According to the formula, at least 39 patients were needed at 90% power of study after considering a 20% drop-out.

Ethical approval

Ethical approval was obtained from the Medical Research and Ethics Committee of the Ministry of Health, Malaysia via online application [reference: NMRR-10-359-5640/(2) dlm. KKM/NIHSEC/08/0804/P10-158)].

Data collection procedure

Data was collected during epilepsy clinic day whereby the research assistants approached, explained and invited potential patients to participate in the study. Potential patients were defined as those who met and satisfied all the study inclusion criteria i.e. 1) epilepsy patients aged 18 years old and above, 2) had been regularly visiting the hospital at least for the past 6 months, 3) able to either understand, read, speak or write in Malay language and 4) capable of answering the questions either in written form or by interview. An information sheet was given to enhance their understanding on the nature of the study as well as to clarify the particulars needed, the instruments used and what was required from them. Once agreed, participants signed a written consent form before proceeding to complete the set instruments in this order: Personal Information Form, *Malay AKA Epilepsy* [23] and *Malay Brief COPE-27* [24]. Once completed, they were thanked for their participation.

Instruments

There were two instruments employed for this study:

1) Malay AKA Epilepsy [23]

This instrument contained three domains; *Awareness*, *Knowledge* and *Attitudes*. Each response score ranged from 0 to 10. The first domain was to detect *Awareness* level which contained 5 items with a total score range from 0-50. The total scores were grouped as follows: 0-10 = very low, 11-20 = low, 21-30 = moderate, 31-40 = high and 41-50 = very high. The second domain was to determine *Knowledge* level containing 8 items with a total score of 0 to 80. The scores were grouped as follows: 0-16 = very low, 17-32 = low, 33-48 = moderate, 49-65 = high and 66-80 = very high. The last domain measured *Attitude* level which was sampled by 4 items with a minimum total score of 0 and maximum of 40. The scores were again grouped as follows: 0-9 = very negative, 10-19 = negative, 20-29 = indifferent, 30-39 = positive and 40-49 = very positive. Finally the *Total AKA* score was generated via the summation of all three domain scores to give the general AKA level of all respondents. The score ranged from 0 to 170 with the interpretation of total AKA level set as: 0-33 = very poor, 34-67 = poor, 68-101 = moderate, 102-135 = good and 136-170 = excellent. Finally there were also individual items inquiring about the patients' perception of the best epilepsy treatment, their preference of epilepsy information delivery and the mode of transportation to seek medical treatment. The responses were recorded in the form of multiple-choice answer scales. Overall there were three domains with a total number of 20 items.

2) *Malay Brief COPE-27* [24] consisted of 27 items assessing 14 domains as those in the original *Brief COPE* [25]. Similarly, fourteen dimensions of coping were focused in the scales examining *Self-Distraction*, *Active-Coping*, *Denial*, *Substance Use*, *Emotional Support*, *Instrumental Support*, *Behavioural Disengagement*, *Venting*, *Positive Reframing*, *Planning*, *Humour*, *Acceptance*, *Religion* and *Self-Blame*. Responses were scored on Likert-type scale (1-4, whereby higher scores indicated higher

frequency) and the instrument could either be self- or interviewer-administered. Each scale's total was computed as an unweighted sum of responses to the four items which made up that scale.

Statistical analysis

This study employed the Statistical Package for Social Sciences version 16 (SPSS 16) for the purpose of data analysis. All socio-demographic data were analysed descriptively and presented as frequencies and percentages. Prior to subsequent group comparisons, normality test was carried out employing the Shapiro-Wilk statistic to determine the distribution pattern of the variables. The scores of all domains were not normally distributed as indicated by its significant value (<0.05) and the absence of a normal curve as required for parametric testing. Due to the relatively small sample size ($n < 100$) and failure to conform to normality requirement, tests for subsequent univariate analysis were carried out using non-parametric techniques. The chi-square (χ^2) for goodness of fit was utilized to test for homogeneity of the proportion of categorical variables while Spearman's Rho (r_s) was used to measure the strength and direction of correlation between AKA and coping strategies. For the purpose of the between-group comparisons, the patients were regrouped into; Good AKA and Poor AKA. Patients who generated the Total AKA Score of higher than the group median was considered to possess good AKA level while those with Total AKA score equal to or lower than the group median was considered as having poor AKA level. The Mann-Whitney U test was the analysis of choice for between-group score comparisons (Coping mechanisms of Good vs Poor AKA groups). The value of $p < 0.05$ was considered statistically significant.

Results

Socio-demographic characteristics

Sixty out of 72 out-patients diagnosed with all subtypes of epilepsy participated in this study (response rate = 83.3%). These subtypes comprised mostly of complex partial seizure, symptomatic epilepsy, generalised seizure and generalised tonic clonic seizure. The median age was 27.5 years, ranging from 18 to 65 years. The male to female ratio was almost equal. Most of the respondents were Malay (90.0%),

Muslim (90.0%), single (63.3%), possessed education level at SPM (equivalent to Cambridge O' level) and lower (81.4%), unemployed (58.4%), were earning not more than RM 500 (equivalent to USD 163.3) monthly (68.4%), living with spouse or family (96.7%) and were rural dwellers (70.0%). Further details are shown in Table 1.

Table 1. Socio-demographic characteristics of sample respondents (n=60).

Variables	Mean	Standard deviation	Median	Minimum-maximum
<i>Age</i>	31.07	11.07	27.5	18-65
	Frequency (n)	Percentage (%)	p value*	
<i>Gender</i>				
Male	32	53.3	0.606	
Female	28	46.7		
<i>Marital status</i>				
Married	20	33.3	<0.001	
Single	38	63.3		
Widowed	2	3.3		
<i>Race</i>				
Malay	54	90.0	<0.001	
Chinese	6	10.0		
<i>Religion</i>				
Islam	54	90.0	<0.001	
Buddhism	6	10.0		
<i>Education level **</i>				
SPM (equivalent to Cambridge O' level) and lower	48	81.4	<0.001	
Higher than SPM	11	18.6		
<i>Occupation</i>				
Professional	2	3.3	<0.001	
Supportive	5	8.3		
House-wife	18	30.0		
Retiree	7	11.7		
Student	7	11.7		
Unemployed	21	35.0		
<i>Monthly income **</i>				
RM 500 and below	39	68.4	<0.001	
Above RM 500	18	31.6		
<i>Living arrangement</i>				
Alone	1	1.7	<0.001	
With spouse/family	58	96.7		
Rent a room	1	1.7		

<i>Living area</i>			
Urban	18	30.0	<0.01
Rural	42	70.0	

* Chi-square test for goodness of fit;
Coping strategies

** contains missing data, thus n≠60.

Among all the coping mechanisms reported by our respondents, *Religion* was the most popular (93.3%). *Emotional Support*, *Instrumental Support* and *Acceptance* were also highly preferred (80.0 – 87.0%).

However *Active Coping*, *Planning*, *Positive Reframing*, *Self-Distracton*, *Humour*, *Venting*, *Denial*, and *Behavioural Disengagement* were all fairly favored (12.0 – 73.0%) while *Self-Blame* was the least-practiced coping skill (<2.0%) – Figure 1.

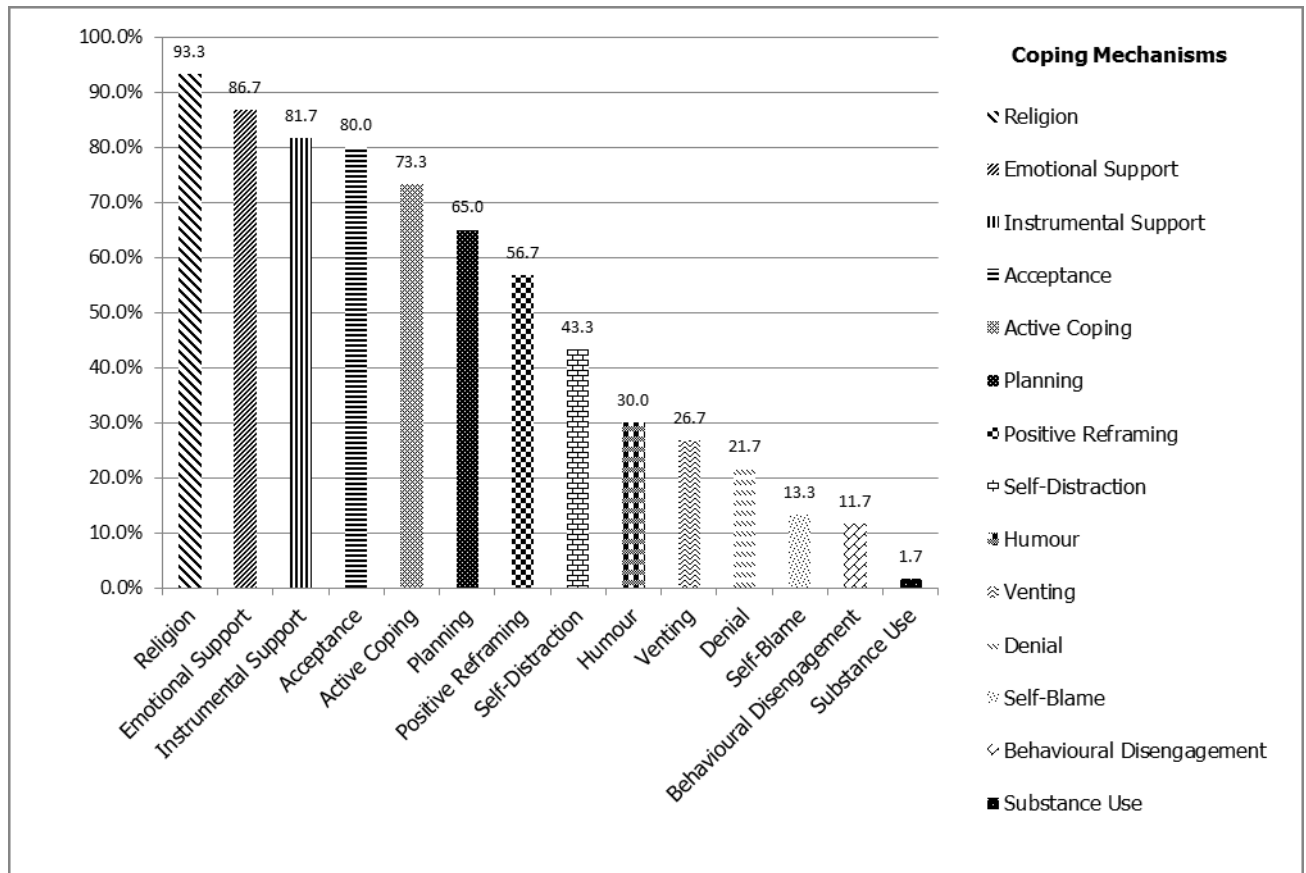


Figure 1. Coping mechanisms of PWE (n=60).

Correlation between AKA and coping mechanism

Awareness was negatively correlated with the use of *Instrumental Support* ($r_s = -0.268$, $p < 0.05$). *Knowledge* was significantly but weakly linked to *Humour* ($r_s = +0.267$, $p < 0.05$) while *Attitudes* was significantly

associated with *Active Coping* and *Positive Reframing* ($r_s = +0.284$ to $+0.331$, $p < 0.05$). Details are shown in Table 2.

Table 2. Correlation between AKA and coping mechanisms.

COPING MECHANISMS	AKA		
	Awareness (r_s)	Knowledge (r_s)	Attitudes (r_s)
<i>Self-Distraction</i>	+0.212	+0.084	+0.203
<i>Active Coping</i>	-0.007	+0.070	+0.284*
<i>Denial</i>	-0.224	-0.124	-0.124
<i>Substance Use</i>	-0.022	+0.015	-0.004
<i>Emotional Support</i>	-0.076	+0.030	+0.157
<i>Instrumental Support</i>	-0.268*	-0.016	+0.230
<i>Behavioural Disengagement</i>	+0.067	+0.063	-0.216
<i>Venting</i>	+0.023	+0.048	+0.001
<i>Positive Reframing</i>	+0.044	+0.183	+0.331**
<i>Planning</i>	-0.022	+0.073	+0.195
<i>Humour</i>	+0.053	+0.267*	+0.226
<i>Acceptance</i>	-0.117	-0.113	+0.193
<i>Religion</i>	+0.237	+0.078	+0.234
<i>Self-Blame</i>	-0.128	+0.097	-0.101

r_s = Spearman's correlation coefficient * $p < 0.05$ ** $p < 0.01$

Comparison of coping mechanism between PWE with different AKA levels

Results showed that PWE with good AKA level coped significantly better in *Self-Distraction*, *Positive Reframing* and *Humour* compared to those with poor AKA. Moreover, they were also generally coping better in *Active Coping*, *Substance Use*,

Emotional Support, *Instrumental Support*, *Venting*, *Planning* and *Religion* than their counterparts. However, in comparison to those with good AKA, respondents with poor AKA dealt with their disease more effectively via *Denial*, *Behavioural Disengagement*, *Acceptance* and *Self-Blame* – Figure 2.

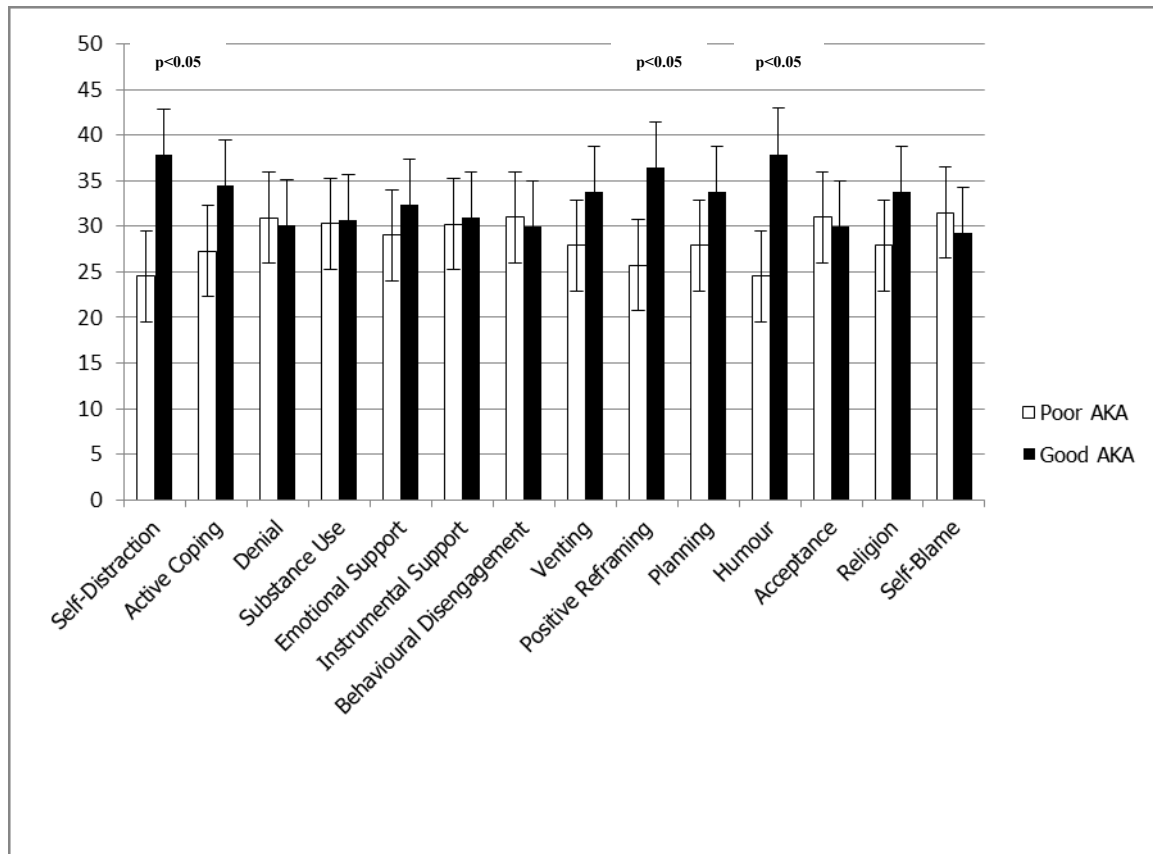


Figure 2. Comparison of coping skills and frequency of practices between PWE with different AKA level. Error bar: 5% error, SD=1.

Discussion

Through this study, the PWE's AKA towards epilepsy as well as their coping mechanisms were simultaneously studied. Considering the limited investigations which have been carried out to relate AKA and coping in epilepsy, our study was expected to benefit the psychosocial development of PWE in the process of managing their disease as well as facilitating their interactions with the society.

The most-frequently practiced coping strategy among PWE was *Religion*. This could be due to the socio-demographic background of our sample whereby 90% were Muslim. Islam teaches the concept of "redha" (acceptance) in facing the disease because it is considered a test from God. Marie [26] discovered that religion, faith or

prayer could contribute to PWE's well-being and help them deal more effectively with epilepsy. However, it was also found that meditation and yoga had similar effects as prayer, so there is probability that religion may not be the absolute factor helping PWE to cope with their diseases but rather activities which relieve psychological stressors. Religion was nevertheless also seen as disengaging oneself from direct and active problem management by seeking comfort in and resorting to praying for reversal of condition course or minimization of condition impact on one's life [27].

The finding that showed *Substance Use* being the least-practiced coping skills was explained by the remarks by patients themselves who claimed that since they have already been consuming a number of drugs, taking additional substances would be

unnecessary. A study by Raty and colleagues discovered that feelings of confidence and security were related to the use of antiepileptic drugs (AEDs) [28]. Besides that, the fear of adverse effects usually prevented patients from consuming drugs or alcohol to cope with their illnesses. Studies showed that between 10% and 25% of newly diagnosed cases of epilepsy in adults may show chronic alcohol abuse as a risk factor. Withdrawal from alcohol use is a factor in about 30% of persons experiencing alcohol-related seizures [29]. Alcohol would increase the sedative effect of AEDs and could affect the rate of absorption of AEDs [30]. AEDs on the other hand might weaken one's tolerance to alcohol, making it easier to become intoxicated. It was therefore not unexpected that considering all the side effects of drugs and alcohol, their combined consumption with AEDs had probably discouraged patients from adapting this coping style.

The negative association between *Awareness* and *Instrumental Support* indicated that the more aware PWE were of their own diseases, the less frequently they turned to advices and help from others. As we have long-acknowledged, the stigma attached to epilepsy is more debilitating not only to the patients but also to their family and caregivers. Stigma, prejudice and misunderstanding from their surrounding society have somehow exerted pressure on PWE, lowering their self-esteem, restricting their social lives and subsequently affecting their HRQoL. Because of this, PWE tend to depend on families and caregivers in managing their daily lives as well as for support, help and advices. But enhanced awareness towards this disorder has been identified as capable of helping to demystify the stigma surrounding epilepsy [31-35]. Moreover, increased vigilance of epilepsy helped facilitate better understanding of the clinical manifestation, psychological and psychosocial aspects of this medical morbidity. On top of that, these could lead to improved psychological judgement of PWE [5], plus enhanced awareness of their needs

and the related services available [36]. Consequently, by being aware they depended on less advice and help from others.

Interestingly, *Knowledge* was found to be positively linked to *Humour*. PWE who were more knowledgeable in their disease were more likely to have a positive mind-frame, enabling them to joke about their condition. By adapting humour, our respondents seemed to be taking their conditions rather lightly and did not find it to be offensive to joke about. According to Couldridge and co-workers [37], accurate information could generate positive adaptation towards their diseases. Adequate knowledge regarding this brain disorder has also been shown to prevent misconception, unnecessary worry and discrimination towards PWE. The self-advocacy skills of the PWE might improve in parallel, which placed them in a better position to explain their condition to others even through humour and jokes, thereby promoting a positive view of epilepsy [38]. Despite limited scientific research, there was even theoretical and anecdotal support for the use of humour as a coping strategy [39]. A previous study suggested that there was a direct relationship between patients' knowledge and understanding of their disability and their evolving methods in coping [40].

Our findings have further divulged significant associations between *Attitudes* and coping styles which are "active" and those involving "positive reframing". Positive attitudes enabled PWE to adapt better with their disease by reframing the problems and situation favorably as well as to embark on actions actively [41]. Possessing a positive mindset had probably encouraged PWE to directly tackle their problem while simultaneously taking various actions to deal with it. The extent to which patients feel in control of their lives and their attitudes varied, and active coping strategies which promote a feeling of control, such as task-focused coping or

positive reframing, were proven to be beneficial to PWE with positive attitudes [42]. On the other hand, negative self-concept and low self-esteem have been closely linked to unfavourable attitudes toward epilepsy in PWE [43]. Poorer adjustment and negative attitudes have been found to be associated with persistent denial, venting of emotions and behavioural disengagement that distanced PWE from dealing with change [42].

In terms of PWE with different AKA levels, those with good AKA significantly cope better in *Self-Distraction*, *Positive Reframing* and *Humour* compared to those with poor AKA. Good AKA has probably helped to boost patients' self-esteem, confidence and psychosocial adjustment leading to positive thinking and active dealings with the disease. Psychosocial factors in epilepsy, AKA for example have been found to be more significant than medical factors in predicting PWE's adjustment and coping mechanisms [5]. It is therefore crucial to enhance PWEs' AKA not only for achieving improved HRQoL but also to help patients cope effectively with their illness. Furthermore, providing PWE with detailed and proper information about the disease is clearly important in preventing their self-deprecation and in allaying their fears. Perceiving epilepsy appropriately and accurately could improve patients' adaptation to their treatment and most importantly increase treatment success rate [44-45]. For that purpose, intensive health education efforts in spreading the awareness, enriching their knowledge and cultivating positive attitudes toward epilepsy should be continuously carried out.

As with other studies of this nature, cautions should anyhow be taken in generalizing the results. Due to the limited sample (although it fulfilled the calculation formula), our findings could possibly have not been representative of the total PWE population within Malaysia. Other than that, the possible bias, as a consequent of interviewer- and self-administered

questionnaire could not be ignored although we did not think this had imposed any major deviations in the outcomes.

Conclusion

The general AKA level of PWE in Terengganu was only moderate and could still be improved. Their most preferred coping strategy was *Religion* while *Substance Use* was the least popular coping mechanism. *Awareness* was negatively associated with *Instrumental Support*, *Knowledge* was positively linked to *Humour* while *Attitudes* was significantly correlated to *Active Coping* and *Positive Reframing*. PWE with good AKA significantly cope better via *Self-Distraction*, *Positive Reframing* and *Humour* compared to those with poor AKA. It could be concluded that AKA levels seemed to bear influence on the type of coping strategies adopted by PWE in dealing with their illness. Hence, coping styles should become a vital focus of their treatment management. Also, it might suggest that in the treatment of epilepsy, care should be taken to create opportunities for patients to actively participate in their own treatment plan. Patients' empowerment in AKA and coping strategies therefore should be incorporated into future epilepsy care.

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ORIGINAL ARTICLE

STRESS AND COPING STRATEGIES AMONG RETIRED PEOPLE IN MALAYSIA: A QUALITATIVE STUDY

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Abstract

Objective: This study explored the stress and coping strategies among retired people in Malaysia. **Methods:** In-depth interviews were conducted with 36 elderly Malaysian subjects. This protocol was approved by the Ethics Committee of the Management and Science University. The data obtained were sorted into various categories. **Results:** A total number of 36 retired elderly people participated in this study. The majority of them were in the age group of 55-59 years old, females, Malay and married. The majority defined stress as pressure or tension. Financial difficulties, family and work problems were the main causes of stress in the majority. Also, the majority of respondents mentioned that they coped with stress by sharing problems with others, by resting and relaxing, and/or by doing housework during their free time. A few of them coped with stress by hanging out with friends, going shopping, doing photography, travelling, going fishing, and doing sports. **Conclusion:** Financial difficulties, family and work problems were the main causes of stress among elderly people. They coped with stress by sharing problems with others, resting and relaxing, and/or doing housework during their free time. *ASEAN Journal of Psychiatry, Vol.12(2), July – Dec 2011: 143-147*

Keyword: Stress, coping strategies, retired Malaysian

Introduction

In daily life, several changes occur to elderly people due to age, physical, mental, or social alterations, thus constituting a stress factor stimulating behavioural and neuro-vegetative responses to adapt with the stress [1]. It has been postulated that the moment retirement comes knocking on the door of an employee, it enters with challenges and expectations. Retirement is typically associated with attendant stress for the average employee [2].

Retirement can be broadly grouped into three kinds, namely compulsory/involuntary retirement, voluntary retirement and

mandatory/regular retirement. Compulsory or forced retirement is often imposed on an employee by an employer for various reasons at times on grounds of ill-health, mental or physical incapability and so on. Voluntary retirement is associated with personal withdrawal from active service by an employee having put in the required years of service for retirement eligibility. This may, in most cases, be due to personal satisfaction or dissatisfaction with work schedule or vocational life style. Mandatory/regular retirement is said to occur when an employee is made to withdraw his/her service from a long-time work schedule having

attained the mandatory retirement duration according to the organization's policy [3].

