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Information for Authors

Email manuscript submissions to the Editor, The ASEAN Journal of Psychiatry
at the following address:

Hatta Sidi MBBS MMed DipSHC.
Chief Editor, ASEAN Journal of Psychiatry (2009-2013)
Professor of Psychiatry, Department of Psychiatry,
Universiti Kebangsaan Malaysia Medical Center (UKMMC)
56000 Cheras, Kuala Lumpur, Malaysia.
Website: www.aseanjournalofpsychiatry.org

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REVIEW ARTICLE

DOES CANNABIS CONSUMPTION NEGATIVELY AFFECT COGNITION? A REVIEW OF THE SCIENTIFIC EVIDENCE

Attilio Rapisarda ** ***, Keane Lim*, Jimmy Lee* ^*

Research Division, Institute of Mental Health, 10 Buangkok View Singapore 539747; **Medical Education, Research & Evaluation Department, Duke-NUS Medical School, 169857 Singapore;Program in Neuroscience & Behavioral Disorders, Duke-NUS Medical School, 169857 Singapore; ^Department of General Psychiatry 1, Institute of Mental Health, 10 Buangkok View, Singapore 539747.**

Abstract

Objective: **This review summarises the existing evidence on the effects that recreational and medical use of cannabis and cannabinoids have on cognitive performance.** ***Methods:*** **Databases (PubMed, Medline, and Google Scholar) were searched from inception to March 2017 by adopting the following key terms: dronabinol, nabilone, nabiximols, cannabis, marijuana, cognition, neurology, and neuropsychology. A total of 94 documents, including reviews, preclinical and clinical studies, industrial and government agencies reports were included in this review.** ***Results:*** **We found that recreational use of cannabis doubles the risk of a fatal traffic accident by impairing attention and lengthening reaction time. Short-term use lowers performance in working memory, attention, executive functions and visual perception tasks. Chronic recreational use in adolescents also doubles the risk of early school-leaving, cognitive impairment and psychoses in adulthood. Adverse effects of cannabis-based medication – dronabinol, nabiximol and nabilone – and ingestion/inhalation of marijuana allowed for medical use include dizziness, drowsiness and short-term memory impairment.** ***Conclusion:*** **Cannabis consumption is associated with significant impairments in a range of cognitive abilities. Of particular concern, early and chronic exposure to cannabis, especially in the adolescence, seems to be associated with irreversible cognitive impairments.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 123-134.***

Keywords: Cannabis, Cannabinoids, Cognition, Neuropsychology

Introduction

"Cannabis" is frequently adopted in reference to the flowering tops of the female *Cannabis sativa* plant. Cannabis is usually smoked or ingested to achieve the desired psychoactive effects of euphoria and increase sociability. Such effects are primarily produced by delta-9-tetrahydrocannabinol (THC) and are modulated by cannabidiol (CBD), a non-psychoactive cannabinoid [1]. The more general term "cannabinoids" is used in reference to three different classes of active compounds that exhibit effects, especially in the central nervous system (CNS) and immune system: (i) phytocannabinoids, which are the constituents of *Cannabis sativa* and include, among others, THC and CBD, (ii) endocannabinoids, which act as neuromodulators and neurotransmitters in the human body and (iii) synthetic cannabinoid preparations, of which three are currently approved for medical use – dronabinol (Marinol), nabiximol (Sativex) and nabilone

(Cesamet) – and seven are still under development by the pharmaceutical industry: dexanabinol, CT-3, cannabinor, HU 308, HU 331, rimonabant, taranabant [2, 3].

Phytocannabinoids and synthetic cannabinoids are used in medicine to ease chemotherapy-related nausea and vomiting, chronic pain, neuropathic pain, muscle spasm, anxiety and sleep disturbances. Other proposed medical use include anti-inflammatory activity, antiviral activity and antitumoral activity [4]. Endocannabinoids are a class of bio-active lipids that serve as natural ligands of the cannabinoid receptors. Anandamide (*N*-arachidonylethanolamide, AEA) was the first of such ligands to be isolated, in 1992, followed by 2-arachidonoylglycerol (2-AG) [5]. More recently, three more endocannabinoids were identified: 2-arachidonyl-gliceryl-ether (noladin, 2-AGE) [6], virodhamine (*O*-arachidonyl ethanolamine) [7] and *N*-arachidonyl dopamine (NADA) [8].

Endocannabinoids are synthesized in the post-synaptic terminals of neural cells and bind to the cannabinoid receptors in near-by cells or in the same cells that synthesized them [9]. The two most relevant receptors for cannabinoids are the CB_1 and CB_2, predominantly expressed in the Central Neural System (CNS) and immune system respectively [10]. Once released, endocannabinoids are inactivated via reuptake, hydrolysis or absorbed within the phospholipidic layers of the cellular membrane [11]. Endocannabinoids serve as a neuromodulator system that controls neural excitability by either initiating a second messenger cascade reaction or by interacting with gamma-aminobutyric acid-ergic (GABA-ergic), serotoninergic, glutamatergic or dopaminergic transmission [12].

The physiological role of the endocannabinoids system is very diverse. It controls appetite by increasing hunger after endocannabinoid binding with the central CB_1 receptors in the hypothalamus [13]. It is also involved in the extinction of old memories by suppressing long-term potentiation in the hippocampus[14]. Endocannabinoids also possess antiemetic [15], analgesic [16], anticonvulsive [17], and hypotensive properties [18]. They also seem to modulate immune [19] and stress responses [20], control energy balance [21], promote sleep [22] and lower spasticity associated to multiple sclerosis [23]. This review collects the evidence on the cognitive risk associated with the early, short-term and long-term assumption of cannabis for medical and/or recreational reasons.

Methods

Types of Studies

Randomized clinical trials (RCTs) comparing cannabinoids with usual care, placebo or no treatment in various patient populations were included in this review. Non-randomized, non-controlled studies were also reviewed when including at least 25 participants. *In vitro*, *in silico* and animal studies on endocannabinoids signalling and endocannabinoids receptors were also included when pertinent to explore the effects of suppression/enhancement on cognition.

In addition, scientific literature reviews, industry reports and government reports on the adverse effects of cannabis on cognition in patients and healthy individuals who reported recreational use of cannabis were reviewed. Any anecdotal literature, which was prevalent in Google Scholar searches, was excluded from the review.

Types of Participants

Studies with participants of any age and gender consuming cannabis in any of the following situations were included: (i) chemotherapy-induced nausea and vomiting; (ii) appetite stimulation in HIV/AIDS, (iii) chronic pain, (iv) spasticity due to multiple sclerosis (MS) or paraplegia, (v) depression, (vi) anxiety disorders, (vii) post-traumatic stress disorder, (viii) sleep disorders, (ix) psychosis, (x) intraocular pressure in glaucoma, and (xi) neurological disorders (amyotrophic lateral sclerosis, dystonia, Huntington's disease, Parkinson's disease, Tourette's syndrome).

Types of Consumption/Intervention

Studies exploring the association between cognitive performance and any form of

medical or recreational cannabis consumption were included in the review: smoked/ingested phytocannabinoids or administered synthetic cannabinoids.

Search Strategy

The literature review was conducted in June 2015 and updated continuously until March 2017 using three popular databases: PubMed, Medline and Google Scholar. Relevant literature was generated by using key search terms in several different combinations to retrieve as many publications as possible. The comprehensive list of search terms used included dronabinol, nabilone, nabiximols, cannabis, marijuana, hashish, cognition, neurology, neuropsychology, prenatal.

Results

From the PubMed, Medline and Google Scholar database searches a total of 70 publications were included to identify trend in the association between recreational and medical use of cannabisand cognition. It is worth noting that "medical use" may include the administration of cannabis-derived pharmaceutical formulations as well as cannabis ingested or inhaled under medical control: reference to either case is specified below.

Acute Exposure to Recreational Cannabis and Neuropsychological Functioning

The acute effects of cannabis use (between 5 and 36 occasions of cannabis use in a year) on cognition have been reviewed by Lundqvist [24] and are very well documented. Such use lowers performance in neuropsychological measures of verbal memory, attention, short-term memory, executive functions, visual perception, facial emotion recognition, memory consolidation and retrieval [25-30]. Verbal memory, attention, episodic memory consolidation and working memory in particular, seem to be consistently impaired by both acute and chronic exposure to cannabis [31], in a dose-dependent fashion [32, 33]. These findings are in line with those obtained in studies administering THC intravenously on non-users: poorer immediate and delayed verbal recall and poorer verbal working memory was noted 10 minutes after drug-administration [34, 35].

A study comparing psychomotor performance across a group of occasional users and chronic users engaged in a driving simulation task intuitively showed that both users were significantly impaired compared to non-users but – counter-intuitively – occasional users were more impaired than chronic users, perhaps as a result of a more cautious behaviour in the chronic users, who were more aware of their level of intoxication [36, 37]. Recent systematic reviews and meta-analyses concluded that acute cannabis use is associated with a two-[3, 38, 39] to seven-fold [40] risk of being involved in a fatal accident.

Acute Exposure to Medical Cannabis and Neuropsychological Functioning

The most frequently reported adverse events reported in clinical trials after acute administration of dronabinol (Marinol©) and nabiximols (Sativex©) – drowsiness, dizziness, transient impairment of sensory and perceptual functions [41, 42] – involve the Central Nervous System (CNS). These effects were reported in 24% of patients receiving Marinol© as an anti-emetic and 8% of patients who were administered it as an appetite stimulant [41]. Dizziness is the most common adverse event reported with Sativex©, with 25 to 35% of patients reporting it [43].

Acute administration of nabilone or nabiximols has been found to impair psychomotor performance crucial in driving behaviours: the learning and execution of coordinated movement of the hands, fingers, upper and lower limbs. Acute administration of a medium dose of dronabinol (20 mg) or THC from hemp milk decoctions (16.5 mg) was also found to lower performance in a set of motor and perceptual tasks required for safe driving [44-46]. Performance deterioration after administration of dronabinol is comparable to the one observed in drivers with a blood-alcohol concentration of 0.8 mg/mL (0.08 g%): serum THC concentrations between 2 and 5 ng/mL have been identified as a threshold above which THC-induced impairment of skills related to driving become apparent [47-49]. Decrease in performance is dose-dependent: the driving skills deteriorate

with increasing dosages of dronabinol, especially in occasional users [50]. Driving performance impairment was reported to be highest during the first hour after inhaling cannabis and declines after 3-4 hours [51, 52].

Chronic Exposure to Recreational Cannabis and Neuropsychological Functioning

Findings on the long-term effects of chronic, recreational cannabis consumption (1 to 3 joints per day, more than 160 times per year) on cognitive performance are heterogeneous. While some studies suggest that lower cognitive performance is associated to either chronic use [53-55] or abstinence after chronic use [25, 27], other studies could not confirm these associations [56-58]. Nonetheless, most of the evidence collected so far suggests that chronic cannabis use leads to potentially long-lasting impairment of verbal learning, memory and attention [46, 59-62].

A global neuropsychological decline was observed in a longitudinal study tracking 1037 chronic cannabis users who started using during adolescence and were followed up for 20 years. Importantly, cessation of cannabis use for one month to one year did not restore the loss in cognitive functioning [25, 63, 64]. Chronic cannabis use seems to be most likely to affect cognition in early-onset users [65, 66]: such early-onset, chronic use affects learning abilities, executive function, working memory and verbal memory, independently from other substances of abuse like tobacco and alcohol [30, 65, 67-71]. Also, cognitive performance seems to decline in line with cannabis' cumulative, lifetime exposure: in a verbal memory task, for example, every 5 years of past exposure were associated with 1 fewer recalled word from a list of 15 [71].

Studies on the long-term neuropsychological sequelae of prenatal exposure to recreational heavy-use (one or more cigarettes per day) of marijuana have reported significantly lower speed of processing and visual motor coordination performance in the offspring at the age of 16 [72], lower Stanford-Binet Intelligence Scale IQ scores in children at 3 [73] and 6 years of age [74], lower Continuous Performance Task working-memory and learning performance[75], and lower executive functions performance [76].

Findings on the effect of chronic cannabis use on general intelligence are mixed, with one [70] study supporting a lower general intelligence in users and one study [77] finding no association. Cognitive disruptions are more likely in early, chronic, frequent users [78-80]. These users perform approximately one-third of a standard deviation lower compared with their non-user peers [81].

Chronic Exposure to Medical Cannabis and Neuropsychological Functioning

In the animal model, acute administration of dronabinol was found to impair working memory in an object recognition task [82] and attention [61, 83, 84]. In multiple sclerosis patients who ingest or inhale cannabis, it was observed poorer performance in tasks probing working memory, executive functions, visuo-spatial perception and speed of information processing [85]. Driving performance is also impaired in heavy, chronic users of dronabinol, and the level of impairment on dosage level [50].
Studies exploring the impact of chronic exposure to medical cannabis on cognition found effects similar to those of chronic, recreational use: it is worth noting that participants in these studies are often also recreational users [86].

Discussion

The literature on the effect of cannabis exposure on cognition is generally heterogeneous in terms of length of exposure to cannabis and types of participants assessed. The effects of cannabis exposure on cognitive performance depend on the onset of consumption, on the type of consumption (medical vs. recreational; smoked vs. ingested; direct or indirect), on the age of the consumer, on the duration and quantity of consumption, on the potency of cannabis consumed. Also, cognitive domains that are crystallized under the same "umbrella term" (e.g. "executive function" or "memory") reflect cognitive processes that recruit distinct populations of neurons in different brain districts and are measured by neuropsychological tools that not always are equivalent to each other [87].

Despite the above mentioned heterogeneity of scopes, samples and measuring tools, the

evidence to support a negative impact of THC on cognition seems robust. Early, chronic, recreational consumption of cannabis, in particular, is generally found to exert deleterious effects on learning abilities, executive function, working memory, verbal memory [30, 65, 67-71] and general intelligence [78-80]. Often, these effects are directly proportional to the frequency and duration of cannabis consumption [71].

Prenatal exposure to recreational, heavy use of cannabis also exerts particularly deleterious effects on the offsprings' general intelligence [73, 74, 88], learning abilities [75], working memory and executive functions [76]. Studies on the effects of the acute exposure to cannabis bear more mixed findings, possibly due to differences in the means of administration and methodological difficulties in the investigation of long lasting effects on cognition of acute administration of cannabis on non-regular users. Impairment of verbal and working memory has been consistently found among non-users or occasional users after acute administration of THC, either intravenously or by inhalation [34, 37]. Interestingly, when groups of frequent users and occasional users were compared on a battery of neuropsychological tests after acute THC administration, the occasional users showed a higher degree of impairment in tasks associated with driving skills [39, 50], and such impairment is amplified when cannabis is administered in combination with alcohol [36, 89].

Investigations on the long-term, permanent neuropsychological sequelae of chronic cannabis use are particularly challenging due to the considerable resources required. Most of these investigations have been conducted on small samples and only collected their measures at baseline [54, 57, 90]. While some studies have been conducted on relatively large samples including baseline and follow-up measures after a period of abstinence[27], very few investigations have employed a longitudinal design on very large samples followed up for up to forty years. Regardless the design and sample size, all these studies have found that the cognitive decline associated with chronic cannabis use spanned a wide array of cognitive domains, from memory to executive functioning to learning, and the severity of the decline was proportional to frequency and years of use [54]. The evidence from follow-up studies suggest that chances for cognitive impairment to recover in chronic cannabis users depend on age of use onset: cognitive decline is not reversed after use cessation in individuals who started consuming during adolescence [63, 91, 92]. On the other hand, in young adults who were heavy users, abstinence for 12 months restored their cognition to levels not significantly different from non-users [93].

Lack of control for combined consumption of cannabis with other substances of abuse like alcohol, tobacco and amphetamines, common in cannabis users, is one of the most frequent limitations in the available literature. Alcohol has a potentiating effect on the cognitively impairing properties of THC: especially in tasks associated with driving skills and divided attention [60]. When combined with alcohol consumption, the cognitively impairing effects of THC are potentiated in frequent cannabis users [94]. Other frequent limitations found in the available literature refer to the lack of control for premorbid functioning and lack of information on the participants' educational level. A final general limitation of the reviews available on the effects of cannabis on cognition focuses on the lack of standardization on cannabis use metrics across studies: active principles' combination (THC/CBD), potency, frequency of use, duration of use and length of abstinence [31].

Despite the above-mentioned limitations, the available evidence on the impact of cannabis consumption on cognitive function and development suggests that medical practitioners must exercise care with patients who seek prescription of medicinal cannabis. Still, public acceptance, rather than science, has been the main drive to push approval of medical cannabis in some regions in the West and in the Asia-Pacific region. Regulations on prescription, monitoring, informed consent, record-keeping, right to refuse treatment, sourcing and supply of medical cannabis, vary from state to state: complaints to government and professional bodies and criminal law issues may arise in situations when patients who are on cannabis medications prescribed in states where medicinal cannabis is regulated seek continuation of treatment in states where

medical cannabis is not allowed and regulated [95]. The evidence for pharmacological interactions between psychiatric medications like neuroleptics and antidepressants and cannabis-derived compounds suggests extra-care in the management of patients seeking medicinal cannabis prescription while under psychiatric care [34].

Medical practitioners should consider laws and regulations by their own government and professional body, and perhaps consult legal experts within their own institution, before seconding a patient's request for medical cannabis treatment [96].

Conclusion

There is solid and consistent evidence on the association between early, chronic cannabis use and lower cognitive performance. The strength of this association is often dose-dependent, persists after statistical adjustment for plausible confounding factors and is also observed in children and young adults who were prenatally exposed to cannabis.

Acute cannabis consumption – in the form of either phytocannabinoids or synthetic cannabinoids - dramatically increases the risk of fatal car crashes. Chronic cannabis consumption in early use onset individuals is also associated with long lasting, and irreversible impairment of verbal learning, working memory, executive functions, visuo-spatial perception and attention.

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Corresponding author: ***Attilio Rapisarda, Research Division, Institute of Mental Health, 10 Buangkok View, Singapore 539747.***

Email: attilio.rapisarda@duke-nus.edu.sg

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ORIGINAL ARTICLE

VALIDATION OF THE MALAY VERSION OF THE POSTTRAUMATIC GROWTH INVENTORY-SHORT FORM (PTGI-SF) AMONG MALAYSIAN CANCER PATIENTS

Mohammad Farris Iman Leong Abdullah*, Rohayu Hami*, Gokula Kumar Appalanaido**, Nizuwan Azman, Noorsuzana Mohd Shariff*, Siti Shahanis Md Sharif****

***Lifestyle Sciences Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia, 13200 Kepala Batas, Pulau Pinang, Malaysia; **Radiological and Oncological Sciences Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia, 13200 Kepala Batas, Pulau Pinang, Malaysia; ***Division of Research and Networking, Advanced Medical and Dental Institute, Universiti Sains Malaysia, 13200 Kepala Batas, Pulau Pinang, Malaysia.**

Abstract

Introduction: **Posttraumatic growth (PTG) is a positive psychological change in life that occurs as a result of struggle with highly challenging life crises. There is a growing need to explore posttraumatic growth (PTG) in cancer patients, as higher PTG may enhance well-being of patients.** ***Objectives:*** **The aim of this study was to translate the Posttraumatic Growth Inventory-Short Form (PTGI-SF) into the Malay language and evaluate its psychometric properties for assessing Malaysian cancer patients in future studies.** ***Methods:*** **Two parallels forward and backward translations of the PTGI-SF into the Malay language were conducted. The test was administered to 195 cancer patients. Reliability was evaluated by testing internal consistency (Cronbach's α) and calculating the test-retest intra-class correlation coefficient, and validity was examined by determining face, convergent, and discriminant validities and using confirmatory factor analysis (CFA).** ***Results:*** **The Malay version of the PTGI-SF and its five domains demonstrated good internal consistencies and acceptable test-retest reliability. All 10 items of this version were highly correlated with their own domains and thus exhibited convergent validity. Discriminant validity was achieved, as all domains of the Malay PTGI-SF was not highly correlated with the domains of the Source of Social Support Scale. CFA resulted in a best-fitting 5-factor model.** ***Conclusion:*** **The Malay version of the PTGI-SF is a suitable tool for measuring PTG in Malaysian cancer patients.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 135-143.***

Keywords: Malaysian Cancer Patients, Malay Version of PTGI-SF, Reliability, Validity, Posttraumatic Growth

Introduction

There are many situations or events that cause trauma in life, such as experiencing a car accident, rape, natural disaster, physical or sexual abuse, being a refugee or prisoner of war, and suffering from chronic and recurrent illnesses such as cancer. Most victims of such events suffer from acute trauma whereby they constantly think about the nature of the trauma that occurred. Unlike those with acute trauma, those diagnosed with cancer experience

chronic trauma and persistently worry about adverse effects of treatment and possible recurrence of cancer (i.e., future trauma). Hence, no doubt a proportion of cancer patients tended to develop posttraumatic growth (PTG) as a result of their illness [1].

PTG is defined as positive psychological changes that occur as a result of struggle with major life crises or traumatic events [2]. Not all patients with cancer will experience PTG; it will only occur if the person strongly perceives the illness and its course as a threat and has an intense emotional response to the seriousness of the event [3]. The importance of studying PTG and possible factors that may enhance PTG in cancer survivors is the potential benefits it may provide, such as a greater value of life, improved interpersonal relationship with others, higher capacity and strength to face new possibilities in life, higher spiritual maturity, and optimisation of self-values [1].

Several screening tools are used to assess the level of PTG in cancer patients. These include the Posttraumatic Growth Inventory (PTGI) [4], Stress-Related Growth Scale [5], Changes in Outlook Questionnaire [6], and Perceived Benefit Scales [7]. Among these, the PTGI is the most widely used questionnaire for assessing PTG. The PTGI is a 21-item scale that measures the degree of positive change experience by a person in the aftermath of a traumatic event. It consists of five subscales (appreciation of life, spiritual change, and new possibilities in life, personal strength, and relating to others). The PTGI total score has excellent internal consistency (Cronbach's α = 0.9), and its five subscales have acceptable internal consistencies (Cronbach's α ranged from 0.67 to 0.85). Confirmatory factor analysis (CFA) demonstrated that an oblique 5-factor model was the best-fit [4].

The Posttraumatic Growth Inventory-Short Form (PTGI-SF) is a shortened version of the original PTGI (Appendix 1). It consisted of the same five subscales but has a total of 10 items with two items designated to each subscale. The advantage of using the PTGI-SF instead of the PTGI for assessing cancer patients is that it takes less time to administer and has fewer total questions to answer; this is beneficial for cancer patients who are physically weak and have reduced concentration. Hence, the PTGI-SF may minimize response bias from cancer patients. The PTGI-SF has demonstrated good internal consistency (Cronbach's α = 0.86), and its five subscales have acceptable internal consistencies (Cronbach's α ranged from 0.68 to 0.8). CFA demonstrated the same 5-factor model as the best fit for both the PTGI and PTGI-SF. PTGI-SF has been shown to measure the degree of posttraumatic growth equivalent to that of PTGI. Thus, the PTGI-SF can be used in place of the PTGI for measuring degree of PTG without significant loss of information [8].

The PTGI-SF has been translated and validated in several other languages, such as Portuguese, French, Urdu, and Spanish [9 - 12]. The goal of this study was to translate the original English version of the PTGI-SF into the Malay language and determine the psychometric properties of the Malay version for use in future studies of PTG in Malaysian cancer patients.

Methods

Translation of the PTGI-SF

The original English version of the PTGI-SF was translated in parallel by two bilingual language experts who were native speakers of the Malay language and proficient in English. It then was back-translated by another bilingual expert who was a native speaker of English and proficient in the Malay language who had never seen the original English version. Permission for validation of the questionnaire was obtained from Cann et al. (2010) prior to these processes. A group of experts consisting of two psychiatrists, a clinical psychologist, and a PTG expert assessed the translated and back-translated versions of the questionnaire to decide on the appropriateness of the contents before the final draft of the Malay version of the PTGI-SF was generated. A pilot study was conducted in which the final draft of the Malay version was administered to 20 Malay speaking Malaysian cancer patients to identify any flaws in the wordings and sentence structure, appropriateness of questions asked and instructions given, and duration of

administration. Any sentences or questions found to be inappropriate were amended by the group of expects based on the feedback from the respondents in the pilot study.

Data collection

This prospective study received approval from the Human Ethics Committee of Universiti Sains Malaysia (code: USM/JEPeM/15060178).

Cancer patients with different diagnoses were recruited from the Oncology Unit of the Advanced Medical and Dental Institute, Universiti Sains Malaysia in 2016 for one year. The inclusion criteria were patients with any type of cancer diagnosis confirmed by the histopathological report (except those with a primary brain tumour), no cognitive impairment (cognitive functioning screened using the Malay version of the Mini Mental State Examination; participants must have a score of > 24/30), 18 years and older, ambulatory, any stage of cancer except those with brain metastasis, and those who understand and can read and write in the Malay language. Those who were too weak to answer questionnaires were excluded from the study. Cancer patients were approached and told about the study. Those who agreed to participate signed the informed consent form and enrolled in the study.

Baseline assessment was performed by administering a general questionnaire (which included age, gender, education status, race, and type of cancer), the Malay version of the PTGI-SF, and the Malay version of the Source of Social Support Scale (SSSS) (used for comparison with the Malay version of the PTGI-SF to evaluate discriminant validity of the latter). Follow-up assessment commenced 2 months after baseline, at which time the Malay version of the PTGI-SF was re-administered (in order to assess test-retest reliability).

Research tools

The PTGI is a self-administered scale used to assess the degree of positive psychological change in a person that occurred as a result of a struggle with highly challenging life crises. It consists of a total of 21 items and made up of five domains: appreciation of life, personal strength, relating to others, spiritual growth, and new possibilities in life. Each item is rated from 0 (I did not experience this change) to 5 (I experienced this change to a great degree). The higher the total score, the higher the level of PTG is [4]. The PTGI-SF is a shorter scale adapted from the PTGI that can be used to replace the PTGI without any significant loss of information. It consists of a total of 10 items in five domains, each of which contains two items (appreciation of life: items 1 and 2, spiritual change: items 3 and 8, new possibilities in life: items 4 and 7, relating to others: 5 and 10, and personal strength: items 6 and 9). It is scored from 0 to 50 and can be administered in a much shorter period of time compared to the PTGI [8].

The SSSS is also a self-administered scale that is used to assess a person's perceived level of spousal support. It consists of four domains (informational support, instrumental support, emotional support, and negative support) with a total of 10 items. The SSSS is scored on a Likert scale of 1 to 5 for each item, and its total score ranges from 10 to 50 [13]. In this study, the SSSS was used for comparison with the PTGI-SF to assess the discriminant validity of the latter.

Data analyses

Statistical analyses were carried out using SPSS version 22. Descriptive statistics were applied to describe the socio-demographic characteristics and the proportion of the types of cancer in this study. Reliability of the total score of the Malay version of the PTGI-SF and its domains was determined based on internal consistency using Cronbach's α and by computing the test-retest reliability using the intraclass correlation coefficient (ICC). Convergent validity of the Malay version of the PTGI-SF was measured using Pearson's correlation coefficient to assess the strength of correlations of items within the designated domains of the inventory. Discriminant validity was measured with Pearson's correlation coefficient to assess the strength of correlations between domains of the Malay versions of the PTGI-SF and those of the SSSS. Finally, exploratory factor analysis of

the Malay version of the PTGI-SF was carried out (with factor loading of > 0.4 for each item). This was followed by CFA with best-fitting model analysis using Analysis of Moment Structure version 22. Goodness-of-fit indicators included χ^2, goodness of fit index (GFI) where > 0.9 was acceptable, comparative fit index (CFI) where > 0.95 was acceptable, Tucker-Lewis index (TLI) where > 0.95 was acceptable, normed fit index (NFI) where > 0.90 was acceptable, and root mean square error of approximation (RMSEA) where < 0.10 was acceptable.

Results

We recruited 208 cancer patients in this study, but only 195 completed both baseline and follow-up assessments. The participants' mean age was 53 years old (±10.25).More than two-thirds of the participants were female (72.8%). Malays constituted more than four-fifths of the participants (82.1%), whereas the proportions of Chinese (9.7%) and Indians (8.2%) were almost equal. More than half of respondents had only secondary education (64.1%), followed by tertiary education (22.6%) and primary education (13.3%). Half of the participants had breast cancer (52.1%), 16.5% had colon cancer, 8.8% had nasopharyngeal carcinoma, and 22.7% had other cancer diagnoses.