Retirement involves a lot of changes in values, monetary involvements, and social aspects of life; it leads to termination of a pattern of life and a transition to a new one. Retirement is described as the transition from first adulthood to second adulthood which is often a jarring and unsettling experience. It follows from these definitions of retirement that a retired person or retiree is any person who performs no gainful employment during a given year or any person who is receiving a retirement pension benefit and any person not employed full time, all year round after his/her disengagement from a previous work schedule. It is deducible, therefore, that retirement implies a transition from active working life at young age with adequate financial capability to less rigorous work schedule or lack of any tangible work schedule at old age. A worker is said to retire when he/she discontinues, withdraws, or ceases doing a particular work for which he/she has been known for a long period of time. It is a phase of an individual's life which must be planned for and anticipated with a great sense of fulfillment. However, anticipating and planning for retirement is not easy, especially among the civil servants when the majority find it difficult to make ends meet even while still in service. [7]

Malaysia inherits retirement benefit system from the British since pre-independence days. Before the introduction of mandatory employee/employer contribution in 1951, traditional pension scheme was well known for government servants, which provided a life-time

annuity of usually a half of last basic salary and free medical treatment upon retirement [4]. Stress among different population has been reported by previous studies [5]. However there is no study conducted among elderly people in Malaysia. Thus, the main focus of this study is to explore the sources of stress and coping strategies of retired citizens in Malaysia and to address the gap in knowledge about this issue.

Methods

In-depth semi-structured face-to-face interviews were conducted with 36 elderly Malaysian subjects. Participants were randomly selected from section 13 and 2 of Shah Alam. An explanation of the purpose of the study was provided to the volunteers and consent was obtained. At the beginning, the interviewer introduced himself, briefly mentioned the study purpose, and reviewed the elements of informed consent. The interview took approximately 60 minutes. A semi-structured interview was used to guide the participants in a discussion about the following topics: stress, coping strategies, causes of stress. Probing was used to obtain additional information and to get specific examples from the participants. This protocol was approved by the Ethics Committee of the Management and Science University. The data obtained were sorted into various categories.

Results

A total number of 36 retired elderly people participated in this study. The majority was in the age group of 55-59 years old; female, Malay and married (50%, 61%, and 86%; respectively) (Table 1).

Table 1. Socio-demographic information of retired Malaysian (n=36)

Variable	Categories	Number	Percentage
Age group	55 – 59	18	50%
	60 – 64	14	38.8%
	65 – 69	3	8.3%
	≥ 70	2	5.5%
Sex	Male	14	38.8%
	Female	22	61.1%
Race	Malay	32	88.8%
	Chinese	4	11.1%
	Indian	1	2.7%

Marital status	Married	31	86%
	Single	1	2.7%
	Divorced/ widowed	4	11.1%

Definition

The majority of respondents defined stress as ‘pressure’ or ‘tension’. Few mentioned that stress is about work load.

One of them said: “It is when you feel burdened by something or some situation.” (Male, Indian, 61 years old)

Another one said: “Working on something without taking rest at all.” (Male, Malay, 60 years old)

Sources of stress

The majority of respondents considered money, family and work as their main causes of stress. One of them said: “Financial problem, overload of work, and fight with wife are the main causes of stress” (Male, Malay, 57 years old). Few respondents mentioned that health problems and not well-managed life were the main causes of stress. Eight of the respondents mentioned that their monthly income was not enough to support their life after retirement.

Coping strategies

The majority of respondents mentioned that they coped with stress by sharing problems with others, resting and relaxing, and/or doing housework during their free time. A few of them mentioned that hanging out with friends, going shopping, doing photography, travelling, going fishing, and doing sports were their coping strategies.

One of them said: “I usually talk with my wife and share problem with my children.” (Male, Malay, 68 years old).

Another one said: “Always think positive! There are many ways to solve a problem.” (Male, Malay, 68 years old).

General Health

The majority of respondents have critical health problems such as hypertension and Chronic Obstructive Pulmonary Disease (COPD).

Adaptation to life after retirement

The majority of respondents adapted to life after retirement by leading a normal life, watching dramas, going on holidays, and by spending time in prayer.

One of them said: “I watch all the dramas on TV.” (Female, Malay, 58 years old)

Discussion

The sample of this study was composed of 36 elderly people, predominantly female (61.1 %). The majority of respondents considered financial difficulties, family, and work problems as their main causes of stress. This is consistent with Ugwu [6 & 7] that retirement stress factors are money, health, ageing, search for meaningful activities, work in retirement, marital status, caring for family members and problems of relocation.

Old age is marked by the presence of a wide range of stressors. An old person is often subject to biological deterioration, social exclusion and economic deprivation. A few studies reported that it is still possible that old adults encounter fewer stressful events than the young [8 & 9]. But the fact remains: many of the stresses of younger adults’ lives have pleasant aspects. Leaving home, getting married, having a baby, buying a house, getting a promotion are all stressful, but they also bring challenges and rewards. In contrast, many stresses of later adulthood are primarily negative such as poor health, reduced income, and the death of a spouse [10].

Coping has been described as ‘realistic and flexible thoughts and acts that solve problems and thereby reduce stress’ [11]. Coping is considered effective to the extent that threat or harm is reduced. There are different strategies – emotion-focused and problem-focused – that are used depending on personality and situation. Emotion-focused strategies cannot change the threat, but the meaning of the situation, a way of

reappraisal. It can also be about taking the mind off the problem for a while, a form of distraction. Problem-focused strategies are a way of defining the problem with the attempt to alter it. How stressful the caregiver experiences the situation is partly based on what coping strategies he or she uses, and how useful they are. Lazarus and Folkman [11] discuss internal and external resources.

The majority of respondents mentioned that they coped with stresses by sharing problems with others, resting and relaxing, and/or doing housework during their free time. A few of them mentioned that hanging out with friends, going shopping, doing photography, travelling, going fishing, and doing sports were their coping strategies. Consistent with the current study is a study reported by Marceau [12], that a worker and retiree can handle retirement if they learn to do ten basic strategies; being themselves; leading a well balanced life; eating sensibly; venting stress physically (through exercise); adopting a calming routine; talking with people he can trust; taking control of his life; brainstorming about the causes of stress; constructive use of imagination and devising ways of managing himself differently. These results corroborate with previous studies in which confrontive and optimistic coping styles were predominantly reported in different groups of elderly [13 & 14].

Conclusion

Financial difficulties, family and work problems were the main causes of stress among elderly people who coped with stresses by sharing problems with others, by resting and relaxing, and/or by doing housework during their free time. Therefore, it is essential to counsel all workers with a well packaged pre-retirement counseling as well as meeting the counseling needs of retired persons. It is essential that all workers and retired persons be counseled on the need for holistic preparation for retirement such as financial preparation, psychological preparation, and appropriate documentation, preparation towards the use of the expected retirement benefits, time management and preparation for the retirement home.

Implications

It could be inferred from the findings of this study that retirement from work does create a lot of problems for retirees. These problems range from the sudden loss of income, financial insufficiency and anxiety, deteriorating health condition, anxiety about suitable post-retirement accommodation to problems of learning new survival skills for post-retirement life. Another implication is that the individual who is bound to retire someday must decide on the type of life he wishes to live. This is crucial to note that the factors that may influence the success or failure during retirement are infinite. These include educational and family background, government policy and personal investment among others. Another implication of the findings of this study is that old people or retired people must be provided with retirement counseling services because it is not uncommon to see very active or agile men and women becoming very fragile and suddenly growing dismally old one or two years after retirement. This is believed to be as a result of lack of adequate pre-retirement planning and counseling. Therefore, it is essential for counselors to be alert to the responsibility in providing all workers with well packaged pre-retirement counseling as well as meeting the counseling needs of retired persons. Holistic preparation must cover areas such as financial preparation, psychological preparation, and appropriate documentation, preparation towards the use of the expected retirement benefits, time management and preparation for the retirement home.

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ORIGINAL ARTICLE

**DEMOGRAPHIC AND CLINICAL FACTORS ASSOCIATED WITH
VERBAL MEMORY PERFORMANCE IN PATIENTS WITH
SCHIZOPHRENIA IN HOSPITAL UNIVERSITI SAINS MALAYSIA
(HUSM), MALAYSIA**

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Abstract

Objective: The present study aims to assess verbal memory performance in patients with schizophrenia attending HUSM and determine the relationship between the patients' verbal memory performance and their demographic/clinical factors. **Methods:** A cross sectional study of 114 patients with schizophrenia attending HUSM psychiatric services from December 2007 to May 2008 was conducted. The schizophrenia symptoms as well as verbal memory performance were assessed using the Brief Psychiatric Rating Scale, the Malay version of the Calgary Depression Scale (MVCDS), and the Malay version of the Auditory Verbal Learning Test (MVAULT). The relationship between verbal memory performance and demographic/clinical symptoms was evaluated using Pearson Correlation. **Results:** Overall MVAULT scores in all the trials were lowered in patients with schizophrenia compared to average healthy controls. There were significant relationships between occupational status and MVAULT performance in Trial A1-A5 Total; between educational level and MVAULT performance in Trial A1 and Trial A1-A5 Total and between severities of illness and MVAULT performance in all indexes except Trial A1 after controlled for occupation and educational level. **Conclusions:** Patient with schizophrenia in HUSM performed significantly worse than healthy controls in verbal memory with or without interference. There were significant relationships between MVAULT performance and patient's occupational status, educational level and severity of the illness but not depressive symptoms. *ASEAN Journal of Psychiatry, Vol.12(2): July – December 2011: 148-156.*

Keywords: schizophrenia; demographic; Malay version of the Auditory Verbal Learning Test; Brief Psychiatric Rating Scale; Malay version of the Calgary Depression Scale

Introduction

Schizophrenia is characterized by broad cognitive impairment, with varying degrees of deficit in all ability domains measured by standard clinical tests which include global and selective verbal memory, nonverbal memory and executive function [1]. Study by Green in 1996 emphasizes the significance of verbal memory for the functional outcome in schizophrenia [2] and was proposed to be one

of the main predictors of psychosocial functioning [3].

Paulsen et al. (1995) evaluated the potential clinical and demographic factors associated with learning and memory impairment in schizophrenia and found that patients with schizophrenia showed prominent retrieval deficit [4]. They also performed badly on all learning, recall and recognition memory measures and the most important clinical correlates of these impairments were earlier

age of onset, more negative symptoms, and greater anticholinergic medication dosage. Another study found that the patient's performance in the neuropsychological tests correlated with dosage of neuroleptic and anticholinergic medication [5]. They found that high neuroleptic and anticholinergic dosages were associated with poor verbal recognition memory. On the contrary, a meta-analysis conducted on 70 studies of memory in schizophrenia showed that the memory impairment is stable, wide ranging, and not substantially affected by potential moderating factors such as severity of psychopathology and duration of illness [6]. Thus, it is difficult to ascertain whether the observed memory dysfunctions in schizophrenia were related to variation in age of onset, educational level, effects of the illness or iatrogenic effects of pharmacotherapy.

Thus, the present study aims to (i) assess and obtain local data on verbal memory performance in patients with schizophrenia attending HUSM and (ii) determine the relationship between the patients' verbal memory performance and their demographic/clinical symptoms.

Methods

Subjects

This is a cross sectional study on 114 patients with schizophrenia. The subjects were conveniently selected from the outpatient clinic and psychiatric wards in Hospital Universiti Sains Malaysia (HUSM) within a six-month period (December 2007 till May 2008). They were cooperative and able to understand the Malay language. Patients were excluded if they scored 5 (moderately severe) or more in any of the Brief Psychiatric Rating Scale (BPRS) item, presence of a central nervous system disease, mental retardation or were not testable due to acute psychotic state or severe medical co-morbidity. The age limit of all subjects was set between 18 and 60 years, to enable legal consent and to minimize the effect of normal aging process on the cognitive performance. The study protocol was approved by the Research & Ethics Committee, Universiti Sains Malaysia. A single researcher trained in psychiatric interview and examination administered the test and interviewed all the subjects individually.

Assessments

The patients' verbal learning and memory performance were assessed using the validated Malay version of the Auditory Verbal Learning Test, MVAULT [7]. The test was administered to all subjects by the same rater (second author) as described earlier [8]. The MVAULT consists of two different lists (A and B) of 15 concrete nouns. Subjects were read list A five times (A1 to A5) at a rate of one item per second (tape recording was used to standardize the rate). Free verbal recall was tested immediately after each presentation. Then list B was presented followed by a free recall of list B. Thereafter, recall of list A (A6) was examined without prior presentation of list A. Recall of list A (A7) was repeated again after 20 minutes of rest without prior presentation of list A. Finally, subjects had to recognize the words from list A interspersed among semantically or phonetically related words in a third list comprised of 30 words. BPRS was used to measure positive symptoms, general psychopathology and affective symptoms in patients with schizophrenia. Sixteen symptom constructs were originally listed for rating on a seven-point scale (1 = not present, 7 = most severe), which document the intensity of symptoms in relatively independent areas. The rating is based upon observations made by the rater during a 15 to 30-minute 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 feelings, grandiosity, depressive mood, hostility, somatic concern, hallucinatory behaviour, suspiciousness and blunted affect). Subsequent additions to the scale were two additional items of excitement and disorientation.

The Malay version of The Calgary Depression Scale for schizophrenia (MVCDS) (translated by psychiatrist, Dr Riana Abdul Rahim) was used to assess the symptoms of major depressive disorder in patients with schizophrenia. The CDRS was first developed by Addington et al. (1990) and was specifically designed to assess co-morbid depressive symptoms in patients with

schizophrenia; its use in other patient populations has not been tested. The CDRS consists of nine items: depressed mood, hopelessness, self-deprecation, guilty ideas of reference, pathological guilt, depression worsening in the morning, early awakening, suicide, and observed depression. The items on the CDRS are all typical depressive symptoms and do not appear to overlap with the negative symptoms of schizophrenia (e.g., anhedonia is not included as a CDRS item).

Statistical Analysis

All analyses were conducted using SPSS version 18.0. The scores in the MVAVLT were taken as dependent variables. The patients' demographic and clinical characteristics were taken as independent variables. Statistical analysis started with descriptive statistics which included

frequency, percentage, mean, standard deviation and range accordingly for demographic characteristics, clinical characteristics and MVAVLT scores for each domain level. Relationships between MVAVLT performance and demographic as well as clinical characteristics were evaluated using Pearson Correlation. A *p* value of less than 0.05 was considered as significant.

Results

A total of 114 patients with schizophrenia, comprising of 68 males and 46 females, with a mean age of 34.6 (10.21) years were enrolled into the study. A majority of the patients were Malay (97.4%), single (64.9%), unemployed (51.8%) and received education up to secondary school (78.9%) as shown in Table 1.

Table 1. Demographic characteristics of schizophrenia patients attending HUSM

Demographic Variables	Group	N (%)	Mean (SD)
Age (years)	18 – 30	35 (30.7)	34.6 (10.21)
	30 – 40	47 (41.2)	
	41 – 60	32 (28.1)	
Gender	Male	68 (59.6)	
	Female	46 (40.4)	
Race	Malay	111 (97.4)	
	Chinese	1 (0.9)	
	Other	2 (1.8)	
Marital status	Single	74 (64.9)	
	Married	27 (23.7)	
	Divorced	13 (11.4)	
Occupation	Unemployed	59 (51.8)	
	Self employed	30 (26.3)	
	Government servant	17 (14.9)	
	Private sector	8 (7.0)	
Education level	Primary school	8 (7.0)	
	Secondary school	82 (71.9)	
	College / university	24 (21.1)	

A majority of patients had duration of illness for at least 5 years (69.3%) and were treated with atypical antipsychotics (58.8%) whereby 22.4% of them were on clozapine (Table 2). 33.3% of patients were on typical antipsychotics and the remaining patients (7.9%) received combination of typical depot injection and oral atypical antipsychotics. 22.8% of patients were on regular benzhexol, an anticholinergic drug, to counteract the extrapyramidal symptoms caused by the

typical antipsychotics (Table 2). A majority of them (63.2%) were compliance to the antipsychotics prescribed and attended regular clinic follow-up (62.3%). A majority of the patients (66.7%) had history of being admitted to the psychiatry ward at least twice. Concurrent medical illness was present in 8.8% of patients for which 7.0% of them were also on medication for their illness. 9.6% of the patients had previous history of substance abuse. All patients had mild to moderate

illness as measured by BPRS score. 34.2% of them had BPRS score at least 30 to 50, while the remaining (65.8%) scored less than 30.

Depression as defined by the MCVDRS score of 7 or more was present in 5.3% of patients.

Table 2. Clinical characteristics of patients with schizophrenia attending HUSM

Clinical variables	Characteristics	n (%)
Duration of illness (years)	< 2	15 (13.2)
	2 – < 5	20 (17.5)
	5 - < 10	24 (21.1)
	≥ 10	55 (48.2)
Types of antipsychotic	Typical	38 (33.3)
	Atypical /Clozapine	67 (58.8)/ 15 (22.4)
Use of anticholinergic	Both	9 (7.9)
	Yes /No	26 (22.8) /88 (77.2)
Follow up	Regular /Defaulter	71 (62.3)/ 43 (37.7)
Drug compliance	Yes /No	72 (63.2) /42 (36.8)
Concurrent medication	Yes /No	8 (7.0) /106 (93.0)
Number of hospitalization	< 2	38 (33.3)
	2 - < 6	50 (43.9)
	≥ 6	26 (22.8)
Concurrent medical illness	With/ Without	10 (8.8) /104 (91.2)
History of substance abuse	Yes/ No	11 (9.6) /103 (90.4)
BPRS score	< 30	75 (65.8)
	≥ 30 - 50	39 (34.2)
CDRS score	0 – 6 (no depression)	108 (94.7)
	≥ 7 (depression)	6 (5.3)

The mean MVAULT score were 5.0 (1.93) and 8.9 (2.57) out of 15 word lists for both Trial A1 and Trial A5 respectively (Table 3). The mean score for Trial A1-A5 Total was 35.6 (9.79) out of 75 word lists. As for Trial B, the mean score (3.7 (1.50)) was low when compared to Trial A1. These might be due to the difficulty in shifting attention to the new task after five learning trials. However, surprisingly the mean score for Trial A6 (7.5 (2.89)) was higher than Trial A1 even though

their memories had been interrupted by the new word list (list B). The mean score for delayed memory (Trial A7) was almost similar with the mean score of Trial A6 administered 20 minutes before. These showed that the schizophrenia patients still had the ability to sustain the previous learning information. The performance for the recognition task was also good with a mean score of 12.6 (2.60).

Table 3. Verbal memory and learning performance of patients with schizophrenia attending HUSM psychiatric services

MAVLT trials	Mean score (SD)	
	Schizophrenia patients n=114	Healthy controls ** n=15
A1 (Trial 1)	5.0 (1.93)	8.5 (2.20)
A5 (Trial 5)	8.9 (2.57)	12.2 (1.78)
Total Learning (A1+A2+A3+A4+A5)	35.6 (9.79)	53.2 (7.72)
B (Trial 6)	3.7 (1.50)	5.0 (1.60)

A6 (Trial 7)	7.5 (2.89)	11.0 (2.51)
A7 (Trial 8)	7.4 (2.71)	11.1 (2.49)
Recognition (Trial 9)	12.6 (2.60)	14.3 (0.88)

**Published data [7].

The verbal learning and memory performance was assessed using Malay version Auditory Verbal Learning Test (MVAULT).

Table 4. The relationship between MVAULT performance and demographic/clinical characteristics of patients with schizophrenia

	A1	A5	Total Learning	A6	A7	Recognition
Age	0.445	0.633	0.518	0.173	0.469	0.205
Gender	0.043*	0.410	0.210	0.090	0.193	0.681
Occupation	0.083	0.075	0.015*	0.377	0.571	0.302
Education level	0.013*	0.139	0.012*	0.335	0.382	0.056
Duration of Illness	0.204	0.699	0.714	0.293	0.754	0.479
Type of antipsychotic	0.718	0.131	0.312	0.712	0.481	0.577
Use of Anticholinergic	0.992	0.264	0.121	0.201	0.079	0.769
BPRS Score	0.020*	< 0.001*	< 0.001*	< 0.001*	< 0.001*	0.001*
After controlled for education and occupation	0.046	< 0.001*	< 0.001*	< 0.001*	< 0.001*	0.001*
CDRS score	0.438	0.040*	0.193	0.361	0.153	0.913

* $p < 0.05$ was considered as statistically significant.

There were no significant relationships between age and MVAULT performance in all indexes measured (Table 4). There was a significant relationship between gender and mean score for Trial A1 ($p = 0.043$) but not in other trials. Males scored higher compared to females in Trial A1 and the mean difference between the two groups was 0.7 (95% CI = 0.02 to 1.46). Even though the other mean scores were not significant, the results consistently showed that males outperform females on most of the indexes on the MVAULT. Both educational level and employment status showed significant relationship with MVAULT performance. Patients who received college/university education scored higher compared to those who received primary/secondary education and the mean difference between the two groups was 1.1 (95% CI = 0.24 to 1.96) for Trial A1 and 5.6 (95% CI = 1.28 to 9.98) for Trial A1-A5 Total. Similarly, employed patients scored higher compared to unemployed patients in Trial A1-A5 Total and the mean difference between these two groups

was 4.4 (95% CI = 0.90 to 7.95) for Trial A1-A5 Total. These findings reflect that patient with schizophrenia from low educational background and unemployed had more memory symptoms that subsequently impaired their function. However, there were no significant relationship between MVAULT performance in all indexes measured and duration of illness, types of antipsychotic or use of anticholinergic medication. There were significant relationship between MVAULT performance in all indexes measured and BPRS score even after controlling for occupational status and educational level effects. The patients with higher total BPRS score (30 to 50) performed worse compared to those with lower BPRS score (<30) in all MVAULT indexes. In contrast, there was no significant relationship between MVAULT performance in all indexes measured and patient's emotional status as measured by CDRS, except for Trial A5.

Discussion

The present study found that performance of patients with schizophrenia was generally worse than healthy individuals [7] in measures of total learning, immediate memory, immediate memory after interruption using list B and delayed recall. Their performance on recognition tests was not severely impaired. This finding was consistent with previous studies [9, 10]. In addition, it was found that the deficits in recall were related to reduced use of organizational strategies to facilitate verbal encoding and retrieval [10]. The authors concluded that deficits in consistency of learning over several trials, as well as a strong relationship between semantic organizational strategies and reduced learning capacity, implicate prefrontal dysfunction as a contributor to verbal memory deficits in schizophrenia.

The present study provides information regarding the relationship between verbal memory dysfunction in schizophrenia with demographic characteristics. Most of the patient's demographic characteristics including age, gender, ethnicity, marital status, illness duration (years), number of hospitalization, follow up, drug compliance, use of anticholinergic drug and type of antipsychotics use were unrelated to verbal learning and memory performance except for patient's occupational status and educational level.

This study found no significant relationship between the MVAVLT performance and age and this is inconsistent with previous studies [11, 12]. A study by Wiens and colleagues in 1988 found a small but significant correlations between age and performance on Trials 3, 5 and 6 [11]. Another study reported significant age correlating with Trials 5, 6, 7 (delayed recall) and total learning in 600 subjects with seronegative homosexual and heterosexual males [12]. In the present study, there was no consistent score observed between the three age groups and the test performance did not decline with age.

In the present study, there were more male than female patients, 68 (59.6%) versus 46 (40.4%). This is a potential concern since women generally perform better than men on verbal tasks in particular verbal and recall tasks [13]. The present findings were contradictory to previous studies [14, 15].

Studies utilizing the California Verbal Learning Test (CVLT) specifically found that women tend to perform better than men on immediate recall and list learning recognition test [14]. The large difference in sample size between male and female patients with schizophrenia in this study could explain the different findings. However, studies have not been able to consistently replicate gender effects on RAVLT performance [15]. Thus, this appears to be a marginal effect that is of limited importance in interpreting RAVLT results.

There was significant relationship between memory (immediate memory and total learning) and educational level in the present study. This is in line with the findings by Query and Berger in 1980 [16]. That study found that education correlated significantly with recognition memory ($r = 0.41$) and learning ($r = 0.42$) [16]. However, low correlations of education with RAVLT score were observed in acute spinal cord injured patients wherein significant correlations were seen only for mean scores of Trials 4 and 5. The insignificant relationship between other MVAVLT scores and educational level in the present study could be explained by the small sample size and the broad classification of educational level whereby a few of the patients did not really complete secondary or primary school but were still included in the same group. The same confounds the college or university group in which a few of them did not complete their studies. Another strategy is to classify them according to duration of formal education received. However, it must be remembered that some of the patients who studied up to tertiary level had extended their study for several semesters only to fail the course at the end.

Significant relationship between memory and occupational status was only observed in Total Learning ($A1+A2+A3+A4+A5$). Even though there were no relationship in the other MVAVLT scores with the occupational status, the overall performances were better in the employed group. This finding is consistent with a review compiled by Green (1996) that emphasized the significance of verbal memory for the functional outcome in schizophrenia [2]. The classification of the occupational status should be more precise including the type of jobs and the duration of being

employed or unemployed. Some patients with schizophrenia may remain unemployed due to stigma or public perception of their inability to work rather than due to their cognitive impairment.

This study failed to identify a significant relationship between the type of antipsychotics used and MVAVLT scores, consistent with previous study [1]. Another study, however, suggested that clozapine treatment was superior to typical antipsychotic in improving cognitive function in schizophrenia [17]. In this study, 58.8% of patients received atypical antipsychotics whereby almost a quarter of them received clozapine due to treatment-resistant schizophrenia. This subgroup of patients had a much more severe illness and probably had more memory symptoms prior to clozapine treatment thus resulting in lower MVAVLT scores. The different dosage of antipsychotic used and the duration of treatment either in typical or atypical group could also contribute to the non-significant results since the impairment in memory in patients with schizophrenia frequently correlate with the high dose of typical antipsychotic used.

Anticholinergic medication has been associated with impaired memory function [18] and may antagonize the therapeutic effects of antipsychotic medication on positive symptoms in schizophrenia [19]. The present study, however, failed to identify a significant relationship between the use of anticholinergic medication with MVAVLT scores. The regular administration of benhexol in 26 of 114 schizophrenia patients cannot explain group differences since no differences occurred between patients who were never or not regularly treated with benhexol. However, the pattern of results displayed in the present study showed better MVAVLT scores in a group of patients who never or not regularly treated with benhexol. The data obtained regarding the use of benhexol in this study was very subjective whereby the information was gathered from the patients themselves and from the patients' medical records. The information regarding the dosage and duration of benhexol used are also useful. However, the usefulness of this approach is of limited value since many antipsychotics (e.g., chlorpromazine and quetiapine) possess significant intrinsic anticholinergic activity.

The present findings also did not show any relationship between duration of illness and MVAVLT mean scores. These results indicate that the chronicity of the illness did not by itself determine memory function but other additional factors can also impair memory performance. These include adherence to medication, dosage and type of medication used and severity of relapses.

In line with previous studies, the present findings found significant relationship between severity of illness as measured by BPRS and MVAVLT scores. The higher the total BPRS score, the worse performance in the MVAVLT indexes. However, this study did not identify whether the patient's performance was related to specific symptomatology of illness. A study done by Moritz and colleagues in 2001 found that negative symptom was strongly correlated with memory dysfunction before and after controlling for distractibility [20].

The present finding failed to identify a significant relationship between depressive symptoms using CDRS and MVAVLT scores except in Trial A5. This finding was in contrast to findings from other studies [20, 21, 22]. Query and Megran (1984) found that depression (as measured by the MMPI) accounted for reduced performance on Trial 1 [21] only. Hinkin et al. (1992) found that the Beck Depression Inventory (BDI) correlated only with Trial B in a sample of HIV patients [22]. Moritz et al. (2001) found that patients with depression and schizophrenia performed significantly worse than healthy controls in both short term and long term free recall as well as recognition test [20]. The possible explanation to the contrast in findings is the small sample size of the depressed group of schizophrenia patients as compared to non-depressed group in the present study. Some of the schizophrenia patients are very suggestible and tend to admit that they are having the symptoms. The other possible explanation is that the depression in schizophrenia might not be related to affective symptoms but may be related to somatic symptoms which were not measured in this study.

Limitations of this study include small sample size; unavailability of data on the verbal memory performance before and at the time of

disease onset as well as lack of control for external factors. The MVAVLT is ideally conducted in a quiet and comfortable room to minimize distractions and interruptions. However, it is difficult to ensure an ideal environment because this study was conducted in a clinic room during clinic session.

In conclusion, schizophrenia patients in the present study performed significantly worse than healthy controls in total learning, immediate memory with or without interference and delayed recall. There were significant relationships between MVAVLT performance and patient's occupational status as well as their educational level. This study was able to identify a significant relationship between MVAVLT performance and severity of illness but not depressive symptoms.

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ORIGINAL ARTICLE

CAN DARK CHOCOLATE ALLEVIATE ANXIETY, DEPRESSIVE AND STRESS SYMPTOMS AMONG TRAINEE NURSES? A PARALLEL, OPEN-LABEL STUDY

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Abstract

Objective: This interventional study was aimed to investigate the effects of dark chocolate consumption on anxiety, depression, and stress (ADS) among trainee nurses. **Methods:** A parallel and open-label experimental study was conducted. Of the 128 nurses enrolled, only 47 participated in the intervention study (mean age = 20.32 years; ranging from 19 to 22 years old). They were randomly assigned to an intervention group (IG, n = 25) or a control group (CG, n = 22). The IG consumed dark chocolate and CG ingested mineral water for 3 consecutive days. The validated Malay Hospital Anxiety and Depression Scale (HADS) and Depression, Anxiety and Stress Scale (DASS-21) were utilised for measuring ADS levels. Data were analysed descriptively and score comparisons were conducted using non-parametric tests. **Results:** No significant differences between IG and CG in ADS scores were detected at baseline (all $p > 0.05$). At post-consumption, ADS score were significantly reduced in IG (all $p < 0.01$) compared with CG (all $p < 0.05$). Larger effect sizes among these respondents had also revealed that there were mood-elevating effects of dark chocolate consumption. **Conclusion:** This study has discovered that 3-day consumption of dark chocolate may alleviate ADS status among trainee nurses suggesting that dark chocolate may have a more prominent role in improving emotional and mood generally. Further investigations are however warranted to confirm this finding. *ASEAN journal of Psychiatry, Vol.12(2), July - Dec 2011: 157-168.*

Keywords: anxiety, depression, stress, nurse, chocolate

Introduction

It is believed that the nursing profession is exposed to a greater extent of job-related psychological disorders compared to other healthcare professionals [1,2,3]. Similarly, nursing students experience relatively higher levels of physiological and psychological symptoms than students in other health-related disciplines of medicine, pharmacy and social work [4]. In the medical setting, stress coupled with anxiety and depression (ADS) among nurses is also not uncommon as they need to endure the burden of theoretical learning and to adapt to the unfamiliar experience of real clinical practice [5,6,7]. It was further found that anxiety and depression symptoms were

more common in younger and less experienced student nurses [8]. Moreover, if ADS symptoms are not properly tackled and relieved, they tend to impose negative influences on the well-being of nursing students themselves and clinical performances and this ultimately would compromise patients' welfare [7,9]. Interventions designed to reduce ADS are crucial, as they may help students improve their clinical experience and also prevent burn-out in the long run [10].

Psychiatric medications such as anti-depressants or anxiolytic drugs are effective in treating ADS symptoms, but most may cause adverse effects and require a longer time to bring about the desired treatment effects

[11,12]. In a review in 2004, it has been demonstrated that a substantial proportion of depressed patients preferred psychotherapy and were less likely to enrol in anti-depressant treatment [11]. The general perception towards psychotherapy was also very favourable among African women who regarded medications as the last resort for treating depression [12]. In fact, these women believed that prayers, exercise, yoga, and meditation were the more reliable and effective depression treatments [12]. Lowe et al. (2006) also found that psychotherapy was the most frequently preferred treatment and the most common factor to improve emotional well-being for depressed patients, in contrast, anti-depressants were rarely mentioned as preferred treatment [13]. Similarly, anxiety patients had also reported favorable views on psychotherapy [14]. Moreover, non-psychotherapy measures such as prayer is also perceived to be more helpful in anxiety treatment among African American patients [15]. These types of attitudes and beliefs explain why some patients with anxiety and depression preferred alternative non-pharmacological treatments compared to psychiatric drugs. Furthermore, unlike psychiatric medications, patients undergo the non-pharmacological treatments only when necessary [16]. Treatment with anti-depressants are additionally subjected to problems non-adherence, which has recently been shown to be due to forgetfulness, improvement of condition, ineffectiveness of medication and even carelessness on part of patients themselves [16].

Nutritional wise, depressed and anxious individuals are advised to consume high carbohydrate food such as chocolate to enhance mood [17], because this practice may initiate the increase of serotonin production which resulted in mood alleviation [17,18]. However, limited studies have focused on food therapy in treating ADS disorders. Many people crave for chocolate for its pleasure and positive emotions [17], as chocolate is also claimed to be a unique mood-enhancing food [17,19]. During the last decade, increasing interest in the relationship between stress and chocolate has led to some exploratory studies in human [19,20]. These findings could further contribute to the understanding of the association between chocolate-eating and

emotional disorders. In particular, the consumption of chocolate was also found to relieve stress [21]. In seasonal affective disorder (SAD), chocolate-eating is a form of self medication which has a positive impact on the brain neurotransmitters and has shown benefits as antidepressant [18]. Dark chocolate is believed to bring tangible benefits for health since the ancient time, its consumption could affect the metabolism of people who experience high level of stress [20]. Daily dark chocolate consumption for 2 weeks has also been found to exert positive impact on stress-associated metabolic disorders among stressed individuals. In the current study, dark chocolate was utilized as the intervention food because of its palatability and its higher caloric content, which may be the contributors that improve ADS levels [21,22]. Moreover, the distinctive aroma, the higher caloric contents and psycho-pharmacologic constituents are potential contributors in promoting better mood states [21,22,23]. Few studies, however had evaluated dark chocolate consumptions on ADS and mood levels among trainee nurses. In this exploratory study, we initially screened for ADS symptoms among the nurses and later tested the hypotheses whether eating a piece of 50g dark chocolate daily for three consecutive days could induce significant changes in the ADS symptom scores. Specifically, we aimed to compare ADS scores at pre-consumption and post-consumption.

Methods

Research Design and Sample Selection

The exploratory study was parallel, prospective, randomized and open-labelled. The research participants were students enrolled in their third year of diploma in nursing course at the Faculty of Medicine and Health Sciences, Universiti Sultan Zainal Abidin (UniSZA), Hospital Sultanah Nur Zahirah (HSNZ), Kuala Terengganu and Kuantan Specialist Hospital. The selection criteria for this study were: age 18 years or older, Malay-literate, no current or previous experiences with psychotherapy, not allergic to chocolate, no medical conditions, no complication in swallowing and chewing, and recorded Hospital Anxiety and Depression Scale (HADS) domain scores ≥ 8 (considered as possible case) [24,25]. All participants gave

informed consent prior to their inclusion in this study. For possible mild cases of anxiety and depression students were advised to consult their Head of Programme for further actions. As definite diagnoses can only be made by qualified professionals, this was the only way we could ensure that their emotional problems were ethically kept in check.

At least 3 days before of the study begun, all the participants were instructed to prohibit from taking chocolate products such as dark chocolate and brown chocolate during the study period. The volunteers were also asked to abstain from food intake at least 4 hours before receiving the intervention. A 3-day chocolate consumption period was intended to avoid the test food from becoming insensitive among the participants (desensitization effect) [26]. Mineral water was the choice for the control because it contains no cocoa derivatives and sugar which could potentially confound our outcomes. Moreover, the main intention was to mimic a “placebo” (i.e.nothing) as close as possible and mineral water had also been used in previous study [17]. All participants were ensured of their confidentiality and fully comprehended that the information gathered were only to be used for research purposes.

For this study which involved two groups, a power of 0.80 and α error at 0.05 for significance was used to estimate the number of respondents per group [27, 28].

Instruments

Personal particulars

Socio-demographic information was collected through the Personal Particulars form which was distributed to the selected students. This form consisted of 10 questions which included: gender, age, marital status, race, religion, education level, liking/loving and craving for chocolate, the extent of loving chocolate and the amount of chocolate consumption per week. The respondents were asked on whether they “like chocolate/crave for chocolate” or “dislike chocolate/do not crave for chocolate” through two close-ended questions. They were also required to rate the extent of liking chocolate through responses categorised from 0 to 10 with anchor ends [17]. Scores for this

question ranged from 0 (do not love chocolate at all) to 10 (extremely loved chocolate). Chocolate-loving and craving were assessed because both aspects have been shown to be closely associated with chocolate consumption habit which could affect the final outcomes [17,23].

The validated Malay Hospital Anxiety and Depression Scales (HADS).

The HADS [25] has been extensively used to screen for anxiety and depression levels in clinical and non-clinical populations [29,30]. This instrument is a self-assessment tool that consists of a seven-item anxiety subscale (HADS-A) and a seven-item depression subscale (HADS-D). The validated Malay version of HADS was the instrument employed in this study [25,31,32]. This 14-item scale provided information about the trainee nurses’ anxiety and depression status for the “past two days”. The responses on each scale were obtained on a four point Likert scales from 0 (not present) to 3 (considerable). Scores for each subscale of this instrument ranged from 0 (no symptom) to 21 (high level of symptom). A subscale total score ≥ 8 was set for inclusion criteria and considered as possible case. Grading from 0 to 7 was categorized as “non-case”, 8 to 11 as “mild symptom”, 12 to 14 as “moderate symptom” and 15 and above as “severe symptom”.

The validated Malay Depression Anxiety and Stress Scale (DASS-21).

The DASS-21 [33] is the shorter form of the original DASS-42 questionnaire which measures negative emotional states of depression, anxiety and stress [34]. The Malay DASS-21 is a translated version which possessed evidence for favourable psychometric properties for the Malaysian general population [34]. This instrument contains three sections of 7-item self-report scales for measuring anxiety (DASS-A), depression (DASS-D) and stress (DASS-S). Each subscale was scored on a 4-point scale from 0 (not present) to 3 (considerable). This scale measures the extent to which each state has been experienced “over the past 2 days”. Scores for the ADS scales were determined by summing the raw scores for the relevant 7 items; the scores for each subscale were then

multiplied by two because DASS-21 is the truncated version of DASS-42, this multiplication procedure was performed to ensure comparability of outcomes to DASS-42 in accordance to the manual [35]. The sum of scores for each subscale after multiplication ranged from 0 (no symptoms) to 42 (high level of symptoms). This instrument was additionally used to support and substantiate the results from HADS. Moreover, it provides evidence of convergent validity against HADS.

Study Procedures

This study was approved by the Ministry of Health Malaysia (reference number: KKM/NIHSEC/08). All of the information on this study will be strictly confidential. Participants are allowed to withdraw from the study at any time. The study began with a short briefing; participants were provided with a research information sheet. After the preliminary investigation, the participants were randomly assigned to an Intervention Group (IG, n = 25) or a Control Group (CG, n = 22) (See Figure 1).

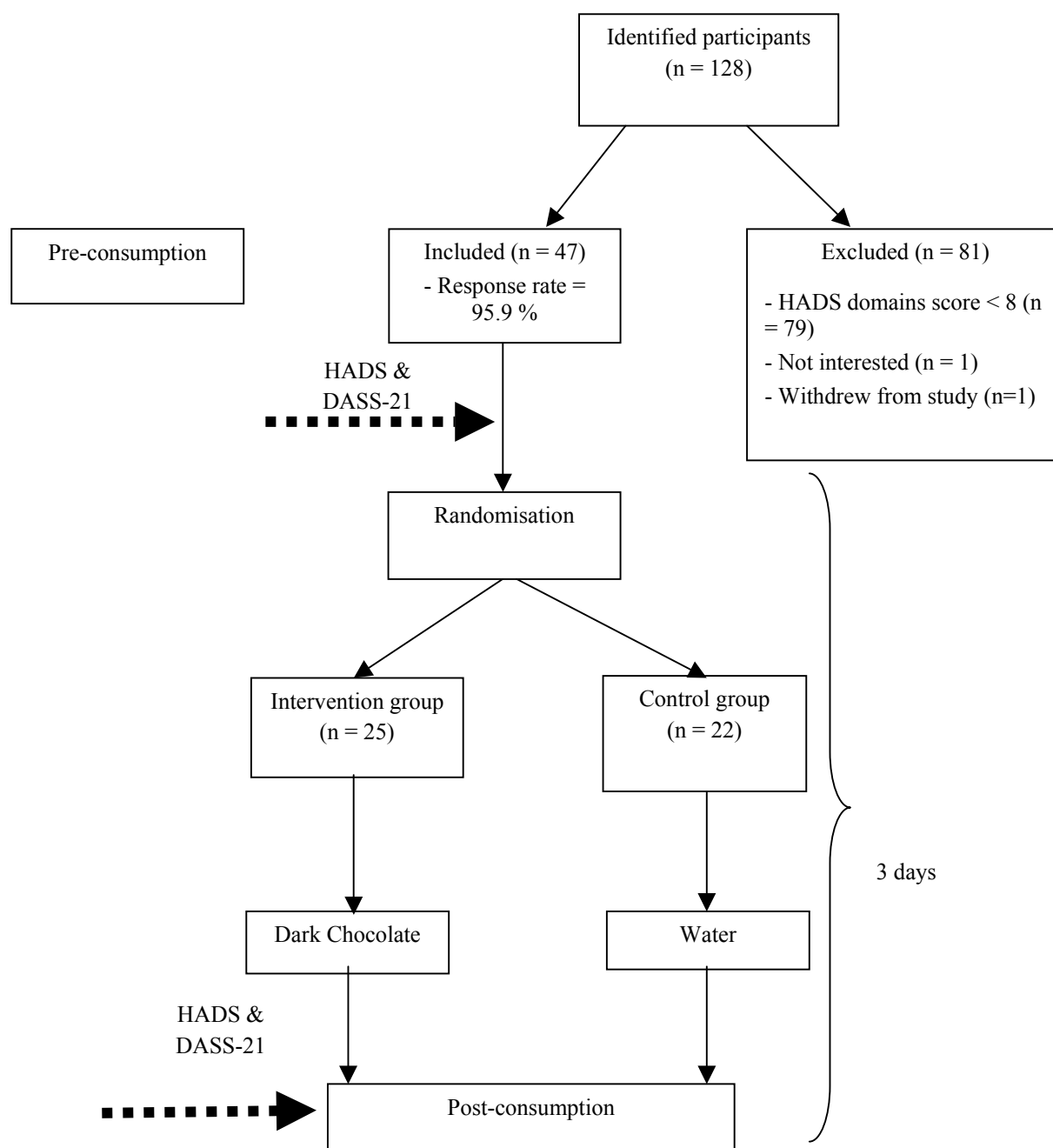


Figure 1: Experimental study design.

For the randomization procedure, each nurse drew a number from a box which contained numbers 1 to 50. Odd numbers were assigned to IG while even numbers were placed in CG. At pre-consumption and two to three hours post-consumption, the participants completed the Personal Particulars form, DASS-21 and the HADS instruments. After the preliminary investigation, the trainee nurses were randomly assigned to an intervention group (IG, $n = 25$) or a control group (CG, $n = 22$). The interventions were administered to the volunteers daily from pre-consumption (Day 1) to post-consumption (Day 3). The IG consumed dark chocolate Vochelle ® (50g, 275kcal) and CG ingested mineral water daily for 3 consecutive days. The dark chocolate/mineral water was administered to the volunteers between 11 a.m. and 1 p.m. or between 5 p.m. and 7 p.m. daily. Once the respondents completed the entire procedure they were presented with a token of appreciation.

Data analysis

For statistical analysis, SPSS 17.0 for Windows was used. Socio-demographic data was analyzed descriptively and presented as frequencies and percentages. Normality test was performed and Kolmogorov-Smirnov statistics was both significant indicating that normal distribution was not assured. Consequently, subsequent score comparisons were conducted using Mann-Whitney U (between group) and Wilcoxon Sign Rank tests (within group). Values of $p < 0.05$ were considered statistically significant. Effect sizes using Cohen's (1988) interpretation were also calculated between the two time points [36].

Results

Participants

Of the 128 nurses identified, 47 (response rate = 37%) met inclusion criteria and participated in the intervention study. The results of verification of homogeneity for socio-demographic characteristics are displayed in Table 1. All participants in this study were female, not married, and had completed SPM education. The average age for both IG and CG were 20.32 years (ranging from 19 to 22 years old). More than 90% of the participants claimed that they liked chocolate. The extent of loving-chocolate was found to be 79%. The mean amount of chocolate consumption in a week was $2.30 \times 50\text{g}$ bars for IG and $2.13 \times 50\text{g}$ bars for CG. A large percentage of the respondents were chocolate-lovers ($> 92\%$) and more than half of both IG and CG respondents did not possess the tendency for chocolate craving. No significant difference was reported for stress experience and craving for chocolate for both IG and CG.

Pre-Consumption vs. Post- Consumption

Pre-consumption ADS levels as measured with HADS and DASS-21 are shown in Table 2. No significant difference was observed in domain scores for IG and CG at pre-consumption (all $p > 0.05$), indicating that the two groups were comparable in terms of the variables intended for assessment. Significant declines in ADS were demonstrated in IG participants between pre-consumption and post-consumption ($p < 0.001$) for DASS-21 domains (Table 3). Between IG and CG, there were also significant reduction of HADS-A and HADS-D scores at day 3 post-consumption. However, greater effect sizes were exhibited by IG compared to CG. Differences for ADS between groups (IG and CG) are displayed in Table 4 (all $p < 0.01$).

Table 1: Socio-demographic characteristics at pre-consumption for IG (n = 27) and CG (n = 22)

Characteristics		Intervention group n (%)	Control group n (%)	P value*
Stress	Yes	22 (88)	18 (81)	0.553
	No	3 (12)	4 (18)	
Crave for chocolate?	Yes	15 (60)	11 (50)	0.491
	No	10 (40)	11 (50)	
Like chocolate?	Yes	23 (92)	22 (100)	-
	No	2 (8)	0 (0)	
Marital status	Yes	0 (0)	2 (9)	-
	No	25 (100)	20 (91)	
Gender	Female	25 (100)	22 (100)	-
	Male	0 (0)	0 (0)	
Mean age (years)		20.32	20.32	0.959
Loving-chocolate (Mean ± SD)		7.60 ± 2.54	8.81 ± 1.78	0.180
Chocolate consumption per week (Mean ± SD)		2.30 ± 1.57	2.13 ± 1.03	0.826

*X² tests for independence; $p < 0.05$ = significant.

Table 2. Subscales scores for intervention group (IG) and control group (CG) at pre-consumption.

Subscales	IG (n =25)		CG (n = 22)		p value*
	Median (range)	Mean (±SD)	Median (range)	Mean (±SD)	
HADS-A	9.00 (8-14)	9.12 (1.42)	10.0 (8-13)	9.45 (1.37)	0.303
HADS-D	9.00 (8-13)	9.16 (1.42)	9.00 (8-13)	9.50 (1.50)	0.344
DASS-A	14.00(10-32)	17.28 (6.47)	14.00 (10-22)	15.27 (3.73)	0.476
DASS-D	16.00(10-28)	16.24 (5.23)	16.00 (10-22)	16.00 (3.26)	0.855
DASS-S	16.00(10-28)	17.04 (5.48)	16.00 (12-26)	16.54 (3.71)	0.966

*Mann-Whitney U test; $p < 0.05$ = significant; HADS = Hospital Anxiety and Depression Scale; DASS = Depression Anxiety and Stress Scale; A = Anxiety; D = Depression; S = Stress.

Table 3: Within group comparisons of anxiety, depression, and stress (ADS) (IG vs. CG)

Subscale		Pre		Post		<i>p</i> value*	Z	Effect size
		Median (Mean rank)	Mean (± SD)	Median (Mean rank)	Mean (± SD)			
HADS- A	IG	9.00 (0.00)	9.12 (1.42)	5.00 (12.50)	5.16 (2.13)	< 0.001	-4.307	0.86
	CG	10.00 (2.50)	9.45 (1.37)	7.00 (9.41)	7.59 (2.30)	< 0.001	-3.538	0.75
HADS- D	IG	9.00 (0.00)	9.12 (1.36)	5.00 (12.50)	5.40 (2.42)	< 0.001	-4.309	0.86
	CG	9.00 (0.00)	9.50 (1.50)	7.50 (10.50)	7.32 (1.67)	< 0.001	-3.955	0.84
DASS- A	IG	14.00 (2.50)	17.28 (6.48)	10.00 (12.43)	10.48 (4.01)	< 0.001	-4.132	0.82
	CG	14.00 (13.33)	15.27 (3.73)	16.00 (8.18)	15.82 (3.08)	0.570	-0.568	0.12
DASS- D	IG	16.00 (7.50)	16.24 (5.23)	10.00 (13.23)	10.56 (4.10)	< 0.001	-4.200	0.84
	CG	16.00 (9.77)	16.00 (3.27)	16.00 (11.39)	16.18 (4.82)	0.925	-0.094	0.02
DASS- S	IG	16.00 (0.00)	17.04 (5.48)	10.00 (12.50)	10.08 (5.11)	< 0.001	-4.300	0.86
	CG	16.00 (7.33)	16.54 (3.71)	15.00 (10.58)	14.90 (3.89)	0.067	-1.831	0.39

Pre = pre-consumption; Post = post-consumption; *Wilcoxon Signed Rank test; $p < 0.05$ = significant; Effect size: small = 0.2 – 0.49, medium = 0.5 – 0.79, large effect = ≥ 0.8 .

Table 4: Between group comparison of anxiety, depression, and stress (ADS) (IG vs. CG).

	Subscales		Median	Minimum – maximum	Mean rank	Z	p value*
HADS-A	Pre	IG	9.00	8 – 14	22.16	-1.030	0.303
		CG	10.00	8 -13	26.09		
	Post	IG	5.00	1 – 10	17.92	-3.275	0.001
		CG	7.00	8 – 13	30.91		
HADS-D	Pre	IG	9.00	1 – 10	22.30	- 0.947	0.344
		CG	9.00	5 – 11	25.93		
	Post	IG	5.00	1 – 10	18.26	-3.095	0.002
		CG	7.50	5 – 11	30.52		
DASS-A	Pre	IG	14.00	10 – 32	25.32	- 0.713	0.476
		CG	14.00	10 – 22	22.50		
	Post	IG	10.00	0 – 20	16.20	-4.226	< 0.001
		CG	16.00	10 – 20	32.86		
DASS-D	Pre	IG	16.00	10 – 28	23.66	- 0.183	0.855
		CG	16.00	10 – 22	24.39		
	Post	IG	10.00	5 – 22	17.02	-3.751	< 0.001
		CG	16.00	6 – 24	31.93		
DASS-S	Pre	IG	16.00	10 – 28	24.08	-0.043	0.966
		CG	16.00	12 – 26	23.91		
	Post	IG	10.00	2 – 22	17.64	-3.415	0.001
		CG	15.00	8 – 26	31.23		

* Mann-Whitney U test; $p < 0.05$ = significant; Pre = pre-consumption; Post = post-consumption.