In the pilot study, assessment of face validity demonstrated that 76% of participants judged the duration of administration of the Malay version of the PTGI-SF to be "appropriate", and 24% responded that it was "very appropriate". Sixty-eight percent of participants found the wording and sentence structure to be "clear and comprehensive", and 32% responded that it was "very clear and comprehensive". Finally, 70% of participants judged the questions asked and instructions given to be "clear and comprehensive" and 30% found it to be "very clear and comprehensive". The participants commented they were able to comprehend the meaning of the wordings and sentences well, and able to understand the questions asked and instructions were given clearly. As a result, no further amendment of the Malay version of the PTGI-SF was necessary.

Test-retest reliability assessment demonstrated that total PTGI-SF score had an ICC value of 0.75 ($p < 0.05$), and its five domains had ICC values ranging from 0.55 to 0.75 (all p values < 0.05). The results are summarized in Table 1.

Table 1. Internal consistencies and test-retest intraclass correlation coefficient of the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF)

	Baseline mean (SD)	Follow-up mean (SD)	Internal consistency (Cronbach's α)	Test-retest reliability (Intra-class correlation Coefficient)
Appreciation of life	7.27 (±2.11)	7.04 (±2.31)	0.86	0.55*
Spiritual growth	8.48 (±2.04)	8.47 (±2.13)	0.91	0.71*
New possibilities in life	8.02 (±1.95)	7.95 (±2.06)	0.90	0.75*
Relating to others	8.27 (±1.88)	8.14 (±2.03)	0.88	0.71*
Personal strength	8.19 (±1.92)	8.04 (±2.20)	0.91	0.67*
Total PTGI-SF	39.99 (±8.40)	39.87 (±9.09)	0.89	0.75*

* statistical significance at $p < 0.05$; SD = standard deviation

Evaluation of the Pearson's correlation coefficient of the items and domains of the Malay version of the PTGI-SF revealed that the correlations of all individual items with their designated domain (i.e. items 1 and 2 had highest correlations with appreciation of life, items 3 and 8 with spiritual growth, items 4 and 7 with new possibilities in life, items 5 and 10 with relating to others, and items 6 and 9 with personal strength) ranged from 0.82 to 0.93; correlations with non-designated domains had coefficients of only 0.29 to 0.68 (Table 2).

Table 2. Correlations within the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF) (item vs. domain)

	Appreciation of life	Spiritual growth	New possibilities in life	Relating to others	Personal strength
Appreciation of life 1#	**0.88***	0.29*	0.38*	0.38*	0.33*
Appreciation of life 2#	**0.82***	0.49*	0.55*	0.48*	0.52*
Spiritual growth 1#	0.43*	**0.93***	0.67*	0.58*	0.64*
Spiritual growth 2#	0.40*	**0.93***	0.64*	0.65*	0.61*
New possibilities in life 1#	0.55*	0.65*	**0.93***	0.66*	0.61*
New possibilities in life 2#	0.42*	0.63*	**0.90***	0.58*	0.63*
Relating to others 1#	0.50*	0.51*	0.60*	**0.91***	0.58*
Relating to others 2#	0.35*	0.68*	0.59*	**0.84***	0.63*
Personal strength 1#	0.50*	0.66*	0.69*	0.68*	**0.93***
Personal strength 2#	0.40*	0.68*	0.67*	0.68*	**0.92***

* statistical significance at $p < 0.05$; SD = standard deviation

In addition, all domains of the PTGI-SF were not significantly correlated with the domains of the SSSS, except for appreciation of life and personal strength, which were weakly positively correlated with informational support ($r= 0.21$, $p < 0.01$ and 0.20, $p < 0.05$ respectively), and new possibilities in life was found to be weakly positively correlated with instrumental support ($r= 0.2$, $p < 0.05$) (Table 3).

Table 3. Correlations between domains of the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF) and those of the Source of Social Support Scale (SSSS)

	Informational support	**Instrumental support**	**Emotional support**	**Negative support**
Appreciation of life	**0.21***	0.14	0.17	0.031
Spiritual growth	0.12	0.13	0.092	-0.40
New possibilities in life	0.16	0.15	0.16	-0.063
Relating to others	0.15	**0.20***	0.071	-0.013
Personal strength	**0.20***	0.17	0.17	-0.030

* statistical significance at $p < 0.05$; SD = standard deviation

Exploratory factor analysis with oblique Promax rotation with Kaiser normalization of the Malay version of the PTGI-SF (Table 4) showed that all items had factor loading values ranging from 0.56 to 0.91. Bartlett's test of sphericity was significant ($p < 0.01$), and the Kaiser-Meyer-Olkin measure of sample adequacy was 0.91.

Table 4. Exploratory factor analysis with oblique Promax rotation with Kaiser normalization of the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF)

	Appreciation of life	**Spiritual growth**	**New possibilities in life**	**Relating to others**	**Personal strength**
Item 1#	0.91				
Item 2#	0.56				
Item 3#		0.87			
Item 8#		0.79			
Item 4#			0.79		
Item 7#			0.85		
Item 5#				0.91	
Item 10#				0.59	
Item 6#					0.70
Item 9#					0.91

CFA with best-fitting model analysis revealed that the Malay version of the PTGI-SF did not fit into a 1-factor model (χ^2 = 171.20, p < 0.001, GFI = 0.840, NFI = 0.864, CFI = 0.880, TLI = 0.856, RMSEA = 0.142) or a 3-factor model (χ^2 = 149.50, p < 0.001, GFI = 0.846, NFI = 0.881, CFI = 0.903, TLI = 0.846, RMSEA = 0.138). A 4-factor model also was not the best fit for this inventory (χ^2 = 138.38, p < 0.001, GFI = 0.853, NFI = 0.890, CFI = 0.910, TLI = 0.860, RMSEA = 0.139). Ultimately, a 5-factor model was the best fit for the Malay version of the PTGI-SF (χ^2 = 125.30, p < 0.001, GFI = 0.90, NFI = 0.919, CFI = 0.933, TLI = 0.90, RMSEA = 0.144) (Figure 1).

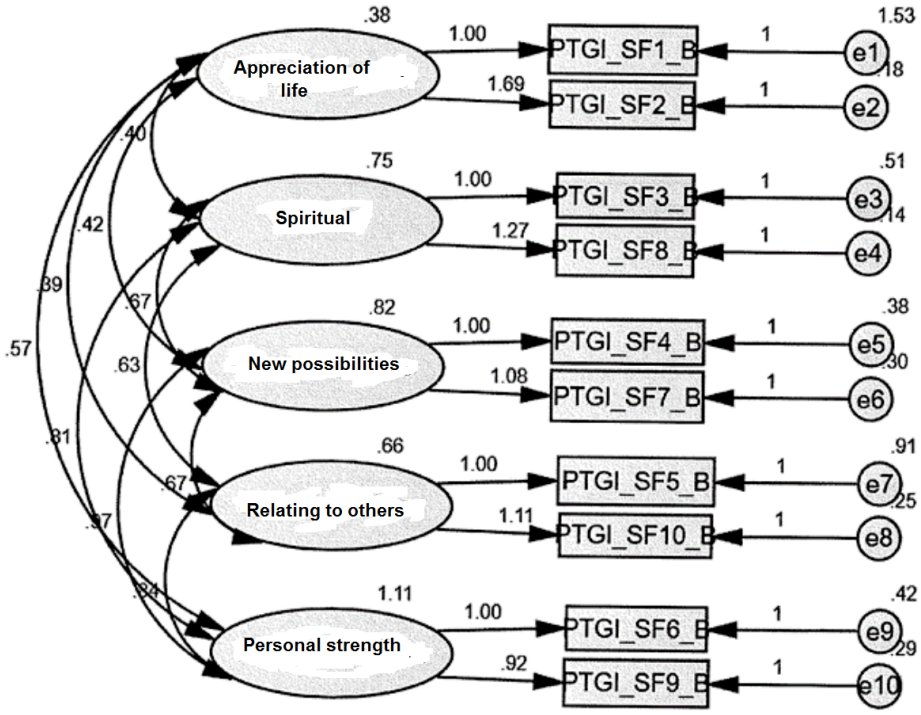

Figure 1. The best-fitting 5-factor model for the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF)

Discussion

The goal of this study was to translate and validate the original English version of the PTGI-SF into the Malay language for use in the Malaysian cancer population. Results of tests for internal consistency, test-retest reliability, face validity, content validity, convergent and discriminant validities, and CFA indicate that the Malay version of the PTGI-SF was successfully translated and validated.

The total score of the Malay version of the PTGI-SF had good internal consistency (Cronbach's α = 0.89), and the value was similar to that of the original English version of the PTGI-SF (Cronbach's α= 0.86) [8]. All domains of the Malay version also demonstrated good to excellent internal consistencies (Cronbach's α ranging from 0.86 to 0.91), and these values were even higher than those of the original English version of the inventory (Cronbach's α ranging from 0.68 to 0.80) [8]. The total score of the Malay version of the PTGI-SF also demonstrated fair to excellent test-retest reliability (ICC of 0.75, p < 0.05), and its five domains showed fair to good ICC values as well (0.55 to 0.75, p < 0.05). These results indicate that the Malay version of the PTGI-SF is a reliable tool for measuring PTG in Malaysian cancer patients.

Face and content validities of the Malay version of the PTGI-SF were established by stringent translation and back translation of the questionnaire by language experts followed by review by a group of experts (two psychiatrists, a clinical psychologist, and a PTG expert) before the final version of the questionnaire was created. Its item relevancy, acceptability, duration of administration, and semantic precision were established by testing the questionnaire in a pilot study of Malaysian cancer patients. All respondents accepted the questionnaire without any need for further improvement.

Convergent validity of the Malay version of the PTGI-SF was achieved, as all items had higher correlations with their designated domains than with non-designated domains. Discriminant validity also was established, as none of the domains of the Malay version of the PTGI-SF were highly correlated with the domains of Malay version of the SSSS, which measures different parameters.
Factor loading in exploratory factor analysis revealed that all individual items were designated into their respective domains, as all items had acceptable factor loading > 0.4 (loading factors ranged from 0.56 to 0.91) (Table 4). Bartlett's test of sphericity was significant ($p < 0.01$) and the Kaiser-Meyer-Olkin measure of sample adequacy was 0.91, indicating that the factor analysis was appropriate. CFA confirmed that the Malay version of the PTGI-SF best fit into a 5-factor model, which was also the case for the original English version of the PTGI-SF [8] and for a few translated versions of the PTGI-SF [10, 11, 12,14].

This study had one limitation. The sample size in this study was relatively small, which may have affected the accuracy of CFA. Despite these limitations, this study showed that the Malay version of the PTGI-SF is a reliable and valid tool for assessing the degree of PTG in Malaysian cancer patients. Future studies should validate this questionnaire for use in other Malaysian study populations that may exhibit PTG, such as crime victims, HIV positive or AIDS patients, natural disaster victims, and victims of abuse and domestic violence.

Conflict of interest: None

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Corresponding author: ***Mohammad Farris Iman Leong Abdullah, Consultant Psychiatrist, Lifestyle Sciences Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia, 13200 Kepala Batas, Pulau Pinang, Malaysia.***

Email: farris@usm.my

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Appendix 1. Items of Posttraumatic Growth Inventory-Short Form (PTGI-SF) in original English version and translated Malay version

Appreciation of life 1 = Item 1: I changed my priorities about what is important in life.
[Saya mengubah keutamaan saya tentang apa yang penting dalam kehidupan.]

Appreciation of life 2= Item 2: I have a greater appreciation for the value of my own life.
[Saya lebih menghargai nilai hidup saya sendiri.]

Spiritual growth 1= Item 3: I have a better understanding of spiritual matters.
[Saya mempunyai pemahaman yang lebih baik mengenai perkara-perkara yang berkaitan dengan keagamaan.]

Spiritual growth 2 = Item 8: I have a stronger religious faith.
[Saya mempunyai kepercayaan agama yang lebih kukuh.]

New possibilities in life 1 = Item 4: I established a new path for my life.
[Saya telah membina laluan baharu untuk kehidupan saya.]

New possibilities in life 2 = Item 7: I am able to do better things with my life.
[Saya berupaya melakukan perkara yang lebih baik dalam kehidupan saya.]

Relating to others 1 = Item 5: I have a greater sense of closeness with others.
[Saya berasa lebih rapat dengan orang lain.]

Relating to others 2 = Item 10: I learned a great deal about how wonderful people are.
[Saya telah menyedari bahawa betapa baiknya orang di sekeliling saya.]

Personal strength 1 = Item 6: I know better that I can handle difficulties.
[Saya lebih yakin yang saya boleh menangani kesukaran dalam kehidupan.]

Personal strength 2 = Item 9: I discovered that I'm stronger than I thought I was.
[Saya menyedari bahawa diri saya lebih kuat daripada apa yang saya sangkakan sebelum ini.]

ORIGINAL ARTICLE

AN EXPLORATION OF USE OF SOCIAL NETWORKING SITES AMONGST USERS WITH PSYCHOLOGICAL PROBLEMS

Manoj Kumar Sharma*, Indu S Menon*, P Marimuthu**

***Service for Healthy Use of Technology (SHUT Clinic), Department of Clinical Psychology, Govindaswamy Block, National Institute of Mental Health & Neurosciences (NIMHANS), Bangalore, Karnataka 560029, India;**
****Department of Biostatistics, Govindaswamy Block, National Institute of Mental Health & Neurosciences (NIMHANS), Bangalore, Karnataka 560029, India.**

Abstract

Objective: **Social Networking Sites (SNS) are gaining popularity across different cultures and age groups with its increasing role in the day-to-day life of its users. Objective of the present investigation is to study the SNS use and its relationship with online and real-life social capital, self-esteem and interpersonal relationships in normal and clinical population.** ***Methods:*** **The sample consisted of 93 participants of the age range 17-37 years, 63 participants from the general population and 30 from the clinical population with a diagnosis of any depressive or anxiety spectrum disorder. The tools used for this study are Basic Data Sheet, the Facebook Intensity Scale, Internet addiction Test, Internet Social Capital Scale.** ***Results:*** **The Rosenberg Self-Esteem Scale and Sentence Completion Test Results show that Facebook use has a positive correlation with online bonding and bridging capital. A significantly higher percentage of participants from the clinical group met the criteria for problem use of the Internet. Compared to average users, problem users of the Internet are found to have higher mean scores for online bridging capital and conflicts in inter-personal relationships and lower mean scores for real life bonding capital and self-esteem.** ***Conclusions*****: It necessitates an exploration of Facebook's use patterns in routine evaluation and management of clinical conditions and implies the need for further research to develop explanatory models and management strategies for problematic use of the Internet.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 144-153.***

Keywords: Social Networking Sites, Social Capital, Self Esteem, Internet Problematic Use

Introduction

Social Networking Sites (SNS) is a web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system [1]. With the wide spread use of SNS the correlation between use and various psychosocial variables such as personality traits, self esteem, perceived social support and feelings of loneliness and depression had been of interest to mental health professionals.

The studies on positive versus negative impact of use of internet were fueled by the popular

findings of the 'Internet Paradox' study, that internet use reduces one's real life social interactions and increases depression and loneliness [2]. After three years follow-up, the negative effects were found to be dissipated .There had been an increase in communication, social involvement and well being [3]. It also led to decrease in loneliness and depression, increase in self esteem and social support,[4]; increase in time spent with friends, increased quality of these friendships and increased general well-being were also reported with the use of internet [5].

More in-depth studies on mediating variables between internet use and general well-being suggests that the pattern of use of internet (social versus non-social use) and pre-existing social world and social interactions of the person are found to be important variables associated with internet use and well-being. It can be understood from the perspectives of the poor-gets-poorer hypothesis, i.e., people who are introverts or who have poor social support are likely to show this poor ability or interest in interactions on-line also so that they are not likely to be benefitted by the use [6, 3]. This finding was associated with the introvert's non-social use of internet. Introverts were found to develop a compulsive pattern of internet use, in surfing or downloading [6 - 8]. When it comes to SNS use over general internet use, the social functions come to the forefront.[9]Use of SNS has been associated with increased social capital [10, 11], life satisfaction, social trust, civic participation and political engagement [12 – 14, 16, 17]. The use of Facebook as a means to solve relationship conflicts were found to be correlated with lower self esteem and higher levels of depression. With increased time spent on SNS people, started spending lesser and lesser time for other social activities and community [18].

It is also possible that SNS can also be conceptualized as a means of supplementing the existing social capital without increasing or decreasing it. Just as any other means of communication SNS also help in maintaining existing contact as a faster way to interact [15, 19, 20]. With the contrasting findings seen in the literature, it was assumed that the impact of SNS use on social capital might depend on various factors which may vary from individual to individual. Self-esteem had been found to be a mediating variable with people with lower self esteem gaining more from SNS use [10, 11]. High level of social activity in SNS and more self promoting content was found to predict higher levels of narcissistic traits [21]. 'Grandiose Exhibitionism' that includes self-absorption, vanity, superiority and exhibitionistic tendency was found to be positively correlated to self promoting Facebook behaviors like frequently posting status updates, photos of self, updating profile information, changing profile pictures and tagging pictures of self [22].

The concept of Internet Addiction (IAD) became popular in the field of psychology after the extensive works after 1995 [23]. Though many diagnostic dilemmas exist even now regarding this disorder. Although conceptually unclear, psychosocial correlates associated with SNS addiction have been studied. Loneliness, social activities and relationship building were found to be positively correlated with SNS addiction [24]. Those who identified themselves as SNS users and those who looked for a sense of belongingness on SNS also appeared to be at risk for developing addiction [25]. Personality correlates of extroversion were found to be positively correlated with SNS addiction where as conscientiousness was negatively correlated [26].

Positive correlation had been seen between past mental health treatments and suicidal intent with frequency of internet use [27]. As per cognitive behavioral model for Problematic Internet Use (PIU), existing underlying psychopathology was viewed as a diathesis for PIU [28]. Individuals with psychosocial problems hold negative perceptions of their social competence and substitute Computer Mediated Communication for Face-to-Face communication and thus engage in compulsive use of the same [29].There was a need to explore to the pattern of use in normal & clinical group as well as its relationship with other psychological variables. It would be helpful in evolving intervention for this group. The present work got the approval of National Institute of Mental Health & Neurosciences, Bengaluru,

Karnataka, India Institute Ethic Committee for exploring these patterns among normal and clinical group.

Methods

Objective of the present investigation was to study the intensity of Facebook use, internet addictive/problematic use and online & real life social capital in normal and clinical population. Relationship of internet problematic use with online & real life social capital, self esteem and interpersonal relationships also analyzed. Sample was taken from normal (n=63) population and clinical population (n=30) using purposive sampling method. The normal group included people who used SNS in the age range of 17 to 37.They did not have any history of Axis I mental disorders, scored below 13 on Beck Depression Inventory (BDI) [30] and below 7 on Beck Anxiety Inventory (BAI) [31]. The clinical group included people who met the ICD-10 criteria for any depressive or anxiety spectrum disorders with no history of any organic, psychotic or manic episodes. They were assessed on Basic Data Sheet, The Facebook Intensity Scale, Internet addiction Test, Internet Social Capital Scale [32]. The Rosenberg Self Esteem Scale (Rosenberg, 1965) [33] and Sentence Completion Test [34]. The Facebook intensity scale which is a measure of Facebook usage which includes two self-reported assessments of Facebook behavior, designed to measure the extent to which the participant was actively engaged in Facebook activities: the number of Facebook "friends" and the amount of time spent on Facebook on a typical day. It had a Chronbach's-α of 0.83 Internet Addiction Test that made use of a five point likert scale that measures the degree to which one's internet use affects their daily routine, social life, productivity, sleeping pattern and feelings. Internet Social Capital Scale was intended to measure two different types of social capital-bridging and bonding. The alpha for the full online bridging and bonding scale was .900, and for the offline version, .889. Participant is asked to rate in the five point likert scales his agreeableness for online friend and offline friend separately. The Rosenberg Self-esteem Scale is a ten item questionnaire that makes use of a likert scale. A week interval test-retest coefficient of .85 is [36]. Sentence Completion test explores specific clusters of attitudes or significant areas of an individual's life. It is a 60-item instrument with four subscales (Family, Sex, Interpersonal Relationships (IPR), and Self-Concepts). Reported inter-rater agreement coefficients range from .48 to .57 and 77% of the statements were rated in close agreement with clinical findings. For statistical analysis of the obtained data descriptive statistics, Student's t test and Karl Pearson's correlation are used.

Results

Table 1 shows the socio-demographic details of the sample. The mean age of the sample was found to be 23.38 ± 4.18 years for normal group is 24.27 ± 4.39 years for clinical group. The age distribution was not found to be significantly different in the normal and clinical group ($t = 0.94$, $p > 0.05$). The groups were found to differ in terms of gender distribution ($\chi2 = 4.02$, $p < 0.05$) with 44.4% of males in the normal group and 66.7% in clinical group. 82.5% of the participants from normal group are unmarried and in the clinical group 80% are unmarried. The two groups did not differ significantly in terms of marital status ($\chi2 = 0.09$, $P>0.05$). In terms of education ($\chi2=11.93$, $p < 0.01$), the normal and clinical groups differ. 83.90% of sample belongs to an urban residential area and 16.10% belongs to the rural residential area. The normal and clinical groups did not differ significantly with respect to their residential area (urban vs. rural) ($\chi2=0.26$, $P>0.05$).

Table 1. Socio-demographic details of the sample

Variable	Mean			Standard Deviation			statistical-test	p-value
	Normal	Clinical	Total	Normal	Clinical	Total	0.94*	0.35
Age	23.38	24.27	23.67	4.18	4.39	4.24		
Variable	Frequency			Percentage				
Gender	Normal	Clinical	Total	Normal	Clinical	Total		p-value
Male	28	20	48	44.40	66.70	51.60	4.02**	0.05*
Female	35	10	45	55.60	33.30	48.40		
Marital Status								
Married	11	6	17	17.50	20.00		0.09*	0.78
Unmarried	52	24	76	82.50	80.00			
Education								
High school	0	3	3	0.00	10.00	3.20	11.93*	0.01**
PUC	27	13	40	42.90	43.30	43.00		
Degree	8	8	16	12.70	26.70	17.20		
Above degree	28	6	34	44.40	20.00	36.60		
Residential Area								
Urban	53	26	78	82.50	86.70	83.90	0.26*	0.77
Rural	11	4	15	17.50	13.30	16.10		

*t-test; ** χ2-test

Table 2 showed comparison of normal and clinical group on intensity of Facebook use, social capital and internet use. A significant difference was found in real life bonding capital ($t = 4.91$, $p < 0.01$), real life bridging capital ($t = 2.75$, $p < 0.01$) and internet use ($t = 2.06$, $p < 0.05$). Real life bonding and bridging capital is found to be more in the normal group. Internet use scores were more in clinical group.

Table 2. The comparison of normal and clinical group on intensity of Facebook use, social capital and Internet use

Variable	Groups	N	Mean	SD	t-test	p-value
Intensity of SNS use	Normal	63	4.02	1.18	1.02	0.31
	Clinical	30	3.73	1.39		
Online bonding capital	Normal	63	24.05	7.38	1.27	0.21
	Clinical	30	26.20	8.10		
Real life bonding capital	Normal	63	40.67	4.29	4.91	< 0.01**
	Clinical	30	35.07	6.62		
Online bridging capital	Normal	63	33.76	8.42	0.125	0.90
	Clinical	30	34.00	8.96		
Real life bridging capital	Normal	63	39.00	4.07	2.75	0.01**
	Clinical	30	34.77	7.96		
Internet use	Normal	63	31.43	10.20	2.06	0.04*
	Clinical	30	35.93	17.18		

*P<0.05, **P<0.01; N = sample number; SD = standard deviation

Table 3 showed cross tabulation of internet addiction test scores in normal and clinical group. The two groups were found to differ in terms of extent of problematic use (χ2=8.11, $p < 0.05$). A total of 82.5% of the participants of normal group belong to 'average user' category and 17.50% belong to the 'cause frequent problems' category. In the clinical group 56.70% were average users and 40% have frequent problems due to internet use. One participant from clinical group met the criteria for 'cause significant problems' category.

Table 3. Cross tabulation of Internet use scores in normal and clinical group

	Average user (20-39)		Cause frequent problems (40-69)		Cause significant problems (70-100)		$\chi 2$	p-value
	F	%	***F***	%	***F***	%		
Normal	52	82.50	11	17.50	0	0.00	8.11	0.02*
Clinical	17	56.70	12	40.00	1	3.30		
Total	69	74.20	23	24.70	1	1.10		

*P<0.05, **P<0.01; N = sample number; SD = standard deviation

Table 4 showedt test for comparison of the internet users on intensity of Facebook use, social capital, self esteem and areas of conflict. Significant difference was found between the two groups in intensity of Facebook use (t = 2.48, p < 0.05), real life bonding capital (t = 2.08, p < 0.05), online bridging capital (t = 2.08, p < 0.05), self esteem (t = 2.88, P=0.01) and conflicts in inter-personal relationships (t=2.50, P=0.01) with problem users showing higher scores for intensity of Facebook use, online bridging capital and conflicts in inter-personal relationships and significantly lower scores for real life bonding capital and self esteem.

Table 4. The comparison of average and problem internet users on intensity of Facebook use, social capital, self esteem and areas of conflict

Variable	SNS problematic use groups	Number (N)	Mean	Standard deviation (SD)	t-test	p-value
Intensity of SNS use	Average user	69	3.72	1.11	2.48	0.02*
	Problem user	24	4.53	1.46		
Online bonding capital	Average user	69	23.86	7.22	1.89	0.06
	Problem user	24	27.25	8.39		
Real life bonding capital	Average user	69	39.57	5.04	2.08	0.04*
	Problem user	24	36.79	7.16		
Online bridging capital	Average user	69	32.76	8.07	2.08	0.04*
	Problem user	24	36.91	9.27		
Real life bridging capital	Average user	69	37.50	5.57	0.35	0.72
	Problem user	24	38.00	6.94		
	Problem user	24	19.91	4.65		
Self esteem	Average user	69	19.91	4.65	2.88	0.01**
	Problem user	24	16.62	5.25		
Conflict in family area	Average user	69	1.41	1.39	1.90	0.06
	Problem user	24	2.12	2.07		
Conflict in sexual area	Average user	69	0.91	0.99	1.35	0.17
	Problem user	24	1.25	1.18		
Conflict in IPRs	Average user	69	0.72	1.08	2.50	0.01**
	Problem user	24	1.50	1.81		
Conflict in 'self'	Average user	69	2.69	2.65	0.42	0.67
	Problem user	24	2.95	2.52		

*P<0.05, **P<0.01; N = sample number; SD = standard deviation

Table 5 showed the inter-correlation between eleven variables under study for the total sample. Significant correlation was found to be present between intensity of Facebook use and online bonding capital, intensity of Facebook use and online bridging capital (r = 0.40, p < 0.01) and intensity of Facebook use and internet addiction (r = 0.36, p < 0.01). There was significant positive correlation with online bonding capital and online bridging capital (r = 0.59, p < 0.01) and online bonding capital and internet addiction (r = 0.26, p < 0.05). Real life bonding capital was found to have significant positive correlation with real life bridging capital (r = 0.54, p < 0.01) and self esteem (r = 0.43, p <0.01) and significant negative correlation with internet addiction (r = -0.22, p < 0.05), conflict in the family area (r

= -0.22, p < 0.05) conflict in interpersonal relations (r = -0.27, p <0.05) and conflict in the area of 'self' (r = -0.32, p < 0.01). Online bridging capital was found to have significant positive correlation with internet addiction (r = 0.32, p < 0.01), sexual area (r = 0.27, p < 0.01) and inter-personal relationships (r = 0.27, p <0.01) and negative correlation with conflicts in the family area (r = -0.22, p <0.05). There was negative correlation between real life bridging social capital and conflict in the area of 'self'(r = -0.20, p <0.05). Internet addiction had negative correlation with self esteem (r = -0.33, p < 0.01) and positive correlation with conflict in family area (r = 0.30, p < 0.01) sexual area (r = 0.28, p <0.01) and inter-personal relations (r = 0.35, p < 0.01).