Discussion

It has been well-known that chocolate possesses the ability to improve mood [17,23,35]. This experimental study was designed to determine whether dark chocolate consumption could suppress ADS levels. Overall participants were comparable in terms of gender, age, marital status, education levels and chocolate-loving trait. Furthermore, the domain scores for HADS and DASS were not significantly different at pre-consumption. A 3-day dark chocolate consumption seemed to decrease ADS levels among the trainee nurses. In our study, the higher score differences and larger effect sizes in the IG also revealed that

the ADS-alleviating effects of dark chocolate did not merely occur by chance for chocolate-loving participants. The results of this study support some of the former studies on chocolate consumption [17,18,19,20,21].

The physiological indicators of mood disorder especially ADS symptoms have been shown to be related [37]. Any intervention that produces effect on stress is expected to create the same outcome on anxiety [37]. The findings in our pilot study also paralleled with this outcome. Similarly, intervention that can lower blood pressure, pulse rate, and respiratory rate could also promote in the improvement of anxiety [38]. Dark chocolate

possessed similar advantages by creating a declining effect on blood pressure (one of the physiological indicators of anxiety) probably due to the high flavonoid level [39].

Studies in the past have also demonstrated that chocolate consumption improved negative induced mood state immediately, depending on palatability [17]. Higher percentages of cocoa are found in dark chocolate which produced relatively bitter taste during ingestion. However, manufacturers commonly add extra sweetness in dark chocolate as to improve its palatability. The distinctive aroma, high carbohydrate contents (275 kcal) and psycho-pharmacologic constituents were perceived to be the possible contributors to oro-sensory effects which resulted in lowering of ADS levels [17,40,41,42]. Nutrient-dependent changes during dark chocolate intake have also been proposed to mediate mood alleviation by producing a larger amount of serotonin acting on 5HT receptor [43].

Chocolate possess many beneficial health effects include cardioprotective effect, anti-cancer, chemopreventive effect on chronic disease, cough preventor, anti-diarrhoea and brain stimulator [23]. However, the psychoactive agents and the high caloric contents are considered as one of the down side in chocolate consumption as they may cause weight/blood glucose increments, craving and even addiction [23,44]. In addition, it is clear that chocolate may also cause neurologic effects because it can induce migraine in certain individuals due to its caffeine and theobromine contents [45]. Therefore, chocolate consumption should be prohibited among individuals who are allergic to caffeine and theobromine. Unconstrained consumption in large quantities is also thought to increase the risk of obesity without a corresponding increase in activity. Alternatively, the semi-sweet or bitter dark chocolate which contains lower calories is recommended to prevent weight gain in susceptible individuals.

Despite the recognition of this matter however, not many studies have been widely conducted to determine the effects of dark chocolate consumption on ADS symptoms among nurses. The findings in our study could not compare with any data from local studies, as to our

knowledge there was no other chocolate studies had been conducted among student nurses. The outcome of this pilot study has a potentially far-reaching benefit than only to the respondents of this sample alone.

There were possible response biases due to prior perception that dark chocolate consumption may alleviate ADS levels. Perhaps liking chocolate or not will influence the outcomes on ADS. Nonetheless, we did not distinguish the chocolate-loving respondents from non-chocolate-loving respondents. An open-label study is a type of clinical trial in which both the researchers and participants know which treatment is being administered [46]. An open-label trial may be unavoidable under some circumstances, such as in our study where placebo is not available. We also attempted to minimize this limitation inherent in an open-label design by having similar packaging for both interventions. Additionally, randomisation was also incorporated in our study to reduce bias in group allocation. We did not and could not possibly control the overall food intake of each participant during the study period which may have also confounded the findings. Because these findings are limited to the younger age and female group, we acknowledge that the results may not be generalizable to other sample of respondents with differing demography. At this point, we could say that dark chocolate may be useful as an alternative non-pharmacological treatment to improve mood. However, further investigations are warranted before we can use dark chocolate as a practical food remedy in psychiatric therapy. In future, studies on dark chocolate intervention with a longer study period, along with diagnostic interviews and biophysiological factors examinations are highly recommended. Most importantly, perhaps the presentation or packaging and outlook of the intervention and control should be more uniformed and indistinguishable. For example, placebo (with no cocoa derivative) or dark chocolate in pill form shall be used for the control.

Conclusions

ADS status was significantly improved in the group of nursing students who consumed dark chocolate compared to those who did not,

suggesting that 3-day dark chocolate consumption seemed to be effective in reduction of ADS symptoms. However, further studies with greater methodological rigor are necessary in order to confirm these findings. Therefore, this exploration study served as a basis for future research on dark chocolate consumption as a non-pharmacological relief method for mild cases of mood disorders among nurse respondents pursuing their internship training.

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ORIGINAL ARTICLE

DEVELOPMENT AND VALIDATION OF NEGATIVE SELF-IMAGE INVENTORY

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Abstract

Objective: The aim of this study was to develop and validate the Negative Self Image Inventory (NSII). This inventory assesses the emotional and behavioural manifestations that characterize dissatisfaction with real or imagined defects in physical appearance. The 40-item inventory comprised self-descriptive statements which participants were required to respond to on a 6-point modified likert-type format ranging from 6 (strongly agree) to 1 (strongly disagree). **Methods:** Participants for the study were 500 keep-fit exercisers, in the age range of 16 – 54. Initial item collation of NSII comprised 95 items which were systematically reworked and pruned down to 66 on the basis of their face and content validity. The 66 items were administered to 30 participants in an initial pilot study. Difficult-to-understand items were dropped to reduce the scale to 44 items. An inter-item correlation was performed with Pearson Product Moment Statistic technique on the 44 items. The 4 items with weak coefficients were removed to bring NSII to 40 items. The 40 item instrument was administered concurrently with a similar test instrument – Fear of Negative Evaluation (FNE) in order to obtain the concurrent validity of this new scale. **Results:** Normative scores for NSII were: 88.04 (Males), 93.12 (Females) and 90.58 (M&F). Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bertlett's test of sphericity indicates a score of 0.71 and a chi square of 1779.31, $df = 780$, $p < 0.05$. NSII presented a concurrent validity of 0.51, a split-half reliability coefficient of 0.78 and a Cronbach-alpha reliability of 0.82, with a 2-week test-retest reliability coefficient of 0.82. **Conclusion:** NSII is potentially a useful instrument for the assessment of anxiety associated with preoccupation with real or imagined defects in physical appearance. *ASEAN Journal of Psychiatry, Vol. 12(2), July – December 2011: 169-177.*

Keywords: Negative Self-Image, Inventory, Development, Validation.

Introduction

Successful insight and management of a given psychological difficulty is partly based on a proper diagnosis, which only a proper assessment could offer. This study seeks to develop and validate a negative self-image inventory, an assessment inventory that is expected to identify the social, emotional, physical and behavioural dimensions of negative self-image. The history of negative self-image dates back to 1960s when Dr Maltz, an America cosmetic surgeon made

some intriguing observations. He observed that some patients, who did minor facial changes, changed their personality and life dramatically, while others with greater facial changes did not seem to change. They retained their old and debilitating self-image and continued to 'see' themselves as 'ugly' and 'deformed', even though they appeared beautiful by society's standards [1]. Maltz then inferred that the reason was because such individuals continued to *think* of themselves as ugly, different and defective. This inference led him to conclude that

changing the physical image was not the real key to changes in personality and behaviour, but there must be a change in the self-image (the mental image or picture). Maltz thus proposed that personality can be improved by helping an individual to mentally "see" himself or herself, as a beautiful person after surgery, by altering the ingrained hidden pattern of thought causing the dissatisfaction. Thus, proper diagnosis and management of negative self-image is predicated on proper assessment of the precipitating psychological difficulties and anxieties. It is important to note that negative self-image concern can develop to a dysfunctional extreme level resulting in a psychopathological condition known as Body Dysmorphic Disorder (BDD) [2]. This is a disorder of imagined ugliness defined as, an intensification of normal concern with real or imagined defects in physical appearance [3-4], with significant social and interpersonal impairment. Such a pervading psychopathological problem therefore needs to be thoroughly assessed in order to ascertain its peculiar characteristics and further management. The objectives of the study are to: (i) identify items that illustrate symptoms and manifestations of negative self-image, (ii) determine the normative score for Negative Self-Image Inventory (NSII), (iii) to determine the reliability and validity scores of Negative Self-Image Inventory (NSII).

Literature has indicated that the earliest and simplest measures of physical appearance and its influence on psychological well-being were the use of schematic figures or silhouettes of varying sizes, from thin (underweight) to heavy (overweight); and the discrepancy between the individual's choices of their ideal figure versus their conception of the figure that matches their current size. [5-6-7]. In the Figure Rating Scale of Stunkard, Sorenson and Schulsinger [8], participants were asked to select from nine figures that vary in size from underweight to overweight, that which best describe their ideal and perceived self. Participants included 92 normal male and

female undergraduates. Result indicates significant correlation between figures picked and the ideal and perceived self. It was observed that most picked figures slimmer than their current weight as ideal self. This finding is not surprising, because media images presented by the society readily portray the slim and 'beautiful' image as the ideal while for the developing child, those at variance to this ideal could grow up feeling inferior and ugly.

Other schematic designs have been created to assess different aspects of physical appearance than overall body size. Thompson and Tantleff [9] were interested in the upper torso, particularly breast and chest-size satisfaction, and developed the Breast/Chest Rating Scale for this purpose. This involved 5 males and females schematic figures ranging from small to large upper torso. Participants were 43 males and females and test-retest reliability coefficient ranged from 0.81 for ideal breast, 0.85 for current breast and 0.69 for ideal chest. As expected, ideal size selections were larger than current size ratings, for both men and women. This is an indication that breast size and appearance could also trigger self-image anxiety.

Gardner, Friedman and Jackson [10] however criticized some of the figural scales because of the lack of consistent size gradation between adjacent figures. For instance, they evaluated Stunkard, Sorenson and Schulsinger's Figure Rating Scales and noted that the proportional change from size 5 to size 7 was 0.100 whereas the change from size 4 to size 3 was 0.176 and the change from size 3 to 2 was 0.03. Another potential problem with standardizing figure rating procedures is that the size and dimensions reflected by the figure may not match that of the participant, leaving them to state that none of the shapes looked like them. Another important observation is that the facial and hair features often appear Caucasian, which may make their use disconcerting or inappropriate with individuals of other races.

Alfonso and Allison [11] designed for 170 male and female undergraduates, an Extended Satisfaction with Life Scale with a Physical Appearance sub-scale, a shift from the figure-rating assessment. This scale tapped into issues of general satisfaction with appearance, on a 7-point likert-type scale and has an internal consistency coefficient of 0.91 and a two-week test-retest reliability coefficient of 0.83. Also, Peterson, Schulenberg, Abramowitz, Offer and Jarcho [12], developed the Self-Image Questionnaire for Young Adults (SIQYA) for 10 to 15 year olds. Standardization sample included 335 sixth grade students who were followed through 8th grade. Result indicates an internal consistency coefficient of 0.81 and a one-year test-retest reliability coefficient of 0.60.

In line with the studies reviewed, literature indicates a dearth of negative self-image assessment tests in recent times. This study therefore seeks to contribute to knowledge in this area.

Method

Population

The target population was the keep-fit exercisers. The study covered participants aged 16-54 who were residents in Lagos metropolis. Participants were made up of those trying to loose weight, as well as those working to retain their toned muscle mass. Purposive sample technique was used to select the 500 participants (males 250, females 250), in the age range of 16 – 54, (mean 30 years).

Research Design

Survey design involved the use of 2 psychological test instruments which were administered to a sample of 500 participants. *Correlation design* was also employed for the test-retest analysis. The independent variable was time interval and the dependent variables were scores obtained with the test instruments.

Instruments

The following psychometric instruments were used:

1. Negative Self-image Inventory (NSII):

This is a 40-item test instrument validated in this study. Each item is a self-descriptive statement which participants were required to respond to on a 6-point modified Likert-type format ranging from 6 (strongly agree) to 1 (strongly disagree). Specifically, NSII taps into emotional and behavioural manifestations of real or imagined defects in physical appearance.

2. Fear of Negative Evaluation (FNE):

This is a 30-item scale with a true-false response format and was developed by Watson and Friend [13]. It measures fear of negative evaluation due to general anxiety, fear of losing social approval and ineffective social behaviour. The reliability coefficient reported by Watson and Friend [13] are: KR-20 = 0.94, and one month interval test-retest coefficient = 0.78. Using Nigerian sample, Odedeji [14] obtained a concurrent validity coefficient of 0.63 with State Trait Anxiety Inventory Form Y-2 [15].

NSII Item Selection and Analysis

The development of NSII started with initial item selection from literatures, Caballo [4], Rosen [3], informal interviews and observations. This process resulted in 95 test items. The item editors, comprising two professional colleagues and one exercise instructor, systematically reworked the items to prune them down from 95 to 66 on the basis of their face and content validity. The 66 items were administered to 30 participants in an initial pilot study. Difficult-to-understand items were further dropped to reduce the scale to 48 items. Items that participants found to be ambiguous were rephrased and this led to some items appearing similar. The items were streamlined and this brought the scale to 44 items. An inter item correlation was performed with Pearson Product Moment Statistic technique on the 44 items. Four

items with weak coefficients were removed to bring NSII to 40 items.

Test Administration Procedure

NSII and Fear of Negative Evaluation (FNE) were administered by the researcher, with the help of two research assistants, who had undergone formal training on test administration techniques. Test administration was generally conducted after establishing adequate rapport and with an assurance of confidentiality. Observations raised by the participants were also clarified. Participants were encouraged to respond honestly to the test item. NSII was administered concurrently with Fear of Negative Evaluation Scale (FNE), so as to determine its concurrent validity. NSII and FNE were initially administered to 560 participants, of which 532 were retrieved. It was observed that 22 were not properly filled. In order to match for gender, 10 of the test instruments were discarded bringing it to 500 tests.

In order to obtain the test-retest reliability coefficients of the tests, NSII and FNE were further re-administered two weeks after to 100 participants (50 males, 50 females) who also took part in the first administration.

Data Analysis

The statistical methods used in the standardization of NSII include, mean, standard deviation, Pearson Product Moment Correlation, Principal Component Factor Analysis with Iteration and Varimax Rotation and Cronbach Alpha statistics.

Result

Norm Score

The normative scores of the tests were obtained by computing the mean scores and standard deviations for the 500 participants (250 males and 250 females). The result is presented in Table 1.

Table 1. NSII Norm for Males and Females

Groups	NSII		FNE	
	Mean	SD	Mean	SD
Males (n=250)	88.04	25.59	13.20	5.32
Females (n=250)	93.12	26.86	13.55	5.47
M&F (n = 500)	90.58	26.32	13.37	5.39

(SD = standard deviation)

Table 1 showed that females have higher manifestations of negative self-image as measured by Negative Self-Image Inventory (NSII), with mean score of 93.12. The female group also obtained higher mean score on Fear of negative evaluation (FNE), a validation scale, with score of 13.55. Mean scores for males were 88.04 for NSII and 13.20 for FNE. Overall mean score for both male and females were 90.58 for NSII and 13.37 for FNE. Thus, norm score of 90.58 and above for both males and females on NSII is an indicative of negative self-image manifestation.

Reliability Score

Pearson Product-Moment Statistical Method was used to obtain the 14-day test-retest reliability coefficients of NSII, while Cronbach-alpha was used to obtain its internal consistency reliability coefficient. The result is presented in Table 2.

Table 2. Reliability Coefficients of NSII

Type	r
14-day test-retest	0.82
Split-half	0.78
Cronbach-alpha	0.82

Table 2 showed that NSII had internal consistency alpha coefficient of 0.82, split-half reliability coefficient of 0.78 and an equally strong two week test-retest reliability coefficient of 0.82.

Validity Score

In order to obtain the concurrent validity of Negative Self-Image (NSII), the scores on NSII were correlated with those of Fear of Negative Evaluation (FNE) using Pearson Product-Moment Statistics. The result is presented in Table 3:

Table 3: Correlation Matrix of NSII and FNE

Measures	NSII	FNE
NSII	1	
FNE	0.51**	1

** Significant at $p < 0.05$, df , 498, $r = 0.195$

Result in Table 3 showed significant concurrent validity coefficients of the 2 clinical measures. The concurrent validity coefficient obtained was 0.51 which is significant at $p < 0.05$.

Construct validity

In order to further determine the factorial structure of NSII, which is an aspect of construct validity, Factor analysis, Principal Component and direct varimax rotation were used [16]. However, in order to obtain information about the factorability of the data, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bertlett's test of spericity were computed. The result obtained was: 0.71 and a chi square of 1779.31, $df = 780$, at $p < 0.05$ respectively. Thus, as a measure of factorability, KMO values of 0.60 and above are acceptable [16]. The obtained value of 0.71 is greater than 0.6, an indication that it is above the acceptable value, and also significant.

A further factor analysis with iteration was used to factor analyze the scores of the 500 participants. The result is presented in Table 4.

Table 4: Initial Eigenvalues of the Extracted Components

Factors	Eigenvalues	Percentage of Variance	Cumulative Percentage
1	8.32	20.81	20.81
2	3.67	6.67	20.48
3	2.29	5.74	33.22
4	2.20	5.40	38.71
5	1.96	4.89	43.60
6	1.87	4.66	48.27
7	1.68	4.20	52.47
8	1.58	3.95	56.41
9	1.36	3.41	59.82
10	1.25	3.12	62.95
11	1.21	3.03	65.97
12	1.48	2.87	68.84
13	1.03	2.57	71.41

The result in Table 4 showed that 13 Factors with eigenvalues greater than 1 were extracted and they accounted for a total of 71.41% cumulative variance. The items that loaded in each of the factors and their communalities are presented in Table 5 and appropriately named.

Table 5: Name, Extracted Factor and Items that Loaded on them

S/N	Item No.	Item Name	Factor Loading	Factor Name
1	32	People think I look older than my age	0.45	Body-image anxiety
	34	I feel jealous of people I think are better than me	0.51	
	37	My appearance makes me avoid public places	0.51	
	40	People think I am quiet and timid	0.55	
	35	I wish my skin is smooth	0.59	
	30	I believe my ears are ugly	0.74	
	22	I feel that my buttocks are fat and shapeless	0.77	
2	6	People think I have an unpleasant odour	0.56	Poor self-confidence
	11	My shoulders are not as broad as I want	0.65	
	14	I believe that my head is too big/small	0.66	
	20	I don't like my cheeks	0.67	
	17	I believe I lack self-confidence	0.70	
3	26	My baldness bothers me	0.43	Social awkwardness
	39	I believe people don't respect me	0.46	
	12	I feel that my face is not attractive	0.69	
	24	I am not satisfied with the shape of my eyes	0.73	
	16	I feel I cannot go for certain jobs	0.77	
4	21	People think I am old-fashioned	0.70	Complexion dissatisfaction
	19	I want to tone-up my complexion	0.75	
	31	I would like to change the colour of my hair	0.77	
5	3	I feel intimidated when I am with beautiful people	0.46	Self consciousness
	9	I feel embarrassed about my height	0.46	
	7	I will like to go for plastic surgery	0.57	
	23	I feel uncomfortable among learned people	0.65	
	18	I have physical defects that I try to hide	0.70	
6	29	My thighs are too heavy/thick	0.41	Embarrassment
	33	I wish I am part of another race	0.67	
7	27	I have the nicest lips around	0.75	Self monitoring/ Admiration
	25	I love looking at myself in the mirror	0.78	
8	13	I like reading newspaper health columns	0.41	Body-checking Behaviour
	1	I weigh myself every now and then	0.58	
	8	My breasts are too small/big	0.66	
	15	I don't like the acne/pimples on my face	0.66	
9	4	I am too fat/thin	0.78	Fixation with stomach/body size
	2	I believe my stomach is big	0.86	
10	10	I often avoid close physical contact with people	0.54	Poor personal space
	38	I am not satisfied with the shape of my neck	0.73	
11	5	I believe that people talk behind my back	0.78	Fear of negative evaluation
12	36	I sometimes diet to remain in shape	0.82	Dieting
13	28	I am not satisfied with the shape/colour of my teeth	0.74	Dentition dissatisfaction

The result in Table 5 showed that 7 items loaded significantly in factor 1; 5 each in factors 2 and 3; 3 in factor 4 and 5 items in

factor 5. Factors 6 and 7 each had 2 items loaded on them; 4 items were loaded in factor 8; 2 in factors 9 and 10, and 1 each in

factors 11, 12 and 13 respectively. The items were arranged in descending order of loading in each factor, and name appropriately.

Discussion

Psychological instruments continue to be one of the most powerful and essential tool for obtaining objective information about human behaviour. The development and validation of negative self-image inventory is an effort to contribute to the body of knowledge in this area. The first effort about any newly developed instrument is to determine its reliability and validity, that is, to measure what it was designed to measure [17]

The aim of this study was to develop and validate the Negative Self-Image Inventory (NSII) of which participants were keep-fit exercisers. Findings from this study showed that the normative score for NSII is 90.58. Thus scores more than 90.58 is an indication of manifestations of negative self-image. Result further revealed norm scores for females to be 93.12, and males: 88.04. This indicates that females appear more disturbed about physical appearance than the males. This is not surprising because females appear to be socialized into equating beauty and physical attractiveness with success and competence. They are bombarded daily by the electronic media on beauty ideals with marketers presenting beauty products that are sometimes ineffective. However, this does not necessarily mean that behavioural and emotional manifestation of negative self-image is gender specific as men are gradually drawn into the beauty ideal and anxieties.

Results further indicate that NSII has an alpha coefficient of 0.82, a split-half reliability of 0.78, and a test-retest reliability coefficient of 0.82. According to Aiken [18], for a test to determine if the mean score of the two groups of people are significantly different, a reliability coefficient of 0.60 to

0.70 may be satisfactory. The reliability coefficient of alpha and split-half obtained on the NSII are above the range and also above the commonly held rule of a minimum Cronbach alpha of 0.70. The reliability values obtained for the NSII is comparable to those of other similar tests like the Self-Image Questionnaire for Young Adults (SIQYA) by Peterson et. al., [12] who reported a reliability coefficient of 0.81, and Offer Self-Image Questionnaire [19], with 0.53 to 0.70 coefficients.

The validity statistics indicate that NSII has a concurrent validity of 0.51. This was obtained by correlating it with Fear of Negative Evaluation (FNE), a similar test instrument. This result is positive and significant. This thus confirmed Aiken [18] claim that a construct validated instrument should have high correlations with other measures or methods measuring the same construct (convergent validity), but low correlations with measures of different construct (divergent validity). This statement was further amplified by Brace, Kemp and Sineglar [16], assertion that convergent validities above 0.85 show that the scales are very similar and might not necessarily be used as two different scales, while values that range between 0.50 and 0.80 show differences in the scales though they may be measures of the same construct. Conversely, values below 0.50 indicate various degrees of divergence between scales. A concurrent validity of 0.51 is an indication that NSII has good validity measure.

NSII was further subjected to factor analysis which Brace, Kemp and Snelger [16] indicates as another way of confirming construct validity of scales. The data was analyzed using the principle component analysis. An orthogonal factor greater than 1.0 was therefore found. Rotating the components, 13 factors with Eigen values greater than 1 were extracted and they accounted for a total of 71.41% cumulative variance and this conformed to Kaiser's criterion and Thurston's [20] principles. This means that the factors extracted loaded

significantly, and are independent of one another. The component factors extracted could be said to represent different factors that constituted negative self-image. Kaiser's criterion also stated that only factors having latent roots greater than 1 are considered, since factors less than 1 would add nothing to the data [21]. From the result, the first factor had an eigenvalue of 8.32 and a variance of 20.81% while the values for the last factors were 1.03 and 2.57% respectively. Specifically, result showed that the 13 factors were: Body-image anxiety, Poor self-confidence, Social Awkwardness, Complexion dissatisfaction, Self consciousness, Embarrassment, Self monitoring/admiration and Body-checking behaviour. Others were Fixation with stomach/body size, Poor personal space, Fear of negative evaluation, Dieting and Dentition Dissatisfaction.

Thus, in a bid to contribute to knowledge as well as provide insight on the behavioural and emotional manifestations of negative self-image, the Negative Self Image Inventory (NSII) was developed and validated in this study. Result indicates that NSII has good psychometric properties and thus could be viewed as a potential screening test for negative self-image manifestations, especially among keep-fit exercisers.

Limitations of this study should also be noted. The homogeneity of the sample limits the generalizability of the findings. Acknowledging the role of teasing and other developmental experiences in the etiology of negative self-image, future research could focus on children as this will aid early detection of self-image concerns and prompt management. In addition, anorexic patients as well as plastic-surgery patients could provide further insight in this area.

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REVIEW ARTICLE

A REVISIT TO PARANORMAL BELIEFS – WHEN IS IT A PSYCHIATRIC DISORDER?

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Abstract

Objective: Beliefs in paranormal phenomena, matters beyond the ability of current science to plausibly justify, are shared by a significant number in the population. It is useful in clinical practice to be able to determine when this may have psychiatric clinical implications. This review article aims to better delineate the group of individuals with such beliefs and experiences, and go on to offer a schema of approaching a patient with paranormal beliefs. **Methods:** A MEDLINE search of the current literature in this field is conducted. Relevant findings are presented in the review, grouped according to appropriate subheadings. **Results:** Demographics of believers are reviewed, while certain psychological and physiological traits found to have associations with paranormal beliefs are also highlighted. The functional role of paranormal beliefs and the psychological rationale behind them are considered. Certain psychiatric conditions, which have to be considered when clinically evaluating an individual with paranormal beliefs and experiences, are evaluated with reference to the ICD-10. These individuals also have different attitudes towards treatment options where required for a psychiatric condition. **Conclusions:** Individuals with paranormal beliefs are a distinct group. Thorough evaluation is required when these individuals are assessed, to pick up a psychiatric diagnosis where present. A schema is offered towards such a cause in a clinical consultation with an individual who has paranormal beliefs. *ASEAN Journal of Psychiatry, Vol.12(2): July – Dec 2011: 178-189.*

Key Words: Parapsychology; Internal-External Control

Introduction

"Paranormal phenomena" describes an umbrella term encompassing a heterogeneous range of unusual experiences which lack scientific explanations, processes associated with cognitive or physiological activity falling outside of conventional scientific boundaries. Out-of-body experiences (the ability to come out and away from one's physical body),

mediumistic communication (the ability to communicate with spirits) and extrasensory perception (the ability to access information which is not available to the five senses) are just some such examples, to name a few.

People with self-reported paranormal experiences also tend to have stronger inclinations to believe in the paranormal,

with moderate to strong positive correlations documented [1]. Believers in the existence of paranormal phenomena tend to speak from personal experience [2], and the strength of one's conviction in paranormal belief has been shown to have a positive correlation with the number of subjective paranormal experiences [3].

These believers form a population group that has been intently studied over the years often in contrast to their skeptic counterparts. The concept of "sheep" and "goats" was first introduced in 1942 by Gertrude Schmeidler, a professor of psychology. "Sheep" and "goats" referred respectively to believers and skeptics, with

regards to beliefs of the existence of psi. A classic psi test with extrasensory perception cards was administered, in which subjects tried to guess sequences of target-cards. The remarkable conclusion was that the "sheep" had a significant deviation above chance, while "goats" were significantly below it. These results have been consistently repeated, shown in over 73 experiments [4], in what is known as the Sheep-Goat Effect.

Various interviews and scales have been used to assess for paranormal beliefs, but there is no clear gold-standard. Table 1 attempts to list some of the more common interviews and scales.

Table 1. Common Interviews and Scales to assess for Paranormal Beliefs

Author	Year	Title
Christensen	1995	Extrasensory Perception Survey
Tobacyk and Milford	1983	Paranormal Belief Scale
Tobacyk	1988	Revised Paranormal Belief Scale
Thalbourne	1995	Australian Sheep-Goat Scale
Eckblad and Chapman	1983	Magical Ideation Scale

A Newsweek article in 2008 [5] examined paranormal beliefs in greater detail, relating believers' explanations for the events and how the scientific perspective of paranormal beliefs involves normal brain activity carried to the extreme. It is almost as if the human mind, being prone to confirmatory bias and other flaws in perception, is wired to have paranormal beliefs. A significant proportion of Americans not suffering from any known mental illnesses have beliefs in possibility of encounters with aliens [6], ranging from mere contact ("experiencers") to abduction ("abductees").

Believers have also been interesting from a neurological perspective, with the right hemisphere identified to be dominantly involved. Hyperdopaminergia, more prominent in the right hemisphere, has also been implied in the genesis of unusual experiences such as paranormal thought. Other similar experiences include hallucinations, which makes the link between belief in the paranormal and

clinically-relevant features of psychosis easy to appreciate. Prefrontal systems have also been shown to play a role in paranormal beliefs [7], again drawing the relation with psychiatric conditions like schizophrenia that also involve the prefrontal cortex.

Through presenting a collection of cases in 2003, Bobrow had opined that there was "sufficient smoke to warrant a search for fire" when pertaining to paranormal phenomena in medical literature [8]. To the best of the authors' knowledge, there has been no prior comprehensive review of paranormal beliefs and their associated clinical implications. This review seeks to evaluate and summarize the vast literature available and provide a holistic outlook towards such individuals, so as to better understand differences in people with paranormal beliefs. In the course of a clinical encounter with a patient reporting paranormal beliefs, evaluation for several psychiatric diagnoses has to be performed and these conditions are briefly outlined.

Methods

Our review consisted of epidemiological studies, randomized controlled trials, systematic reviews and meta-analyses of associations related to paranormal ideations. These articles were identified through searches of MEDLINE, as of February 2010. Search terms included “paranormal belief” and “paranormal ideation”. A total of 95 search terms were elicited. Findings were screened based on their titles, and then abstracts and full text articles. Other resources highlighted by the initial findings were also screened for their relevance to the topic under review.

Results

A. Epidemiology

Paranormal beliefs have been found in various studies to be more common amongst younger populations without psychiatric disorders [9]. This has been suggestive of a physiological neurodevelopmental stage favouring the expression of psychosis proneness in normal subjects [10]. A survey on the World Wide Web [11] with 998 respondents found statistically significant correlations between paranormal belief and female gender, scores on external locus of control, good mood, extraversion, and emotional well-being.

B. Perceptions

Many psychological experiments and studies have been done involving people with paranormal beliefs. In summary, believers tend to :

- make more deductive reasoning errors and display more delusional ideation [12]
- have poorer impulse control and organizations in executive functioning [7]
- perceive chance events and unchosen experiences as meaningfully connected ('apophenia') [13-14]
- be more susceptible to suggestions consistent with their own paranormal beliefs [15]
- be prone to hindsight and confirmatory biases [16], impairing the critical thinking process [17]
- be more fantasy-prone, have higher levels of dissociativity, absorption and creativity; be unusually prone to false memories. [6]

Based on the above, errors in judgement appear to be apparent in paranormal believers. However, they may not accurately represent the basis for paranormal beliefs. Probability misjudgement shown in paranormal believers were no longer significantly correlated when adjusting for final examination grades in 72 college students [18]. This would suggest that differences in general cognitive performance may provide an explanation, at least in part, for the basis of paranormal beliefs.

Apart from the above reported differences, some studies had reported findings which highlight concerns in the process of collecting self-reported data pertaining to paranormal belief. The ongoing thought process of the subject, at the point of completing the interview instrument, has been demonstrated to affect the yield in terms of findings in two studies worthy of mention. When college students were made to rehearse a five-digit number while completing the Paranormal Belief Scale, higher rates of reported paranormal beliefs were noted as compared with a control group [19]. Order effects also cannot be ignored when evaluating paranormal belief, when 72 college students found that those who took the Paranormal Belief Scale prior to the Emotional Intelligence Scale scored lower on the latter, as compared to those who took it alone [20].

C. Physiological Functioning

Various distinct physiological parameters have been identified, when studying believers. This helps to shed some light on

how believers are different, in terms of bodily functions, compared to the neutrals and skeptics.

Electroencephalography (EEG) is the recording of electrical activity along the scalp produced by the firing of neurons within the brain [21]. Simply put, it provides a measure of brain waves. Findings in EEG studies have been able to provide some degree of enlightenment on physiological differences in the brain distinguishing believers. EEG findings in believers showed :

- more right-located sources of the beta2 band (18.5-21 Hz, excitatory activity), in addition to more general negative affect and more hypnagogic-like reveries after a 4-min eyes-closed resting period [22]. These were suggestive of higher right hemispheric activation and reduced hemispheric asymmetry of functional complexity.
- more negative event-related potentials when processing sentences with core knowledge violations (for example, "The house knows its history") [23].

Some significant findings have surfaced when correlating the dominance of the right hemisphere's function in believers. Believers experienced significantly enhanced lexical-decision accuracy in the left visual field/right hemisphere when given a lateralized tachistoscopic lexical-decision task [24], which is in keeping with previous studies indicating a bias for right-hemisphere processing. One's belief system cannot be regarded as a distinct entity from one's physiological functioning, as paranormal beliefs have been shown to exert some effect on the mediation of pain sensation in a study done on forty healthy participants [25]. The participants, sorted into two equal groups based on their scores on the Magical Ideation Scale, used placebo analgesia in the form of a sham cream for relief of unilaterally-applied nociceptive stimuli. Those with strong paranormal beliefs had increased pain tolerance only on the left side, while disbelievers had increased pain tolerance on the right. The

likely physiological rationale for this is due to the right hemisphere also being dominantly involved in the mediation of pain sensation.

A study done on healthy believers and skeptics [26] found that believers showed stronger indirect (but not direct) semantic priming effects than disbelievers after left (but not right) visual field stimulation, indicating faster appreciation of distant semantic relations specifically by the right hemisphere, reportedly specialized in coarse rather than focused semantic processing. Such findings had suggested that a disinhibition with semantic networks may underlie the formation of paranormal belief.

The field of anthropometry also has contributions to provide some insight on differences in believers from their counterparts. Paranormal beliefs were found to be correlated [27] with features such as fluctuating asymmetry of finger length, which may be related to greater intraindividual variability in the degree of 'atypical' functional lateralization. An intraindividual variability index was found to significantly predict the strength of paranormal beliefs. These findings have led to postulations that patterns of functional hemispheric asymmetry that may be related to perturbations during fetal development may partly explain variance in strength of paranormal beliefs.

Differences in the physiological state at the point of encounter and evaluation of a potential paranormal experience have been noted. A state of arousal, both objective and subjective, was correlated with overestimating in the rate of telepathic transmission among believers [28]. This leads the authors to the conclusion of the important role of covariation bias in the maintenance of paranormal belief.

D. Associations with conditions

Apart from distinguishing themselves by the beliefs that they hold, believers also have been noticed to have behavioural

predilections that may have clinical bearing in their management. Professionals working in clinical settings involving mental health, such as psychiatrists and psychologists, would be interested to know that paranormal beliefs have reported potential associations with the following conditions:

- attention-deficit hyperactivity disorder, depression and dissociation [29]
- schizotypal personality [24, 30]
- a hypothesized personality continuum [31] with manic-depressive psychosis, regarded as bipolar affective disorder in the current diagnostic context, at one extreme
- isolated sleep paralysis [32]

E. Psychological Rationale for Paranormal Beliefs

Postulation on the psychological function of paranormal beliefs has seen various explanations for rationales behind such beliefs. These include :

- "self-serving cognitive biases" to ensure psychic integrity [33]
- a component of a complex defensive framework in the face of perceived uncontrollability in life [34]
- an effort to regain some sense of organization by detecting patterns [35]
- provide a sense of control and hence offer a powerful emotional refuge [36]

It is not possible to consider a stance towards the paranormal without taking into consideration one's religious background and belief in the supernatural. Stronger religiosity in undergraduate students decreased their paranormal beliefs, as they were more accepting of supernatural phenomenon. The interaction of supernatural belief and negative affect was shown to be a significant predictor of belief in the paranormal situation [37].

A brief mention is warranted for the opposing camp of skepticism. Skeptics insist

on replicable experiments by neutral or even skeptical observers, before accepting a claim. Kurtz believes in two forms of skeptics, the total and the selective [38]. The former are regarded as nihilistic, dogmatic, essentially self-defeating and self-contradictory while the latter operates as a methodological principle of inquiry, testing hypotheses and theories in the light of evidence, but always open to new departures in thought.

F. Genetic Correlation

Attempts were made to correlate the phenotype of paranormal belief with a dopaminergic gene (COMT). These were made due to the gene's involvement in prefrontal executive cognition and for a polymorphism which was positively correlated with suggestibility [39]. Despite initial inconclusive findings, it remains a baby step in the long road to finding associations of paranormal beliefs with a genetic basis.

Discussion

Looking at the bigger picture, paranormal experiences are one aspect of broader psychotic-like experiences at both clinical and sub-clinical levels. A recent systematic review [40] found that 75-90% of developmental psychotic experiences (of which, paranormal experiences form a portion of) are transitory and disappear over time. Based on the findings, the review suggested evidence for a psychosis proneness-impairment-persistence model, where transitory developmental expression of psychosis (proneness) may become abnormally persistent (persistence) and subsequently clinically relevant (impairment), depending on the degree of genetic and environmental risk the person is additionally exposed to.

From an earlier study [41] examining the period of early adulthood in the clinical expression of psychotic symptoms, it is interesting to note that younger subjects without a lifetime history of psychiatric

disorder scored higher on paranormal beliefs as one of the dimensions of delusional beliefs as compared to their older compatriots who scored higher on religiosity which was another one of the dimensions considered.

Paranormal beliefs are not spared from the influence of one's cultural background. In a comparison study done by Otis and Kuo in 1984 [42], university students from Singapore demonstrated higher levels of global paranormal belief. This cross-cultural difference was most marked for groups of items related to religious concepts and to spiritualist phenomena, although differences also were evident for individual items concerning extraordinary life forms and precognition.

There has not been much contribution from psychiatrists in general, pertaining to the academic field of paranormal beliefs. Whilst their input may over-represent a portion of the spectrum where such beliefs are pathological in nature, it is nevertheless

necessary to convey the full extent of the spectrum of paranormal beliefs.

Paranormal beliefs have been hypothesized to be on a dimensional continuum with delusional beliefs, in psychotic illnesses. It should be of little surprise that people with paranormal beliefs score higher on various measures relevant to schizophrenia [43]. Significantly higher scores for believers were seen on the Magical Ideation Scale, the Perceptual Aberration Scale, and a scale combining both of the above.

The term "prodrome" by definition cannot be appropriately used until the full-blown syndrome has developed, making it a retrospective label. Paranormal beliefs may be a feature of the At-Risk Mental State by one or more means (see Table 2A). Certain scales (see Table 2B) are used in an attempt to provide both accurate and valid assessments of ultra-high-risk individuals. Close follow-up is required for those suspected to have a psychotic disorder.

Table 2A. Role of Paranormal Beliefs in At-Risk Mental State

- Schizotypal personality disorder
 - Attenuated positive psychotic symptoms
 - Brief limited intermittent psychotic symptom
-

Table 2B. Scales for Evaluation of At-Risk Mental State

- Comprehensive Assessment of At-Risk Mental State (CAARMS)
 - Structured Interview of Prodromal Symptoms (SIPS)
this includes the Scale of Prodromal Symptoms (SOPS)
 - Schizophrenia Prediction Instrument for Adults (SPI-A)
-

If paranormal beliefs should surface in a clinical evaluation, this would warrant careful evaluation, taking into account the believer's educational background, religious and cultural beliefs. Pertaining to religious experiences, certain indicators [44] help to

distinguish between those associated with psychiatric morbidity (see Table 3A) and those intrinsic to a person's belief with less likelihood to denote psychiatric illness (see Table 3B).

Table 3. Suggestive Indicators for Establishing a Religious Experience

Table 3A. Probably Associated with Psychiatric Morbidity

The experience causes a significant amount of distress to the individual
 Persistence of the experience is noted for sustained durations
 There are other recognizable symptoms of mental illness
 The lifestyle, behaviour and direction of personal goals of the person subsequent to the event are consistent with the natural history of mental illness, rather than with an enriching life experience
 Such behaviour is consistent with disorders in the person's personality
 The phenomenology of the experience conforms with psychiatric illness

Table 3B. Intrinsic to the Person's Belief, less likely to denote Psychiatric Illness

The person shows some degree of reticence to discuss the experience, especially with those he anticipates will be unsympathetic
 It is described unemotionally with matter-of-fact conviction and appears 'authentic'
 The person understands, allows for and even sympathizes with the incredulity of others
 He usually considers that the experience implies some demand upon himself
 The religious experience conforms with the subject's recognizable religious traditions and peer group

A schema is proposed here (see Table 4), with some questions of use to the clinician approaching a patient with paranormal beliefs, in a clinical encounter. If the

paranormal belief is deemed to be of a pathological value, certain clinical diagnoses are to be considered.

Table 4. Proposed Schema to Approach Paranormal Beliefs

- Routine baseline outlook of the individual towards the paranormal
 - Origins of the beliefs (in particular, any association with significant life events for the person)
 - Strength of the belief
 - Whether the beliefs are individual or shared (family, religious/cultural group)
 - Record of intake/usage of drugs or alcohol
 - Any red flags for possible psychopathology (as a result of the paranormal beliefs) :
 - associated personality changes
 - behavioural changes
 - deterioration in functioning
 - concurrent psychotic symptoms
-

Relevant information from ICD-10 corresponding to some of the possible conditions is highlighted as below.

Schizophrenia

People suffering from schizophrenia have distortions of thinking and perception, with

an affect that may be inappropriate or blunted. Consciousness is maintained, while cognitive deficits are known to evolve with time. Without adequate treatment, functional deterioration is inevitable. Schneider had listed psychotic symptoms, today known as Schneiderian First-Rank Symptoms [45], that were particularly characteristic of this

condition. Paranormal beliefs in the schizophrenic might be of a delusional quality.

Acute Schizophrenia-like Psychotic Disorder

The symptoms of psychosis in this condition justify a diagnosis of schizophrenia, but are present for not more than one month. In cases where the symptoms persist on follow-up, the diagnosis is subsequently revised to schizophrenia.

Schizoaffective disorder

Prominent episodic components of both affective and schizophrenic symptoms are to be present to warrant this diagnosis. Affective symptoms can be depressive, manic or mixed. Like schizophrenia, paranormal beliefs in schizoaffective disorder may be of a delusional quality.

Delusional Disorder

This condition is diagnosed if the predominant clinical characteristic is a single delusion or set of related delusions. Other features of psychotic disorders in schizophrenia or definitive evidence of brain disease have to be excluded, and functional capacity (outside of the delusion's influence) is otherwise preserved. The delusional belief tends to be well-encapsulated, and does not affect other spheres of functioning. The need for treatment will depend on a thorough assessment of risk to self and/or others.

Induced Delusional Disorder

This should be considered if two or more people, usually with close emotional links, present with a delusional belief. Treatment differs because only one person has a genuine psychotic disorder (as above, in Delusional Disorder) while treatment for the other(s) usually only requires geographical separation for the delusion to resolve.

Acute psychotic episode

Clear psychotic features develop over a short period of time of two weeks or less, with no organic cause apparent after the necessary evaluation. There may be stressful events preceding the episode by one to two weeks. Complete recovery should be expected within days to a few weeks, up to months.

Organic conditions

It is worthwhile to briefly mention that psychosis can occur also in other organic conditions, such as epilepsy and brain disease. Psychoactive substances, be it illicit drugs or certain prescribed medications such as corticosteroids, can also lead to a drug-induced psychosis that is classically self-limiting upon discontinuation of the offending agent. A thorough history of medical conditions and current medications will have to be carried out to exclude this.

Schizotypal Personality Disorder and Schizotypal Disorder

People with the above condition tend to have eccentric behaviour and have bizarre ideas. They are socially withdrawn and with limited capacity to express feelings and experience pleasure. In schizotypal personality disorder, the features are present since adolescence and persist into adulthood whereas this might not be the case for schizotypal disorder. The paranormal ideations in these conditions may be overvalued and at times quasi-psychotic, but not overtly of a delusional quality.

Trance and Possession Disorders

Psychotic disorders as above are the primary psychopathology that one would have to exclude, but outside of the realm of psychosis, paranormal phenomena may also surface in trance and possession disorders. As mentioned earlier, one of the paranormal phenomena which people might believe in or experience is that of having an out-of-

body experience. This above disorder might be more likely to be suspected when the patient complains of temporary loss of the sense of personal identity, despite retaining full awareness of the surroundings. Such states have to be involuntary or unwanted, occurring outside religious/culturally-accepted situations.

Earlier studies of dissociative trance disorders in Singapore found certain personality traits being more prevalent [46]

and psychosocial stressors present in all of the cases [47], warranting a clinician to look for this in the clinical evaluation if trance and possession disorders should be suspected. Where do we draw the line where trance states are truly pathological, requiring psychiatric intervention, and when are they simply an ephemeral artefact? Griffith and Ruiz had suggested [48] certain conditions where the trance state is considered to be abnormal (see Table 5).

Table 5. Conditions where the Trance State is considered to be Abnormal

- It lasts too long, since it is typically a quick and transitory experience
 - There is no perceivable stimulus or condition (ie, a ceremony, thunder or lightning, or accidents)
 - It has a negative orientation (sickness possession, as compared to positive orientation in ritual possession)
-

Over the years, the medical doctor of today has come to terms with the fact that the patient of today might not turn solely to them for help, if at all. Alternative medicine refers to healing practice which either does not fall within the realm of conventional medicine [49] or that which has not been shown consistently to be effective [50]. This is frequently grouped with complementary medicine, interventions used in conjunction with mainstream techniques, under the term Complementary and Alternative Medicine (CAM). Individuals with paranormal beliefs have been shown to have stronger beliefs in CAM [51]. Believers used more CAM and had a more positive perception towards it [50], which could possibly be attributed to a more intuitive and 'holistic' thinking style. Relatives of Indian subjects formally diagnosed to have schizophrenia had denied magico-religious beliefs, but a majority still sought magico-religious treatment for their relatives [52].

Conclusion

Individuals with paranormal beliefs are a group that has been keenly studied over the years, and with good reason for doing so. Compared to others, certain striking features

have been noted in the course of this review. In the clinical setting, the psychiatrist is invariably going to have to assess patients with paranormal beliefs. Thorough evaluation is required with due consideration for the possible psychiatric diagnoses, if any.

Declaration of Interest

No fees or grants were required for this manuscript. The authors do not have any conflict of interest to declare.

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CASE REPORT

WILSON'S DISEASE CAN PRESENT AS PARANOID SCHIZOPHRENIA AND MANIA: TWO CASE REPORTS

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Abstract

Objective: This case report highlights Wilson's disease, a rare genetic disorder involving the liver and brain presenting clinically with psychiatric symptoms as the first manifestation. **Method:** We present two cases of Wilson's disease who had the typical symptoms of Schizophrenia and Bipolar mood disorder (mania) respectively. **Results:** Wilson disease first presentation of psychiatric diagnosis may obscure the diagnosis who later on turned out to be suffering from Wilson's disease. **Conclusion:** Although such patients are more commonly seen in neurological and hepatological settings, mental health professionals must keep in mind a high level of suspicion, once first presentations may be of psychiatric nature. *ASEAN Journal of Psychiatry, Vol.12 (2): 190-192.*

Key words : Wilson's disease, Paranoid Schizophrenia, mania

Introduction

Dr. Kinnier Wilson in 1912 first described Wilson's disease in twelve patients as hepato lenticular degeneration [1]. It is an autosomal recessive disorder caused by mutation of ATP7B gene, which is a membrane bound copper transporting ATPase [2]. The three main neurologic problems are dystonia, incoordination and tremor [2]. Others include memory loss, migraine type headache, autonomic disturbance, seizures etc. [2]. A history of behavioral disturbances with onset five years before diagnosis of Wilson's disease is present in half of patients with neurological disease [2]. Scheinberg and Sternlieb found that 10-25% of Wilson's disease patients initially present with psychiatric symptoms which range from depression, mania, antisocial behavior to psychosis [3].

Case One

A 20 year-old unmarried Hindu, from rural background and lower socioeconomic class, education up to 10th standard presented with sudden jerky involuntary movement of head, trunk and all four limbs for the past six months and abnormal behaviour for the past one month. He was referred to Department of Psychiatry from Department of Neurology for exclusion of any component of conversion disorder. They diagnosed the case as Progressive myoclonic epilepsy which was not responding to anti-epileptics. The attacks were present during sleep with reduced frequency. He also complained of infrequent hearing voices which were commanding and persecutory in nature and used to frighten him which suggests auditory hallucination. He also described few episodes of viewing "Maa Kali" (Goddess) coming and also

multi-coloured halo coming from Goddess and entering his body which causes a burning sensation suggestive of visual hallucination, somatic passivity and somatic hallucination respectively. The mental status examination also suggested presence of thought broad casting and feature like syndrome of Fregoli (single person is coming to him in different disguise). The patient also had delusion of control where he attributed the involuntary movements to be controlled by external forces. Throughout the mental status examination, his affect was preserved. These kinds of symptoms were atypical for his culture as reported by his father. There was no past or family history of neurological or psychiatric illness. The neurological examination was within normal limits. Investigation revealed positive KF ring in cornea under slit lamp, low serum ceruloplasmin 0.13 gram/ L (reference range 0.2-0.6 gram/L), 24 hour urinary copper was 33 μ gm (reference range 32- 64 μ gm in 24 hours). The results of Liver function test, Ultrasonography of whole abdomen, Hb/TLC/DLC, Fasting sugar, Urea Creatinine, Na^+ , K^+ , routine and microscopical examination of urine, EEG, ECG, CT scan of brain were all within normal limits. The liver biopsy was not performed because of the invasiveness of the procedure and the facility of estimating copper in dry liver tissue is not available at our centre. A diagnosis of Wilson's disease was made and he was given 300 mg/ day zinc sulphate and 10 mg per day olanzapine. He is now on regular follow up and is doing well.