Table 5. Inter-correlations of Facebook use, social capital, Internet use, self esteem and areas of conflict in total sample

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
I	--										
II	0.40**	--									
III	0.03	0.06	--								
IV	0.44**	0.59**	0.00	--							
V	0.20	0.04	0.54**	-0.02	--						
VI	0.36**	0.26*	-0.22*	0.32**	0.11	--					
VII	-0.01	0.00	0.43**	-0.13	0.17	-0.33**	--				
VIII	-0.09	0.14	-0.22*	-0.22*	-0.19	0.30**	-0.29**	--			
IX	-0.02	0.12	-0.20	0.27**	-0.11	0.28**	-0.24*	-0.36**	--		
X	0.09	0.15	-0.27*	0.22*	-0.13	0.35**	-0.31**	0.30**	0.45**	--	
XI	-0.06	0.14	-0.32**	0.11	-0.20*	0.14	-0.60**	0.48**	0.44**	0.40**	--

[I – Intensity of SNS use, II – Online bonding capital, III – Real life bonding capital, IV – Online bridging capital, V – Real life bridging capital, VI – SNS problematic use, VII – Self esteem, VIII – Conflict in family area, IX– Conflict in sexual area, X – Conflict in inter-personal relations, XI – Conflict in area of 'self']
N=93, *P<0.05, **P<0.01

Significant correlation was found to be present between intensity of Facebook use and online bonding capital (r = 0.49, p < 0.01), intensity of Facebook use and online bridging capital (r = 0.32, p < 0.01) and intensity of Facebook use and internet addiction (r = 0.58, p < 0.01) (Table 6). There was significant positive correlation with online bonding capital and online bridging capital (r = 0.62, p < 0.01) and online bonding capital, internet addiction (r = 0.28, p < 0.05) and conflicts in interpersonal relationships (r = 0.31, p < 0.05). Real life bonding capital was found to have significant positive correlation with self esteem (r = 0.31, p < 0.05). There was positive correlation between real life bridging social capital and internet addiction (r = 0.26, p < 0.05). Internet addiction had negative correlation with self esteem (r = -0.33, p < 0.01) and conflict in inter-personal relations (r = 0.27, p < 0.05).

Table 6. Inter-correlations of Facebook use, social capital, internet use, self esteem and areas of conflict in the normal group

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
I	--										
II	0.49**	--									
III	-0.01	0.08	--								
IV	0.32**	0.62**	0.03	--							
V	0.23	0.05	0.17	-0.07	--						
VI	0.58**	0.28*	-0.23	0.13	0.26*	--					
VII	-0.17	0.03	0.31*	0.02	-0.12	-0.33**	--				
VIII	-0.01	0.02	0.00	0.15	0.11	0.03	-0.05	--			
IX	0.04	0.11	-0.05	0.19	0.07	0.12	0.06	0.14	--		
X	0.20	0.31*	-0.15	0.20	0.06	0.27*	-0.19	0.16	0.37**	--	
XI	-0.01	0.13	-0.17	0.19	-0.05	0.19	-0.25	0.33**	0.31*	0.44**	--

[I – Intensity of SNS use, II – Online bonding capital, III – Real life bonding capital, IV – Online bridging capital, V – Real life bridging capital, VI – SNS problematic use, VII – Self esteem, VIII – Conflict in family area, IX– Conflict in sexual area, X – Conflict in inter-personal relations, XI – Conflict in area of 'self']
N=63, *P<0.05, **P<0.01

Table 7 showed the inter-correlation between eleven variables under study in the clinical group. Significant correlation was found to be present between intensity of Facebook use and online bonding capital ($r = 0.66$, $p < 0.01$). There is significant positive correlation with online bonding capital and online bridging capital ($r = 0.55$, $p < 0.01$). Real life bonding capital was found to have significant positive correlation with real life bridging capital ($r = 0.67$, $p < 0.01$). Online bridging capitals found to have significant positive correlation with internet addiction ($r=0.60$, $P<0.01$), and conflict in sexual area ($r = 0.43$, $p < 0.05$). Internet addiction had positive correlation with conflict in family area ($r = 0.39$, $p < 0.05$) and inter-personal relations ($r=0.40$, $P<0.01$).

Table 7. Inter-correlations of Facebook use, social capital, internet use, self esteem and areas of conflict in the clinical group

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
I	--										
II	0.31	--									
III	-0.05	0.22	--								
IV	0.66**	0.55**	-0.01	--							
V	0.14	0.14	0.67**	0.04	--						
VI	0.19	0.19	-0.03	0.60**	0.18	--					
VII	0.03	0.19	0.15	-0.04	0.05	-0.16	--				
VIII	-0.11	0.19	-0.08	0.35	-0.17	0.39*	-0.11	--			
IX	0.06	0.06	-0.14	0.43*	-0.09	0.36	-0.31	0.46*	--		
X	-0.02	-0.18	-0.31	0.26	-0.23	0.40*	-0.36	0.38*	0.53**	--	
XI	-0.01	0.03	-0.04	0.06	-0.01	-0.12	-0.53**	0.33	0.42*	0.36	--

[I – Intensity of SNS use, II – Online bonding capital, III – Real life bonding capital, IV – Online bridging capital, V – Real life bridging capital, VI – SNS problematic use, VII – Self esteem, VIII – Conflict in family area, IX– Conflict in sexual area, X – Conflict in inter-personal relations, XI – Conflict in area of 'self']
N=30, *P<0.05, ** P<0.01

Discussion

The present study did not demonstrate significant difference in the intensity of social networking sites use between normal and clinical. This finding is consistent with the results of the study conducted by which reports no significant association between depressive and anxiety symptoms and time spent on Facebook [37].

Significant positive correlation was identified between intensity of use of Facebook and the following variables; online bonding capital, online bridging capital and internet use. The findings of the current study were supportive of the hypothesis of Facebook use increasing the online social capital [10 - 12]. The positive correlation between Facebook intensity and online bridging capital remains significant for both normal and clinical group. But correlation between Facebook intensity and online bonding capital was found significant only for normal group. The strongest association was found between bridging capital and intensity of use even after controlling for other variables of life satisfaction and self esteem [10, 11]. The present study documented that intensity of Facebook use had no significant correlation with real life bonding nor it had any correlation with conflicts in any real life interpersonal relationships. But use of Facebook use could be an added privilege for the individual to enhance his social capital, especially the bridging social capital, through online medium with no significant increase or decrease in offline social capital.

A significant difference was found between normal and clinical group in terms of internet use, with problematic use scores more for the clinical group. The positive correlation between internet addiction and symptoms of depression and anxiety had been identified in previous studies also. Internet addiction as positively related to depression, anxiety, and stress [38].

In the current study, internet use scores showed significant negative correlation

between real life bonding capital and self esteem and positive correlation with online bonding and conflicts in interpersonal relationships. In the t-test also average users of internet significantly differ from problem users in real life bonding capital, online bridging capital, self esteem and conflicts in inter-personal relationships, with problem users getting higher mean scores for online bridging capital and conflicts in inter-personal relationships and average users getting higher mean scores for real life bonding capital and self esteem. These findings seem to support the Cognitive Behavioral Model of problematic internet use [28] that because of poor self esteem, people who are unable to build real life social capital and who already have conflicts in multiple areas of inter-personal relations depend on Facebook to compensate for their poor real life social capital. But inter-personal conflicts and ruptures in relationships caused by internet addiction has also been well documented. Dependents are reported to have difficulties in marriage, parent-child relationships, and close friendships due to the excessive time spent on internet [35]. So compulsive use of SNS leading to conflicts in inter-personal relationships and resultant poor real life social capital can be an alternative explanation for the same. There are a few studies which reported that people with low self esteem were more benefitted by SNS use compared to others [4, 10, 11].

Conclusions

The use of SNS is found to enhance the social capital of an individual in the online medium, whereas real life social capital is found to be unaffected due to use of SNS. SNS use is an area that is usually left unexplored in the management of clinical conditions. But higher percentage of problem users of SNS identified in the clinical group and association of SNS problematic use with low self esteem and increased conflicts in inter-personal relationships necessitates exploration of SNS use patterns in routine evaluation and management of clinical conditions. The study also implies need for further research to develop explanatory models and management strategies for SNS problematic use. The study sample is more skewed towards younger age and also the study sample is not screened for personality disorders which are the major limitations of the study.

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Corresponding author: ***Dr Manoj Kumar Sharma, Department of Clinical Psychology, SHUT clinic, Govindaswamy Block, National Institute of Mental Health & Neurosciences (NIMHANS), Bangalore, Karnataka, India – 560029.***

Email: shutclinic@gmail.com

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ORIGINAL ARTICLE

VALIDATION OF THE MALAY VERSION OF THE SOURCES OF SOCIAL SUPPORT SCALE AMONG MALAYSIAN CANCER PATIENTS

Mohammad Farris Iman Leong Bin Abdullah*, Rohayu Hami*, Nizuwan Azman**, Noorsuzana Mohd Shariff*, Gokula Kumar Appalanaido, Siti Shahanis Md Sharif****

***Lifestyle Sciences Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia, Bertam, 13200 Kepala Batas, Pulau Pinang, Malaysia; **Division of Research and Networking, Advanced Medical and Dental Institute, Universiti Sains Malaysia, Bertam, 13200 Kepala Batas, Pulau Pinang, Malaysia; ***Oncology and Radiological Sciences Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia, Bertam, 13200 Kepala Batas, Pulau Pinang, Malaysia.**

Abstract

Objective: **It is important to investigate the association between spousal support and psychology of cancer patients, thus a validated instrument to measure the degree of perceived spousal support is required. We translated and evaluated the psychometric properties of the Sources of Social Support Scale-Malay version (SSSS-Malay) among Malaysian cancer patients.** ***Methods:*** **In this study, the SSSS-Malay and Hope Scale-Malay [used to compare with the SSSS-Malay to assess discriminant validity] were administered to 195 Malaysian cancer patients during baseline assessment. The SSSS-Malay was re-administered 2 months after the baseline assessment during follow-up.** ***Results:*** **The SSSS-Malay total score (Cronbach's α = 0.70, intraclass correlation coefficient (ICC) = 0.72) and its domains (Cronbach's α ranging from 0.70 to 0.83, intraclass correlation coefficient ranging from 0.6 to 0.76) exhibited good internal consistencies and good test-retest reliability. The SSSS-Malay also demonstrated good convergent and discriminant validities. However, confirmatory factor analysis of the SSSS-Malay showed that it was best fit into a 3-factor model instead of the 4-factor model of the original English version.** ***Conclusion:*** **The SSSS-Malay demonstrated good psychometric properties for use in Malaysian cancer patients.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 154-161.***

Keywords: Perceived Spousal Support, Malaysian Cancer Patients, Source Of Social Support Scale-Malay, Validity, Reliability

Introduction

Perceived spousal support of cancer patients has been shown to contribute substantially to the psychology of cancer patients. Higher perceived spousal support has a positive influence on the quality of life and mental well-being of cancer patients, which may result in a positive outcome. Spousal support positively affects quality of life of cancer patients and is highlighted as an important target for psychosocial intervention to improve their quality of life [1]. In addition, social support has been shown to predict quality of life of the spouse of cancer patients [2]. Thus, spousal support not only predicts increased quality of life of cancer patients but also quality of life of their caretaker spouse.

Psychological complications of cancer include depression and anxiety, and spousal support (i.e., presence of a person with whom to share problems) resulted in a beneficial outcome by ameliorating psychological distress in cancer patients. In contrast, absence of a spouse to accompany cancer patients to hospital visits was related to higher degree of depression and anxiety [3, 4]. For these reasons, it is important to study perceived social support in cancer patients and determine how it interacts with mental well-being and quality of life of patients. This information can be used to devise a conceptual framework for future studies focused on psychosocial intervention to effectively increase spousal support and in turn enhance mental well-being and quality of life of cancer patients. For such studies to become a reality, a validated measuring instrument for evaluating perceived spousal support in cancer patients is vital.

A few scales that assess perceived social support are available and include the Sources of Social Support Scale (SSSS) [5], Social Support Questionnaire-Shortened Version [6], Interpersonal Support Evaluation List Shortened Version -12 items [7], and Multidimensional Scale of Perceived Social Support [8]. The SSSS is the only social support measuring instrument that has been validated for cancer patients. It is a 10-item respondent-rated questionnaire that is used to measure the degree of spousal social support perceived by the respondent. It consists of the following four domains: informational support (measures the degree to which the spouse of the patient provides guidance, advice, and feedback about the patient's problems); instrumental support (measures the degree to which the spouse of the patient provides assistance in managing the patient's daily chores, such as transportation, financial management, and household chores); emotional support (assesses the degree to which the spouse of the patient listens, empathizes, communicates sufficiently, and provides comfort to the patient); and negative support (measures the degree to which the spouse of the patient neglects the supportive needs of the patient). The SSSS was validated in breast cancer patients with confirmatory factor analysis, which demonstrated that the best fitting model was a 4-factor model [5].

This study was conducted to translate the original English version of the SSSS into the Malay language (SSSS-Malay) and to examine the psychometric properties of the translated version among Malaysian cancer patients.

Methods

This study was approved by the Human Ethics Committee of UniversitiSains Malaysia (code number USM/JEPeM/15060178). This 2-year prospective study was conducted by recruiting cancer patients with different cancer diagnoses who were treated at the Oncology Unit of the Advanced Medical and Dental Institute, Universiti Sains Malaysia from 2015 to 2016. Funding: This study was funded by UniversitiSains Malaysia (grant number 304/CIPPT/6313245). This study was approved by the Human Ethics Committee of UniversitiSains Malaysia (code number USM/JEPeM/15060178).

Patients were approached and told about the study, and those who fulfilled all inclusion criteria were invited to participate in the study. All potential participants who agreed to participate signed an informed consent form before they were enrolled in the study. The inclusion criteria were as follows: patients with a histopathological report of diagnosis of cancer (except primary brain cancer); 18 years old and above; married; ambulatory; stage I to IV cancer but without brain metastasis; and Malay language literate.

The SSSS is a self-rated 10-item scale that assesses the respondent's perceived level of spousal support, and it previously was validated in cancer patients. It consists offour domains, with one item each for informational support and instrumental support, six items for emotional support, and two items for negative support. Each item is scored on a 5-point Likert scale ranging from 1 (not at all) to 5 (a lot), hence total score ranges from 10 to 50 [5].

The original English version of the SSSS was concurrently translated by a bilingual language expert who is a native Malay speaker and back translated by another bilingual language expert who is a native English speaker from the School of Language and Literacy, UniversitiSains Malaysia. The language

experts who back translated the questionnaire had never read the original English version. The translated and back translated versions were reviewed by a team of content experts consisting of two psychiatrists and one clinical psychologist, who then compiled the SSSS-Malay draft. The SSSS-Malay draft then was administered to 20 Malaysian cancer patients who are native Malay language speakers in a pilot study to assess the wording and sentence structure, comprehensibility, semantic quality, and appropriateness of duration of administration before the final version of the SSSS-Malay was constructed for use in the study. Table 1 shows the content of the original English version (SSSS) and the translated version (SSSS-Malay).

Table 1. Item content of the Sources of Social Support Scale: original English and translated Malay version with their designated domains

Items	Domains
Item 1: How much does your partner give you advice or information about your cancer (whether you want it or not)? [Berapa kerapkah pasangan anda memberikan anda nasihat atau maklumat tentang kanser anda (sama ada anda mahu atau tidak)?]	Informational support (Item 1)
Item 2: How much does your partner give you assistance with things related to your cancer (for example, helping you with daily chores, driving you places, dealing with bills and paperwork)? [Berapa kerapkah pasangan anda membantu anda dengan perkara-perkara yang berkaitan dengan kanser anda (contohnya membantu perkerjaan harian anda, memandu anda ke tempat-tempat tertentu, mengurus bil dan kertas kerja anda)?]	Instrumental support (Item 2)
Item 3: How much does your partner give you reassurance, encouragement, and emotional support (affection) concerning your cancer? [Berapa kerapkah pasangan anda memberi anda keyakinan, galakan dan sokongan emosi (perasaan) berkenaan dengan keadaan penyakit kanser anda?] Item 4: How much does your partner listen to and try to understand your worries about your cancer? [Berapa kerapkah pasangan anda bersedia mendengar dan cuba memahami kebimbangan anda tentang kanser anda?] Item 5: How much can you relax and be yourself around your partner? [Berapa kerapkah anda boleh bertenang dan menjadi diri anda yang sebenarnya apabila berada bersama pasangan anda?] Item 6: How much can you open up to your partner if you need to talk about your worries about your cancer? [Berapa banyakkah anda boleh meluahkan kepada pasangan anda jika anda perlu menyuarakan kebimbangan anda tentang kanser anda?]	Emotional support (Items 3, 4, 5, 6, 9, and 10)

Item 9: How often does your partner let you down when you are counting on him/her? [Berapa kerapkah pasangan anda mengecewakan anda apabila anda memerlukan dia?] Item 10: How often does your partner withdraw from discussions about your illness or try to change the topic away from your illness? [Berapa kerapkah pasangan anda berundur daripada berbincang tentang penyakit anda atau cuba mengubah tajuk perbincangan?]	
Item 7: How often does your partner argue with you relating to your cancer? [Berapa kerapkah pasangan anda bertengkar dengan anda berkenaan dengan kanser anda?] Item 8: How often does your partner criticize you relating to your cancer? [Berapa kerapkah pasangan anda mengkritik anda berkenaan dengan kanser anda?]	Negative support (Items 7 and 8)

In order to assess the discriminant validity of the SSSS-Malay, the Hope Scale (HS)-Malay was used for comparison. The HS is a self-rated 12-item scale that assesses the responder's level of hope. It consists of two domains titled agency and pathway. Four items assess agency, four items assess pathway,and four items act as fillers. Each item of this scale is scored from 1 (strongly disagree) to 4 (strongly agree), thus the total HS score ranges from 12 to 48 [9]. The Malay version of the HS was validated in Malaysian cancer patients with Cronbach's α of 0.72.

During the study, the SSSS-Malay and the HS-Malay were administered to participants during baseline assessment, and the SSSS-Malay was re-administered 2 months after the baseline assessment during follow-up.

Data analysis was performed using IBM SPSS version 22. Reliability of the SSSS-Malay was examined by testing internal consistencies (Cronbach's α) and checking test-retest reliability (intraclass correlation coefficient, or ICC). Convergent validity was assessed using Pearson's correlation coefficient of the individual items with the domains of the SSSS-Malay. Convergent validity is exhibited if items have higher correlations with their designated domain compared to their non-designated domain [Research Methods Knowledge Base, 2006]. Discriminant validity was determined using Pearson's correlation coefficient of the domains of the SSSS-Malay with domains of the HS-Malay. Discriminant validity is exhibited if the items or domains of a scale exhibit low correlations with non-designated domains [10]. Construct validity was evaluated using confirmatory factor analysis with Analysis of Moment Structure (AMOS) version 22 to look for the best fitting model of the SSSS-Malay. The following criteria were used to determine model fitness: χ^2; goodness-of-fit index (GFI) for which 0.9–0.95 was acceptable; Tucker-Lewis index (TLI) for which > 0.95 was acceptable; comparative fit index (CFI) for which > 0.95 was acceptable, normed fit index (NFI) for which > 0.90 was acceptable and root mean square error of approximation (RMSEA) for which < 0.06 indicated good fit and 0.06–0.10 indicated moderate fit.

Results

Of the 195 participants who completed the baseline and follow-up assessments, 73% were female, 82% were Malays (followed by Chinese at 10% and Indians at 8%), and 52%

were diagnosed with breast cancer (followed by colon cancer at 16%, nasopharangeal carcinoma at 9%, and other cancers at 23%). In the pilot study, 76% of respondents commented that the sentence structure and wording, comprehension and meaning of questions, semantic quality, and duration of administration of the SSSS-Malay were "appropriate", whereas 24% of respondents commented that they were "most appropriate". Therefore, there no amendment of the SSSS-Malay was necessary.

Internal consistency (Cronbach's α) of the SSSS-Malay total score was 0.7, and values for its domains ranged from 0.7 to 0.83 (Table 2). The test-retest reliability (ICC) of the SSSS-Malay total score was 0.72, $p < 0.05$, and the values for its domains ranged from 0.60 to 0.76, all p values < 0.05, (Table 2).

Table 2. Internal consistencies and test-retest reliability of the SSSS-Malay and its domains

Domains of SSSS-Malay	Baseline Mean (SD)	Follow-up Mean (SD)	Internal consistency Cronbach's α	Test-retest reliability ICC
Informational support	4.06 (±1.17)	4.06 (±1.01)	Single item	0.68*
Instrumental support	4.06 (±1.01)	4.06 (±1.01)	Single item	0.62*
Emotional support	19.26 (±3.23)	19.34 (±2.96)	0.83	0.60*
Negative support	9.08 (±2.16)	9.17 (±2.21)	0.70	0.76*
Total SSSS-Malay	36.31 (±8.75)	36.01 (±9.67)	0.70	0.72*

*statistical significance at $p < 0.05$, SD = standard deviation; ICC = intraclass correlation

Evaluation of the correlations between items and domains of the SSSS-Malay revealed that all items were highly correlated with their designated domain, Pearson's correlation coefficient (r)ranging from 0.63 to 0.90, all p values < 0.05, except for items 9 and 10, which had higher correlations with the negative support domain than with their designated emotional support domain (Table 3).

Table 3. Pearson's correlation coefficient between items and domains of the SSSS-Malay

Items	Informational support	Instrumental support	Emotional support	Negative support
Item 1	**Single item**	0.38*	0.39*	0.10
Item 2	0.38*	**Single item**	0.42*	0.075
Item 3	0.49*	0.50*	**0.70***	-0.50
Item 4	0.44*	0.49*	**0.74***	-0.057
Item 5	0.33*	0.32*	**0.63***	-0.12
Item 6	0.34*	0.37*	**0.76***	-0.017
Item 7	0.14	0.11	0.18	**0.90***
Item 8	0.02	0.10	0.087	**0.82***
Item 9	-0.20*	-0.21*	0.17*	**0.41***
Item 10	-0.09	-0.12	0.28*	**0.37***

*statistical significance at $p < 0.05$, SD = standard deviation; ICC = intraclass correlation

Assessment of correlations between domains of the SSSS-Malay and the HS-Malay showed that none of the SSSS-Malay domains were correlated with domains of the HS-Malay except informational support, Pearson's correlation coefficient (r)= 0.16, $p < 0.05$, and emotional support of the SSSS-Malay, Pearson's correlation coefficient (r) = 0.20, $p < 0.05$. They were weakly correlated with the agency domain of the HS-Malay (Table 4).

Table 4. Pearson's correlation coefficient between domains of the SSSS-Malay and the HS-Malay

	Pathway	Agency
Informational support	0.096	0.16*
Instrumental support	0.081	0.14
Emotional support	0.11	0.20*
Negative support	–0.15	–0.12

*statistical significance at $p < 0.05$, SD = standard deviation; ICC = intraclass correlation

In the assessment of construct validity, confirmatory factor analysis indicated that the SSSS-Malay did not fit into a 4-factor model, $\chi^2 = 94.37$, $p < 0.001$, GFI = 0.912, TLI = 0.901, NFI = 0.889, CFI = 0.925, RMSEA = 0.096. The SSSS-Malay also did not fit into a 2-factor model, $\chi^2 = 55.647$, $p < 0.001$, GFI = 0.935, TLI = 0.889, NFI = 0.892, CFI = 0.924, RMSEA = 0.100. Instead, the SSSS-Malay best fit into a 3-factor model, $\chi 2 = 73.727$, $p < 0.001$, GFI = 0.927, TLI = 0.952, NFI = 0.946, CFI = 0.953, RMSEA = 0.082, in which Items 1 and 2 were merged into one domain (informational support domain), Items 3, 4, 5, and 6 stayed in the emotional support domain, and Items 9 and 10 merged with Items 7 and 8 into the negative support domain (Figure 1).

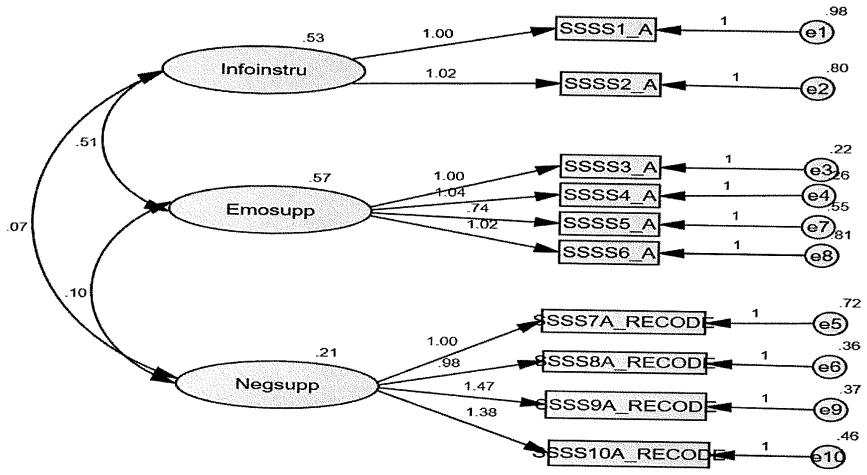

Figure 1. Final best fitting 3-factor model of the SSSS-Malay: Infoinstru = informational support domain, Emosupp = emotional support domain, and Negsupp = negative support domain

Discussion

This study was conducted to translate the original English version of the SSSS into the Malay language and investigate the psychometric properties of the translated SSSS-Malay among Malaysian cancer patients. The SSSS-Malay demonstrated good reliability (Table 1). The internal consistency of the SSSS-Malay total score, Cronbach's $\alpha = 0.70$, and its domains, Cronbach's α 0.70–0.83, were acceptable to good [11]. The SSSS-

Malay total score, ICC = 0.72, and all its domains also exhibited good test-retest reliability, ICC 0.6–0.76, [12].

The content validity of the SSSS-Malay was documented by thorough review of the contents of the translated and back translated versions of the SSSS-Malay for wording and sentence structure, comprehension, meaning of items, suitability of the questions, and semantic quality of the items by a team of content experts (two psychiatrists and one clinical psychologist) before the SSSS-Malay draft was constructed. Face validity of the SSSS-Malay was confirmed, as 76% of the respondents of the pilot study commented that all factors were "appropriate" and the other 24% commented that they were"most appropriate". Thus, there was no need to amend the item wording and sentence structure of the SSSS-Malay.

The SSSS-Malay exhibited convergent validity, as all items were highly correlated with their designated domains, except for items 9 and 10, which were supposed to be designated under emotional support but had higher correlations with the negative support domain (Table 2). The SSSS-Malay also exhibited discriminate validity, as all of its domains were not highly correlated with the domains of the HS-Malay, which measures different parameters (Table 3).

Confirmatory factor analysis revealed that the 4-factor model that best fit the original English version of the SSSS [5] was not the best fit for the SSSS-Malay. Instead, a 3-factor model was the best fitting model, with items 1 and 2 merged to form a single domain (informational support domain) and items 9 and 10 moved from the emotional support domain to merge with items 7 and 8 to form the negative support domain (Figure 1). This result may be explained by differences in the language used, as it may not have been possible to translate the exact wording and sentences from the English version into the Malay language. In addition, differences in Asian and American cultures may lead to different interpretation of the meaning of the items in the two versions of the SSSS.

A limitation in this study needs to be noted. The socio-demographic characteristics of the participants were not representative of the Malaysian population. A large proportion of the participants were Malays, and the proportions of Chinese and Indians were relatively smaller than the real situation in the Malaysian population. Furthermore, the female to male ratio of respondents was not representative of the Malaysian population. Despite this limitation, the SSSS-Malay demonstrated good reliability and validity for measuring perceived spousal support in Malaysian cancer patients. This is the first Malay version of a social support scale that has been validated for use in evaluating Malaysian cancer patients.

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Corresponding author: ***Mohammad Farris Iman Leong Bin Abdullah, Psychiatrist, Lifestyle Sciences Cluster, Advanced Medical and Dental Institute, UniversitiSains Malaysia, Bertam, 13200 Kepala Batas, Pulau Pinang, Malaysia.***

Email: farris@usm.my

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ORIGINAL ARTICLE

PARENTING STYLES IN CHILDREN AND ADOLESCENTS WITH SUBSTANCE USE DISORDERS: A STUDY FROM THE PRINCESS MOTHER NATIONAL INSTITUTE ON DRUG ABUSE TREATMENT, THAILAND

Weeranee Charoenwongsak, Patraporn Kinorn**, Sirichai Hongsanguansri**

***Department of Psychiatry, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, 270 Rama VI Road, Ratchathewi, Bangkok, Thailand 10400; **Princess Mother National Institute on Drug Abuse Treatment, 60 Prachatipat Thanyaburi, Pathumthani, Thailand 12130.**

Abstract

Objective: **To study the parenting styles of primary caregivers of children and adolescents with substance use disorders and to examine the association between parenting styles and parental education level and parent income.** ***Methods:*** **This cross-sectional study was conducted on 257 children and adolescent participants (<20 years old), who were diagnosed with substance use disorders, through questionnaires. Participants were recruited from patients who was in treatment for substance use disorders at the Princess Mother National Institute on Drug Abuse Treatment in Pathumthani, Thailand. Descriptive statistical analyses were used to examine parenting styles and Chi square to examine associations between parenting styles and parental education level and parent income.** ***Results:*** **A total of 257 participants recruited were consisting of 226 (87.9%) male participants with an average age of 16.8 ± 1.6 years old. An average age of first-time drug use was 14.6 ± 1.4 years old. The most regularly used substances were: amphetamine (101 participants; 39.3%), marijuana (70 participants; 27.2%), and other drugs (86 participants; 33.5%). Parenting styles that participants had received from the primary caregivers were; authoritative (115 participants; 52.5%), neglectful (57 participants; 26.0%), permissive (18 participants; 8.2%), and authoritarian (29 participants; 13.2%). A significantly larger number of participants had neglectful parents while a significantly lower number of participants had permissive parents than in Thai general population (26.0% versus 12.4%, 8.2% versus 22.8%, respectively, $p < 0.001$). Additionally, there were no significant associations between parenting styles and parental education level or parent income.** ***Conclusion:*** **In comparison to the general population, a higher number of participants within this study had a neglectful primary caregiver while fewer numbers of participants had a permissive primary caregiver.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 162-173.***

Keywords: Parenting Styles, Substance Use Disorder, Adolescents, Thailand

Introduction

Substance abuse and dependence are serious public health issues that have various aspects of impacts, including several social problems. According to the report on substance abuse and addiction from the years 2006-2013 published by Royal Thai Police, the crime rate in Thailand has been progressively increased year by year [1], in which 80% of those cases are drug-related. This increasing trend reflects the current state of substance abuse and

dependence epidemic within Thailand, which imposes tremendous economic and social costs. A large portion of an annual government budget, approximately 290 million USD, was spent on drug-related prevention and law enforcement [2].

Family is one of the most important aspects, which has a tremendous impact on substance use in children and adolescents [3-5]. A relationship between parents and child, particularly parenting styles, has been of great interest for researchers to investigate its association with child and adolescent substance use, in order to understand the relationship between a specific element of parenting and child's substance use. According to the seminal groundwork on the parenting dimension by Baumrind [6-7] and Maccoby and Martin [8], parenting style is composed of two key dimensions of interaction, support and control. This framework results in four distinct parenting styles: authoritative (high support and high control), authoritarian (low support and high control), permissive/indulgent (high support and low control), and neglectful (low support and low control).

A number of previous studies have found that adolescents from authoritative family are the least likely to abuse substance [9-13] and those from neglectful family are the most likely to abuse substance [11, 12, 14-17]. In addition to less likelihood of substance abuse, having authoritative parents also provides a higher protective factor and makes adolescents less sensitive to peer substance use than those with less authoritative parents [18]. Furthermore, it is not only parenting style of adolescent's own parents that has an effect on adolescent substance use, but parenting styles from adolescent's friends' parents also have an impact on adolescent substance use. A longitudinal study following four waves of American adolescent, total of 90,118 participants, from 1994-1995 to 2007-2008 has found that an adolescent with friend whose mother had an authoritative parenting style is less like to smoke cigarettes, abuse alcohol, and use marijuana comparing to those whose friend's mother has neglectful or authoritarian parenting style [19].

Although there seems to be a consensus of the best and the worst parenting styles in preventing adolescent's substance abuse, authoritative and neglectful parenting styles, respectively, these findings do not always hold true. For example, there is inconsistency regarding which parenting style is the highest risk factor for adolescent substance abuse. A study of 846 Norwegian teenagers found that those who came from a family with "affectionless control" parenting style with a low level of caring and high level of protection, similar to authoritarian parenting style, found to have a high risk of substance abuse [20]. In another study, a survey of 256 Iranian high-school students from Minab also found that adolescents with indulgent and authoritarian parents, rather than neglectful parents, were significantly associated with substance abuse, while it still held true that authoritative parenting style provided a protective effect against substance abuse [21].

In addition to this inconsistency, authoritative parenting style is not always the best styles for preventing adolescent substance abuse. A study of 1,416 Spanish adolescents, 12 to 17 years of age, found that indulgent parenting style was associated with less adolescent substance use and better or equal outcomes in self-esteem, psychosocial maladjustment, personal competence, and problem behavior in comparison to authoritative parenting style [11]. While the outcome from authoritative parenting style was still better than those from neglectful and permissive parenting style, it appeared that the optimal parenting style against adolescent substance abuse may be specific for each sample population.

Culture was suggested to be the main contributor in the inconsistency between each study. Spain has been described as an egalitarian society, which parental strictness and control may not have positive meaning [11]. The high parental control and negative connotation of parental control may lead to early experiment with substances. However, in comparison, parental strictness and control in hierarchical society can by any means exert greater influence on adolescents, which is possibly more effective in preventing substance abuse. Furthermore, this difference between collectivistic society and

individualistic society was also suggested to have an influence on adolescent's perception of parenting styles.

As culture can play an important role in the relationship between parenting styles and adolescent substance use, there are very few studies that examine this particular aspect in the context of hierarchical collectivistic society. Thailand, a hierarchical collectivistic society, is a very interesting case to study since there are also very small numbers of studies on parenting styles in Thailand. The aimed of this study is to determine the parenting styles of primary caregivers of children and adolescents with substance use disorders and to examine the association between parenting styles and parental education level and income.

Methods

The study was designed to cross-sectionally examine a population of children and adolescents with substance use disorders. Participants were recruited from those who have received treatment at Princess Mother National Institute on Drug Abuse Treatment in Pathumthani, Thailand.

They were selected based on the following criteria: 1) have been diagnosed with substance use disorders according to DSM-5 criteria, excluding tobacco and alcohol use, 2) <20 years old, 3) able to read and write Thai language, 4) mentally sound and cognizant at the time of study, and 5) willing to participate in this study. Exclusion criteria were: 1) unable to offer any information due to the active phase of physical or mental disorders, 2) tested positive for drug screen on the day of data collection, 3) that court ruled the patient as an incapacitated person or 4) not willing to participate in the study. This study was approved by an ethic committee of Princess Mother National Institute on Drug Abuse Treatment.

The sample size of 257 was calculated from the total number of 1039 eligible inpatients and outpatients who received treatment at Princess Mother National Institute on Drug Abuse Treatment in 2015 with a 0.95 confidence interval [22]. The study was conducted during January to August 2016. The self-reported questionnaire used in this study consisted of two portions. The first portion of the questionnaire was given to participants and can be divided into two sub-sections. First sub-section was a survey of general socio-demographic information, such as sex, age, status of marriage, education level, occupation, income, birth order, number of siblings, primary caregiver, along with a variety of detailed about substance use consisting of tobacco and alcohol use, lifetime use of any substance, first used substance, age of initiation, and regularly used substance. Second sub-section was a questionnaire of received parenting style according to the participants' perception. Although the response from participants may be biased due to respondent error, the previous study has found that report from adolescent was less biased than those from a parent [23]. The version of the questionnaire used in this study was developed by Naovanit Muksombud [24] with a content validity of 0.73, which is comparable to an assessment from five clinical professionals, and a Chronbach's alpha of 0.79 [24]. The questionnaire has a total of 40 items that are divided into four sections (10 questions each) according to each parenting style. Responses to each question were rated on a 5-point scale from "always" (5 points), "frequently" (4 points), "sometimes" (3 points), "seldom" (2 points), and "never" (1 point). The section that received the highest score determined the parenting style of participant's primary caregiver.

The second portion of the questionnaire was given to participant's primary caregiver and can be divided into four sub-sections. First sub-section was a survey of the demographic information such as relation to the participant, age, occupation, and income. Second and third subsections were surveys, specifically for participant's father and mother, respectively. The survey inquired information regarding age, status of marriage, education level, income, drinking, smoking and substance use. Fourth sub-section was a survey on the relationship between participant's father and mother, including their age during pregnancy of the participant, their intention and desire of conceiving participant during pregnancy, their relationship during pregnancy and at the time

of the study, and whether they have a new partner since the separation.

Data were analyzed using SPSS, version 18, to examine the frequency, prevalence, mean, standard deviation of each parameter. Chi-square test was used to examine the significance of relationships between parenting style and four other variables, parent's (paternal and maternal) income, and parent's (paternal and maternal) education level. Z-test was also used to compare two proportions by comparing the parenting styles in this study to those of general population in Thailand [25].

Results

From the 257 participants, 87.9% (226 participants) were male. They had an average age of 16.8 ± 1.6 years old. The majority of participants were not married (92.6%), was obtaining a secondary education (66.2%), were a student at the time of the study (66.5%), and did not have their own income (70.8%). The most of participants were first born in the family (44.4%) and perceived a mother as a primary caregiver (52.5%). 56.8% of participants did not have any family member who used illicit substances. The substances that were most regularly used were amphetamine (39.3%), marijuana (27.2%), and other (33.5%). A large majority of participants, 91.4% and 72.0%, had smoked cigarettes and had consumed alcohol, respectively. The average age of onset of substance use was 14.6 ± 1.4 years old. Amphetamine and marijuana were the top two substances that were first used by participants, 45.9% and 28.0%, respectively.

Table 1. Socio-demographic data of participants

Socio-demographic Data	n	%
Sex		
Male	226	87.9
Female	31	12.1
Marital Status		
Single	238	92.6
Married	1	0.4
Cohabitation	11	4.3
Separated	2	0.8
Not Answer	5	2.0
Education Level		
Primary Education	25	9.8
Secondary Education	170	66.2
Associate Degree	53	20.6
Not Answer	9	3.5
Occupation		
Student	171	66.5
Self-employed/Business Owner	7	2.7
Contractor	21	8.2
Private Sector Employee	2	0.8
Unemployed	38	14.8
Other	1	0.4
Not Answer	17	6.6
Income		
< 10,000 Baht	44	17.1
10,001-20,000 Baht	4	1.6
> 20,000 Baht	1	0.4
No Income	182	70.8
Not Answer	26	10.1
Birth Order		
First-Born	114	44.4

Second-Born	105	40.9
Third-Born and Later	35	13.6
Not Answer	3	1.1
Primary Caregiver		
Father	27	10.5
Mother	135	52.5
Grandparent	51	19.8
Uncle or Aunt	8	3.1
Sibling	2	0.8
Other (Monk)	1	0.4
Father and Mother	28	10.9
Not Answer	5	2.0
Illicit substance use by any family member		
No	146	56.8
Yes	18	7.0
Not Answer	93	36.2
Smoking		
Yes	235	91.4
No	18	7.4
Not Answer	93	1.2
Drinking		
Yes	185	72.0
No	57	22.2
Not Answer	15	5.8
Most regularly Used Illicit Substance		
Amphetamine	101	39.3
Ice/Crystallized Amphetamine	10	3.9
Heroin	9	3.5
Marijuana	70	27.2
Kratom	6	2.3
Promethazine (Procodyl)	11	4.3
4 x 100*	3	1.2
Pain medication	26	10.1
Inhaler	7	2.8
Not Answer	14	5.5
Illicit substances that had used in the past (Can choose more than 1 answer)		
Amphetamine	164	63.8
Ice (Crystallized Amphetamine)	104	40.5
Ecstasy	4	1.6
Cocaine	9	3.5
Opium & Heroin	21	8,2
Marijuana	144	56.0
Kratom	57	22.2
Promethazine (Procodyl)	76	29.6
4 x100*	36	14.0
Pain medication	85	33.1
Inhaler	18	7.0
Other	4	1.6
Illicit substance that had used for the first time		
Amphetamine	118	45.9
Ice (Crystallized Amphetamine)	8	3.1
Heroin	6	2.3

Marijuana	72	28.0
Kratom	4	1.6
Promethazine (Procodyl)	14	5.5
4 x 100*	3	1.2
Pain medication	17	6.6
Inhaler	7	2.7
Not Answer	8	3.1

***4 x 100 – A mixture of substances that is commonly used by Thai adolescents, which is usually consists of Kratom, Promethazine, antihistamine, and codeine**

The perceived parenting styles were that 115 (52.5%) participants had authoritative parents; 57 (26.0%) had neglectful parents; 18 (8.2%) had permissive parents; 29 (13.2%) had authoritarian parents. The majority of primary caregivers was self-employed (35.4%), had completed secondary education (44.0%), and had an income of 20,000 baht or more per month (34.2%). The average age of primary caregiver was 45.4 ± 9.3years old.

Table 2. Parenting styles perceived by the participants

Parenting Style	n	%
Authortative	115	52.5
Neglectful	57	26.0
Permissive	18	8.2
Authoritarian	29	13.2

Table 3. Socio-demographic data of participant's primary caregiver and parents (n=257)

Socio-demographic Data	Primary caregiver n (%)	Father n (%)	Mother n (%)
Education Level			
Lower than Primary Education		2 (0.8)	1 (0.39)
Primary Education	44 (17.1)	38 (14.8)	34 (13.2)
Secondary Education	113 (44.0)	134 (52.1)	143 (55.6)
Higher than Secondary Education	49 (19.1)	56 (21.8)	38 (14.8)
Not Answer	51 (19.8)	27 (10.5)	41 (16.0)
Occupation			
Government Employee	21 (8.2)	17 (6.6)	14 (5.5)
Self-employed/Business Owner	91 (35.4)	83 (32.3)	83 (32.3)
Contractor	87 (33.9)	86 (33.5)	95 (37.0)
Private Sector Employee	34 (13.2)	45 (17.5)	35 (13.6)
Unemployed	16 (6.2)	3 (1.2)	14 (5.5)
Other	5 (2.0)	4 (1.6)	3 (1.2)
Not Answer	3 (1.2)	19 (7.4)	13 (5.1)
Income			
< 10,000 Baht	69 (26.8)	50 (19.5)	64 (24.9)
10,001 -20,000 Baht	85 (33.1)	91 (35.4)	86 (33.5)
> 20,000 Baht	88 (34.2)	90 (35.0)	79 (30.7)
No income	13 (5.1)	3 (1.2)	10 (3.9)
Not Answer	2 (0.8)	23 (9.0)	18 (7.0)
Illicit Substance			
Used		16 (6.2)	2 (0.8)
Not Used		216 (84.1)	235 (91.4)
Not Answer		25 (9.7)	20 (7.8)

Smoking			
Yes		142 (55.3)	8 (3.1)
No		89 (34.6)	227 (88.3)
Not Answer		26 (10.1)	235 (8.6)
Drinking			
Yes		133 (51.8)	13 (5.1)
No		104 (40.5)	223 (86.8)
Not Answer		20 (7.8)	21 (8.2)

Participant's father and mother had an average age of 45.5 ± 6.5 and 42.6 ± 6.5 years old, respectively. The majority of participant's father and mother were working as a contractor (33.5% and 37.0%, respectively), had completed secondary education (52.1% and 55.6%, respectively), and had an income between 10,000-20,000 baht per month (35.4% and 33.5%, respectively). The majority of participant's father and mother did not use any illicit substance (84.1% and 91.4%, respectively). However, a significant number of participants' father smoked cigarettes (55.3%) and consumed alcohol (51.8%). In contrast, the majority of participant's mother did not smoke cigarettes (88.3%) and did not consume alcohol (86.8%).

Average ages of participant's father and mother during pregnancy were 28.8 ± 6.6 and 25.8 ± 6.1 years old, respectively. The majority of participant's parents had the intention and desire to have a child (87.9% and 88.7%, respectively). 56.0% of participant's parents were married when participant's mother was pregnant and 60.3% of participant's parents were still together at the time of this study. The majority of participant's father and mother did not have a new partner (66.2% and 66.9%, respectively). The average age of participants when father or mother had a new partner were 7.8 ± 4.4 and 8.4 ± 4.3 years old, respectively.

Table 4. Parental relationship and intention to have a child (n=257)

	n	**%**
Relationship between parents during pregnancy		
Married	144	56.0
Cohabitated	102	39.7
Other	3	1.2
Not Answer	8	3.1
Intention to have the child		
Intended	226	87.9
Not intended	18	7.0
Not Known	10	3.9
Not Answer	3	1.2
Desire to have the child		
Wanted	228	88.7
Not Wanted	12	4.7
Not Known	10	3.9
Not Answer	7	2.7
Relationship between parents at the time of study		
Still together	155	60.3
Separated – Before birth of participant	21	8.2
Separated – After birth of participant	43	16.8
Other	23	9.0
Not known	11	4.3
Not Answer	4	1.6

Father has a new partner at the time of study		
Yes	34	13.2
No	170	66.2
Not Known	35	13.6
Not Answer	18	7.0
Mother has a new partner at the time of study		
Yes	43	16.7
No	172	66.9
Not Known	21	8.2
Not Answer	21	8.2

No association was found between parenting styles and paternal or maternal education level in a subpopulation of the sample in which primary caregiver was either father or mother (p-value = 0.669 and 0.425, respectively). Furthermore, no association was found between parenting styles and paternal or maternal income in a subpopulation of the sample in which primary caregiver was either father or mother (p-value = 0.995 and 0.664, respectively).

Table 5. Association between paternal education level and parenting styles*

Parenting Styles	**n (%)**	
	Lower than or equivalent to Secondary Education (n=108)	**Higher than Secondary Education (n=38)**
Authoritative parenting style	58 (53.7)	17 (44.7)
Neglectful parenting style	27 (25.0)	12 (31.6)
Indulgent parenting style	7 (6.5)	4 (10.5)
Authoritarian parenting style	16 (14.8)	5 (13.2)

Chi-square test, p-value = 0.669
*Only in a subpopulation of the sample in which a primary caregiver was either father or mother (n=146)

Table 6. Association between maternal education level and parenting styles*

Parenting Styles	**n (%)**	
	Lower than or equivalent to Secondary Education (n=109)	**Higher than Secondary Education (n=29)**
Authoritative parenting style	57 (52.3)	12 (41.4)
Neglectful parenting style	26 (23.9)	11 (37.9)
Indulgent parenting style	9 (8.3)	3 (10.3)
Authoritarian parenting style	17 (15.6)	3 (10.3)

Chi-square test, p-value = 0.425
*Only in a subpopulation of the sample in which a primary caregiver was either father or mother (n=138)

Table 7. Association between paternal income and parenting styles*

Parenting Styles	**n (%)**		
	< 10,000 Baht (n=31)	**10,001-20,000 Baht (n=53)**	**> 20,000 Baht (n=66)**
Authoritative parenting style	17 (54.8)	28 (52.8)	33 (50.0)
Neglectful parenting style	8 (25.8)	12 (22.6)	18 (27.3)
Indulgent parenting style	2 (6.5)	5 (9.4)	5 (7.6)

Authoritarian parenting style	4 (12.9)	8 (15.1)	10 (15.2)

Chi-Square Test P value = 0.995
*Only in a subpopulation of the sample in which a primary caregiver was either father or mother (n=150)

Table 8. Association between maternal income and parenting styles*

Parenting Styles	n (%)		
	< 10,000 Baht (n=46)	**10,001-20,000 Baht (n=51)**	**> 20,000 Baht (n=55)**
Authoritative parenting style	28 (60.9)	23 (45.1)	29 (52.7)
Neglectful parenting style	11 (23.9)	14 (27.5)	13 (23.6)
Indulgent parenting style	3 (6.5)	4 (7.8)	6 (10.9)
Authoritarian parenting style	4 (8.7)	10 (19.6)	7 (12.7)

Chi-square test, p-value = 0.664; *Only in a subpopulation of the sample in which a primary caregiver was either father or mother (n=152)

Discussion

In our study, we found that a large number of participants, 52.5%, had authoritative parents while sizeable numbers of participants, 26.0% and 13.2%, had neglectful and authoritarian parents, respectively. Interestingly, only 8.2% of participants had permissive parents. The data showed a significantly higher number of neglectful parents in our sample population (Table 2) comparing to general population (26.0% versus 12.4%, respectively, $p < 0.001$) and a significantly lower number of permissive parents (Table 2) comparing to general population (8.2% versus 22.8%, respectively, $p < 0.001$) [25]. However, we did not find any statistically difference in number of authoritative parents and authoritarian parents between our sample population (Table 2) and the Thai general population (authoritative: 52.5% and 52.4%, respectively, $p = 0.983$; authoritarian: 13.2% and 12.4%, respectively, $p < 0.799$) [25]. Furthermore, statistical analysis did not reveal any association between parental (either paternal or maternal) education level or income and parenting styles (Tables 7-10).

This significant increase of neglectful parents showed that having neglectful parents was a risk factor for substance use in Thai adolescents. This result was consistent with the consensus from previous studies [11-16]. It is likely that children and adolescents who received neglectful parenting style may feel abandoned and emptiness due to lack warmth and attention from parents, which creates greater dependency needs. So they look for a way to sooth themselves. Using illicit substances is one of the many ways of self-soothing to ease the lack of attention from parents and fulfill their dependency needs. In contrast, those who had received other parenting styles possibly have received a sufficient amount of warmth and attention from parents, so they have fewer dependency needs.

In contrast to the higher number of neglectful parents, there was a significantly lower number of permissive parents in our study (Table 2). It was contrary to the finding in some studies, in which greater substance use in adolescents was associated with permissive parenting style [10, 12, 14-15]. However, a number of studies found the strength of the relationship between substance use, and permissive style was in between those of authoritative and neglectful parenting styles or even found that permissive style was the least associated with substance use [9, 11, 13, 16].

One important contributing factor to this inconsistency may be cultural. One of the studies that showed a strong relationship between decreased substance use, and permissive parenting style was conducted in Spain [11]. The authors hypothesized that egalitarian and collective characteristics of Spanish society are the main reasons that permissive parenting style is the best in preventing substance use in adolescents [11].

Thai society can be considered as a

collectivistic society, where family tends to be larger including several generations and more close-knitted comparing to western individualistic society. Due to this collectivistic mentality, permissive parenting style may possibly be more acceptable or even a norm in Thai society. So those children and adolescents, who have received permissive parenting style, may feel that they had received the same rearing as other in society, and do not feel the emptiness unlike those children and adolescents with neglectful parents. Furthermore, those with permissive parents tend to have very supportive parents and family, which makes adolescents less likely to turn to substances when facing challenges in their life. Even though having permissive parents is possibly a very good protective factor against substance abuse, those with indulgent parents may indeed have a higher risk of other psychological disorders, in which further studies are needed.

Majority of socio-demographic data in this study (Table 1), including sex, education level, birth order, primary caregiver, and most regularly used substances, were very similar to those in the previous study [26], which was collected from an older population (18 years and older) with substance use disorders who had been treated at Tanyarak Hospital, Songkhla, Thailand. The similarity in data between these two studies showed that the general socio-demographic data and pattern of substance use in children and adolescent patients are mostly consistent with those of adult patients. Interestingly, adolescent patients were less likely to pursue tertiary education similar to the adult patients. However, there was a disparity in the average age of onset of substance use between children and adolescents in this study (14.6 ± 1.4 years old) and adult in a previous study (19.3 ± 1.4 years old). This disparity showed that a significant number of adult patients did not start experiment with substance in their adolescence, suggesting that parenting styles may have an impact on timing when children and adolescents start to experiment with an illicit substance.

The main strength of our study is a large number of participants (N = 257), so the findings are very robust. However, there might be a selection bias since we only collected data from a single institution, Princess Mother National Institute on Drug Abuse Treatment, Pathumthani, Thailand. So it is possible that our findings are specific to this particular geographic area or this particular subpopulation, and our finding may not apply to the entire population of children and adolescents with substance use disorders in Thailand or other countries. In addition, there are also a number of unaccounted children and adolescents with substance use disorders who did not receive treatment. Furthermore, our study only collected the general socio-demographic data and parenting styles but did not collect other variables that may have an effect on the sample population, such as peer substance use, other psychological disorders, religious belief, etc. Due to the nature of the cross-sectionally examination of population, we cannot truly link substance abuse in children and adolescents and the received parenting styles. In addition, the survey used in this study was similar, but not identical to those used for the general population. So the slight difference between two versions can possibly, but albeit not likely, affects the finding.

Conclusion

The children and adolescents with the substance use disorders who had received treatment at Princess Mother National Institute on Drug Abuse Treatment in Pathumthani, Thailand, in this study had higher numbers of neglectful parents while had fewer numbers of permissive parents comparing to the general population. Children and adolescents who have a neglectful parent can be considered to be a high-risk group for substance abuse. Primary prevention of substance abuse in children and adolescents, especially in Thailand, should be focused on this particular group.

Conflict of Interest

The authors declare no conflict of interests.

Author contributions

WC and SH conceived and designed the study. PK assisted in the design of the study and

collected data. WC performed the statistical analysis and interpretation of data, and wrote the draft manuscript with inputs from SH. All authors contributed to writing and editing, and approved the final manuscript.

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Corresponding author: ***Sirichai Hongsanguansri, M.D., Associate Professor, Department of Psychiatry, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, 270 Rama VI Road, Ratchathewi, Bangkok, Thailand 10400.***

Email: sirichai_hong@yahoo.com

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Estimating The Size Of The Drug Using Population In Three Deep-South Provinces Of Thailand: Results From A Service Multiplier And Respondent Driven Sampling (RDS) Method
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ORIGINAL ARTICLE

ESTIMATING THE SIZE OF THE DRUG USING POPULATION IN THREE DEEP-SOUTH PROVINCES OF THAILAND: RESULTS FROM A SERVICE MULTIPLIER AND RESPONDENT DRIVEN SAMPLING (RDS) METHOD

Muhammad Fahmee Talek*, Linda B Cottler**, Sawitri Assanangkornchai*

***Epidemiology Unit Faculty of Medicine Prince of Songkla University, Songkhla, 90110 Thailand; **Department of Epidemiology, College of Public Health and Health Professions and College of Medicine University of Florida, USA.**

Abstract

Objective: **The deep-south provinces of Thailand, the border area where the population is majority Malay ethnic, have faced with armed-conflicts for the decade and are a major route for drug trafficking. Several studies have reported concerns about drug problems among local population but the size of drug using population has not been studied. The objective of this study is to estimate the size of drug using population in the deep-south provinces of Thailand.** ***Methods:*** **A cross-sectional survey, including interviews was conducted in 2016. Males aged 18-40 years who had used any drugs in past six months were recruited. Respondent-driven sampling method was used to reach the target population and multiplier method to estimate the size of drug using population.** ***Results:*** **The estimated number of male using drug population in three deep-south provinces was 13,545, making the prevalence of 50.2 per 1,000 male population of this age group, twice as high as the national prevalence. Most drug users were in Pattani (60.6%), followed by Narathiwas and Yala provinces. Kratom is the illicit drug with the highest number of current users (85.2% of all users). The majority of current users (60.6%) used more than one type of illicit drug, with kratom and methamphetamine being the most common combination (25.6%).** ***Conclusion*****: This study depicts the situation of drug abuse in deep-south Thailand. Kratom was the most popular substance. The high prevalence of drug users in the area should be of concern by stakeholders and interventions to minimize and control the abuse are needed.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 174-184.***

Keywords: Drug Abuse, Size Estimation, Armed Conflict Area, Respondent-Driven Sampling

Introduction

Evidence clearly indicates a close association between conflict situations and marginalization especially in economics, health and education [1]. This is also reflected in three southern provinces of Thailand, - Pattani, Yala and Narathiwas, the deep-south area with the lowest gross domestic product (GDP) per capita and very low human achievement index in Thailand [2]. This area is bordered with Malaysia and mostly inhabited by Muslims (80% of the total population) of Malay ethnicity [3]. A separatism movement had occurred in the area from 1960 to 2000 [4] which led to armed conflicts since January 2004. Up to December 2015, the number of violent incidents was estimated to be 15,132 with 6,523 and 11,877 deaths and injuries, respectively [5].

As many areas of illicit cultivation are isolated

and often plagued by ethnic and other conflicts or political instability, government control over them is limited. People in the area have limited or no access to basic services including education, sanitation and health care [6]. Furthermore, the ensuing instability brought about by conflict has created a favorable environment for drug traffickers, similar to that seen in other conflict areas such as Afghanistan, the Democratic Republic of the Congo, Central America, Somalia and West Africa [7]. The deep-south area of Thailand is known for illicit activities, especially drug trafficking, making the Thailand-Malaysia border the most efficient import route for drugs [8]. A survey between February and March 2009 among 1,878 people posited that the worst problems in the area perceived by inhabitants were unemployment (91%), drug abuse (85%) and conflict situations (51%) [9]. Another survey between July-August 2016 among 1,570 inhabitants also found drug abuse the most urgent problem to be tackled [10].

Reports of drug treatment centers in the deep-south area revealed that methamphetamine was the most used substance, followed by heroin and other drugs. Drug abuse has caused vast damage to the community structure in the deep-south area in term of human resources, economics, crime, religious beliefs and national security. Although there have been some studies in this area, a specific study to estimate the number of drug users has never been conducted. A precise estimation of drug users can provide a variety of benefits for assessing possible treatment needs and political demands. There is also a need to improve basic data of public services on which such estimates are based for planning and implementation of prevention and control of drug use as well as management of the health care system that treats drug users. This study aims to estimate the number of young and adolescent male drug users in the three southernmost provinces and describe their drug using patterns.