CaseTwo

A 24 year-old unmarried Hindu male, education up to Master of Science from middle socio economic class and urban background presented with repeated attacks of fall for the past three months. The fall was associated with clenching of teeth, stiffening of hands and reduced consciousness sustaining for 5-10 minutes without any history of tongue or lip bite, frothing, incontinence or injury. There was no attack during sleep and no apparent life stressor. In one single incident while he was alone he fell into a shallow well near his house and was rescued by family members. He was found to be unconscious. He was admitted to Department of

Medicine, Medical College, Kolkata and was given carbamazepine 1000mg/ day in divided doses. While admitted, he developed manic symptoms for which he was transferred to Psychiatry Department as seizure was controlled. The mania was characterized by delusion of grandiosity, mood congruent delusion of persecution, decreased need for sleep, increased talkativeness, elated and irritable mood. Considering age, seizure disorder and manic symptoms, he was screened for KF ring which came out to be positive. The serum ceruloplasmin level was 0.21 (reference range 0.2-0.6 gram/L), the 24 hour urinary copper was 248 μ gm (reference range 32- 64 μ gm in 24 hours). The results of Liver function test, Ultrasonography of whole abdomen, Hb/TLC/DLC, Fasting sugar, Urea Creatinine, Na^+ , K^+ , routine and microscopical examination of urine, EEG, ECG, CT scan of brain were all within normal limits. There was no past or family history of neurological or psychiatric illness. The neurological examination was within normal limits. Based on presence of KF ring and high 24 hour urinary copper level, a diagnosis of Wilson's disease was made and he was given d- penicillamine 250 mg BID along with Quetiapine 400mg/day in divided doses and carbamazepine was continued as before. The patient is now doing well and is on our continued follow up.

Discussion

Although rare, the reported incidence of Wilson's disease is 3-4 cases per 100,000 population [4]. This disease is diagnosed by the following findings: (a) Presence of Kayser-Fleischer (KF) ring (present in 99% cases having neurological symptoms but only 30-50% cases having only hepatic involvement), (b) Urine copper level $> 1.6\mu\text{mol}$ ($>100\mu\text{g}$) in 24 hours, (c) low serum ceruloplasmin level (normal range 180-350 mg/L) which is found in 80% cases. The gold standard diagnosis is by liver biopsy with quantitative copper analysis (copper values $> 3.1 \mu\text{mol}$ per gram of dry liver weight) [2]. Early detection of Wilson's disease is critical to prevent catastrophic outcome by introduction of

chelation therapy [5]. Young patients presenting with psychiatric symptoms along with movement disorder, seizure or conversion like symptoms should be screened for Wilson's disease even if the symptom is typically suggestive of paranoid schizophrenia or mania. For this, strong clinical suspicion and close liaison between psychiatrist and neurologist is necessary.

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CASE REPORT

WHEN HEALTHY EATING BECOMES UNHEALTHY - ATYPICAL EATING DISORDER IN A MALE PATIENT

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Abstract

Objective: This case report highlights a case of eating disorder in a male patient, traditionally a female-predominant illness, frequently missed in male patients for a variety of reasons. **Method:** We report a case of a young Chinese male with atypical symptoms of eating disorders, presenting with serious physical complications of malnutrition. **Result:** The case presented with the difficulties of diagnosing eating disorders in males and the potential complications of severe malnutrition. **Conclusion:** Clinicians need to be aware of the possibility of eating disorders in cases of medically unexplainable weight loss in males as they frequently present with atypical symptoms. *ASEAN Journal of Psychiatry, Vol.12(2), July – December 2011: 193-196.*

Keywords: eating disorders, males

Introduction

Eating Disorders (ED) has traditionally been seen as a female-predominant illness. Recent studies suggest that males represent 10-20% of cases of Anorexia Nervosa (AN) and Bulimia Nervosa (BN) and up to 40% of binge eating disorder [1]. Males have been found to be less likely to recognize their eating disorder, are more likely to be misdiagnosed with other mental health problems, and are less likely to receive treatment and be referred to a specialist eating disorder service [2]. Undiagnosed and untreated eating disorders can result in serious long-term physical and psychological complications. We present the case of a young Chinese man with an atypical eating disorder, presenting with serious medical complications. The aim of this case report is to discuss the difficulties of diagnosing eating disorders in males and the potential complications of severe malnutrition as a result of delayed diagnosis.

Case Report

Mr. C was a 29 year-old, single, male engineer when he was first admitted in 2004 to haematology with a 1-year history of severe weight loss of 23kg, associated with loss of appetite, early satiety, general malaise and lethargy. He had no past medical or psychiatric history.

On physical examination, weight was 42kg, height 1.70m (BMI 14.5). There was mild hepatomegaly but no other significant findings. Laboratory studies showed pancytopenia and mild transaminitis (Table 1). A comprehensive work-up was done to exclude an organic cause. Thyroid function, tumour/ autoimmune markers, septic work-up, Computerized Tomography (CT) neck/ thorax/ abdomen/ pelvis, esophagogastroduodenoscopy (OGDS), colonoscopy and nasopharyngoscopy were normal. Bone marrow aspiration showed decreased haemopoiesis with serious atrophy of the marrow consistent with severe malnutrition.

A psychiatric consult was requested to exclude an ED. Mr. C recognized he was severely underweight but attributed it to an

inability to eat as a result of early satiety and loss of appetite. He denied body-image issues and felt he was thin even at his premorbid weight of 64kg (BMI 22.4). He was careful with his diet – taking more fruits/ vegetables/ steamed food – but claimed it was for health reasons rather than to lose weight. He ran 30min a day to “keep fit”. A definitive diagnosis of an ED was difficult at that point as he was still undergoing medical investigations.

He was discharged after a week. The pancytopenia persisted and he continued follow-up with haematology but defaulted after a few months.

In 2010, he was readmitted after he was found unresponsive at home. He regained consciousness after IV Dextrose 200ml was given in the ambulance. His weight had plummeted to 34.5kg (BMI 11.9). Lab studies showed severe pancytopenia and transaminitis (Table1). CT brain showed cerebral atrophy disproportionate with age. Neuropsychological testing showed that his current neuropsychological test profile was below expectations in several domains such as executive functioning, attention and processing speed.

Detailed history revealed an increasing preoccupation over the last few years in wanting to be healthy. To Mr. C, being healthy meant “eating healthily and exercising regularly”. He was preoccupied with “eating healthily according to the food pyramid”. His diet consisted predominantly of fruits and steamed vegetables whilst omitting most proteins, fats, salt, and sugars, which he deemed “unhealthy”. He was consuming approximately 1200kcal/ day. He was also exercising compulsively - running an hour a day and developing a highly ritualistic manner of doing static stretching exercises. He recognized that he was extremely underweight and wished to gain weight. However, his misconceptions and

obsessions with “healthy eating and exercising” made it difficult for him to alter his patterns. Throughout this period, he was still able to work. He was not depressed and did not exhibit any other obsessive-compulsive behaviour.

Mr. C was diagnosed to have an atypical eating disorder, also known as Eating Disorder Not Otherwise Specified (EDNOS) according to DSM IV. He also had community-acquired pneumonia with septic shock. After initial medical stabilization, he was transferred to our Eating Disorder Unit for further nutritional rehabilitation. He was educated about his illness and encouraged to complete his meals. He was referred to the dietician to work out his caloric requirements to gain weight and to correct his misconceptions about supposedly healthy eating. To prevent refeeding syndrome, his caloric requirement was gradually increased to include supplements (Resource 2.0 twice a day) to aid weight gain. He completed his meals but found it difficult to comply with resting in bed. He was frequently caught exercising in his room despite repeated advice to rest. He was started on Fluoxetine 10mg OM to help with his compulsion to exercise. He was also referred to the physiotherapist to educate him about appropriate exercise.

Mr. C stayed 7 weeks and gained a total of 9.3kg to 43.8kg (BMI 15.2) upon discharge. He returned to work 2 months later and continued to make good weight gain, eventually achieving a minimum healthy weight of 54.2kg (BM 18.7) 3 months post-discharge. Eight months after discharge, he has managed to maintain his weight, his eating had largely normalized and he was exercising moderately - running 30mins twice a week. His lab results showed significant improvement in tandem with his weight gain (Table 1).

Table 1 Chronological report of weight, blood count, electrolytes and liver enzymes

Date	Wt (kg)	BMI (kg/m ²)	HB (g/DL)	TW (x10 ⁹ /L)	PLT (x10 ⁹ /L)	NA (mmol/L)	K (mmol/L)	ALT (IU/L)	AST (IU/L)
2004	42	14.5	10.7	1.8	139	137	4.3	151	118
Sep 2010	34.5	11.9	7.8	0.6	125	128	4.8	440	293
Wk 1 (Sep)	35.7	12.4	7.7	2.5	142	131	4.2	186	124
Wk2 (Sep)	38.2	13.2	9.2	2.6	319	131	4.3	108	69
Wk3 (Sep)	37.2	12.9	8.0	1.9	425	131	4.1	71	77
Wk 4 (Sep)	41.0	14.2	6.9	2.4	294	131	4.0	45	48
Wk 5 (Oct)	41.4	14.3	8.2	1.8	227	132	4.1	37	45
Wk 6 (Oct)	43.2	14.9	9.2	3.2	322	135	4.8	37	49
Wk 7 (Oct)	43.8	15.2	8.3	3.5	354	135	4.1	29	38
Wk 8 (Oct)	44.2	15.3	9.2	2.8	277	137	5.0	27	38
Wk10 (Nov)	44.9	15.5	11.0	2.4	204	140	4.6	30	38
Nov 10	48.9	16.7	10.8	2.7	204	-	-	33	41
Dec 10	51.0	17.6	11.5	3.2	213	139	5.1	39	51
Jan 10	52.9	18.3	12.1	3.9	189	140	5.2	38	49
Feb 10	54.2	18.7	12.3	3.5	162	138	4.8	33	40
May 10	54.2	18.7	12.1	3.7	149	-	-	28	35
Jul 10	54.9	18.9	12.1	4.5	171	-	-	26	39

BMI – body mass index

HB – haemoglobin

TW – total white cell count

Plt – platelet count

Na – serum sodium

K – serum potassium

ALT – alanine transaminase

AST – aspartate transaminase

Discussion

Diagnosis of ED in men is frequently missed for a variety of reasons. Firstly, ED has been seen as a predominantly female illness afflicting mainly teenagers and young women. Secondly, diagnostic criteria and most assessment instruments for the diagnosis of EDs are gender biased and normed for women rather than men [3]. They are aimed at the types of weight concern, shape concern and methods of weight control common to women (thinness, dieting) rather than men (low body fat, muscularity, strength, exercise) [4]. Thirdly, men tend to present more frequently with atypical eating disorders. Atypical eating disorders (also known as EDNOS), refers to a group of EDs that meet some but not all of the diagnostic criteria for AN or BN. Examples include binge eating disorder, in which individuals indulge in binge eating but do not exhibit the compensatory behaviour required to make a diagnosis of BN. Another example are females who are

still menstruating despite satisfying all the other diagnostic criteria for AN. A third of male patients present with atypical symptoms compared to about 10% of women [5]. There was a low index of suspicion at initial consult with Mr. C as it is unusual for AN to first present in man, and he also did not present with features of body-image distortion, body weight and shape concerns typical of AN.

Mr. C was diagnosed to have EDNOS as he did not satisfy the criteria for AN. Although he presented symptoms similar to AN - severe weight loss, food restriction, excessive exercising and preoccupation with food - however he did not have the core feature of body-image distortion. He recognized he was severely underweight and wanted to gain weight. The driving force behind his symptoms was a compulsion to be healthy rather than to be thin.

Orthorexia nervosa (ON) was a term coined by Steven Bratman in 1997 to define a

pathological fixation on the consumption of appropriate and healthy food. Unlike AN/BN, patients with ON are preoccupied with consuming healthy, pure food rather than preoccupation over the quantity and physical appearance. Mr. C falls into this subgroup but because ON is currently not a recognized diagnostic entity on its own; he still falls into the diagnostic subgroup of EDNOS.

This case also highlights the serious medical complications that could arise from the malnutrition as a result of an ED – including pancytopenia, hypoglycaemia, transaminitis and cerebral atrophy. Anaemia and low peripheral blood counts are frequently seen in the setting of chronic starvation, and are likely due to multiple vitamin and mineral deficiencies as a result of inadequate oral caloric intake [6]. Numerous studies report a strong relation between malnutrition and liver damage [7]. There is often a rapid recovery of liver enzymes with weight restoration suggesting that liver damage may be secondary to acute hypoperfusion and is reversible with refeeding, as is the case with Mr. C. His liver function normalized as weight normalized (Table 1).

In conclusion, clinicians need to be aware of the possibility of eating disorders in cases of medically unexplainable weight loss in males as they frequently present with atypical symptoms. A detailed history both from patients and family exploring weight history, typical day food diary, body-image issues and amount of exercise would frequently provide clues to the diagnosis. Eating disorders have potentially serious medical complications and high mortality rates. Earlier diagnosis could prevent serious medical complications that may arise as the eating disorder becomes more chronic.

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CASE REPORT

PSYCHOLOGICAL PILLOW: A RARE SIGN IN CATATONIA

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Abstract

Objective: Child age group and delay in starting treatment adversely affects response to treatment in catatonia. Symptoms of catatonia include echo phenomenon, mutism, mannerism, stereotypies, posturing, staring, grimacing, negativism, verbigeration, waxy flexibility, *mitgehen*, *gigenhalten*, automatic obedience etc. The common signs are mutism, posturing, negativism, staring, echo phenomenon, rigidity. **Method:** We report a case of childhood onset catatonia with signs of psychological pillow, both of which are rare conditions. **Results:** Our case was a female child. In this age group full blown catatonia is considered a rare presentation. **Conclusion:** Psychological pillow is a rare catatonic symptom. *ASEAN Journal of Psychiatry, Vol.12 (2): July – December 2011: 197-200.*

Key words: psychological pillow, catatonia, clozapine

Introduction

The concept of catatonia was first described by Kahlbaum in 1874 [1]. Catatonic stupor is one of the most dramatic presentation but has become a rare condition nowadays [2]. Introduction of antipsychotic has reduced the incidence of catatonia [3]. Catatonic patients may be hyperkinetic, hypokinetic or stuporous. Symptoms of catatonia include echo phenomenon, mutism, mannerism, stereotypies, posturing, staring, grimacing, negativism, verbigeration, waxy flexibility, *mitgehen*, *gigenhalten*, automatic obedience etc. According to DSM IV, presence of two or more symptoms for more than 24 hour time is needed to diagnose catatonia [4]. The common signs are mutism, posturing, negativism, staring, echo phenomenon, rigidity [5]. According to Sheekhalaxmi et al (2008) and Alakananda Dutt et al (2011) mutism is the commonest symptom [6,7]. Incidence of catatonia is 13.5% in Indian psychiatric hospitals [8]. Benegal and colleagues reported that catatonia appears to be more common in

India than abroad [9]. Catatonia has been rarely described in children and adolescents [10]. Researchers found incidence of catatonia in children to be 0.6-17% in psychiatric population which is significantly lower than adult frequencies of 7.6-38% [11,12].

We decided to present this interesting case for three reasons: a. Catatonia is rare in childhood and adolescence, b. Psychological pillow is an extreme form of posturing, a rare catatonic sign in day-to-day practice, c. This case only responded to clozapine .

Case Report

A eleven-year-old female Hindu patient from urban background, middle socioeconomic class, education up to class eighth presented with gradual onset and progressive course of stiffness of limbs, episodic agitation, low grade fever, urine incontinence, repeating same word and action, non-goal directed episodic bizarre limb movement, and bizarre posturing for long duration even after being

requested to lie down on a pillow, all for a period of two weeks. On examination there was rigidity, agitation, negativism, posturing, mannerism, stereotypies, echolalia and echopraxia. At times she used to maintain a psychological pillow posture where her head and trunk was guided to move above the pillow for minutes to half an hour even after being allowed to lie down over the bed (photo attached).

The patient was first admitted in neurology ward where after thorough neurological examination and eye examination for Kayser Fleischer ring she was investigated thoroughly with magnetic resonance imaging of the brain, lumbar puncture & cerebrospinal fluid study, , and electroencephalogram (done twice), which all came out to be within normal limits. Her blood investigation reports were as follows: Hb%-11.9gm%, total leukocyte count 8700/cmm, differential leukocyte count- N⁶⁵L³⁰E²B⁰M³, total bilirubin- 0.5mg%, SGPT- 39 IU/ml, SGOT-42 IU/ml, alkaline phosphatase- 112 IU/ml, creatine phosphokinase- 11, urea-26 mg%, creatinine- 0.8 mg%, Na⁺-136 meq/ml, K⁺- 3.9 meq/ml, Ca²⁺- 9.8 meq/ml. Psychiatry referral was done and her score in Bush Francis catatonia rating scale was 36. A diagnosis of Psychotic disorder not otherwise specified with catatonic symptom was made.

She was given intravenous lorazepam up to 4mg thrice daily over next 4 days along with other symptomatic management like Ryle's tube feeding, catheterization to measure intake/output, dextrose saline fluid to maintain electrolyte balance, postural care and anti-pyretics. There was no improvement rather the agitation increased for which olanzapine oral dissolving tablet 15mg/ day was added. After ten days there was no improvement. There after patient was planned for electroconvulsive therapy (ECT) following a board decision . Total of five ECTs were given in a thrice-weekly schedule along with olanzapine after getting written and informed consent from the parents. The score in Bush Francis catatonia rating scale became 42. Then the patient was given clozapine in a gradual titrating dose from 12.5 mg/ day at night to 200 mg/day in divided doses with the recommended schedule of haematological monitoring. Olanzapine was withdrawn. Her symptoms started improving within 2-3 weeks time at a dose of 150mg/day and above and continued over a period of the next two months as rated by Bush Francis catatonia rating scale in her next two monthly follow up in the outpatient department of psychiatry, scores being 12 and 8 respectively.



Catatonia patient showing psychological pillow sign

Discussion

It has been reported that child age group, delay in starting treatment affects response to treatment adversely in catatonia [10]. Catatonic schizophrenic patients respond to antipsychotics and electro convulsive therapy better than lorazepam [13]. Our case was a female child. In this age group full blown catatonia is considered a rare presentation. She presented with psychological pillow which is an extreme form of posturing. Psychological pillow is a rare catatonic symptom. She did not respond to lorazepam or ECT and not even to olanzapine. She only responded to clozapine .

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BOOK REVIEW

THE COMPLETE PSYCHIATRIST

Editors: Dinesh Bhugra, Stuart Bell, Alistair Burns and Oliver Howes. Published in 2010 by The Royal College of Psychiatrists, 373 pages. ISBN 978-1-904671-90-9

Review by Dr. Chan Lai Fong, Lecturer & Psychiatrist, Department of Psychiatry, Universiti Kebangsaan Malaysia (UKM) Medical Centre, 56000 Cheras, Kuala Lumpur. Email: laifchan@gmail.com. Received: 27 May 2011 Accepted: 6 June 2011

What makes a “complete psychiatrist”? As an early career psychiatrist who is still learning the ropes of the profession, I found the title of this book, ‘The Complete Psychiatrist’, very appealing. Psychiatrists of today are not only expected to be competent clinicians but also skillful managers, leaders, researchers and savvy public figures. So, did this book, presented as “*an essential guide to the complex world of psychiatric practice, aimed at psychiatrists at all levels, ... covering key areas including leadership, management and personal skills, context of the psychiatrist within healthcare systems and career development,*” live up to my expectations? Here are some positive highlights of this book:

1. *Highly readable:* The contents are clearly divided into 4 main parts: general considerations about healthcare systems, leadership and management skills, essential personal skills and careers in psychiatry. The authors wrote succinctly in simple English, which enabled me to digest 3 chapters within 3 hours aboard a budget airplane directly after the above-mentioned workshop!
2. *Practical approach:* The authors wrote from their numerous experiences in their areas of expertise and offered useful strategies on handling real-life situations and how to avoid common pitfalls. The overall tone of the book was down to earth and candid. Personally, I found the chapter on ‘Academic Careers’ written by a female academician very enlightening, especially

the postscript on tips on how to maintain a healthy work-life balance.

In terms of perspective, the chapters on ‘Higher Degrees’ and ‘How to work with the media – and survive’ had a hint of cynicism in them. The author of ‘Higher Degrees’ seemed to have had adopted a ‘been there, done that, so has it all been worth the effort?’ outlook with regards to pursuing higher academic degrees. For those who might be contemplating the prospect of pursuing a PhD, such a viewpoint may offer a heavy dose of realism in helping to weigh the costs of such an endeavor. The chapter on the media gave me the impression of a soldier who became weary after having to constantly battle with hostile foes in the media. Nevertheless, both these chapters ended on a hopeful note in true psychiatrist fashion. In view of this book being written by psychiatrists in the United Kingdom, due consideration need to be given to our local socio-cultural context in terms of applying the relevant principles in our day-to-day practice.

I would recommend this book to my fellow colleagues; both senior psychiatrists who can further enhance their leadership and management skills, as well as junior psychiatrists, including trainees who are preparing for their Postgraduate Psychiatry Consultation Viva exams. In a nutshell, ‘The Complete Psychiatrist’ offers an opportunity to learn from the wisdom of fellow psychiatrists that have tread many challenging paths, bearing in mind that each individual reader would be led by their own personal convictions and priorities in life.

EDUCATION SECTION

MODEL ANSWER FOR CRITICAL REVIEW PAPER: CONJOINT EXAMINATION FOR MASTER OF MEDICINE (PSYCHIATRY) AND MPM, NOVEMBER 2010

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Abstract

The critical review paper is a component of the theory examination for postgraduate psychiatry in Malaysia. Majority of students find this paper difficult, thus this article is intended to help the students understand the critical review paper better. The paper discussed below aimed to determine the knowledge, attitude and practice towards sleep among medical students of International Islamic University Malaysia (IIUM). Model answers were provided at the end of each question, as marked in italic font. *ASEAN Journal of Psychiatry, Vol.12(2), July – Dec 2011: 202-205.*

Title of paper: Knowledge, Attitude and Practice (KAP) Towards Sleep Among Medical Students of IIUM.

OBJECTIVES

This is the first study in Malaysia undertaken to determine the KAP of sleep among medical students in Malaysia and to determine the impact of socio-demographic factors on the KAP of sleep.

METHODS

This is a cross sectional study among 106 second and third year medical students IIUM. The students were explained about the objectives of the study and verbal consent obtained prior to participation. . Demographic details which include gender, race, parents' marital status and residence were noted. Student's knowledge regarding sleep was obtained using a questionnaire originally developed by Sivagnanam et al (2004). A total of 25 statements were present in the questionnaire; 12 items referred to knowledge regarding sleep while 13 items referred to attitude regarding sleep. The practice of sleep

was assessed using a separate set of 6 questions originally developed by (Shankar, 2008).

Questions pertaining to Knowledge and Attitude covered important basic aspects of sleep physiology, pharmacology, sleep requirements, use and toxicity of hypnotics, consequences of sleep deprivation, sleep-hygiene misconceptions, and sleep practices of respondents. The responses include 3 possibilities; yes,"no," or "don't know." Scoring was done by awarding marks (correct response = 10, wrong = 1, don't know = 2, and not reported = 0) for each item of Knowledge and Attitude.

As for the Practice component, sleep problems of respondents during the week preceding the study were noted. The response for items concerning practice was a frequency-based rating scale (with options, such as "not at all" = 40, "on 6-7 days" = 10, with equal gradation in-between and not reported = 0).

Theoretically, maximum scores for Knowledge, attitude and Practice were 120, 130, and 240 marks, respectively, with a maximum grand total of 490. Analysis of the data was done using t-test for univariate analysis.

RESULTS

A total of 106 medical students participated in this study. Fifty four (50.9%) were female and 52 (49.1%) were male. The mean age of the students was 20 ± 0.56 , ranging from 18 to 22 years. 97 (91.5%) were Malays and 8 (7.5%) were non-Malays. 103 (97.2%) of the participants reported that their parents were still married, and two (1.9%) reported that their parents were divorced. 69 (62.7%) stated that their residence was in town while 29 (26.4%) in the village. The majority of the participants, 101

(91.8%), were non smokers, while 5(4.5%) were smokers. The mean $\pm$ SD **knowledge** scores was 81.8 ± 16.8 , the mean $\pm$ SD **attitude** scores was 65.9 ± 15.3 and the mean $\pm$ SD **practice** score was 176 ± 26.3 .

Table 1: Model building for overall (KAP) for sleep among the medical students

Variable	B	SE	Beta	p value
Constant	317			
Parent marital status	40.8	26.1	0.16	0.12
Reference (Male)	Ref	Ref	Ref	0.05
Female	15.7	7.98	0.21	
Reference (smokers)	Ref	Ref	Ref	Ref
Non smokers	- 44.8	21.6	0.22	0.04

[F value = 2.73, p = 0.04, $R^2 = 0.089$.; KAP = Knowledge, Attitude and Practice]

(i)

QUESTIONS

1. (a) What kind of study is this? (1 mark)

Survey/ Retrospective study

(b) Outline two (2) strengths and two (2) disadvantages of this kind of study (2 marks)

Two (2) strengths

(i) _____

(ii) _____

Two (2) disadvantages

(ii) _____

Strengths:

- (i) *Cheap, and*
- (ii) *Easier to do*
- (iii) *Data is available for analysis without waiting for any interventions (no need to wait for follow-up)*

Disadvantages:

- (iv) *Recall bias*
- (v) *Cannot determine the cause and effects*
- (vi) *He diagnosis and detail of cases*

probably not standardized

2. Based on the information, “The mean $\pm$ SD knowledge (K) scores was 81.8 ± 16.8 , the mean $\pm$ SD attitude (A) scores was 65.9 ± 15.3 and the mean $\pm$ SD practice (P) score was 176 ± 26.3 .”

(a) Define standard deviation (SD) (2 marks)

Standard deviation refers to the standardized difference between the mean and the given values from the mean in relations to the sample size (Formula given also accepted with FULL marks but the formula must be clear)

(b) Explain the meaning of the above statement in relation to the SD or sample size difference (not more than 3 lines) (2 marks)

The SD on Practice (P) will be more unreliable compared to the Knowledge (K) and then the Attitude (A).

2. Multivariate analysis using the multiple linear regression test was done in the analysis of independent variables that was significantly associated with overall knowledge, attitude and practice towards sleep.

(a) Give 4 assumptions that you made for a linear regression model in order for the analysis to be valid (4 marks)

Samples are taken at random
Samples are taken only once (independent)
Relationship between X and Y is linear
Normally distribution of Y values in relations to X
Equal variation of X-Y

(b) Outline 2 significant findings in the model regression analysis (2 marks)

Gender
Smoking status

(c) Interpret your findings based on the above (b) (4 marks)

*Multivariate analysis using the multiple linear regression tests showed that **gender** of the students was significantly associated with overall knowledge, attitude and practice towards sleep. Female had an average of 15.7 points higher than males ($p = 0.05$). Interestingly, **smoking status** of the students significantly associated with overall knowledge, attitude and practice towards sleep. Non smokers had an average of 44.8 point higher than smokers ($p = 0.04$). This means that smoker had higher scores than non-smokers (Table 1).*

3. Outline 3 ways to improve this study (3 marks)

- (i) *Increase the sample size*
- (ii) *Sampling methods must be clear*
- (iii) *Sampling should be on probability methods*
- (iv) *Written consent must be taken*

- (v) *Better to have a control (case-control study if it is cross-sectional)*
- (vi) *Prospective study to establish the effect and cause, eg. Is KAP on sleep improve with intervention, eg. Reading, Teaching curriculum*

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SHORT REPORT

SUICIDE TREND IN SINGAPORE FROM 2005 TO 2009

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Abstract

Objectives: Suicide is one of the top contributors to the mortality rate in Singapore. We study the suicide rate from 2005 to 2009 and comment on possible contributors towards the suicide rate. **Methods:** Data used in this paper was obtained from the Ministry of Health, Ministry of Manpower, Statistics Singapore and Samaritans of Singapore websites. **Results:** Overall, the suicide rate has been fairly stable ranging from 9.99 to 11.88 per 100,000 residents in Singapore. Suicide rates were highest in men in the age groups more than 65 years and 20-29 years. Although there is an increase in suicide rate from 2008 to 2009, the overall trend in the last 5 years appears to be fairly stable. The suicide rate among women appears to be low and stable, if not on the decline. The elderly (older than 65 years old), especially men, remain at the highest risk of suicide. **Conclusion:** Suicide rate in Singapore has remained fairly stable ranging from 9.99 to 11.88 per 100,000 residents. Among men in the 20-29 age group there was an increase in suicide rate that certainly warrants further investigation. Increasing suicide prevention efforts in Singapore may help reduce the loss of productive members of our society. *ASEAN Journal of Psychiatry, Vol.12(2), July – Dec 2011: 206-213.*

Keywords: Suicides; Suicide trends; Singapore

Introduction

The subject of suicide is difficult to study due to varying definitions from country to country as well as from different fields of study such as in legal and medical or psychiatric terms [1]. Suicide is defined by the World Health Organisation as “an act deliberately initiated and performed by a person in the full knowledge or expectation of its fatal outcome” [2]. Deaths by suicide are often very tragic and disturbing events especially when it involves people who could otherwise be well and productive members of society. Suicides affect those surrounding the victim in the form of bereavement with an average of 5 people bereaved by 1 suicide death [3]. The fact that one of the earliest works that defined the field of sociology was on the topic of suicide indicates the significance of suicide deaths and its impact on society [4]. According to statistics by the World Health Organisation, the global burden of disease due to suicide in

1998 was 1.8% and is expected to increase to 2.4% by the year 2020 [5]. The rate of suicide deaths is sometimes also used as an indicator of social cohesion in a culture or civilisation hence monitoring of a nation’s suicide rate can provide a glimpse into the stability of its social structure [6]. From a psychiatric point of view the majority of suicide victims had a psychiatric disorder at the time of death with up to 98% of victims were diagnosed with a psychiatric illness [5].

Although the suicide rate in Singapore is relatively low compared to other Asian countries such as Japan, Taiwan, Hong Kong and China, suicides are one of the leading causes of death in Singapore based on statistics released by the Ministry of Health and Statistics Singapore, deaths by suicide constituted 2.2% of all deaths in 2007 and 2.1% of all deaths in 2008 which placed death by suicide as the 9th leading cause of death in

2007 and the 8th leading cause of death in 2008 [7-9]. Past papers on suicide deaths in Singapore found that suicides were highest among young adults and the elderly; especially those who were elderly and of Chinese ethnicity [10-14]. In terms of gender, males are more likely to commit suicide than females in Singapore which is also the trend internationally [15]. There is also a suggestion that economic indicators are also influential in the rate of suicide in Singapore with the unemployed being at higher risk than the employed [14]. Unlike seasonal countries where there have been associations made between suicide rates with the month of the year, in Singapore there appears to be no such link [16]. Furthermore, contrary to international data on psychiatric disorders in suicide victims, with reports of up to 98% of suicide victims had psychiatric disorder. In Singapore, there appears to be a lower prevalence of psychiatric illness in suicide victims as reported by M Loh et al in 2007 with only 47 (17.2%) in 2001 and 74 (20.2%) in 2002 of suicide victims had a psychiatric diagnosis and in 1980 the prevalence was 25.7% as reported by E. H. Kua and W. F. Tsoi (1985) [13]. In this paper we hope to elucidate the suicide trend in Singapore over the last 5 years and comment on possible contributors to the trend in suicide rates.

Methods

Data used in this paper was obtained from the Ministry of Health (www.moh.gov.sg), Ministry of Manpower (www.mom.gov.sg), Statistics Singapore (www.singstat.gov.sg) and Samaritans of Singapore (www.samaritans.org.sg) websites. The data is freely available to the public over the internet through the websites mentioned. Past papers on suicide trends in Singapore were obtained by searching on Ovid and PubMed databases using the terms: Suicide, Suicide rate, Suicide rate Singapore, Suicide Singapore. An internet search for articles on suicide in general as well as suicide in Singapore was also performed with the internet search engine Google using the search terms: Suicide, Suicide rate, Suicide rate Singapore, Suicide Singapore. Suicide rates were calculated by total number of suicides by residents in a year divided by the mid year resident population and multiplied by

100 000 to derive the suicide rate per 100 000 residents in Singapore.

Results

Table 1 shows the raw data and calculations based on the data from 2005 to 2009. The data in Table 1 is further divided to male and female total suicides and suicide rates. On examination of the total number of suicides and total suicide rate per 100 000 residents across 2005 to 2009, there did not appear to be any clear trend. There was a peak in the suicide rate in 2006 of 11.9 followed by a downtrend up to the year 2008 of 10.0 before increasing again in 2009 to 10.7. There appeared to be some moderate variation in the suicide rate as it ranged from 10 to 11.9. When examined from a gender based perspective there was an increasing suicide rate in the male suicide rate from 2007 (12.1) to 2009 (14.5). The female suicide rate has been relatively stable with minor variations from year to year. The suicide rate ranged from 7.1 to 8.9 for the female population. The ratio of male to female suicides was lowest at 1.3 in 2007 and was on an uptrend to 2.0 in 2009. The low change in ratio was mostly contributed by the changes in the total number of male suicides for those years as the female suicide deaths were fairly stable. Year 2007 saw a sharp decline in total male suicides being the lowest number (215) of the 5 years examined while 2009 showed the highest number of male suicides (267) of the 5 years examined. The large ratio of male: female suicides in 2009 were also contributed by the low number of female suicides (134).

Table 2 shows the breakdown of suicide data by year, age group, sex and includes gross domestic product (GDP), per capita GDP and resident unemployment rate of the corresponding year for comparison of macroeconomic status and its influence on suicide rates. Based on the suicide rates as stratified by age and sex, the group with the highest suicide rate would be in the elderly males who were 65 and older. Their suicide rate was 3-4 times that of the overall suicide rate of the country. In 2005 the suicide rate for this group was 44.6 compared to the national rate of 11.7. The rate decreased to 28.7 compared to the national rate of 10.7 in 2009 however that was still more than double the national rate. Males in the age groups 40-49

and 30-39 had fairly high suicide rates in 2005 and 2006, however their suicide rates had since lowered and is now comparable to the national rate although still slightly higher. However, males in the age group 20-29 had an increased suicide rate in the last year almost doubling from 10.8 in 2008 to 20.1 in 2009. By comparison, the suicide rate for most female age groups was generally declining

with the most dramatic drop in suicide rate in the 60-64 age groups from 14.1 in 2008 to 5.8 in 2009. The highest suicide rate for females was also in the group 65 and above as it was in the males.

Table 1 Raw data and calculated suicide rates and ratios

Year	2005	2006	2007	2008	2009
Total suicide	405	419	374	364	401
Total male suicide	263	260	215	232	267
Total female suicide	142	159	159	132	134
Total Population ('000)	4,265.80	4,401.40	4,588.60	4,839.40	4,987.60
Resident population ('000)	3,467.80	3,525.90	3,583.10	3,642.70	3,733.90
Resident male ('000)	1,721.1	1,748.2	1,775.5	1,803.0	1,844.7
Resident female ('000)	1,746.70	1,777.70	1,807.60	1,839.70	1,889.10
Suicide rate /100 000 (residents only)	11.7	11.9	10.4	10.0	10.7
Male suicide rate	15.3	14.9	12.1	12.9	14.5
Female suicide rate	8.1	8.9	8.8	7.2	7.1
Male: female ratio	1.9	1.6	1.3	1.8	2.0

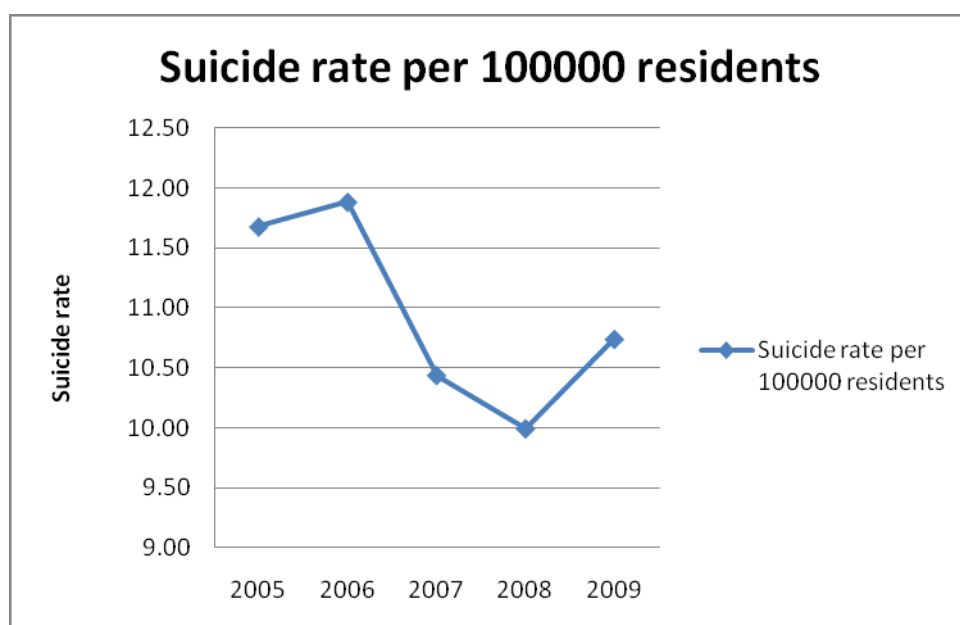


Figure 1 Suicide rate per 100 000 residents from 2005 to 2009

Table 2 Suicide data by age group/sex and economic data from 2005 to 2009

Suicide rate (per 100,000)	Year				
Age and sex <20	2005	2006	2007	2008	2009
Male	1.5	1.9	1.5	1.7	2.1
Female	1.3	0.2	1.5	0.9	2.0
20-29					
Male	15.7	13.0	15.9	10.8	20.2
Female	11.4	10.4	10.4	10.5	8.0
30-39					
Male	17.7	18.1	12.5	12.8	16.8
Female	9.2	8.9	9.1	6.8	5.1
40-49					
Male	18.9	20.3	12.8	17.5	16.3
Female	8.7	10.5	9.5	6.7	5.7
50-59					
Male	17.6	21.1	17.5	17.3	17.4
Female	11.1	13.7	6.4	10.9	11.2
60-64					
Male	22.7	31.0	10.5	15.9	17.9
Female	11.6	10.0	13.1	14.1	5.8
65 and above					
Male	44.6	26.9	31.9	34.4	28.7
Female	14.1	20.7	25.8	11.9	19.0
Economic data					
GDP	208,763.7	230,509.2	266,405.1	273,537.2	265,057.9
Per capita GDP	48,939	52,466	58,243	55,369	53,464
Resident unemployment rate	4.1	3.6	3	3.2	4.3

In comparing the macroeconomic data available and the annual suicide rates from 2005 to 2009 there seems to be some correlation between changes in the levels of unemployment and GDP with the suicide rate. From the year 2006 to 2009, it is observed that low unemployment levels corresponded with relatively lower suicide rates. Similarly a rising GDP from 2006 to 2007 corresponded with a drop in suicide rates. A slight drop in GDP from 2008 to 2009 corresponded with a rather large rise in suicide rate. However, in 2005 to 2006, despite a large increase in GDP and decrease in unemployment there was an increase in suicide rates which would be contrary to expectations. GDP is a number that indicates the overall economic health of the country. Per capita GDP is a measure that results from GDP divided by the size of the nation's overall population. So in essence, it is

theoretically the amount of money that each individual gets in that particular country. The GDP per capita provides a better determination of living standards as compared to GDP alone. With that in mind, we sought to examine the relationships between per capita GDP and unemployment and suicide rates. A correlation analysis revealed that there were no significant correlations between per capita GDP and unemployment rate [$r(5) = -0.77$, $p = 0.13$], as well as between per capita GDP and suicide rate [$r(5) = -0.076$, $p = 0.14$].

We examined how the impact of per capita GDP differed in influencing the suicide rate of males and female. In particular, we were interested to explore the plausibility of a significant inverse relationship between male suicide rate and per capita GDP that would not be present for females. Male suicide rate and

per capita GDP were indeed found to be negatively correlated [$r(5) = -0.94$, $p = 0.02$]. There was no correlation between female

suicide rate and per capita GDP [$r(5) = 0.06$, $p = 0.93$].

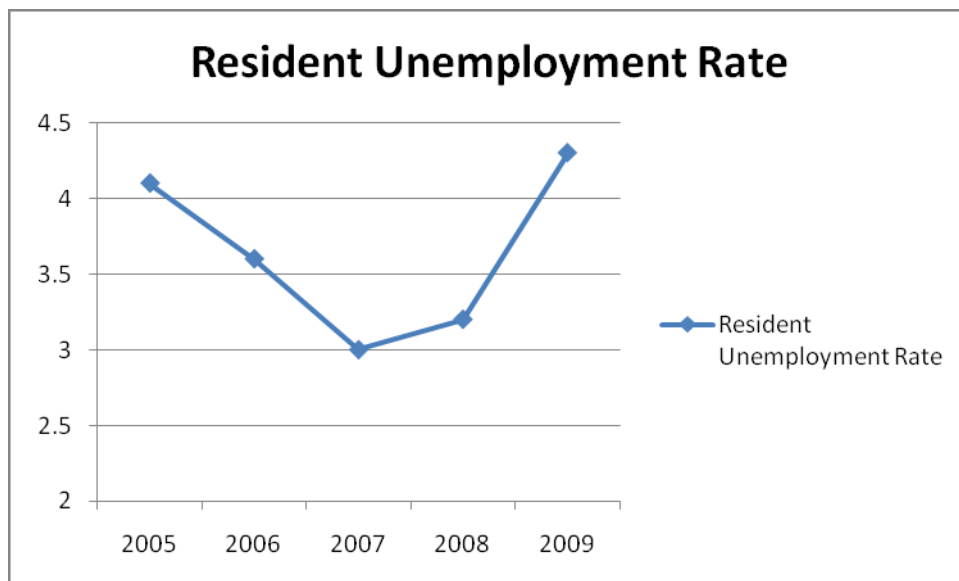


Figure 2 Resident unemployment rate from 2005 to 2009

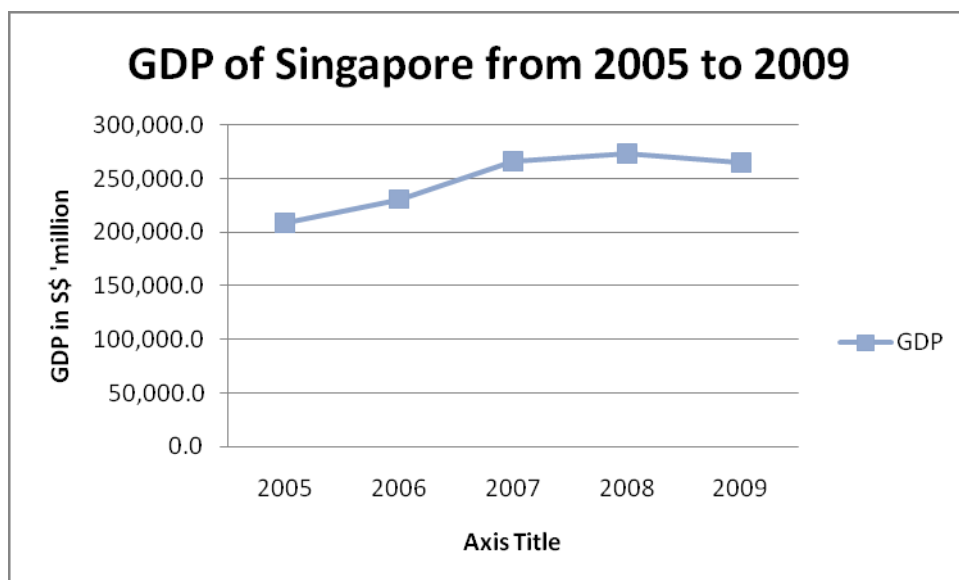


Figure 3 Singapore's gross domestic product from 2005 to 2009

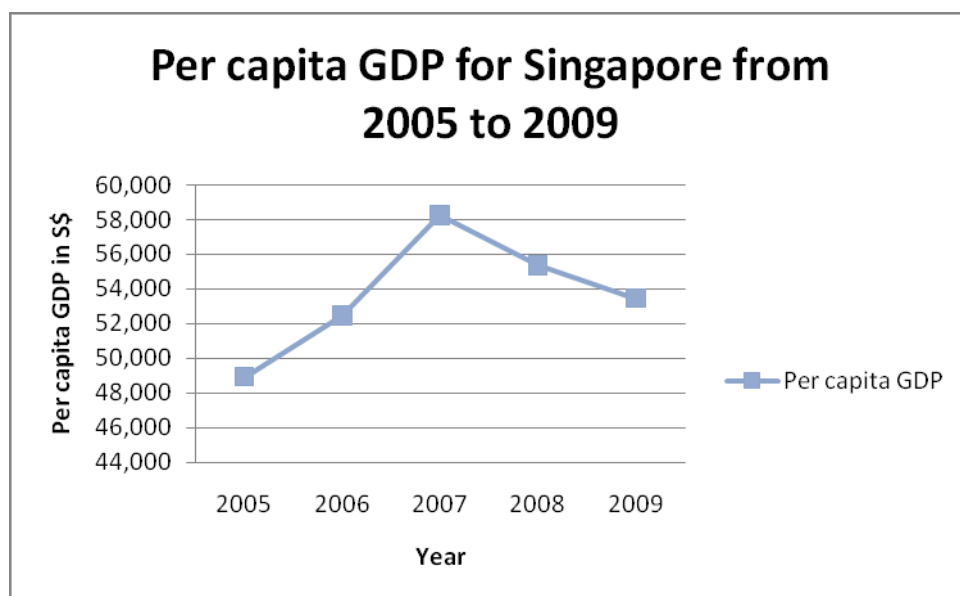


Figure 4 Singapore's per capita GDP from 2005 to 2009

According to data from the SOS, the number of callers to their helpline decreased from 2008 to 2009; the latest annual data shows the lowest total number of calls in the last 5 years. The total number of callers classified as high suicide risk fell from 233 to 202 from the period April 2008 - March 2009 compared to the period April 2009 – March 2010. Calls concerning debts increased from 2454 to 2673 while loan shark related calls remained similar at 217 to 218 and gambling related calls increased slightly from 123 to 132 for the same period.

Discussion

As was seen in previous studies on suicide in Singapore as well as internationally, suicide rates are highest among males in Singapore over the last 5 years. In terms of age, the suicide rates were the highest in the elderly population in Singapore which also corresponds to previously seen data [11]. Suicidal deaths among the elderly continue to be a problem in Singapore as can be seen in the data presented and with the aging population, one can only expect the problem to continue to persist. Further studies into the causes and circumstances leading to the high suicide rate among the elderly may help strategizing future public health policy in preventing suicide deaths within this population.

The sudden increase in suicide rate of males aged 20-29 is a worrying trend. This could just be a statistical aberration in view of the relatively lower suicide rates in the past for this age group. Further monitoring of this age group would certainly be warranted. One possible explanation of the increased suicide rate could be that of the poorer economic climate over the last 2 years. However, without detailed information of the social circumstances of each individual case we can only speculate as to the cause. Rapidly changing socioeconomic and cultural circumstances have previously been suggested as contributors to increased suicide rates. Thus it is possible that the sudden change in economic climate could have caused the increase in suicides in this group of young males [17].

Statistical analysis in our study has showed a negative correlation between per capita GDP and male suicide rates. This suggests that males were more affected by the economic climate than women. This is not surprising as in our Asian culture, males are typically seen as the provider for the family. Males, would therefore, understandably be under greater duress and stress in poorer economic climate and be more affected by the state of the economy than females. With this data in mind, we need to be more alert to diagnose depression and whenever possible, assess the

suicide risk in males, more so during times of economic hardship.

On a more positive note, the suicide rates for females showed a decline across almost all the age groups. If suicide rates were to be considered as an indicator of social cohesion, perhaps this is a reflection of Singapore as a more progressive society with women being able to further advance their social standing and gain access to more opportunities. Examining the progress made in reducing suicide rates in this population may assist in planning for interventions in higher risk populations. It would also have been informative to examine the prevalence of psychiatric disorders in the suicide victims of Singapore especially given the differences in the prevalence reported internationally and that which has been reported in Singapore. Our data was obtained from Statistics Singapore, which unfortunately did not provide an ethnic distribution of suicide rates. Further subdividing the suicide data among different religious and racial groups may have yielded additional information on protective and risk factors in the Singaporean population, and perhaps allowed mental health professionals to be more aware of at risk groups, if any. Further studies are needed to look into this area.

Conclusion

Although there is an increase in suicide rate from 2008 to 2009, the overall trend in the last 5 years appears to be fairly stable. The suicide rate among women appears to be low and stable, if not on the decline. Among men in the 20-29 age group there is an increase in suicide rate that certainly warrants further investigation with the possibility that the change in economic circumstances contributing to the increase. Men have been shown to be more vulnerable to economic downturn compared to women. The elderly (older than 65 years old, especially men) remain at the highest risk of suicide and one wonders if changing cultural and economic circumstances are again at play in increasing suicide rates.

Despite having one of the lowest suicide rates in the region, suicide in Singapore is still one of the top causes of death. Therefore, suicide prevention certainly deserves further efforts

within the country especially when one of the highest rates is within the age group that has significant socioeconomic contributions to the country.

Author Disclosure

There were no sponsors for this study. The first author is involved in gathering the data; all three authors are involved in analyzing the data and writing the manuscript. There are no conflicts of interest that need to be declared.

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COUNTRY REPORT

COMMUNITY MOBILE TREATMENT FOR SUBSTANCE ABUSE

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Abstract

Objective: To discuss and share regarding a highly accessible approach in substance abuse management. **Methods:** We report one of the most innovative ways of providing street-based services is by using Mobile Outreach Vehicles (MOVs). **Results:** MOVs are usually large vans, trailers or campers, converted to provide services in targeted communities. Well-equipped MOVs are effective because MOV-based programmes meet at-risk individuals in their neighbourhoods. MOVs can move to different neighbourhoods as drug traffic migrates from place to place. An MOV can enhance the credibility of a project by becoming a recognizable presence in high risk neighborhoods. A greater amount of privacy, safety, and resources can be provided using MOVs. Among the most important factors that determine the effectiveness of drug abuse treatment programmes is the accessibility of services and the duration that patients are maintained in contact with those services. **Conclusion:** Treatment access is determined largely at the local level, where most services are offered. De-addiction services should be designed and provided in a way that increases the trust of substance users and their families. There is a need to look into the possible low-threshold, low-barrier approaches to the management of substance using populations. *ASEAN Journal of Psychiatry, Vol.12(2): 214-225.*

Keywords: Mobile treatment, Community, Substance abuse

Introduction

Over the years, substance use management has witnessed a never ending quest for understanding the bio-psycho-socio-cultural aspects of the condition. This lookout for the ever elusive gold standard has given different approaches to the understanding, assessment and management of the issues related to substance use. One of the major hurdles in the area has been the feasibility and applicability of these discoveries and inventions to daily practice. Management of substance use related conditions can be carried out in a multitude of settings like emergency departments and outpatient departments of a general hospital, outpatient and inpatient setup of a dedicated substance use treatment centre, community based intervention centres, and self-help groups among others. However, each of these

approaches has its own limitations and drawbacks coupled with the benefits they provide. The issues of behaviourism related to the drug use problem make the transition from confined micro-society experiments to the unconfined macro-societies that characterize the natural ecology of drug abuse treatment one of the biggest challenges.