Methods

Study design

A cross-sectional survey using respondent driven sampling (RDS) was conducted in three southernmost provinces of Thailand, i.e. Pattani, Yala and Narathiwas between January and June 2016.

Sampling

Respondent driven sampling method

A hidden population is a group of people who stay away from mainstream society. There are two main characteristics:(1) No sampling frame exists, so there are no boundaries of that population, and (2) they are living with strict privacy status because of their stigmatized and illegal behaviors [11]. This leads them to refuse to cooperate or give information to protect them from criminalization issues.

Drug users are a group of hidden populations because of illegal and stigmatized behavior. One method to approach hidden populations is RDS, which is modified from a snowball sampling method [12]. It is a novel variant of link-tracing sampling for estimating the characteristics of hard-to-reach groups, such as sex-workers. The main characteristic that distinguished RDS from other chain-referral sampling is that ‘seeds’ (initial recruiters) are limited in the number of respondents they can recruit by the number of coupons they receive (e.g. three or four), thereby reducing the affectation of initial seeds on the last sample composition [12]. Limiting the number of recruits increases possibility to contributelonger recruitment chains, therefore increasing the ‘reach’ of the sample into inaccessible area of the population [13].

Data collection

To be eligible, participants needed to be: 1) a current drug user (defined as one who used heroin, methamphetamine, cannabis or kratom in the six-month period prior the interview), 2) male, 3) 18-40 years of age, and 4) living in Pattani, Yala or Narathiwas province for at least 6 months prior to the interview. From Thailand national survey we have known that at least 90% of drug users were male[14], thus we restricted the sample to male.

One recruitment center each was set up in Pattani and Yala and two in Narathiwas

provinces, with one being in Meaung district and the other in Sungai-kolok district (bordering Malaysia with highest prevalence of IDUs) due to geographical reasons. All centers were set in non-government organization (NGO) offices, located in the heart of downtown, making them easier to build trust among peers of drug users. In each center, three-drug users of different age groups, main drug of use and residential areas were selected as "seeds" of the RDS chain. Three uniquely coded coupons were given to each seed, which was valid for 21 days from the date of the interview. Each coupon contained a code for the data collection center, and due date for the interview. A recruitee presented his valid coupon to the recruitment center before the expired date. The recruitment process continued until the required sample size (at least 401) and equilibriums with consideration to the main variables being measured were achieved. Using an RDS method, once the 'equilibrium' was reached, the sample composition was stable and independent of the initial seeds. Participants were compensated with 200 Thai Baht (THB; about 6 US$) for their participation in the study and an additional 50 THB (about 1.5 US$) for successful recruitment of each eligible participant from their peer network.

Our research team has more than 10 years of experience working with Muslim HIV-AIDS infected intravenous drug users (IDUs) in the area. All interviews were conducted by the principal researcher and six well-trained and experienced interviewers. The participants were initially screened for drug use by asking them to name the street name of the drug of use, price per unit, symptoms of toxicity and withdrawal. This study did not involve any blood or biological sample for serological testing. Ethical approval of this project was obtained from the ethics committee for research in human beings of the Faculty of Medicine at Prince of Songkla University.

Measures

The questionnaire comprised demographic questions and lifetime history of use of alcohol, cigarette and illegal drugs. Questions on drug use history included age at initial use, types of drugs used in the lifetime and past six-months, as well as frequency of use.

Data management and analysis

The analyses were performed with the Epicalc package in the R language and environment [15]. The multiplier method was used for estimating the number of male drug users. *Benchmark* (M) data were newly admitted male drug users (including new admissions and re-admissions) of the age group 18-40 years in the past six months prior to our study derived from the Drug Treatment Registry of the Ministry of Public Health. This registry contains information on all drug users who enter any treatment facilities in the area, including a specialized drug treatment hospital, general hospitals, and rehabilitation camps. Registered data are input online daily by health personnel working in hospitals and treatment centers all over the country; data are pooled in the national drug abuse database system of the Ministry of Public Health.

Multiplier data (P) were the proportion of our drug user samplewho reported being enrolled in each of the above settings in the same period among the entire study respondent. The size of the drug-use population (N) was estimated by M/P.

Results

Eleven seeds produced a total of 414 drug users after 11 waves (the longest chain), including 139, 136 and 139 from Pattani, Yala and Narathiwas, respectively. The mean age of drug users was 26.5 years (standard deviation (SD) = 6.6), with half being 18-25 years of age; 69.8% had never been married and 56.0% werelaborers. The average monthly income was 5,355.6 THB (around 178 US$). Most drug users (68.1%) had a monthly income of less than 6,000 THB. Only 27.4% obtained secondary school education level or above (Table 1).

Table 1. Background characteristics of drug users (n=414)

Variables	Number	Percentage	95% CI
Residential area			
Pattani	139	33.6	29.1-38.4
Yala	136	32.8	28.4-37.7
Narathiwas	139	33.6	29.1-38.4
Age (years)			
18-25	207	50.0	45.2-54.8
26-40	207	50.0	45.2-54.8
Occupation			
Unemployment	72	17.4	13.9-21.5
Student	47	11.4	8.5-14.9
Farmer/ Agriculture	24	5.8	3.8-8.6
Laborer	232	56.0	51.1-60.8
Business owner	39	9.4	6.8-12.7
Monthly Income (THB)*			
No income	17	4.1	2.4-6.6
<3000	153	37.0	32.3-41.8
3000-6000	112	27.0	22.9-31.7
6000-9000	86	20.7	17.0-25.1
> 9000	46	11.1	8.3-14.6
Education			
Illiterate	13	3.1	1.8-5.4
Primary school	186	44.9	40.1-49.8
Secondary school	102	24.6	20.6-29.1
High school	83	20.0	16.4-24.3
Diploma	24	5.8	3.8-8.6
Bachelor and above	6	1.4	0.5-3.3
Marital status			
Never married	289	69.8	65.1-74.1
Married	103	24.9	20.8-29.4
Widowed	5	1.2	0.4-3.0
Divorced	15	3.6	2.1-6.0
Separated	2	0.5	0.08-1.9

*THB: Thai Bath; CI = Confidence Interval

Proportions of current and lifetime drug users

Almost all respondents reported using cigarettes (97.8%). The most common drug reported was kratom, with 85.2% of participants reporting current use. Among all lifetime users, more than 80% had used methamphetamine, kratom and cigarettes. Alcohol was the least common substance used among this group (4.5% current and 11.5% lifetime users). Heroin was the least popular illicit drug reported with 12.8% being current users (Table 2).

Table 2. Proportion of current and lifetime drug users

Types of drug	Current users in last 6 month (414)			Lifelong users		
	Number	Proportion[a]	95% CI	Number	Proportion[b]	95% CI
Heroin	53	12.8	9.8-16.5	120	44.1	32.5-53.5
Methamphetamine	239	57.7	52.8-62.5	288	82.9	78.0-87.0
Cannabis	121	29.2	24.9-33.9	268	45.1	39.1-51.3
Kratom	353	85.2	81.4-88.4	380	92.9	89.7-95.2
Alcohol	19	4.5	2.8-7.2	165	11.5	7.3-17.6
Cigarettes	405	97.8	95.7-98.9	413	98.0	96.0-99.0

a = Proportion from all participants
b = Proportion of current/lifelong users
CI = Confidence Interval

Age at the time of first usage of drugs (lifelong use)

Age at the time of first usage of drugs was described in Table 3. Cigarettes had the lowest age of first use (15 years) followed by cannabis and alcohol. Heroin had the latest age of first use (20.4 years).

Frequency of drug use

Cigarettes and kratom were substances of daily use by respectively 92.8% and 40.8% of our respondents. Of all methamphetamine current users, 7.0% used it daily while 2.7% and 19.3% used 1-6 days per week and 1-3 times per month, respectively (Table 3).

Table 3. Age of first use and frequency of substance use

Substance	Age of first use (years)			Frequency of current substance use[a]					
	Mean	Min-Max	SD	1/M	2-3/M	1/W	2-3/W	4-6/W	D
Heroin (n=53)	20.4	13-33	4.79	3.6	1.2	0.7	1.7	0.2	6.0
Methamphetamine (n=239)	18.9	11-38	4.72	14.3	5.1	9.4	19.3	2.7	7.0
Cannabis (n=121)	16.9	8-28	3.48	6.8	3.4	6.0	7.0	0.5	5.6
Kratom (n=353)	19.5	10-37	5.18	4.1	4.1	8.5	23.4	3.9	40.8
Alcohol (n=19)	17.3	10-24	3.70	1.2	1.4	0.2	0.7	0.2	0.7
Cigarettes (n=405)	15	7-25	3.05	0.2	0.0	0.5	1.0	3.4	92.8

a= present in percentage of all participants (414)
M=Month, W=Week, D=Daily
SD = Standard Deviation

As shown in Table 4, of all current users, 163 (39.4%) had used only one type of drug, including 135 kratom users, 16 methamphetamine users, 7 cannabis users and 5 heroin users, while 2.4% used all four types of drugs concurrently. Among all, 160 (38.6%) used only two drugs concurrently, with 25.6% using kratom and methamphetamine, 6.0% kratom and cannabis, and 4.6% heroin and methamphetamine. Multiple drug use was found most common for the combination of kratom, methamphetamine and cannabis (15.4% of all users). The most popular typology of drug use was kratom alone (31.6%).

Table 4. Proportion of combined drug users in the past 6 months

Type of drugs	Combination	Total	weighted	95% CI
1 type (163)	Heroin	5	1.2	0.4-2.9
	Methamphetamine	16	3.9	2.3-6.3
	Cannabis	7	1.7	0.7-3.6
	Kratom	135	32.6	28.2-37.4
2 types (160)	Heroin + Methamphetamine	19	4.6	2.9-7.2
	Heroin + Cannabis	0	0	0.0-1.1
	Heroin + Kratom	2	0.5	0.1-1.9
	Methamphetamine + Cannabis	8	1.9	0.9-3.9
	Methamphetamine + Kratom	106	25.6	21.5-30.1
	Cannabis + Kratom	25	6.0	4.0-8.9
3 types (81)	Heroin + Methamphetamine + Cannabis	6	1.4	0.6-3.2
	Heroin + Cannabis + Kratom	1	0.2	0.0-1.5
	Heroin + Methamphetamine + Kratom	10	2.4	1.2-4.5
	Methamphetamine + Cannabis + Kratom	64	15.4	12.1-19.4
4 types (10)	Heroin + Methamphetamine + Cannabis + Kratom	10	**2.4**	1.2-4.5

CI = Confidence Interval

Estimation of the size of the drug using population

The number of newly admitted drug users aged 18-40 years derived from the Drug Treatment Registry (benchmark data; M), was 662. Among 414 respondents of our study, 57 reported receiving treatment in the past six months (13.77%; P). The estimated size of the current substance using population obtained by non-classified multiplier method in six months was equaled to 4,808, as derived from 662 divided by 57/414 (N=M/P). The estimated number of users in one year was equaled to 9,616, and the prevalence of drug users among young males in the same age group derived from this estimation was 35.6 per 1,000 populations (9,616 divided by the total number of male population of the same age group (270,000)).

Categorised by province, age group and occupation, the estimated number of drug users in the past year was different from the crude estimate reported above (13,545 vs 9,616). Most drug users were in Pattani province (60.6%), followed by Narathiwas and Yala provinces. The prevalence of drug use among young males in the southernmost provinces was calculated to be 50.2 users per 1,000 population or a prevalence of 5% overall (Table 5).

Table 5. Estimation of size of drug users (based on group classification)

Province	Age group	Occupation	M[a]	n[b]	P[c]	6-month (users)	1 year (users)	percentage	lower CI (users)	upper CI (users)
Pattani										
	age 18- 25	unemployment	69	25	6	287	575	4.2	383.4	672.8
		laborer	121	51	3	2,057	4,114	30.4	1,884.00	5,251.80
		others	8	3	1	24	48	0.4	12.1	66.3
	age 26-40	unemployment	65	10	1	650	1,300	9.6	100.7	1,911.90
		laborer	112	40	5	896	1,792	13.2	1,073.90	2,158.40
		others	19	10	1	190	380	2.8	36.1	555.4
		Total	**394**	**139**	**17**	**4,104**	**8,209**	**60.6**	**6,805.60**	**8,925.00**
Yala										
	age 18- 25	unemployment	10	9	1	90	180	1.3	22.2	260.5
		laborer	18	23	1	414	828	6.1	56.8	1221.5
		others	1	55	2	27.5	55	0.4	-	-
	age 26-40	unemployment	5	2	2	5	10	0.1	10	10
		laborer	32	43	9	152	305	2.3	230.5	344.2
		others	3	4	3	4	8	0.1	8	8
		Total	**69**	**136**	**18**	**693**	**1,386**	**10.2**	**1,193.90**	**1,485.20**
Narathiwas										
	age 18- 25	unemployment	21	11	3	77	154	1.1	85.2	189.1
		laborer	50	21	1	1,050	2100	15.5	111.8	3,114.40
		others	3	3	1	9	18	0.1	6.2	24
	age 26-40	unemployment	18	15	5	54	108	0.8	75.2	124.8
		laborer	96	72	10	691	1,382	10.2	1,006.10	1,574.40
		others	11	17	2	93	187	1.4	76.9	243.2
		Total	**125**	**139**	**22**	**1,974**	**3,949**	**29.2**	**3,674.50**	**4,089.60**
Overall			**662**	**414**	**57**	**6,773**	**13,545**	**100**	**12,436.90**	**14,110.40**

a =Number of substance users in benchmark data, b= Number of participants is this study,
c = Number of participants who enrolled in M 6 months prior to interview, P = p/n

Discussion

Estimated prevalence and type of substance

Our study found a one-year prevalence of current drug use to be 5% among young males in the three armed conflict provinces of the deep south of Thailand. The national household survey on substance use in 2016 reported half the rate (2.5%) in the last 12 months [14]. Kratom and kratom cocktail (a mixture of boiled kratom leaves with Coca Cola Drink and other substances, such as cough syrup and benzodiazepines) were drugs commonly used both in our study and the national survey. Kratom is commonly grown in Southern Thailand and middle-aged and older people in rural areas use it to enhance their work energy and as herbal medicine. However, kratom cocktail is used by adolescents and young adults for entertainment purpose with friends; it is associated with a great deal of criminal activities such as thefts and physical assaults [16]. This picture is similar to what was found in other countries in that the most common drug used is the one which is most easily available, which could also be the one cultivated in the area. As seen in Afghanistan, opiates are the most commonly used substances because the country produces 90% of the world's heroin [17]. Furthermore, in Pakistan and the Islamic Republic of Iran, which share borders with Afghanistan, a high prevalence of opium users is found[18].This shows the importance of the demand-supply chain as a factor to be considered in the control of drug abuse in a nation.

While kratom use was high, alcohol consumption was very low among our respondents (5.8% current drinkers), compared to a 53.0% one-year prevalence of drinkers among the general male population of the whole country [19]. This low prevalence is due to the fact that alcohol consumption is strongly prohibited in the Muslim community as drinking is regarded as a severe sin in the Islamic religious teaching [20]. This finding is in keeping with those found in other Muslim

majority countries such as Afghanistan [18], Islamic Republic of Iran and Saudi Arabia [21], reflecting the important role of religion in alcohol use. In the deep-south area of Thailand, the Islam practice has a strong influence on the people's way of life and alcohol consumption in public places is highly stigmatized, with drinkers being socially sanctioned.

Multiple drugs use

About half of our respondents used more than one drug in the past year, with methamphetamine and kratom being the most common combination. As mentioned before, kratom is commonly grown in the area, and chewing kratom leaves is partially accepted in the community [22] while methamphetamine is the common drug of abuse for the whole country. A previous report found that some kratom users switched to other drugs such as methamphetamine and alcohol when kratom trees were eradicated [16]. On the other hand, some 'hard' drug users used kratom as a substitute for other drugs and withdrawal relief when they tried to quit drugs of higher potency [23]. This may explain why kratom was found to be one of the drugs used by these multiple-drug users. Additionally, concurrent use may be of concern if the drugs are used for the purposes of getting high, to experiment, to increase or counter the effects of other drugs, as it may lead to risky behavior, such as unsafe sex or accidental overdose [24].

Marginalization of substances users

In our study, we found that 51.0% of respondents were unskilled laborers and 17.4% were unemployed, with half being illiterate or having a primary level education. About 40% of respondents received less than 3,000 THB (83 US$) per month, which is close to the poverty line of expenditure of Thailand (2,644 THB) [25]. Unemployment can cause various negative consequences such as stress and anxiety, financial problems, dissatisfaction and estrangement, which are all risk factorsleading to a vicious cycle of substance use (initiation, perpetuation, intensification and resumption) [26]. This finding is consistent with that found in other areas of the world. For example, in the USA, the 30-day prevalence of use of any drug was also high among the unemployed and part-time workers [27]. Data from European countries also reveal that, as of 2013, among all persons accessing treatment for drug use disorders, at least half were unemployed [28]. This supports the finding from Afghanistan that found explicit links between drug use and employment status [18].

Recommendation

Drug-related violence associated with conflict, terrorism and insurgency

As seen in several of drug producing countries such as Afghanistan, Colombia and Myanmar, links between the illicit drugs trafficking and armed terrorist group have materialized [7]. Drug trafficking played an important role in complicating and extending armed conflicts [29]. Such a connection can be alternated, drugs trafficking can fund terrorist group, making them generate more insurgents, perpetuating both crime and insurgency and making conflicts more lethal [29]. Notwithstanding the above-mentioned well-known examples, the connection between drugs, armed conflict and terrorism is not inevitable. Many terrorists and armed groups operate in areas where they could profit by joining in the illicit drug trafficking. However, in the armed-conflict situation in deep south Thailand, no study has accepted association between anti-government activities and drug trafficking. Moreover, the locals tend to associate drug problems with the state officers rather than the anti-government groups [30]. Illegal drug problem in the deep south Thailand appears to be driven by economic and social situation. This should make it easier to solve the drug problem which is not related with political, religion and ethnic issues.

Strengths

RDS which reduces selection bias was used for sampling. All the respondents beyond their geographical barrier to participate in the study were able to be included in the study. Multiplier method: We estimated the number of substance users by standard method. In our study, benchmark from Ministry of Health is the best choice, covers almost all three

systems of treatment (42 places in deep-south). Only a few private and religion treatment places were not included in benchmark. A total of 70 substance users who were treated in last 6 months from any treatment places, 57 (81%) of them were treated in treatment centers which were under the coverage of our benchmark. Thus, it means our benchmark data covered almost all treatments available in the area. Recall bias from treatment history was minimal in this study because we asked about the treatment they had received in last 6 months. This memory of recent treatment is not hard to recall.

Limitations

There were some limitations for the study. Geographical barrier played role in recruiting seeds. The seeds with high recruitment rate may come from areas close to the recruitment centre. Two unsuccessful seeds in the study set an example for this limitation as they were living more than 30 km away from the place of the interview. Our data were from self-report, interviewed by trained interviewers. The reliability and validity of self-report data regarding substance abuse has often been questioned. However, most results examining the reliability and validity of self-reports have been strong [31]. The implication from this study helps policy makers in designing strategies to counter the illegal substance use problem, especially kratom [32]. When kratom was combined with methamphetamine and other drugs, then the clinical and medico-legal issues can be very challenging.

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Disclaimers

None

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Conflict of interest

None to declare

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Corresponding author: ***Sawitri Assanangkornchai, Professor of Psychiatry, Epidemiology Unit Prince of Songkla University, Hatyai, Songkhla 90110 Thailand.***

Email: savitree.a@psu.ac.th

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ORIGINAL ARTICLE

PREVALENCE OF EMOTIONAL AND BEHAVIORAL PROBLEMS AMONG ADOLESCENCE AND SOME RISK FACTORS IN MONGOLIA

Bayarmaa Vanchindorj, Batzorig Bayartsogt^, Guljanat Yerlan*, Altanzul Narmandakh***, Tuya Naidansuren**, Soyolmaa Batdelger*, Baatarjav Oidovnyam*, Chimedsuren Ochir^, Nasantsengel Lkhagvasuren*****

***Department of Public Health, Research,Training and Foreign Affairs, National Center for Mental Health, Ulaanbaatar, 13281-0005 Mongolia; **Department of Psychiatry, "Ach" Medical University, 18101-0024 Ulaanbaatar, Mongolia; ^School of Public Health, Mongolian National University of Medical Sciences, 14210 Ulaanbaatar, Mongolia; ***Department of Psychiatry, School of Medicine, Mongolian National University of Medical Sciences, 14210 Ulaanbaatar, Mongolia.**

Abstract

Objectives: **To determine emotional and behavioral problems among adolescents and to define risk factors for these emotional and behavioral problems.** ***Methods:*** **A cross-sectional study was conducted among selected and qualified middle and high school children, their parents and teachers. The "Strength and Difficulties Questionnaire" (SDQ) were employed with the intention to measure psychosocial problems and strengths [prosocial behavior] in children between the ages of 4-10 and adolescents ages 11-17, through a multi-informant methodology. The questionnaire consists of 25 items equally divided across five scales measuring: 1) emotional symptoms; 2) conduct problems; 3) hyperactivity-inattention; 4) peer problems; and 5) prosocial behavior. Except for the prosocial scale, the combined scale [*i.e.* Total Score] reflects total difficulties, indicating the severity and content of the psychosocial problems. The prosocial scale indicates the amount of prosocial characteristics child displays.** ***Results:*** **In the SDQ questionnaires answered by parents, we obtained the following scores: 27.4% for emotional symptoms, 28.2% for conduct disorders, 20.4% for hyperactivity, 81.4% for interpersonal relationships, and 43.3% as the Total Score. In the SDQ questionnaires answered by teachers, we obtained high scorings such as 8.9% for emotional symptoms, 20.2% for conduct disorders, 13.4% for hyperactivity, 47.6% for interpersonal relationships and a Total Score of 33.4%. In the SDQ questionnaires answered by the adolescents themselves, we obtained scorings such as: 10.0% for emotional symptoms, 10.2% for conduct disorders, 18.8% for hyperactivity, 14.6% for interpersonal relationships, and 16.3% as the Total Score.** ***Conclusion:*** **Mongolian adolescents were found to have emotional and behavioral problems as evidenced by the Total Scores of parents, i.e. 43.3%; by teachers, 33.4%; and self-report 16.3%, respectively. The SDQ confirmed that an adolescent's age, gender, family environment and living areas will influence their emotional and behavioral well-being.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 185-198.***

Keywords: Emotions, Adolescent, Mental Health, Adolescent Behavior

Introduction

Mental-health problems in children are common throughout the world. According to estimates provided by the World Health Organization, 20% or one-fifth of children worldwide suffer with mental and behavioral disorders. Most are adolescents between the ages of 10-19.World Health Report-2001 showed the prevalence of anxiety was 13.0%, behavioral disorders 10.3%, and emotional disorders 6.2% among children ages 9-17. At the minimum, 3% of school-age children complain of severe depression, suicidal thoughts, psychosis and attention-deficit hyperactivity disorders.

Epidemiological studies demonstrate that 13-25% of adolescents will meet the criteria for a mental disorder during their lifetime. Adolescence is an important period in the life of a child. Adolescent mental-health problems often go unnoticed. Therefore, "screening" tools can aid early detection of these problems to facilitate early intervention and a child's access to effective treatments [1,2].

According to a study [3] in more than 10438 children aged, 5-15 using the Strength and Difficulties Questionnaires (SDQ), individuals with a psychiatric diagnosis were identified with a specificity of 94.6% and a sensitivity of 63.3%. The SDQ identified over 70% of individuals with emotional and behavioral problems. Approximately, 10% these children and adolescents reported having psychiatric disorders. However, only about 20% were in contact with a specialist from the mental health service [3]. According to the British school-based survey results, 18-22% of participants were diagnosed with mental-health problems, including 5-8% diagnosed with severe emotional disorders [4-6]. According to the results from a study by the Global School based Student Health Survey 2013 in Mongolia, 23% of 5393 students aged 12-17 were seriously considering suicidal behavior; and 9.6% did attempt suicide within the past year. Girls attempt at suicide were more frequent than boys.

In the World Health Organization Report Instrument for Mental Health Systems (WHO-AIMS, 2006) reported; "Mongolia does not offer child and adolescence mental health services. Furthermore, special attention needs to be given to develop competent professional services in the area of child and adolescent mental health in Mongolia [2]". The purposes of this study were: (i) to determine results of emotional and behavioral problems of adolescents and ii) to define risk factors for emotional and behavioral problems among adolescents.

Methods

1. Study population

Our study was a cross-sectional study of 22 schools selected from Ulaanbaatar City and 50 schools from rural areas. Total sample sizes were: 2250 adolescents, 2250 parents and 72 teachers. Ethical approval for this study was acquired from the Research Ethics Committee of Mongolian National University of Medical Sciences. Participants signed consent forms after introduction and discussion of ethical issues and had to meet the inclusion criteria of the survey. Inclusion criteria are: 1) School children of middle and high school; 2) Access to school children's parents and their teachers; 3) Agreements of school children and their parents and teachers to participate in the survey; 4) School children, parents and teachers must be able to understand and provide answers to the SDQ.

Data collection was done during the period of 1st February to 30th March 2013, among 22 schools of 7 districts in Ulaanbaatar and in urban areas among 50 schools of 8 provinces during the period of 1st September to 30th November.

2. Instruments

We used various versions of the Strengths and Difficulties Questionnaire (SDQ) applicable for children, adolescents, parents and teachers (S11-17, P11-18, T11-17). SDQs for self-assessment by adolescents asked the same 25 questions, though the wording was slightly different (Goodman et al, 1998). This self-assessment version is suitable for young people ages 11-17 depending on their level of understanding and literacy. These 25 items are divided into five scales: 1)

hyperactivity/inattention; 2) emotional symptoms; 3) conduct problems; 4) peer relationship problems; and 5) prosocial behavior. Each item can be answered as 'Certainly True', "Somewhat true", 'Not true' being weighted using a 0 to 2 score depending on the template (Table 1). The Total Score of difficulties typically ranging from 0 to 40, with higher scores indicating more difficulties.

The prosocial scale score is not incorporated in the Total Score of difficulties, as the absence of prosocial behaviors is conceptually different from the presence of psychological difficulties.

3. Scoring the Strengths & Difficulties Questionnaire for age 4-17

The 25 items in the SDQ comprise 5 scales of 5 items each. It is best to score all 5 scales first before calculating the Total [difficulties] Score. 'Somewhat True' is always scored as 1, but the scoring of 'Not True' and 'Certainly True' varies with the item, as shown below scale by scale. For each of the 5 scales the score can range from 0 to 10 if all items were completed.

Table 1. Scoring symptom scores on the SDQ for 4-17 year olds

Items	SDQs 5 scales	Not True	Somewhat True	Certainly True
Emotional problems Scale				
ITEM 3:	Often complains of headaches… *(I get a lot of headaches…)*	0	1	2
ITEM 8:	Many worries… (*I worry a lot)*	0	1	2
ITEM 13:	Often unhappy, downhearted… (*I am often unhappy….)*	0	1	2
ITEM 16:	Nervous or clingy in new situations… (*I am nervous in new situations…)*	0	1	2
ITEM 24:	Many fears, easily scared *(I have many fears…)*	0	1	2
Emotional problems Scales score range		**0-10 score**		
Conduct problems Scale				
ITEM 5:	Often has temper tantrums or hot tempers (*I get very angry)*	0	1	2
ITEM 7:	Generally obedient… *(I usually do as I am told)*	2	1	0
ITEM 12:	Often fights with other children… *(I fight a lot)*	0	1	2
ITEM 18:	Often lies or cheats *(I am often accused of lying or cheating)*	0	1	2
ITEM 22:	Steals from home, school or elsewhere *(I take things that are not mine)*	0	1	2
Conduct problems Scales score range		**0-10 score**		
Hyperactivity scale				
ITEM 2:	Restless, overactive… *(I am restless…)*	0	1	2
ITEM 10:	Constantly fidgeting or squirming *(I am constantly fidgeting….)*	0	1	2
ITEM 15:	Easily distracted, concentration wanders *(I am easily distracted)*	0	1	2
ITEM 21:	Thinks things out before acting *(I think before I do things)*	2	1	0
ITEM 25:	Sees tasks through to the end… *(I finish the work I am doing)*	2	1	0
Hyperactivity scales score range		**0-10 score**		
Peer problems scale				
ITEM 6:	Rather solitary, tends to play alone *(I am usually on my*	0	1	2

	own)			
ITEM 11:	Has at least one good friend *(I have one goof friend or more)*	2	1	0
ITEM 14:	Generally liked by other children *(Other people my age generally like me)*	2	1	0
ITEM 19:	Picked on or bullied by other children… *(Other children or young people pick on me)*	0	1	2
ITEM 23:	Gets on better with adults than with other children *(I get on better with adults than with people my age)*	0	1	2
Peer problems scales score ranges		**0-10 score**		
Total difficulties score: This is generated by summing scores from all the scales except the prosocial scale. The resultant score ranges from 0 to 40.				
Prosocial scale				
ITEM 1:	Considerate of other people's feelings *(I try to be nice to other people)*	0	1	2
ITEM 4:	Shares readily with other children… *(I usually share with others)*	0	1	2
ITEM 9:	Helpful if someone is hurt… *(I am helpful is someone is hurt…)*	0	1	2
ITEM 17:	Kind to younger children *(I am kind to younger children)*	0	1	2
ITEM 20:	Often volunteers to help others… *(I often volunteer to help others)*	0	1	2

SDQ = Strength and Difficulties Questionnaire

We used the same cut-off points published in the literature and available in the Internet at www.sdqinfo.com to define 'normal', 'borderline' and 'abnormal' scores.

Table 2. Categorizing SDQ scores for 4-17 year olds

Completed SDQ	Original three-band categorization		
	Normal	**Borderline**	**Abnormal**
Parent SDQ			
Total difficulties score	0-13	14-16	17-40
Emotional problems score	0-3	4	5-10
Conduct problems score	0-2	3	4-10
Hyperactivity score	0-5	6	7-10
Peer problems score	0-2	3	4-10
Prosocial score	6-10	5	0-4
Teacher SDQ			
Total difficulties score	0-11	12-15	16-40
Emotional problems score	0-4	5	6-10
Conduct problems score	0-2	3	4-10
Hyperactivity score	0-5	6	7-10
Peer problems score	0-3	4	5-10
Prosocial score	6-10	5	0-4
Self-assessment SDQ			
Total difficulties score	0-15	16-19	20-40
Emotional problems score	0-5	6	7-10
Conduct problems score	0-3	4	5-10
Hyperactivity score	0-5	6	7-10
Peer problems score	0-3	4-5	6-10
Prosocial score	6-10	5	0-4

SDQ = Strengths and Difficulties Questionnaire

Cut-off points for SDQ scores: original three-band solution: Although SDQ scores can be used as continuous variables, it is sometimes convenient to categories scores. The initial bandings presented for the SDQ scores were 'normal', 'borderline' and 'abnormal'.

4. Statistical analysis

Data analysis included the SDQs completed by 1959 adolescents, 1959 parents and 72 teachers. Information was analyzed using SPSS 22.0 for statistical analysis. Descriptive statistical analysis was performed to reveal the prevalence of emotional and behavioral problems among adolescents and calculated with 95 percent confidence intervals (95% CI).

After identifying variables to analyze the correlation between parameters, we employed the Pearson correlation coefficient and Chi-square test. A p-value of less than 0.05 was judged to be statistically significant. Correlations between emotional and behavioral problems among adolescents and their risk factors were calculated by correlation analysis and linear regression to determine confidence intervals.

Results

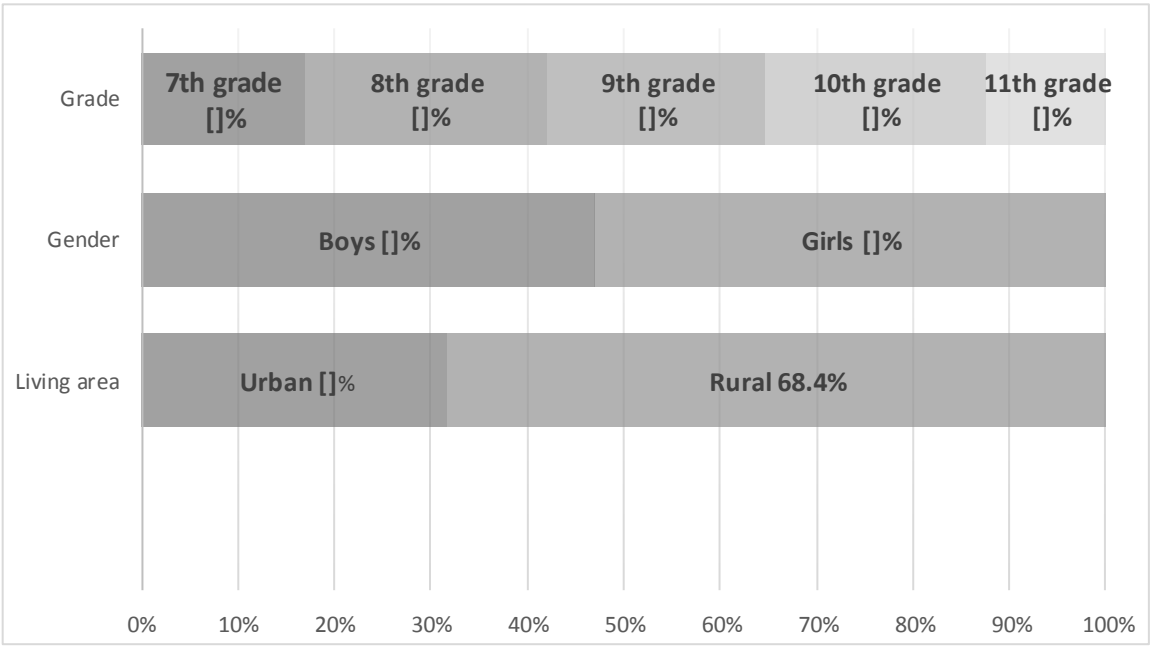

Figure 1. Demographic indications of participants

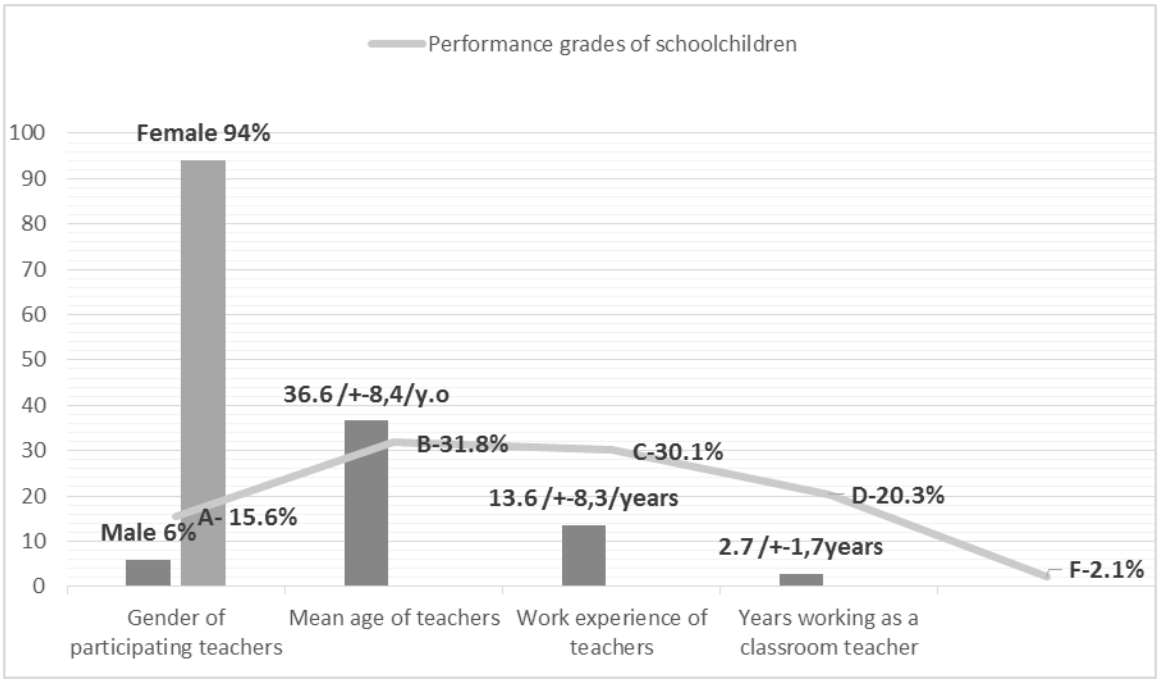

Figure 2. Demographic indications of teachers

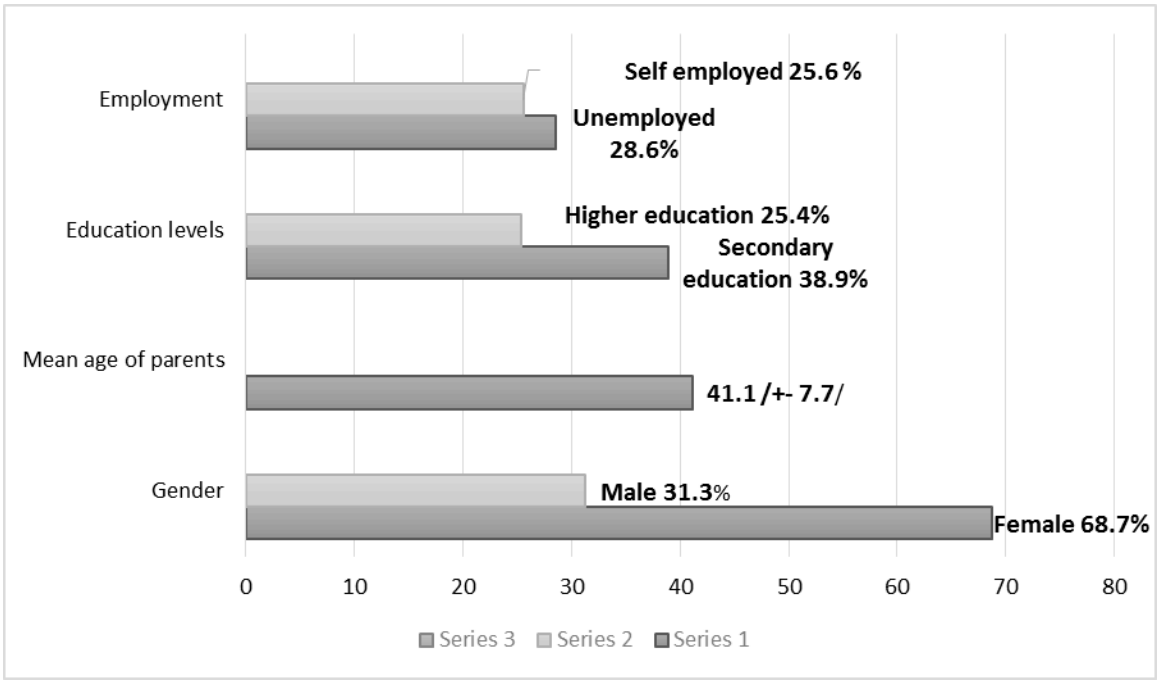

Figure 3. Demographic indications of parents

In the rural areas, most participants had only elementary educations, an incomplete secondary education or no education. Participants from urban areas had higher-education levels, including: Master's degrees and higher. Regarding employment of participating parents, in urban areas, 25.6% were self-employed, 22.8% production workers, and 22.4% office staff.

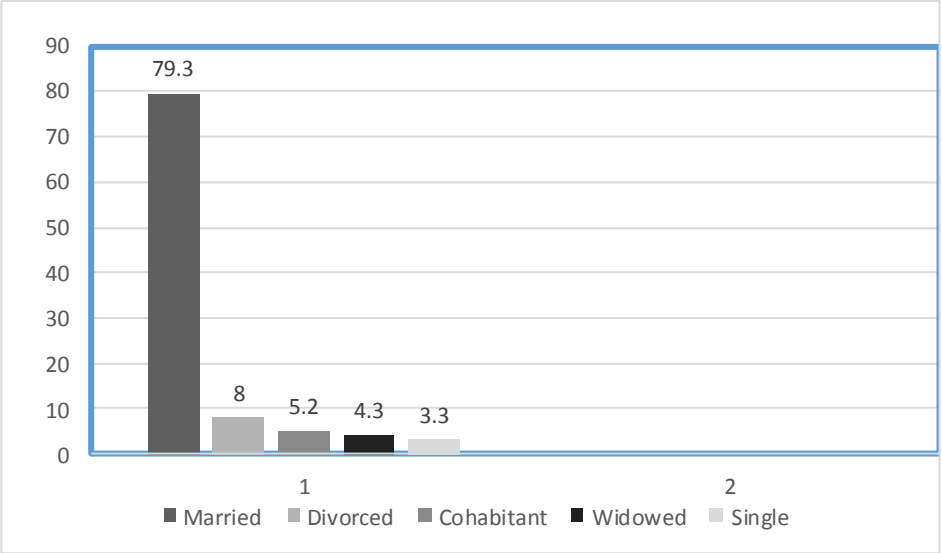

Figure 4. Demographic indications of marital status

Of the marital status: In urban areas most parents were: married, divorced or single. In the rural areas, most parents were cohabitant or widowed.

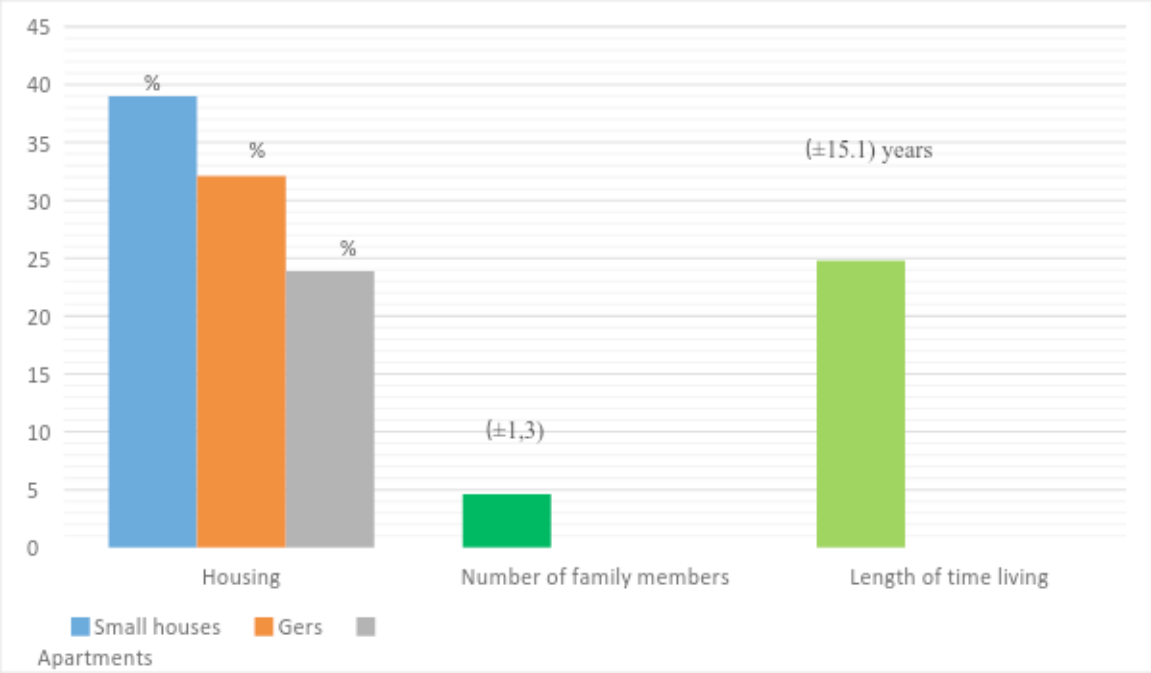

Figure 5. Housing indications of parents

Regarding housing, in urban areas, most parents live in apartments. In the rural areas, parents living in private houses, i.e. *gers*, a Mongolian term to denote a portable, round tent covered with skins or felt and used as a dwelling by nomads in the steppes of Central Asia. Mean urban household monthly income is approximately 600000 tugriks (about 240 US dollars). Comparing urban areas to rural areas, a rural area household monthly income is less than 200000 tugriks (about 80 US dollars).

Evaluation of parent's responses determined that hyperactive problems are common in all age groups and genders of school children but most common in boys. Conduct problems prevailed mostly among boys. Emotional symptoms between 17-year-old male adolescents ($p<0.05$), conduct problems

between 14-year-old male adolescents ($p<0.001$), hyperactivity problems of male adolescents between 12-13 year-old ($p<0.05$), conduct problems between 14-year-old male adolescents ($p<0.05$) were more common compared with females (Table 3).

Table 3. Parent's report of emotional and behavioral symptoms of school children by the age and gender

Age	Gender	n	Emotional	Conduct	Hyperactive	Peer	Prosocial
			Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
11	Male	17	3.05 ± 1.85	2.70 ± 1.26	5.17 ± 1.33	4.82 ± 1.13	7.41 ± 1.54
	Female	12	2.25 ± 2.13	2.5 ± 1.24	5.25 ± 1.76	4.58 ± 1.08	8.16 ± 1.85
12	Male	150	3.33 ± 1.81	2.86 ± 1.44	5.44 ± 1.61*	4.8 ± 1.35	7.2 ± 1.73*
	Female	124	3.63 ± 2.02	2.94 ± 1.15	4.98 ± 1.67	4.61 ± 1.34	7.70 ± 1.76
13	Male	208	3.41 ± 2.11	3.01 ± 1.58	5.62 ± 1.62*	4.66 ± 1.56	7.47 ± 1.88*
	Female	248	3.50 ± 2.05	2.83 ± 1.25	5.27 ± 1.55	4.54 ± 1.40	7.83 ± 1.72
14	Male	176	3.14 ± 1.88	3.16 ± 1.53**	5.15 ± 1.54	4.61 ± 1.39	7.49 ± 2.02
	Female	207	3.44 ± 2.04	2.68 ± 1.45	5.08 ± 1.56	4.64 ±1.39	7.79±1.82
15	Male	197	3.02 ± 1.93	3.04 ± 1.52	5.30 ± 1.73*	4.50 ± 1.31	7.60 ± 1.93
	Female	209	3.27 ± 2.03	2.95 ± 1.27	4.96 ± 1.45	4.73 ± 1.27	7.93 ± 1.94
16	Male	107	3.19 ± 1.88	3.22 ± 1.44	5.19 ± 1.69	4.47 ± 1.42	7.74 ± 1.95
	Female	148	3.58 ± 2.17	2.98 ± 1.32	4.83 ± 1.64	4.68 ± 1.35	8.04 ± 1.82
17	Male	50	2.64 ± 1.63*	2.8 ± 1.22	4.9 ± 1.74	4.46 ± 1.71	7.32 ± 1.82
	Female	71	3.50 ± 2.26	2.88 ± 1.29	4.59 ± 1.62	4.52 ± 1.47	7.64 ± 1.73
18	Male	15	2.46 ± 1.88	2.66 ± 1.23	5.33 ± 1.71	4.26 ± 1.53	8 ± 1.77
	Female	19	3.21 ± 1.96	3 ± 1.20	5 ± 1.66	4.31 ± 1.00	8 ± 1.37

*p<0.05, **p<0.001, ***p<0.0001; SD = standard deviation

Table 4. Teacher's report of emotional and behavioral symptoms of school children by the age and sex

Age	Gender	n	Emotional	Conduct	Hyperactive	Peer	Prosocial
			Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
11	Male	17	2.76 ± 1.44	2.65±0.93	5.88±1.62**	5.24±0.97**	7.24±1.86*
	Female	12	1.75 ± 1.22	2.42±0.90	4.33±1.15	4.25±0.87	8.50±1.24
12	Male	150	2.53 ± 1.56*	2.57±1.49**	4.92±1.53**	4.73±1.29	6.78±1.97**
	Female	124	2.15 ± 1.54	2.11 ± 0.89	4.42±1.37	4.59±1.29	8.06±1.95
13	Male	208	2.52 ± 1.91	2.75 ± 1.39	5.14±1.69**	4.27±1.32	7.26±2.14**
	Female	248	2.53 ± 1.96	2.51 ± 1.36	4.42±1.53	4.41±1.29	7.92±2.00
14	Male	176	2.60 ± 1.80	2.90 ± 1.87**	4.84±1.57**	4.44±1.37	7.23±2.38**
	Female	207	2.41 ± 1.96	2.44±1.47	4.43±1.37	4.40±1.16	8.00±2.02
15	Male	197	2.96 ± 2.19	2.93 ± 1.69	4.98 ± 1.62	4.68 ± 1.42	7.06 ± 2.32**
	Female	209	3.09 ± 2.18	2.75 ± 1.77	4.79 ± 1.58	4.56 ± 1.50	7.75 ± 2.07
16	Male	107	2.80 ± 2.05	2.59 ± 1.59	5.07 ± 1.58	4.41 ± 1.50	7.20 ± 1.92
	Female	148	2.93 ± 1.85	2.64 ± 1.65	4.78 ± 1.39	4.41 ± 1.38	7.50 ± 2.13

17	Male	50	2.38 ± 1.89	2.78 ± 1.58**	4.62 ± 1.84*	4.34 ± 1.30	6.74 ± 2.15**
	Female	71	2.25 ± 1.85	2.10 ± 1.00	4.03 ± 1.42	4.35 ± 1.21	7.76 ± 1.65
18	Male	15	2.87 ± 2.23	2.87 ± 1.41	4.93 ± 1.71	4.20 ± 1.01	6.40 ± 2.41
	Female	19	2.42 ± 1.84	2.53 ± 1.02	3.95 ± 1.47	3.74 ± 1.05	6.74 ± 2.35

*p<0.05, **p<0.001, ***p<0.0001; SD = standard deviation

Table 5. Parent's report of emotional and behavioral symptoms of school children by gender and urban and rural areas

Parent's report	Total	Urban	Rural
	Mean ± SD	Mean ± SD	Mean ± SD
Emotional symptoms			
Male	3.18±1.93	3.46±2.01**	3.04±1.88
Female	3.45±2.08	3.63±2.00	3.37±2.11
Total	3.32±2.01	3.55±2.01**	3.22±2.01
Conduct problems			
Male	3.03±1.50	3.23±1.50**	2.93±1.49
Female	2.87±1.31	3.13±1.47***	2.75±1.21
Total	2.94±1.40	3.18±1.48***	2.83±1.35
Hyperactivity problems			
Male	5.34±1.65	5.38±1.77	5.32±1.59
Female	5.02±1.58	4.97±1.61	5.05±1.57
Total	5.17±1.62	5.16±1.70	5.17±1.58
Peer relationship problems			
Male	4.61±1.43	4.65±1.50	4.59±1.40
Female	4.63±1.36	4.74±1.38	4.57±1.35
Total	4.62±1.39	4.70±1.43	4.58±1.37
Total score			
Male	16.71±4.60	15.88±4.34**	16.15±4.44
Female	16.47±4.12	15.74±4.10**	15.97±4.12
Total	16.59±4.36	15.81±4.21***	16.05±4.27
Prosocialbehaviour			
Male	7.49±1.90	7.38±2.00	7.55±1.84
Female	7.86±1.81	7.67±1.87*	7.94±1.77
Total	7.69±1.86	7.53±1.94*	7.76±1.82

*p<0.05, **p<0.001, ***p<0.0001; SD = standard deviation

Table 6. Teacher's report of emotional and behavioral symptoms of school children by gender and urban and rural areas

Teacher's report	Total	Urban	Rural
	Mean ± SD	Mean ± SD	Mean ± SD
Emotional symptoms			
Male	2.67 ± 1.92	2.89 ± 2.12*	2.57 ± 1.81
Female	2.60 ± 1.96	2.61 ± 2.09	2.59 ± 1.90
Total	2.63 ± 1.94	2.74 ± 2.11	2.58 ± 1.85
Conduct problems			

Male	2.77 ± 1.60	3.11 ± 1.84***	2.61 ± 1.45
Female	2.49 ± 1.45	2.62 ± 1.59*	2.42 ± 1.38
Total	2.62 ± 1.53	2.85 ± 1.73***	2.51 ± 1.42
Hyperactivity problems			
Male	4.99 ± 1.63	4.82 ± 1.65*	5.06 ± 1.61
Female	4.51 ± 1.47	4.26 ± 1.53***	4.63 ± 1.43
Total	4.73 ± 1.56	4.53 ± 1.61***	4.83 ± 1.53
Peer relationship problems			
Male	4.50 ± 1.37	4.59 ± 1.41	4.46 ± 1.35
Female	4.44 ± 1.31	4.72 ± 1.41***	4.31 ± 1.25
Total	4.47 ± 1.34	4.66 ± 1.41***	4.38 ± 1.30
Total score			
Male	14.93 ± 4.23	15.41 ± 4.64*	14.70 ± 4.01
Female	14.04 ± 4.13	14.22 ± 4.71	13.95 ± 3.83
Total	14.45 ± 4.20	14.78 ± 4.71*	14.30 ± 3.93
Prosocial behavior			
Male	7.08 ± 2.18	6.58 ± 2.26***	7.32 ± 2.10
Female	7.83 ± 2.02	7.66 ± 2.09	7.91 ± 1.98
Total	7.48 ± 2.13	7.14 ± 2.24***	7.64 ± 2.06

*p<0.05, **p<0.001, ***p<0.0001; SD = standard deviation

According to the parents and teachers SDQs we evaluated, three ranges: *normal, borderline and abnormal.*

Table 7. Results of normal, borderline and abnormal ranges of SDQ

	Parent-report		**Teacher-report**		**Self-report**	
	Ranges	**95% CI**	**Ranges**	**95% CI**	**Ranges**	**95% CI**
Total score						
Normal	28.3%	24.5-32.0	23.7%	19.9-27.6	52.6%	49.6-55.7
Borderline	28.4%	24.6-32.1	42.9%	39.5-46.2	31.1%	27.4-34.8
Abnormal	43.3%	40.0-46.6	33.4%	29.8-37.0	16.3%	12.2-20.3
Emotional symptoms						
Normal	55.2%	52.2-58.2	83.9%	82.1-85.6	82.0%	80.1-83.9
Borderline	17.4%	13.3-21.4	7.2%	2.9-11.5	8.1%	3.8-12.3
Abnormal	27.4%	23.7-31.2	8.9%	4.7-13.2	10.0%	5.8-14.2
Conduct problems						
Normal	40.9%	37.5-44.3	60.0%	57.2-62.8	76.1%	74.0-78.3
Borderline	30.9%	27.3-34.6	19.8%	15.8-23.8	13.6%	9.5-17.8
Abnormal	28.2%	24.4-31.9	20.2%	16.3-24.2	10.2%	6.0-14.4
Hyperactivity problems						
Normal	59.2%	56.4-62.0	71.1%	68.7-73.4	62.2%	59.4-64.9
Borderline	20.4%	16.4-24.3	15.6%	11.5-19.6	19.1%	15.1-23.0
Abnormal	20.4%	16.5-24.4	13.4%	9.3-17.5	18.8%	14.8-22.8

Peer-relationship problems						
Normal	5.3%	1.0-9.6	21.5%	17.6-25.5	33.1%	29.5-36.8
Borderline	13.3%	9.2-17.5	30.9%	27.2-34.6	52.2%	49.2-55.3
Abnormal	81.4%	79.4-83.3	47.6%	44.4-50.8	14.6%	10.5-18.7
Prosocial behavior						
Normal	86.8%	85.2-88.4	80.2%	78.3-82.2	85.6%	84.0-87.3
Borderline	7.8%	3.5-12.0	12.1%	7.9-16.2	9.5%	5.3-13.7
Abnormal	5.4%	1.1-9.7	7.7%	3.4-11.9	4.9%	0.5-9.2

95% CI = 95% Confidence Interval

The ranges by parent's SDQs the Total Score was 43.3%, emotional symptoms 27.4%, conduct problems 28.2%, hyperactivity problems 20.4%, peer relationship problems 81.4% and prosocial behavior was 5.4% among participants (Table 7). Results of multi-factorial linear regression revealed urban and rural areas, gender, age, family environment affected to adolescent's emotional and behavioral problems (Table 8).