Factors affecting the programme effectiveness

The substance use treatment services literature has examined a wide range of personal and environmental attributes that influence effectiveness of the available services. These include demographics, health status and functional limitations, severity of condition, socioeconomic status and employment, patient view of the

problem, acculturation, ethnicity, community support, provider sensitivity, structural & operating aspects of providers, and a variety of economic and financial barriers.

Among the most important factors that determine the effectiveness of drug abuse treatment programmes is the accessibility of services and the duration that patients are maintained in contact with those services. There has to be four essential elements for 'good' medical care, one of which is accessibility. Accessibility was defined in terms of personal accessibility, comprehensive services, and quantitative adequacy. Personal accessibility means that there must be defined points of entry into the health care system. A comprehensive range of services is needed because complex problems may require input from a variety of specialties. Quantitative adequacy refers to the supply of a comprehensive range of personal health services sufficient to meet the need.

A widely used definition of access was developed by Aday et al (1984): "...those dimensions which describe the potential and actual entry of a given population group to the health care delivery system. The probability of an individual's entry into the health care system is influenced by the structure of the delivery system itself ... and the nature of the wants, resources and needs that potential consumers may bring to the care-seeking process" [1]. Donabedian (1973) developed a similar concept of access, but focusing on the health system —"access comprises those characteristics of the resource that facilitate or obstruct use by potential clients" [2].

The services system can act as a barrier to access. Treatment access is determined largely at the local level, where most services are offered. Local market area studies of substance abuse treatment have indicated that specialty services are concentrated in more urbanized areas, providing urban populations with better

access [3,4]. Capacity or the availability of supply is crucial to understand access (and meet treatment need); both are influenced by the composition of treatment ownership, organization, and services and specialty [5].

A review by Ward et al (1998) indicates that some of the programme factors that are most likely to improve retention include accessibility, affordability and convenient hours of operation [6]. Weisner & Schmidt (2001) remarked that in spite of increase in the availability of treatment for opioid dependence in Australia, concerns about the accessibility of addiction treatment remain [7].

Joanne Neale, while studying the drug users' views of drug service providers observed that most respondents, both substance using men and women, felt that controlled drugs should be dispensed through an easily accessible site rather than a centralized clinic. This meant saving time and money spent on travelling to the centre and the speed of dispensing service among other reasons. Moreover, some of the respondents came up with the alternative dispensing arrangements in form of a mobile bus which they personally considered preferable either to the pharmacy or clinic.

Various national surveys in the country have reported that treatment-seeking in substance users is rather low. Drug Abuse Monitoring Survey (DAMS) has reported that only 27 % of the current treatment seekers have sought treatment for their substance use problem in the past. National Household Survey (NHS) reported this figure to vary from 2 to 19 % [8,9]. This highlights the need for developing a service delivery system that is more easily accessible to the potential beneficiaries. This could be carried out by either bringing the patients to the establishments, that is, treatment centres, or taking the services closer to the patients. While the earlier approach would mean efforts to offer the effective treatment modalities, it would also need to overcome the initial barrier of bringing the patients to

the centres. By bringing services close to the patients, one could expect a circumvention of the initial hurdle, at least in part if not fully.

Low-Barrier/ Threshold Models of treatment delivery:

De-addiction services should be designed and provided in a way that increases the trust of substance users and their families. Various low-barrier services models have been studied for substance using population. The underlying thrust of these models is to bring social services to the community-to remove barriers to service accessibility and availability. Storefront multipurpose service centres, low-barrier drop-in service centres where substance users could receive services with minimal or no requirements could try to reach the difficult-to-access substance user who shuns the formal treatment and service systems. Street outreach can provide drug and infectious disease-related information and services to individuals who do not otherwise have access to them. Research suggests that substance users can be particularly suspicious of medical professionals and institutionalized services. There is a need for mobile vans and a cadre of 'foot soldiers' to go into the shooting galleries and shelters where the potential beneficiaries of the substance use treatment reside. As street outreach often uses indigenous workers from the target community, outreach-based projects may have more success at establishing trust and rapport with community members because staff is perceived as peers.

One of the most innovative ways of providing street-based services is by using Mobile Outreach Vehicles (MOVs). MOVs are usually large vans, trailers or campers, converted to provide services in targeted communities. Well-equipped MOVs are effective because MOV-based programmes meet at-risk individuals in their neighbourhoods. In this way, they accommodate the people they serve. MOVs can move to different neighborhoods as drug

traffic migrates from place to place. An MOV can enhance the credibility of a project by becoming a recognizable presence in high risk neighbourhoods. A greater amount of privacy, safety, and resources can be provided using MOVs.

Mobile services with a multidisciplinary team of medical, case management, and prevention staff would provide more direct access to treatment services. Mobile services concentrated in communities with high prevalence areas and satellites of larger health care facilities would be of help in overcoming some of the barriers in the utilisation of the services for substance use treatment. Being a low-threshold service delivery model, such an approach would be open to a wider range of patients and would have lesser restrictions.

Mobile services aimed at ensuring substance abuse treatment services to patients where they reside help to develop alliances between mobile health, communities and existing biopsychosocial services. They help to foster community partnerships and collaborations that promote the expansion of medication assisted treatment by assisting similar programmes to expand this continuum of care.

Mobile clinic

Mobile unit:

It is a mechanically, electrically, propelled vehicle operating on land or water. Other terms/names used are such as *mobile treatment, mobile community treatment, community initiatives, methadone by van, mobile methadone treatment, methadone on road, and Mobile Outreach Vehicles (MOVs)*. Wiebe et al preferred the use of the term '*community mobile treatment*' since it incorporates the efforts of the 'mobile treatment team' as well as the 'mobilized community' in this community based approach.

Abbas (1989) defined the community mobile treatment as "...an intensive alcohol and drug treatment programme implemented

by a team of facilitators in conjunction with and with the approval of the community at large". This definition precisely sums up the two most important components of this outreach approach- the treatment team and the community of which the substance users are an integral part. This definition also highlights the dynamic rather than the static nature of the concept as an ongoing and ever modifying project receiving and providing inputs from the interaction of the treating team, the patients and the community.

Such outreach programmes have been successfully utilized to provide treatment for HIV & other infectious diseases, counseling, testing & risk reduction activities, conduct early disease intervention for difficult to reach HIV-infected populations, exchange injection equipment, dispense methadone, provide health services, and perform crisis intervention. Special populations that have been successfully targeted by outreach programmes include active drug users, commercial sex workers, methadone maintenance patients, runaway youth, homeless people and mentally ill persons.

Rationale

The mobile clinic for substance use treatment enjoys the advantage of approaching the people who are still using opioids and incorporating them into treatment. Hospital-based facilities of the management of substance use disorders, although comprehensive, rely heavily on the patient's ability to initiate and maintain treatment within a structured system. This invariably means strictly scheduled visits. The nature of the substance use or the circumstantial factors could mean an avoidance or lapses with these schedules. Family or work responsibility could hold back the treatment seekers from leaving their community for an extended period of time or even a shorter but regular and frequent basis. Fear of the unknown larger centre or entering a treatment process little known has also been cited as reasons for not availing the available services.

The mobile treatment team helps patients by bringing the services closer to them and keeping the schedule for them by offering treatment within their neighbourhood on a designated schedule. This approach thus creates a system in which people are comfortable seeking treatment and hence ensures that the treatment is accessible when needed. Additionally, by involving as many community members as possible in the process 'the community mobile treatment attempts to create an observable ethic which encompasses the community's stance on alcohol and drug use' [10].

Inception

In 1979, the presence of around one thousand heroin users in the centre of Amsterdam created an urgent need for medical and social assistance. Since these substance users refused to attend local healthcare clinics, a rebuilt city bus was hastily enlisted to dispense methadone at 6 locations daily. As a 'harm reduction' effort, the programme also distributed clean injection needles and condoms. The 'Amsterdam model' of mobile methadone dispensing came into being in the 1980s. In order to overcome the limitation of the existing service delivery system and to bring the benefits of the available treatment modalities closer to the substance users, Paul Hanki of British Columbia, Canada started *mobile treatment* in 1984.

The change in the drug policy of some European countries also paved the way for a more simplistic and more user-friendly approach of treatment delivery. The concept of Amsterdam Model was soon taken by other cities in Europe through the Frankfurt resolution during the next decade.

Community mobile treatment: An event or a process?

Community mobile treatment is an intervention strategy that relies on the integrated efforts of the service providers

and the service utilisers with the aim of benefitting the community at large. This calls for a coordinated and ongoing collaboration between the two most essential components of the approach, i.e. the treating team and the community, including the substance using population. While the service delivery through the programme can be considered an *event*, the approach is an ongoing *process* aimed at improving the service delivery. Before the programme can actually be put to practice, a lot of work goes in involving and mobilizing the community. This would include installing hope in the community about a possible solution to the problem of substance use and that change can be brought about by concerted effort. This initial *process* lasting around 1-2 years helps in ensuring the committed involvement of the community in the programme. Once the initial *process* sets in, the next step of the service delivery i.e. *event* takes place. This again is followed by the *process* of ongoing community involvement. Thus community mobile treatment would best be described as a combination of a *process* and an *event*, both aimed at the ultimate goal of providing treatment services to the substance users in their community.

Target population

The target population includes homeless individuals, people who will not often seek treatment within established structures, and/or patients who have trouble maintaining the schedule and motivation necessary to continually attend inpatient or outpatient sessions. Mobile clinics aimed at specific sections of populations like sex workers and immigrant population have also been in practice. Another patient population that benefits from this approach is patients who are ‘suddenly’ ready to be treated. The mobile unit offers the opportunity to initiate treatment immediately, which might be simpler and convenient than entering an inpatient or outpatient setting of treatment centres. The patient base for the service would need to be defined so that the

inclusion criterion for the programme is clear. Programmes like Amsterdam model require the treatment seeker to be a registered resident of the city and not enquire about the locality they reside in. However, such an approach might not be practical for the zones with heavy patient load and depending on the availability of the resources one would have to define the area to which the service would be delivered. This would mean use of some kind of proof of residence in the area marked by the team. The outreach members of the team in consultation with local community representatives may arrive at a conclusion regarding the area of stay of the specific individuals.

Attributes of a mobile clinic

Community mobile treatment can be modified as per the needs of the local community. Various factors need to be taken into consideration while planning such an intervention. The description below could be of help in planning such a programme. These suggestions are primarily based on the available information from various ongoing programmes of this nature and might need modification as per the local needs.

Services offered

The community mobile treatment is aimed at drug users, their sexual partners, and significant others, to provide education, prevention, and early intervention services. The services provided may range from IEC activities, dispensing of medications, physical examination and treatment of physical conditions, HIV screening, condom dispensing, needle-syringe exchange, anti-retroviral therapy dispensing in isolation or in varied combinations. Literature about and referral to other health and social welfare concerns is also available.

Components

The Tasks

Management: Good management of the programme includes a clear description of each position and tasks, regular supervision, regular team meetings, and case management. Clear procedures within a programme are important for the staff and have an impact on the expected treatment outcome for the patients.

Medical care: Medical care is provided by doctors, psychiatrists and nurses. Prescribing is the responsibility of the doctor signing the prescription. It is the responsibility of all medical personnel to provide care for general health needs and drug-related problems. It is the clinician's responsibility to make sure that the patient receives the correct dose and that the drug is used appropriately and not diverted onto the illegal market. Particular care must be taken with induction. Doctors need to undertake clinical reviews of patients regularly, at least every two or three months, particularly of patients whose drug use remains unstable. While the issues relating to the dispensing of the drugs for opiate abuse/ dependence would be handled by a specialist clinician, other general health issues can be well taken care of by a medical graduate who has had experience of general medical conditions and their management.

Health promotion: At different times staff should take the opportunity to give information on risk behaviour and how to prevent and reduce risk behaviour to the patients. All staff members should have a task in this issue, except for the manager and administrator.

Counselling & Psycho-social care: Psychological techniques have become a central part of good clinical practice of drug dependence in most countries. Clinical psychology provides models for drug dependence, combining social and neurobiological theories. For example, motivational techniques can be important in the assessment procedure in engaging drug users in treatment as well as preventing relapse during the detoxification regimen. It

is likely that the provision of psychosocial therapy in conjunction with pharmacological approaches improves outcomes, but research evidence is currently limited [11].

Personnel

A mobile community treatment team would require staff members from different fields of expertise. The exact structure of the treatment team would depend on the nature and extensiveness of the services being provided and the population being served. A case manager is available on the van; the patients can meet with the case manager confidentially to discuss their treatment needs. The clinicians would be involved in the assessment of the patients' substance use and provision of the medications. Outreach workers who are former drug abusers canvass the neighborhood locating drug abusers to educate them about risk reduction behavior, treatment and HIV/AIDS. The professional social workers and substance abuse counselors help to establish comprehensive education, counseling, and referral services in the programme. Ex-addict facilitators can be used to mobilize the other substance users to enlist in the mobile treatment programme. It is advantageous for community-based outreach workers to work in teams of two, matching former drug abusers with shorter recovery experience with staff members who have never abused drugs or who have been in recovery longer. The staff must be open-minded, professional, respectful and non-judgmental. Some research has shown that in a methadone maintenance programme where the staff can be identified as 'abstinence oriented' patients will leave quicker than when a programme is 'maintenance oriented'.

Collaboration between professionals-Teamwork

Each mobile community treatment facility must ensure that contact between the staff as well as between the staff and patients is

respectful and that there are appropriate working conditions.

Liaison with external professionals

In the setting of a community mobile treatment a liaison with the external professionals might be needed. The liaisons could range from the local primary/ community health centres, district health centres, Immunology/ HIV clinics, District Tuberculosis Centre (DTC), De addiction/drug dependence Treatment Centre for specialized in-patient/ out-patient care. The co-operation between treatment and care establishments should facilitate an appropriate and continual care of patients.

Urinalysis

Although urine analysis is a vital part of the initial medical assessment of the patient, it is often used as a form of control over patients to see if they are not continuing to use illegal drugs with their medication. The information can also be obtained by asking the patient, which would save a lot of time and money. This requires a good patient-doctor relationship which is based on respect and mutual trust. However, it is also argued that a positive urine test should never be a reason for discontinuing treatment as it is evidence of symptoms of the condition the patient is being treated for. Moreover, some of the mobile treatment programmes, because of their low threshold approach, dispense the medications in spite of the substance use status of the patient and hence, do not carry out the urine testing.

The Physical Setting

The World Health Organisation defined in 1998 that, when a treatment system is developed in any country, it should be planned as an integral part of the community's overall resources to deal with health and social problems. It should be 'population-based' [13]. A proper infrastructure will enable a professional method of working and compliance with guidelines. It needs to be decided in advance

how the available space will be allocated to provide services.

The secure and accessible space for storage of vehicle during non-working hours as well as space for the vehicle during working hours should be finalized. The choice of place for dispensing of the services should be carried out in direct consultation with the representatives from the local community. The place should be easily approachable by as many substance users as possible, and create minimal interference in the routine activities of the general population. The frequency of the visits made by the mobile van would depend on the patient load and the kind of the medication being dispensed.

The location of the programme should meet some important conditions. As patients will have to attend the programme regularly, and in many cases daily, it should be located at the area which is familiar to most of the substance users and is easily approachable. In order to avoid stigmatisation it may be important to have a neutral façade, that the sign outside says something neutral, e.g. 'health service'. It is recommended to seek contact with the local police in order to explain the importance of attracting people with a drug dependency to the programme without fear of coming into contact with the police. Agreements should be made to avoid the presence of police posting outside the centre or in the neighbourhood, which may cause panic and fear in clients.

Hours of Operation

There is no consensus regarding the most appropriate hours of operation for community-based outreach activities. Programmes differ with regard to times designated for contacting at-risk individuals in street and other community settings. Various factors such as patient population being targeted, catchment area of interest, availability of team staff should be kept in mind while deciding for the hours of service delivery. However, it is recommended that once hours of operation have been assigned,

all workers should observe them, regardless of personal preferences. Also, administrative or supervisory staff should always be on when community-based outreach workers are in the field. This would ensure that someone is always available to clarify the queries, give referral advice, and provide support for community-based outreach workers.

Maintaining contact with participants

For community-based programmes that offer multiple sessions or plan to maintain regular contact with participants, it is necessary to have a system for locating participants and reminding them of scheduled activities. For new programme participants, the community-based outreach staff should complete a detailed locator form. Telephone calls or reminder letters can be used to remind participants about any change in the dispensing schedule, if any, and to notify participants of missed appointments. If these methods to contact the patient fail then the community-based outreach workers may visit the last known address, as well as other places where the participant is known to socialize, and try to re-engage the participant in programme activities.

Recordkeeping

Clearly written or computer records of prescribing should be kept. Apart from these, a form documenting any contact of longer than 5 minutes with potential participants is recommended. The contact form should include all relevant details of each participant encounter, including the names of both the participant and the staff member, the date and time of the contact, as well as contact duration and location. The nature of the contact also should be documented, and space should be provided for recording notes. This could include documenting check-in and check-out times; tracking the number of persons referred for other services as well as those receiving social service referrals; a log of telephone/

letter contacts between community-based outreach workers and the administrative office or supervisor; and performing occasional supervisory field visits and documenting observations. A patient-held record, countersigned by those involved in care, can be a useful adjunct to treatment. Other medical staff members who may see the patient should be informed of current treatment. The information thus gathered can be discussed at regular meetings of the administrative team and thus can help to improve the functioning of the programme.

Supervision (Monitoring and Feedback)

The programme supervisor should assist and support community-based outreach workers in maintaining the consistency of intervention activities. Outreach supervisors should spend time on the streets each week with each team. Supervisors should seek to instill a sense of order in the job. They play a central role in hiring new outreach staff and defining, from the outset, the parameters of the position. The following recommended procedures can help community-based outreach workers organize their daily responsibilities and provide structure for their work (i) supervisors should meet with outreach staff at the beginning of each day to coordinate that day's activities; (ii) near the end of each day, staff and supervisors should meet again to complete paperwork; and (iii) after the paperwork is given to supervisors, a team meeting should be held.

These meetings typically centre on events that occurred during the day, but they also afford an opportunity for the staff to receive feedback and provide information to each other and the supervisor. These discussions are particularly important, since they can lead to needed modifications in the content or location of outreach efforts.

Evaluation

It is important to have checking mechanisms to see if the different professionals are doing their work adequately, and whether

individual patients who are admitted into treatment are suited for that particular type of treatment. A descriptive analysis on the basis of the monitoring of activities is always possible. The programme can have some system of monitoring its activities: how many people are seen, with what frequency, how much medication is prescribed, staff/client ratio, number of counseling sessions required to engage a client, number of referrals made to social service and drug treatment agencies etc.

Evaluation of the treatment outcome or a cost-benefit analysis can be carried out. A survey could be carried out among patients to check if they are satisfied with what is being offered and the way in which it is offered to them. Assessment of the quality of the service could be measured with more qualitative instruments, such as through a 'focus group' or in-depth interviews with workers, clients, consumer groups, neighbours, community leaders, police, etc. It can be useful to involve external experts for this type of evaluation.

The process of community mobile treatment- mobilizing the community

It is recommended that patients and their family members be involved in the development and running of treatment programme. The process of community mobilization would begin with identification of the problem. This would mean identifying the individuals within the community who are having problems due to substance use and are willing to do something about it. Raising the awareness of the community on these issues would help in accelerating the process. The aim should be to include as many personnel as possible. They should also be representative of the diverse stakeholders. Meeting of these members, sessions in the local schools, colleges, and community halls can provide the community with the required information regarding the substance use, need for treatment and the available treatment modalities. Involvement of as many individuals as possible in the

programme would provide role models for those who would still be contemplating. The active participants of the programme could also provide the support to the potential new help seekers. It would be a continuous effort of the mobile unit to harness more community participation. Service users should also be given regular opportunities to assess the services that they receive so that they could provide feedback and inputs to modify the approach. Many programmes in Europe have service-user groups who work closely with clinical staff, and such groups should have an important voice in matters of policy and practice. Such initiatives enable closer communication between patients and professionals, as well as better mutual understanding and concern. Some programmes also involve patients in the development of treatment protocols and facilitates access to patient advocacy services. The mobile task team has the responsibility to spend time to know the neighborhood and the people within the neighborhood, thereby building trust in what they are doing with prospective clients.

Impact of the ongoing programme

The Amsterdam methadone programme, with their harm reduction approach, reaches an estimated 60% to 70% of the city's 5000 opiate-dependent drug users receiving treatment. Implementation of the programme led to improvement in public order as open drug scenes were no longer tolerated in the city and a major chunk of these users shifted to mobile methadone dispensing.

Using the data from the Amsterdam Central Methadone Register (CMR), it was found that the low threshold component of the programme had significantly reduced mortality rate in the opioid users. Patients in a community-based methadone programme considered this an acceptable way of methadone service delivery and a good alternative to clinic-based treatment. Patients in the community-based programme

used significantly less heroin than before their entrance in the programme [14].

Langedam et al (1998) found that during the first year of their study on patients in methadone treatment in Amsterdam, 86% of the cohort participants received methadone at the low-threshold programme (methadone outpost, methadone bus and prostitutes' and foreigners' outpatient clinic), 10% at the medium threshold level (through general practitioners (GPs)) and 4% at the highest level, the outdoor addiction clinic [15].

The success and acceptance of the Amsterdam model can be judged by the acceptance of the model by 20 European cities through the Frankfurt Resolution to implement the low threshold model during 1990s.

Brady et al (1992) attempted to determine the feasibility and comparative effectiveness of delivering drug abuse treatment within the context of a mobile health service in the city of Baltimore [16]. The researchers compared the services provided by the medication van and a modified house trailer that makes daily rounds at several predetermined sites in a centre city community on the west side of Baltimore for drug abuse counseling along with the delivery of ancillary health services. The data regarding the programme effectiveness based on a questionnaire evaluating client satisfaction with the programme and follow-up urine samples from patients revealed that the earlier approach received higher ratings on 'convenience' and 'scheduling' items. The drop out rate is also in favour of the mobile drug abuse treatment programme as an attrition rate of only 13% has been seen with this approach as compared to rate of around 40% for the standard methadone treatment clinics in the city of Baltimore. Both process and outcome evaluations completed to date confirm the savings in time and money reflected in the patient self-reported comparisons between their previous drug abuse treatment programmes and the mobile health service drug abuse treatment

programme. Self-reported levels of legitimate employment have increased from less than 20% at intake to over 35% during the first 6-month course of treatment and comparisons with other fixed site drug abuse treatment programmes in the city. The results of this comparative analysis show that the mobile health service had a higher percentage of patients reporting daily drug use on admission; fewer previous drug abuse treatment admissions; and an average length of stay in the mobile health service treatment programme was greater than for fixed-site programmes. Greenfield et al (1996) found that the retention of patients enrolled in mobile health services (MHS), a Baltimore outpatient mobile methadone treatment programme, was for a median of 15.53 months as compared to 3.90 months for fixed-site dispensing [17].

While assessing the impact of the community mobile treatment in Anahim Lake reserve after 6 months of its inception it was seen that 75% of the service utilisers were abstinent. But for one patient all had gained employment. The improvement was also observed in the health, attendance and care at home of the school students. This was a significant change for a population whose 75% adults were having problem related to use of alcohol prior to the use of this treatment strategy.

Conclusion and Limitations

Due to the limited scope of the programme and limited resources, it would not be feasible to provide the comprehensive services to the substance users. While a set of the patients would find it suitable for their needs, others would find it short of resources for their needs. Due to the emphasis on a particular substance, other substances would not get the required interventions. The limitation of the services available through this approach to the use of opiates would mean a possible neglect of other substances being used by the individual. Moreover, while the use of illicit opiates is likely to come down by use of the

programme, the individual might substitute it with some other substance or escalate the dose of the substance being used earlier in a lesser amount. The urine sample results in the study carried out by Brady et al, 1992 showed that while there was a drop in the urine positive samples to a 40-50% level for opiates other than methadone, cocaine was found in 80-90% of the samples [16].

These issues need to be taken into account and the individuals needing interventions for substances other than opiates along with it would probably need to be referred to a setting where they can be provided with more comprehensive care. This would call for a well-planned backup and referral services. It would probably mean that the users of multiple substances would not be good candidates for such an approach.

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While evaluating the effectiveness of the programme for the opiate use problem there would be a need to assess the status of use of other substances as well.

The vicinity of the drug dispensing unit might experience increasing pressures of petty crimes and social nuisance. According to Huber, the vicinity of the area of agonist dispensing in the community experienced increasing pressure of petty crimes and social nuisance, and the “pull-effect” of the drug scene was a destructive element. Community participation in the implementation of the programme and adhering to the well-defined set of rules and work criteria would probably ameliorate such problems.

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