Table 8. Some of the risk factors that was associated with emotional and behavioral problems

Parent	Regression coefficient	T-statistics	p-value
Emotional symptoms			<0.0001
Urban, rural	-0.43	-4.34	<0.0001
Gender	0.29	3.22	0.001
Age	-0.08	-2.72	0.01
Households	-0.14	-3.69	<0.0001
Marriage	-0.23	-2.03	0.043
Conduct problems			<0.0001
Urban, rural	-0.36	-5.16	<0.0001
Gender	-0.16	-2.50	0.013
Age	0.01	0.25	0.802
Households	-0.07	-2.71	0.007
Marriage	-0.07	-0.95	0.342
Hyperactivity problems			<0.0001
Urban, rural	-0.08	-1.01	0.314
Gender	-0.30	-4.18	<0.0001
Age	-0.09	-3.78	0.0002
Households	-0.12	-3.98	<0.0001
Marriage	-0.16	-1.77	0.076
Peer relationship problems			<0.005
Urban, rural	-0.15	-2.14	0.032
Gender	0.02	0.33	0.744
Age	-0.04	-2.13	0.033
Households	0.01	0.30	0.765
Marriage	-0.24	-3.07	0.002
Prosocial behavior			<0.0001
Urban, rural	0.29	3.15	0.002
Gender	0.34	4.11	<0.0001
Age	0.07	2.48	0.013
Households	0.05	1.61	0.107
Marriage	-0.02	-0.15	0.877
Total score			<0.0001
Urban, rural	-1.02	-4.83	<0.0001

Gender	-0.15	-0.78	0.435
Age	-0.21	-3.33	0.001
Households	-0.31	-4.04	<0.0001
Marriage	-0.70	-2.95	0.003

Discussion

According to the results from our study, hyperactivity abnormality was more distinct among younger adolescents when compared to survey results in UK, Norway and China [3,9-10].As to gender, emotional abnormality was more distinct among female participants and conduct abnormality was more distinct among male participants. These results are identical to survey results of UK, Iran and China [3,10-11].

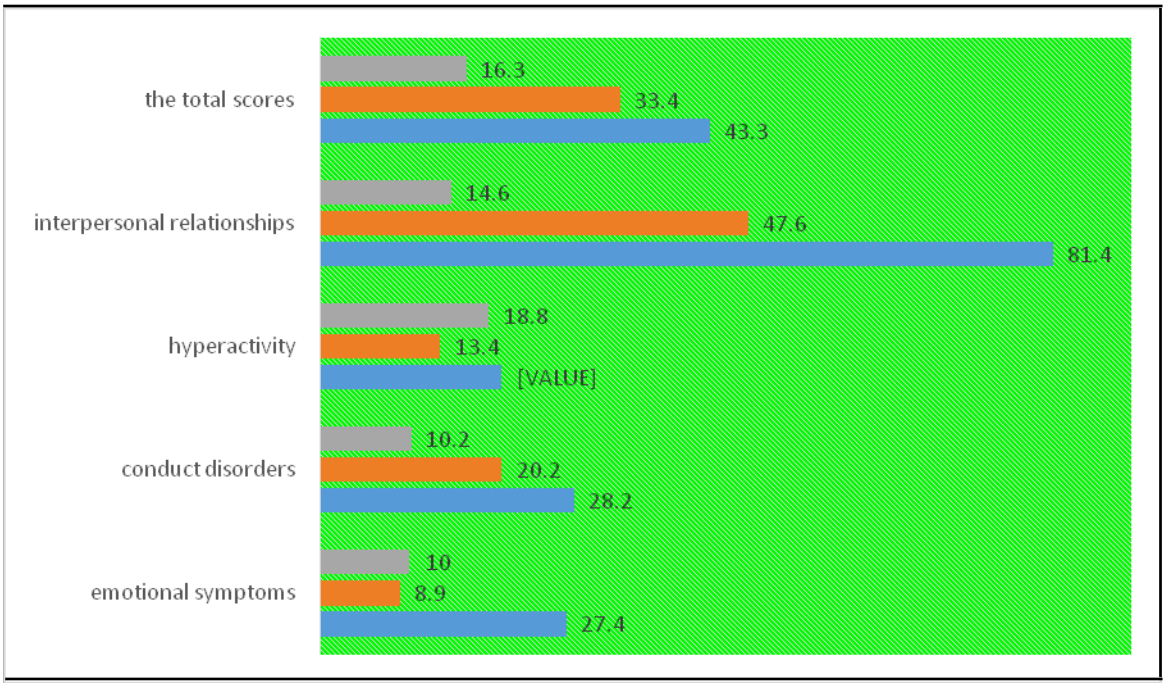

Figure 7. The by parents, teachers and self-assessments SDQs results of Mongolia

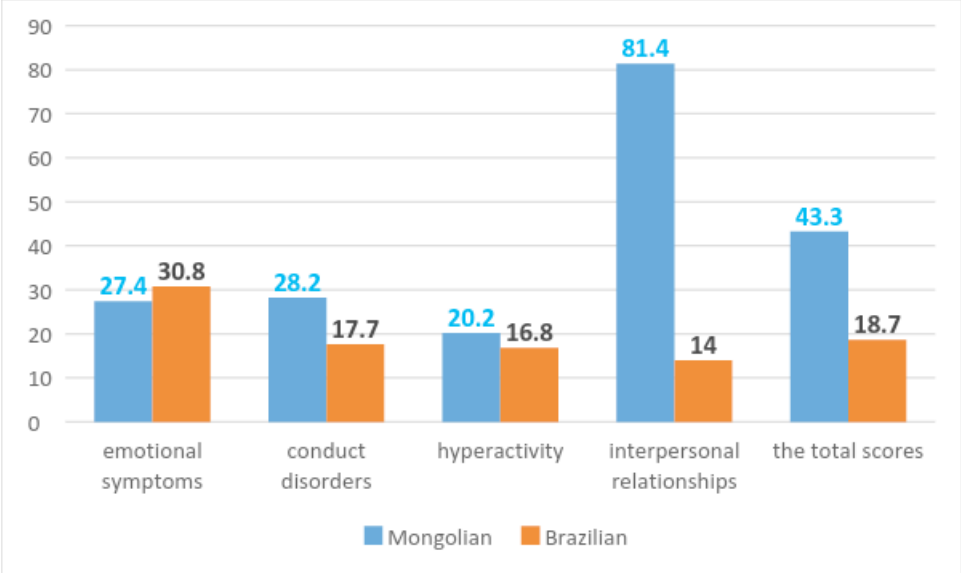

Figure 8. The parents results of comparing Mongolian survey with Brazilian survey

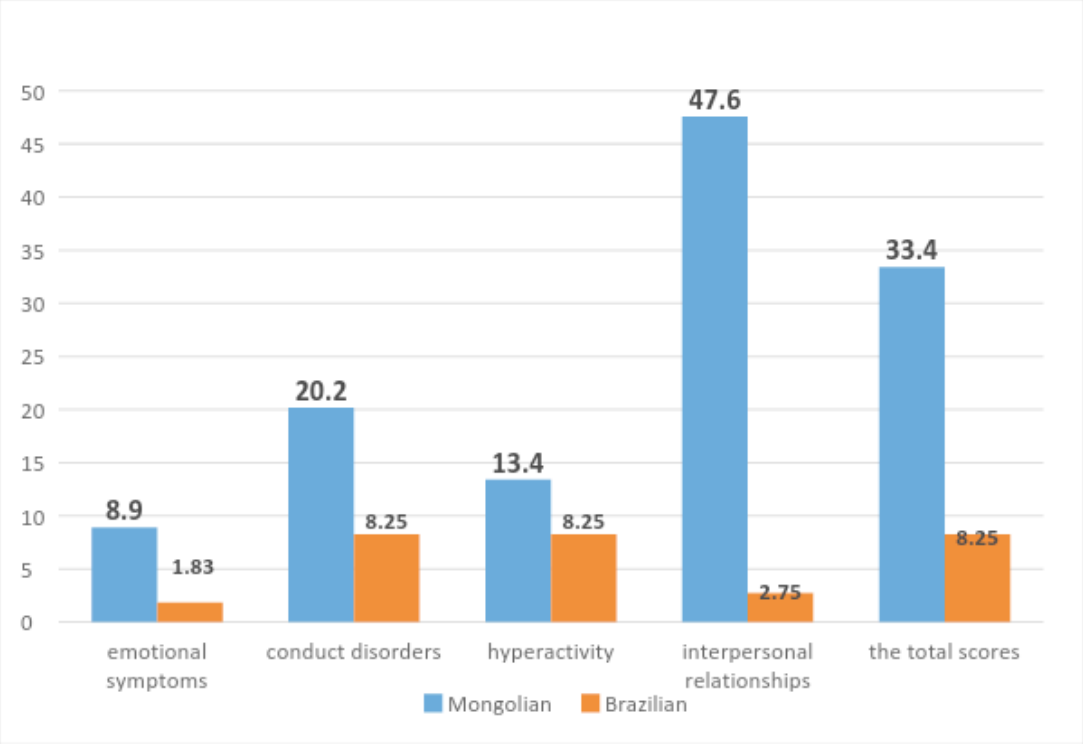

Figure 9. The teachers results of comparing Mongolian survey with Brazilian survey

Compared to Brazilian survey results from our study seemed higher in the total scores but evaluations by parents and teachers their high scored problems were approximate (Figure 8,9) [8]. Our study is valuable because this is the first time the SDQ was used in Mongolia for detecting normal and abnormal conditions of adolescents' emotions and behavior, and determining risk factors. By implementing early detection SDQs of adolescents' emotional and behavior abnormalities in the school environment, it can be significantly helpful in early detection of abnormal behavior and may be useful for prevention of pathological behaviors.

The findings from this study suggest that SDQs should be considered for community-wide screening programs to improve the detection and treatment of a child's mental-health problems. The SDQs identified that two-thirds of the questioned children and adolescents have psychiatric disorders. There were several limitations in our study. First, the SDQ was translated into the Mongolian language then retranslated to English another psychiatrist after then retranslated into Mongolian by psychiatrists because a Mongolian language SDQ was not available. Further studies need to use SDQ via an official Mongolian version in the relevant website [7]. In conclusion, Mongolian adolescent's emotional and behavioral problems are prevalent in this country as reported by parents, teachers and the by self-assessment and was influenced by the adolescents' age, gender, family environment and living areas.

Conflict of Interest

The authors declare no conflict of interest.

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Corresponding Author: ***Bayarmaa Vanchindorj, Department of Public Health, Research, Training and Foreign Affairs, National Center for Mental Health, Ulaanbaatar 13280, Mongolia.***

Email: vbayarmaa_1974@yahoo.com

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ORIGINAL ARTICLE

ALCOHOL USE AND ASSOCIATED RISK BEHAVIORS AMONG ADOLESCENTS IN NORTHERN THAILAND

Nonglak Boonchooduang, Orawan Louthrenoo*,*
*Chawanun Charnsil**, Atsawin Narkpongphun***

***Department of Pediatrics, Faculty of Medicine, Chiang Mai University, 50200 Thailand; **Department of Psychiatry, Faculty of Medicine, Chiang Mai University, 50200 Thailand.**

Abstract

Objectives: **Alcohol use in adolescents is one of the major health problems in many countries.Understanding the extent of the problem andrelated health risk behaviors is necessary to help prevent the associated behaviors andprovide appropriate intervention. This study aimed to identify alcohol use in adolescents and its correlation with others health risk behaviors.** ***Methods:*** **A total of 4372 participants, aged 13-18 years old were enrolled. The data were collected using a two-stage stratified cluster sampling methods from secondary and vocational schools. A web-based questionnaire using the Thai Youth Risk Behavior Survey, modified from the Center for Disease Control and Prevention, was administered.** ***Results:*** **The prevalence of lifetime alcohol exposure was 28.32%, of which 815 participants (18.64%) reported current alcohol use. Adolescents with older age (odds ratio, OR=4.93, 95% confidence interval (CI) = 4.15-5.87), male gender (OR = 2.63, 95% CI = 2.23-3.09), and attendance at vocational schools (OR=7.87, 95% CI = 6.66-9.31) were associated with current alcohol use.When adjusted for confounding variables, health risk behaviors including interpersonal violence, cyber bullying, risky sexual behaviors, tobacco and marijuana use, and suicidal behaviors were associated with current alcohol use from the multiple logistic regression ($p<0.001$).** ***Conclusions:*** **This study shows that a number of adolescents in Northern Thailand are currently using alcohol, and this can influence other health risk behaviors. Efforts to prevent and control alcohol use needs to focus on high-risk groups and among those currently using alcohol.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 199-205.***

Keywords: Alcohol Use, Risk Behaviors, Web-Based Survey, Adolescent Problems, Interpersonal Violence

Introduction

Alcohol use in adolescents is one of the major health problems, and it has increased in prevalence in many countries [1-3]. From a national survey in the United States, almost three-quarters of adolescents in secondary school, by 12th grade, have reported of having an alcoholic drink. The patterns of alcohol use that are of the highest concern are excessive drinking and drinking at an early stage of life. Underage alcohol drinking is problematic to the young people, others around them, and the community [4]. Alcohol use at an early age is associated with future behavioral problems such as greater sexual risk-taking, academic problems, other substance use, and delinquent behaviors [5, 6]. Furthermore, early onset of alcohol use may be a risk factor for alcohol-related consequences in adulthood [4]. The Centers for Disease Control and Prevention (CDC) reported that drinking before age 15 years were six times more likely to develop alcohol abuse or dependence than those who

begin drinking after the age of 21 [7]. The trend analysis reported by the World Health Organization (WHO) showed stable alcohol consumption levels over the last 5 years in Europe, as well as in Africa and the United States [8, 9]. In the United States, the rate of current underage drinkers had declined over the decade. The rate of current alcohol uses decreased from 50.85% in 1991 to 32.8% in 2015 [10, 11]. Unfortunately, an increasing trend has been reported in the South-East Asia and the Western Pacific regions [12].

Previous studies in Thailand have shown a decreasing trend of adolescent alcohol use over 10 years from 37.3% in 2001 to 27.9% in 2011 [13, 14]. Moreover, another survey in 2008 found the prevalence of current alcohol use in adolescents was 14.8% [15]. However, increasing social and environmental risk factors and weakened family relationships due to economic crises may push the adolescents in the cities into extremely dangerous situations as regards alcohol. Increased alcohol use by peers and alcohol offers were associated with increased drinking in adolescents and alcohol-related consequences [16].

Alcohol is the leading cause of morbidity and mortality in adolescents due to injuries and risk behaviors. Negative consequences associated with drinking include health risk behaviors such as violent behaviors, high-risk sexual behaviors including multiple partners and unprotected sex, suicidal behavior, and substance use [17, 18]. Understanding the extent of the problems and related health risk behaviors is necessary to help prevent the associated behaviors andprovide appropriate intervention[5]. Therefore, this study aimed to identify alcohol use in adolescents and its correlation with others health risk behaviors.

Methods

Study population

A cross-sectional survey was conducted between June and August 2016. The study sample included adolescents aged 13-18 years (7^{th} to 12^{th} grade) in Chiang Mai, a city in Northern Thailand. The data were collected using a two-stage stratified cluster sampling methods from secondary schools and vocational schools. Only the schools in the city of Chiang Mai with more than 1000 students were enrolled. Assenting students completed a web-based questionnaire, taking approximately 20 minutes, after their computer class. The participants were instructed that the information they provided was completely confidential. Their responses would remain anonymous, and that participation was voluntary. Students were asked to indicate their consent on the front of the web page questionnaire. They were only identified by their age in years, gender, and year of schooling. Research Ethics Committee of Chiang Mai University approved the study.

Measurement

Information regarding alcohol use and other risk behaviors was obtained through the Thai Youth Risk Behavior Survey (Thai-YRBS) which was modified from the Youth Risk Behavior Surveillance System (YRBSS) 2015 [19] developed by the Centers for Disease Control and Prevention (CDC). The YRBS is a school-based survey, which monitors major risk-taking behaviors.

Current alcohol drinking was using the following question: "*During the past 30 days, on how many days did you have at least one drink of alcohol?"* Current drinking was defined as drinking alcohol on *any* of the days in the past 30 days.Current tobacco use: The question was *"During the past 30 days, on how many days did you smoke cigarettes?* Current tobacco use was defined as smoking on *any* of the days in the past 30 days.

Marijuana use: The question was *"During the past 30 days, on how many days did you use marijuana?* Marijuana use was defined as use on any of the days in the past 30 days.

The participants who had been exposed to alcohol, who answered a day or more to the question *"During your life, on how many days have you had at least one drink of alcohol?"* were linked to the education page of alcohol automatically after completing their questionnaires. Instead of read–only information on the website, the participants could mail this page to their mailbox or post to their social media as needed.

Ethic approval

The study was approved by the Ethics Research Committee of the Faculty of Medicine, Chiang Mai University.

Data analysis

Data were analyzed using the SPSS program, version 22.0 (IBM Corp, Armonk, NY) for windows. The percentage, mean, and standard deviation were calculated and reported. A Chi-square test was used for the analysis of categorical variables, and student's t-test was used for continuous variables. Simple and multiple logistic regression analysis were used to identify related factors of each risk behavior. The odds ratios (ORs) and adjusted odds ratios (aORs) with a 95% confidence interval (CI) were calculated.

Results

Of 5639 adolescents randomly enrolled from the six schools, 4372 completed the web-based questionnaire and were included in the analysis, giving a response rate of 77.53%. The average age was 15.20 (SD 1.66) years with 50.8% males. Seventy-eight per cent of participants were studying in secondary school. The prevalence of lifetime alcohol exposure using the Thai Youth Risk Behavior Survey was 28.32%, of which 18.64% have reported on going alcohol use. The percentage of current alcohol use has increased with age, from 2.58% of 7th grade students to 33.87% of 10th grade students. The reported average age at drinking onset was 14.01 ± 2.26 years. Current binge drinking as defined by five or more drinks of alcohol in a row within a couple of hours was reported to be 13.47%. Prevalence of alcohol use and other health-risk behaviors is shown in Table 1.

Table 1. Alcohol use and other risk behaviors among study participants (n=4372)

	n	**% (95% CI)**
Alcohol exposure	1238	28.32 (27.00-29.67)
Current alcohol use	815	18.64 (17.51-19.82)
Current binge drinking	589	13.47 (12.49-14.52)
Bullying involvement	958	21.91 (20.71-23.16)
Interpersonal violence	941	21.52 (20.33-22.76)
Cyber bullying involvement	759	17.36 (16.27-18.51)
Tobacco use	486	11.12 (10.22-12.09)
Marijuana use	216	4.94 (4.34-5.62)
Suicidal behaviors	188	4.30 (3.74-4.94)
Sexual behaviors problems	145	3.32 (2.83-3.89)

CI = confidence intervals

From this study, the older adolescents had significantly higher proportion of current alcohol use than the younger ones ($p<0.001$). Males were also more likely to report of current alcohol use than females significantly. Those at vocational schools were associated with current alcohol use. Characteristics of adolescents with current and non-current alcohol use are shown in Table 2.

Table 2. Characteristics of current and non-current alcohol use in adolescents

Variables	Current alcohol use (n=815)	Non-current alcohol use (n=3557)	p	OR	95%CI
Age					
13-15-year-old	200 (24.54)	2191 (61.60)	<0.001	4.93	4.15-5.87
16-18-year-old	615 (75.46)	1366 (38.40)			
Gender					
Female, n (%)	248 (30.43)	1901 (53.44)	<0.001	2.63	2.23-3.09
Male, n (%)	567 (69.57)	1656 (46.56)			
Grade					
7-9 th grade, n (%)	105 (12.88)	1752 (49.25)	<0.001	6.56	5.29-8.14
10-12 th grade, n (%)	710 (87.12)	1805 (50.75)			
School					
Secondary school, n (%)	354 (43.44)	3052 (85.80)	<0.001	7.87	6.66-9.31
Vocational school, n (%)	461 (56.56)	505 (14.20)			

(OR = odds ratio; CI = confidence intervals)

Health risk behaviors including interpersonal violence, cyber bullying involvement, tobacco and marijuana use, suicidal behaviors, and sexual behaviors problems were associated significantly to current alcohol use from the simple logistic regression($p<0.001$). Similar findings were found from the multiple logistic regression analysis when adjusted for age, gender, level of education, and type of school, as shown in Table 3.

Table 3. Association of risk behaviors with current alcohol use from the simple and multiple logistic regression analysis

	Simple logistic regression			Multiple logistic regression		
	p	OR	95%CI	*p*	aOR*	95%CI
Bullying involvement	0.10	0.85	0.71-1.03	0.55	1.07	0.86-1.33
Interpersonal violence	<0.001	2.93	2.48-3.46	<0.001	3.25	2.68-3.93
Cyber bullying involvement	<0.001	2.14	1.79-2.56	<0.001	2.06	1.68-2.53
Tobacco use	<0.001	27.36	21.63-34.59	<0.001	13.09	10.13-16.93
Marijuana use	<0.001	19.11	13.72-26.63	<0.001	6.83	4.78-9.75
Suicidal behaviors	<0.001	1.76	1.27-2.45	<0.001	2.04	1.40-2.97
Sexual behaviors problems	<0.001	2.21	1.45-3.36	<0.001	2.17	1.43-3.30

(OR = odds ratio; CI = confidence interval; aOR = adjusted odds ratio
*adjusted for age, gender, level of education, and type of school)

Discussion

The findings from this study showed a prevalence of lifetime alcohol use in 28.3% of adolescents of which approximately 18.6% had reported current use. The prevalence of alcohol use reported by Thai students from previous studies in 2008 and 2011 was 14.8% and 27.9%, respectively [14, 15]. Whether the trend of alcohol consumption in adolescents in Thailand is decreasing could not be determined because of different settings and distinctive study population. Compared with the findings from the U.S. 2015 Youth Risk Behavior Surveillance System report [20], U.S. adolescents were more likely than Thai adolescents to have drunk alcohol in the past 30 days (32.8% vs 18.6%) and also lifetime

alcohol drinking (63.2% vs. 28.3%).

The results of the survey showed that the rate of alcohol use increased with age and school years among adolescents. There were 3.7% of 7th grade students reported current uses of alcohol. The critical point of alcohol initiation was found to be around grade 10th. Any primary interventions that aim to decrease the start of alcohol consumption need to be implemented before this point. Males were more likely to be current alcohol drinkers than females so gender-specific preventative measures need to be considered. From previous studies, similar to those predicting alcohol uses, predictors of substance use are gender, ethnicity, school status, social connectedness, and parental monitoring and rule enforcement [18, 21]. Therefore, suggestions from this study are that intervention and prevention programs should be focused at adolescents with older age, male gender, and vocational schools.

Besides the high prevalence of current alcohol consumption in this study, the other health-risk behaviors were quite high too, including bullying, violence, risky sexual behaviors, and other substance use. It is well-documented that these health-risk behaviors are related to alcohol use[4]. Findings from the multiple logistic analyses in this study indicated a positive association between current alcohol used, and many risk behaviors. These findings are consistent with previous studies, which reported the association of alcohol use with sexual risk-taking, tobacco and other drugs use, violence, and suicidal attempts [2, 22-26].

Bullying was found to be quite prevalent in this study. In the study by Carlyle et al [27], it was found that there was a positive correlation between bullying and alcohol use. However, Nansel et al [28] reported negative association between alcohol use and being bullied. As those two studies described, alcohol use is more strongly associated with perpetrators than victims. Being bullied may more commonly lead to internalized behaviors especially depression than externalized behaviors like alcohol use. The results were consistent with the study by Mitchell et al [29], which showed a higher rate of alcohol use in the cyber bullied group (aOR = 3.5; 95%CI 2.0-6.1) and Peleg-Oren et al [30], which reported a higher rate of current alcohol drinking in cyber bullied victims in middle school (aOR 1.64; 95% CI 1.38-1.95).

The strength of this study is that it was based on a representative sample of students in the city and was designed by the epidemiologist. The web-based anonymous questionnaires increased the level of confidentiality for the adolescent participants, and the follow-up pages could provide educational intervention directly to the risk groups in an interactive manner. All underage alcohol users received education regarding the alcohol consequences as a brief intervention. There were 10.1% of the participants mailed this information to their mailbox, and 1.8% posted it on their social media link. This might be the next step for providing intervention directly benefits for the participants.

Some limitations need to be considered. Firstly, the cross-sectional nature of this study limits the ability to explore the direction of relationship between the predictor variables (alcohol used) and the outcomes (others health-risk behaviors). A longitudinal study is needed for assessment of the causality. Secondly, the data used in this study were self-reported, which might have responses biases due to social desirability. However, the web-based questionnaire is designed to report the results directly to the researchers via the Internet, bypassing the teachers. This should provide greater confidentiality and hence greater confidence than traditional questionnaires, which may cause the students more discomfort in reporting their risk behaviors. Thirdly, the school-based study data did not include adolescents who had dropped out of school so that the prevalence found in this study may be lower than the actual prevalence.

Conclusion

This study has found that a number of adolescents in Northern Thailand were current alcohol users. This can influence other health-risk behaviors. Efforts to prevent and control alcohol use should start at early age, especially focusing on high-risk groups, including adolescents of older age, male gender, and adolescents attending vocational schools as well as among those currently using alcohol.

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Conflict of interests

None

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Corresponding author: ***Orawan Louthrenoo, Department of Pediatrics, Chiang Mai University, Chiang Mai 50200, Thailand. Tel: 66-53-935412, Fax: 66-53-936461.***

Email: orawan.l@cmu.ac.th

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ORIGINAL ARTICLE

A COMPARATIVE STUDY ON SOCIAL MEDIA ADDICTION BETWEEN PUBLIC AND PRIVATE HIGH SCHOOL STUDENTS OF URBAN BENGALURU, INDIA

N R Ramesh Masthi, Pruthvi S, Phaneendra Mallekavu

Department of Community Medicine, Kempegowda Institute of Medical Sciences, Bengaluru - 560070, Karnataka, India.

Abstract

Objective: **Social media usage is a global consumer phenomenon that has risen exponentially in the last few years. Published Indian studies on social media addiction are scarce and social media associated health issues are an emerging health problem in India. Objectives: To assess and compare social media addiction between private and public high-school students and to assess health problems related to social media usage across these groups.** ***Methods:*** **This cross-sectional study was completed in 2016. It was conducted in five private and five public high schools across wards of Bengaluru city that were selected by simple random sampling. The subjects were students studying in grades 8, 9 and 10 (aged between 12 and 16 years). A total of 760 subjects were recruited, 380 from public and 380 from private high schools. They were administered a pretested, semi-structured, self-administrated questionnaire in either the local language or English. Univariate and multivariate logistic regression were employed to establish any associations between social media addiction and various other factors.** ***Results*****: In our samples, 60.95% of social media users studied in private schools and 39.05% in public schools ($z = 10.31$, $p<0.001$). The most commonly used social media applications were, Internet gaming (69.23%) in Public schools and WhatsApp (61.15%) in Private schools. The overall prevalence of social media addiction was 19.96% among users with significantly higher rates of self-reported addiction in private schools ($z = 3.47$, $p < 0.001$). A total of 70.67% of the subjects had one or more physical symptoms, i.e. neck pain, tension, strain on eyes and fatigue of which 67.42% and 72.75% were from public and private schools, respectively. Psychological changes, i.e. anger, lonely and frustration; and behavioural changes, i.e. sleep disturbance and neglect personal hygiene were observed in 67.42% and 51.01% of public and private school pupils, ($z = 3.85$, $p < 0.001$), respectively.** ***Conclusion*****: Private school students were more prone for social media addiction. Majority had mild addiction. Addiction was associated with behavioural changes. A multitude of physical, psychological and behavioural problems were observed among social media users.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 206-215.***

Keywords: Social Media, Addiction, Physical Symptoms, Psychological Changes, Behavioural Changes

Introduction

The new millennium has arrived with the rapid spread of modern technology, especially the electronic communication revolution, bridging the gap between the developed and developing countries; the rich and poor. The most significant advance has been the advent of the Internet and mobile phones which has improved communication and access to

information for all. Globally, about 3.5 billion people were using Internet in 2016 through modern gadgets like smart phones and computers with 82% of the population in the developed world and 35% of population in the developing world[1]. The commonest use of Internet is to share and learn new information through work, Google, g-mail, apps, online payments, social media, etc.. Today, social media is close to becoming an integral part of the day to day lives of most people on the planet.

Social media usage is a 'global consumer phenomenon' with an exponential rise in its usage in the last few years [2]. Research into frequent, excessive, and compulsive social network activity has increased over the years, in which terms such as "social network site addiction" and "Facebook addiction" have been used interchangeably [3]. One can get addicted to social media like alcohol, tobacco, injectable and non-injectable substances because of proffered reward [4]. Addiction may have deleterious effect on the health of users in their formative years. Physical effects involve the brain, hearing, vision and heart; psychological effects as anxiety, disturbed sleep pattern, fatigue, loneliness, depression, and social problems such as academic decline, relationship problems, and social isolation [5,6]. Overall, the research into this topic is in its infancy, and as such the social media addiction constructs need further exploration [3].

Contemporary scientific literature addressing social media usage, addiction and health problems among adolescents is scarce in India. Nowadays, children irrespective of their socio economic background had greater exposure to electronic gadgets like smart phones at a much younger age and more prone to social media overuse or addiction. Hence, the present study was conducted with the objective to assess and compare social media addiction between private and public high-school students. To describe the socio-demographic profile of the study subjects, and to assess physical, psychological and behavioural problems related to social media usage.

Methods

This cross-sectional study was conducted in Private and Public high schools, situated in selected ward in Bengaluru city, Karnataka, India between June and November 2016. The subjects were high school students studying in grades 8,9 and 10 (aged between 12 and 16 years). A total of 20 schools gave consent to conduct study. 10 schools (5 public & 5 private) were selected by simple random sampling. In each school classes were selected by simple random sampling by chit method and in each class all students were included. The absentees on the day of study were excluded. A total of 760 subjects were recruited from both Public and Private high schools.. They were administered a pre- tested, self-administrated questionnaire in the local language/English. The subjects were instructed to read each question carefully and answer honestly.

The investigators explained the details of the questionnaire before the students were made to answer. The questionnaire is in three parts, A, B and C. Part A asks about the students' socio-demographic profile, their social media usage and any associated health problems. Part B consisted of a 9-question novel social media addiction scale. This scale was field tested and validated with sensitivity of 98.1% specificity of 80.8% and cronbach's alpha of 0.76. Each question was given a score ranging from 1 to 5 (1: Never; 2: Seldom; 3: Occasionally; 4: Often; and 5: Always) giving a minimum score of 9 and a maximum of 45. They were then classified based on the scores as normal (<14), mild addiction (15-22), moderate addiction (23-36) and severe addiction (37-45). Part C consisted of a 6-question Internet Gaming scale. Each question was scored from 1 to 5 (1: Never; 2: Seldom; 3: Occasionally; 4: Often; and 5: Always) giving a minimum score of 6 maximum of 30. Those who scored ≤ 13 were grouped as normal, and those > 13 as excessive usage.

Operational definitions

Social Media: Websites/Applications that enable users to create and share content, or to

participate in social networking; Social Media User: Student who had used social media for at least 2 months in the past; Social Media Non-User: Student who had not used social media even once in the past.

Statistical Analysis: The data was collected in epiinfo and analyze during a statistical package Stata 12.1 (Stata Corp, Texas, USA). Descriptive statistic such as mean, median, standard deviation, frequencies and proportions was computed for. A Chi-square test and Z-test for proportions was used for comparison of groups. Univariate and Multivariate logistic regression were applied to know the association between addiction and various factors.

Ethics approval and consent to participate

The ethical clearance was obtained for the study from Kempegowda Institute of Medical Sciences (KIMS), ethical committee, Bengaluru, Karnataka, India. (Ethical committee clearance letter will be provided when required for submission). Confidentiality of the school and study participants was ensured.

Results

Seven hundred and sixty students (male: female = 280: 286) were recruited. Three hundred and eighty students participated from public and private high schools, with a total of 159 (20.92%) subjects were from 8th grade, 232 (30.52%) from 9th grade and 369 (48.56%) from 10th grade, respectively. Five hundred and sixty six (74.5%) study subjects were social media users and 194 (25.5%) were non users. The average family size was found to be 4.7 ± 1.67. 673(88.55%) of the subjects stayed at home, 60(7.89%) in the hostel, and 27(3.56%) in paying guests. Among users, 60.95%studied in private schools and 39.05% in public schools, and this difference were found to be statistically significant (z= 10.31, p < 0.001). 53.92% males from public schools used social media compared to 46.08% from private schools (z = 7.18, p < 0.001). A total of 75.53% females from private schools were social media users compared to 24.47% from public schools (z = -7.1812, p < 0.001). A total of 63.95% of subjects used mobile phones; 34.27% subjects used computers, and 15.37% used tablets to access social media. 14.24% of the users' parents were unemployed, 2.65% resided in different cities, and 1.23% was separated.

A total of 51.94% public and private schools used social media daily, 27.03% weekly, 17.13% monthly and 3.88% yearly. Overall, 77.41%% of the subjects used social media at home, 4.59% while walking along the road, 2.65% in hostel and 2.47% while driving. Majority of users operated Whatsapp (51.41%), followed by Internet gaming (50.35%), Facebook (36.57%), YouTube (32.86%), Twitter (9.01%), and others (0.76%) like hike, instagram and skype. The most commonly used applications were, Internet gaming (69.23%) in public schools and Whatsapp (61.15%) in private schools.

The overall prevalence of social media addiction was 19.96%. Between 566 users 15.18% of study subjects from eighth grade, 20.85% from 9th grade and 20.66% from 10th grade were addicted to social media. A total of 25% males were addicted to social media compared to 15.03% females. The median money spent/month ± Inter Quartile Range (IQR) for the use of social media among addicts was Indian National Rupees (INR) 128 ± 211 and Rs. 90 ± 155 among non-addicts. The median duration of usage ± IQR among addicts was 28 ± 42 and 20 ± 20 hours/month among non-addicts. A significantly greater proportion of social media addicts was found in those attending private schools (z = 3.47, p<0.001). There was no statistical difference with regards to excess use of Internet gaming as described in Table 1.

Table 1. Distribution of subjects according to social media usage and addiction

	Public (n=221)	**Private (n=345)**	**Total (n=566)**	**Z-score, p value**
Mild addiction	27(12.21)	64(18.55)	91(16.07)	
Moderate addiction	1(0.45)	21(06.08)	22(03.88)	
Severe addiction	-	-	-	
Total	**28(12.66)**	**85(24.63)**	**113(19.96)**	**3.47, <0.001**
Usage of internet gaming based on Internet Gaming scale				
	Public (n=153)	**Private (n=132)**	**Total (n=285)**	**Z-score, p value**
Excessive use	34(22.23)	54(40.91)	88(30.87)	0.0857, 0.92
Normal	119(77.77)	78(59.09)	197(69.12)	

Figures in parenthesis indicate percentages

Internet gaming excessive use was observed in males compared to females and this difference was found to be statistically significant(z-score 3.006, p-value 0.002).The variables that were statistically significant in the univariate logistic regression were included in the final binary logistic regression model as described in Table 2. A statistically significant association was observed only between addiction to social media and wrist pain (Adjusted OR 1.95[1.07, 3.56], $p< 0.028$).

Table 2. Association of individual factors with social media addiction using Binomial logistic regression model

		Addicts (n=113)	**Non-addicts (n=453)**	**Adjusted OR(CI)**	**p-value**
Sex	Female	43(38.06)	242(53.42)	Reference	
	Male	70(61.94)	211(46.57)	1.79(1.18-2.73)	0.006
Conflict	Friends	50(44.24)	189(41.72)	-0.34(0.21-0.55)	<0.001
	Relatives	15(13.27)	48(10.59)	-0.24(0.08-0.69)	0.008
Place of Usage of social media	Hostel	97(85.84)	354(78.14)	-0.41(0.25-0.65)	<0.001
Application	Facebook	56(49.55)	151(33.33)	1.67(1.00-2.78)	0.049

(Figures in parenthesis indicate percentages; OR = Odds ratio)

The physical activities performed by users were, sports (36.74%), followed by dancing (34.27%), walking (31.80%), exercise (19.78%), yoga (15.90%), jogging (12.72%), gymnastics (10.24%), aerobics (5.30%), and others (21.37%). A total of 4.52% of users from Public schools and 3.47% from Private schools had a history of smoking; 1.80% and 2.02% users respectively consumed alcohol, and 1.80% and 0.86% respectively used tobacco. Non-users did not use any of the above substances. 63.63% of addicts and 36.47% non-addicts had a history of smoking; 76.92% addicts and 23.08% non-addicts consumed alcohol, and 85.71% addicts and 14.29% non-addicts respectively used tobacco.

A total of 45.58% of the subjects gave a history of conflict with friends, 8.48% with parents, 12.72% with relatives. Four hundred (70.67%) subjects had one or more physical symptoms. Physical symptoms observed among social media addicts and non -addicts are given in Table 3, and the differences were not statistically significant.

Table 3. Comparison of physical symptoms observed between social media addicts and non-addicts.

Physical symptoms	Addicts (n=113)	Non-addicts (n=453)	Total (n=566)	χ2 value (df), p-value
Neck pain	28(24.56)	101(22.34)	129	8.2 (8) 0.41
Tension	19(16.66)	58(12.83)	77	
Strain on eyes	27(23.68)	115(25.44)	142	
Fatigue	12(10.52)	29(6.41)	41	
Back pain	25(21.92)	105(23.23)	130	
Watering of eyes	19(16.66)	71(15.70)	90	
Shoulder pain	16(14.03)	37(8.18)	53	
Wrist pain	9(7.89)	49(10.84)	58	
Stiffness of neck	4(6.14)	29(6.41)	33	

Figures in parenthesis indicate percentages, *Multiple responses

Three hundred and twenty five (57.42%) subjects had one or more psychological and/or changes when subjects were interrupted from using social media. The psychological and behavioural changes observed between addicts and non-addicts are shown in Table 4.The difference observed in behavioural changes was statistically significant (χ2=11.92, p = 0.035).

Table 4. Comparison of psychological and behavioural changes between social media addicts and non-addicts

Psychological changes*	Addicts(n=113)	Non-addicts(n=453)	Total(n=566)	χ2 value (df), p-value
Anger	21(18.42)	62(13.71)	81	2.307 (4) 0.6794
Lonely	13(11.40)	51(11.28)	64	
Frustration	10(8.77)	50(11.06)	60	
Anxious	11(9.64)	37(8.18)	48	
Relief	10(8.77)	26(5.75)	36	
Behavioural changes*				
Failure to eat regularly	14(12.28)	52(11.50)	66	**11.92 (5) 0.035**
Sleep disturbance	13(11.40)	49(10.84)	62	
Neglect personal hygiene	11(9.64)	42(9.29)	53	
Felt annoyed	8(7.01)	56(12.38)	64	
Yelled at person	8(7.01)	23(5.08)	31	
Nothing at all	81(71.05)	180(39.82)	261	

Figures in parenthesis indicate percentages, *Multiple responses

A total of 76(35.18%) and 140(64.82) of addicts and non addicts had *ringxiety,* a sensation and false belief that one can hear his/her mobile phone ringing or feel it vibrating when in reality it is not) [7].

Discussion

The meteoric rise of the Internet usage and emergence of various social media platforms has left many young Indians socially isolated and lonely.There is a large growth in the use of mobile phones especially among the youth which is followed by a rapid growth in the use of online social networking sites[8].This growth has been observed irrespective of the subjects economic background. In the present study, a comparative study was made on social media addiction among high school students as they are a vulnerable group and the Information obtained may provide evidence in planning appropriate strategies.

The percentage of social media users among boys was more in public school in contradiction to the popular belief of more usage among private school subjects because of their high socio-economic status and purchasing power. However, when it came to addiction, private school subjects were more addicted among males. Females were seen to use social media more than males in Private schools, contradictory to the findings from another study [9]. Overall, Half of the subjects stayed longer than intended on social media and one third suffered in their grades similar to another study [10, 11, 9]. The most commonly used social media application was Whatsapp among overall users.

In the present study, the overall prevalence of social media addiction was high and may be explained due to the novel scale used, which had high sensitivity. Majority of subjects had mild addiction, which was a good sign as being borderline and may be reversible with appropriate counselling. Even though more female subjects used social media, prevalence of addiction was less in them. This could be due to female being more responsible in their usage. High-school students, who had stayed at the hostel, were presumed to be protected against social media addiction probably due to restricted access to social media. Children are being more exposed to overuse/abuse of social media at such young age is leading to hazardous use of technology. This affects both the physical health and family health. Adolescents, *i.e.* 4.1% boys, 3.6% girls using social networking sites intensely were more often classified with Internet addiction and displayed higher psychosocial distress [12]; 15.6% were classified as social media addicts and 31% Facebook addicts [11,13] similar to the present study. Among all the prevalent social media platforms, Facebook's usage is linked to the highest conversion to an addict [14]. Adolescents overuse, or misuse social media, which can lead to addiction [15].

Internet gaming excessive use was observed in males compared to females. Access to social media for Public school subjects was mainly through Internet cafes, and on-line gaming was most common. The subjects had good liking to on-line gaming as one would expect in this age. The use of online gaming and social applications increased the risk for Internet addiction[16]. Female gender was a protective factor for the Internet and gambling addiction [17]. Parental attitude toward gaming has a negative relationship with the addiction[18, 19]; 80% were addicted to video games[20]. Symptoms of gaming addiction range from mild socio-personal distress to gross disorganization in behaviour and self-care [21].

Young's Internet Addiction Test (IAT) is one of the most commonly used scale to measure problematic Internet use [22]. The IAT is quite lengthy and was difficult for the high-school student. Hence, a novel 9-point scale was developed based on the above-mentioned scale, compared, validated and can be used as a screening tool for social media addiction. The concept of "Internet addiction" has been proposed as an explanation for uncontrollable, damaging use of this technology. Problematic Internet use can be found at any age, social, educational, or economic range. The Internet may provide pathological users with a way to express themselves that is considered more satisfying than previous methods of self-expression. There is no way to account for whether or not excessive Internet use may be the result of an underlying addictive process. Likewise, there is no way to establish whether Internet addiction is a discrete problem in contrast to a manifestation of another disorder (*e.g.*, depression, anxiety, sexual disorders) [23].

There was no association between the physical activities of students and their use of social media or addiction. This indicates the pull of social media on adolescents. We could not assess the duration of physical activities performed between social media users and non-users.

Physical symptoms observed between addicts and non-addicts were similar in both schooling systems. Commonly observed physical problems were strain on eyes, neck pain, back pain, headache, watering of eyes, wrist and shoulder pain which were in concordance with other studies [11,24–29]. Regular smartphone users were found to sleep significantly less than non-users.[30,31]. Behavioural changes observed more among addicts. Evidence suggests that, 'addiction' to social networking may have potential mental health problems for some users.[2]Social Media can easily generate Anxiety, Jealousy, Stress, Pressure, Dislike, Loneliness and Feeling, too much of those emotions can lead to a bout of "Social Media Depression" [32]. For girls, feeling depressed seems to trigger higher social networking site involvement while anxiety is the trigger in boys [33]. Motivation for going online is a factor in relating technology usage to depression and anxiety [34]. Social media addicts were more likely to have of history of smoking, alcohol consumption and use of tobaccocompared to non-addicts. Social media-related 'addictions' share some neural features with substance and gambling addictions[35].

Conflicts were more prevalent in Public school subjects and among friends, parents and relatives among addicts as well as non-addicts. The behavioral changes observed in this study were similar to another study [11]. Excessive viewing of YouTube in children has been shown to lead to cyber-bullying and online abuse [26, 36]. Social interaction using social media could be preventing teens from developing the skills they need to manage healthy relationships later in life [10,37]. Subject having *ringxiety* was less compared to 64% in another study [38]. Recognizing problematic Internet use as a health issue, SHUT (Services for Healthy Use of Technology) clinic was started in 2014 at the government run National Institute of Mental Health and Neuro-Sciences, Bangalore. It offers counseling to internet addicts and helps them replace excessive technology usage with healthy activities [39].

Social media addiction is an emerging health problem in India. The study points towards the need for legislative action concerning the age limit for use of social media just as we have for cigarette smoking and alcohol. The parents must be pro-actively involved in the child's upbringing in preventing the excessive use of social media and consequently, the development of adverse health effects. Limitations: Information on details of social media usage, money spent, symptoms described are based on the history revealed by subjects. Other factors like psycho social, personality traits, past history, family history are beyond the scope of study.

Conclusion

Private school students were more prone for social media addiction. Majority had mild addiction. Addiction was associated with Behavioural changes. A multitude of physical, psychological and behavioural problems were observed among social media users.

Recommendation

Screening of high-school students for social media addiction and counselling regarding healthy use of technology is the need of the hour. A larger comparative study with gold standard scale covering a wide geographical area should be done before the novel scale can be accepted.

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Conflict of interests

The authors declared that they had no competing interests, and there was no funding for the project and was self-financed.

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Corresponding author: ***Pruthvi S, Tutor cum post graduate, Department of Community Medicine, Kempegowda Institute of Medical Sciences, Bengaluru., Karnataka, India.***

Email: pruthvi.swamygowda@gmail.com

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ORIGINAL ARTICLE

THE ASSOCIATION BETWEEN PARENTS' AND CHILD'S POST-TRAUMATIC STRESS DISORDER (PTSD) SYMPTOMS AMONG NEPALESE CHILDREN EXPOSED TO THE 2015 EARTHQUAKE

Shneha Achary and Sawitri Assannangkornchai

Epidemiology Unit, Faculty of Medicine,
Prince of Songkla University, 90110, Thailand.

Abstract

Objectives: **Emotional, functional and psychological balance of the parents towards their children during disaster is related to children's psychopathological symptomatology. This study aims to identify the association between types of parental PTSD symptoms and children's PTSD symptoms affected by 2015 earthquake in Nepal.** ***Methods:*** **A community-based cross-sectional study was carried out in Kathmandu district fifteen months after the 2015 earthquake. Multi-stage cluster sampling was used to collect 800 earthquake-affected children of age 7-16 years and their parents. Face-to-face structured interview with Children PTSD Symptoms Scale (CPSS), Impact Event Scale (IES) and Family Assessment Device (FAD) were done. Logistic regression was done to identify the association between parental and children PTSD symptoms.** ***Results:*** **Of all 800 children, 28.9% had both parents without any symptoms of PTSD, 36.6% had mother, and 3.6% had father with PTSD symptoms whereas 12.2% had single parent without PTSD symptoms. Children having both parents with PTSD symptoms were almost 7 times [95% Confidence Interval, CI = 4.21, 10.75], children having mother with PTSD symptoms were 2.6 times [95% CI = 1.16, 5.64] and those with father having PTSD symptoms were 3.85 times [95% CI = 2.65, 5.58] more likely to have severe PTSD symptoms, compared to those without any parental PTSD.** ***Conclusion:*** **Consideration and assessment of maternal, paternal and both parents PTSD symptoms were quite prominent required an intervention for children stress reactions or PTSD symptoms. Role of father in children's stress reaction cannot be ignored.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 216-225.***

Keywords: Parents, Children, Earthquake and PTSD Symptoms

Introduction

Trauma survivors with Post-Traumatic Stress Disorder (PTSD) have greater rate of familial psychopathology, compared to individuals similarly exposed who do not have PTSD [1,2]. Parenthood conveys many concerns regarding children's growth and development. The concept of a parent "as a protective shield" has been extensively used in describing the role of parents as a primary care taker for their children and in keeping away any harm, threat and adverse situation [3]. This parenting role has been described as a basic motivational system in parents [4]. This is usually activated but actions may be blocked during intense stress, making parents psychologically distressed, and feel that they have failed in keeping their child away from harm and threat, leading to the feeling of guilt. These negative emotions along with their concern about their children may induce PTSD

symptoms in parents [5]. Feeling of shortcomings in meeting their children's need may add to the perception of fewer competent parents.

Parents with depressive mood or stress exhibit a lack of control over their environment and inability to draw the line of disciplines for their children [6]. Feeling of incompetent and guilt may increase their withdrawal behavior towards their children and result in reduced parental engagement and availability to the children. This may also bring about lack of support for the child's emotional and behavioral regulations [7], preventing children to develop ego strength and ability to recoverfrom adverse situation. This negative interaction may lead to the development of psychological distress among them [7]. Therefore, it can be argued that parental psychological status in the stressful condition has a great impact on children's emotional and behavioral regulations, security and adversity they face from the stressful situation.

Parental PTSD, in particularly has been demonstrated to be associated with PTSD symptoms and other psychopathology in children. Clinical observation and empirical research have also suggested that the children's and parents' PTSD is associated [8]. Previous researchers identified concordant responses in parents (mostly in mothers) and children who were exposed to the same trauma [9,10]. Several studies have been focused on maternal trauma and their negative parenting resulting in the psychological sequel of children [11,12]. Maternal role is considered an important part in overall development of a child so researchers have given priority to the maternal trauma in the previous studies [12, 9, 13]. Children are closer to their mother, and it is often concluded that children with maternal psychopathology are more vulnerable to the effect of trauma exposure. However, role of father and his emotion in children emotional regulation cannot be ignored. Limited studies have considered paternal role in children psychopathology [8, 14, 15]. Central role of father in the family is very common in Asian culture. A study found that father's qualities are more important in children and adolescent health than mother's qualities [16]. Thus it was an interest to extend the understanding of the previous studies about the role of paternal PTSD symptoms on children PTSD symptoms. Better understanding with regards to the relation between PTSD among parents and children warrants careful study of PTSD symptoms of children and their respective parents (both mother and father) [8].

In 2015, Nepal was destructed by two powerful earthquakes. Thousands of families with their children were left homeless and several of children lost their parents and relatives. Increased burden of returning into normal life after disaster, financial burden and poor resilience has increased intensity of stress among the survivors of earthquake. Kathmandu was one of the most affected areas by 2015 earthquake.

A specific association between parental PTSD occurrence and the occurrence of PTSD in children has been previously reported. Most of the studies focused on maternal PTSD and its relation with children PTSD. However, association of parental PTSD symptoms with PTSD symptoms of children has been still unclear in terms of types of parental PTSD. Limited studies have assessed the roles of father and mother separately. Nepal is a patriarchal society; roles of males in the family and role of father in a child's life are influential. Even though, children are close with mother but while reaching out to parents, father cannot be forgotten in such society. Therefore, it is essential to assess the role of both father and mother while looking at their associations with children's PTSD symptoms. Thus, in this present study, we examined children's stress reaction, their mother and father separately. The main aim of the study was to identify the effects of parental PTSD symptoms on the PTSD symptoms of children who were affected by the 2015 Nepal Earthquake.

Methods

Study setting and participants

A community-based cross-sectional study was done in Kathmandu District, Nepalin September and October 2016, which were 15 months after the 2015 earthquake. Children aged 7-16 years, and their parents who had

been living in Kathmandu before the 2015 earthquake, and for at least 6 months prior to the date of the interview were recruited in the study, using a multi-stage cluster sampling method. Two urban and three sub-urban municipalities of Kathmandu Valley were selected. From each selected municipality, 10 wards were selected with probability proportional to size (PPS) based on the number of households in each ward. Altogether, 800 children and their parents from selected wards were chosen randomly. Trained research assistant and two child psychologists were employed to interview eligible subjects at their home (Details of the sampling and data collection methods are to be published elsewhere).

Ethical approval was taken from Nepal Health Research Council (ref no 150) and Prince of Songkla University (ref no 59-183-18-5). Verbal and written consent was taken from family and children. Anonymity and confidentiality were maintained throughout the study.

Instruments

Child-PTSD symptoms scale (CPSS)

PTSD symptom severity was assessed by the Child-PTSD symptoms scale (CPSS), a translated and validated version of a questionnaire based on the Diagnostic and Statistical Manual of Mental Disorder (DSM-IV) diagnostic criteria of childhood PTSD. CPSS has 17 items for severity of PTSD symptomology, each on a 4-point Likert scale (0=never, 1=once in a week, 2=2-4 times in a week and 3=5 or more times in a week) therefore, the range of total score is 0 to 51, with higher score indicating more severe PTSD symptoms. In the present study, the total score was categorized into score<=20, no and mild PTSD symptoms and score >20, having moderate to severe PTSD symptoms. The clinical cut-off score 20 was derived from a validation study in Nepal to classify children with PTSD symptoms for the need of treatment [17].

Impact of Event Scale (IES)

Parental PTSD symptoms were assessed by the IES. It is a 22-item self-report measure that assesses subjective distress caused by a traumatic event. Items are rated on 5-point Likert scale ranging from 0 (not at all) to 4 (extremely). This scale yields a total score ranging 0 to 88 and two sub scale scores; avoidance and intrusion can be calculated. In this study, a total score is used, where score exceeding 24 considered meaningful for presence of PTSD symptoms [18,19].

General family functioning

It was measured by a sub-scale of the Family Functioning Assessment Device, which assess the overall functioning, family structures, organization and transactional patterns in the family. It is a 12 items 4-point Likert scale where the score more than 2.0 indicates unhealthy functioning. The questionnaire was checked for face validity by a group of experts. Cronbach's internal consistency index from the pilot study was 0.86. The whole set of the questionnaire also includes child's and parents' socio-demographic characteristics and their perceivedseverity of earthquake exposure.

Statistical Analysis

Epi-data 3.1 was used for data entry and Statistical Software R version 3.3.2 was used for data management and analysis. Descriptive data are presented with percentage, mean and standard deviation. The main outcome variable was child's PTSD symptoms. Stepwise logistic regression was done to identify the association of types of parental PTSD symptoms with the severity of PTSD symptoms among children, adjusted fordemographic characteristic and family functioning variables. A p-value of <0.05 was considered statistically significant.

Results

Parents' characteristics are listed in Table 1 and Table 2 explains the demographics of the children and family function. Of all 800 children, 768 had mother and 638 had father still living with them. Among fathers, the majorities were in 30-40 (63.6%) years age group, and were of Hindu religion (74.6%). About one-fourth of fathers had secondary-

level education and was engaged in business. Similarly, the majority (77.9%) of mothers was 30-40 years and was Hindu (72.4%). About thirty percent of mothers had primary level education and were engaged in business. In the entire parent sample, 27.9% of fathers and 56.2% of mothers had PTSD symptoms. The prevalence of PTSD symptoms was found higher among mothers having primary education level (29.6%) and mothers engaged in business (29.9%).

Table 2 shows the demographic characteristics of the children. About 60% of the respondents were at their school age, and 52% were female. Majority of children (45.1%) was attending primary level education, and 71.4% were of Hindu religion. Moreover, looking into the general family functioning, majority of children's families (97.5%) had poor family functioning. Overall prevalence of severe PTSD symptoms among children was 51.12%.

Table 1. Demographic Characteristics of Parents

Demographic information	Mother (n=786)	Father (n=638)
Education		
Illiterate	76 (9.7)	66 (10.3)
Can read and write	145 (18.4)	64 (10.0)
Primary	233 (29.6)	96 (15.0)
Secondary	178 (22.6)	169 (26.5)
Higher secondary	64 (8.1)	118 (18.5)
Graduate	90 (11.5)	125 (19.6)
Age		
Less than 30 Years	59 (7.50)	9 (1.4)
30-40 years	612 (77.9)	406 (63.6)
Above 40	115 (14.6)	223 (35.0)
Occupation		
Business	235 (29.9)	162 (25.4)
Government Service	87 (11.1)	110 (17.2)
Private service	109 (13.9)	91 (14.3)
Agriculture	177 (22.5)	129 (20.2)
Others	178 (22.6)	146 (22.9)
Religion		
Hindu	569 (72.4)	476 (74.6)
Others	217 (27.6)	162 (25.4)

**Note: other religion includes Buddhist, Christian, Muslim and minor religions*

Table 2. Demographic information of children and family functioning

Demographic information	Frequency (n=800)
Age	
School Age	464 (58.0)
Adolescent	336 (42.0)
Gender	
Male	384 (48.0)
Female	416 (52.0)
Education	
Primary	361 (45.1)
Lower secondary	291 (36.4)
Higher Secondary	148 (18.5)
Religion	
Hindu	571 (71.4)
Buddhist	163 (20.4)
Christian	35 (4.4)
Muslim	15 (1.9)
Others	16 (2.0)

Table 3 (cont). Demographic information of children and family functioning

Demographic information	Frequency (n=800)
Ethnicity	
Brahman	100 (12.5)
Chettri	205 (25.6)
Newar	167 (20.9)
Others	328 (41.0)
Demographic of family	
General family Functioning	
Healthy general functioning	20 (2.5)
Unhealthy general functioning	780 (97.5)

Table 3 describes the prevalence of PTSD symptoms among children according to type of Parental PTSD symptoms. In the entire sample of the children, 28.9% had both parents without any symptoms of PTSD, 36.6% had mother, 3.6% had father with PTSD symptoms whereas 12.2% had single parent without PTSD symptoms. The prevalence of PTSD symptoms was found lowest among the children with no parental PTSD symptoms (69.7%), compared to those with a single parent with PTSD symptoms (70.4%) or both father and mother having symptoms (74.5%).

Table 4. Prevalence of severe PTSD symptoms in children according to maternal and paternal PTSD symptoms

Children with and without Parental PTSD symptoms	Total Sample (n=800)	PTSD symptoms among children		p-value (χ^2)
		Mild Symptoms (n=391)	Severe Symptoms (n=409)	
Children with no Parental PTSD	231 (28.9)	161 (69.7)	70 (30.3)	<0.001
Children with Paternal PTSD	29 (3.6)	14 (48.3)	15 (51.7)	0.900
Children with Maternal PTSD	293 (36.6)	109 (37.2)	184 (62.8)	<0.001
Children with Both parents PTSD	149 (18.6)	38 (25.5)	111 (74.5)	<0.001
Children with single Parent without PTSD Symptoms	98 (12.2)	69 (70.4)	29 (29.6)	<0.001

*Notes: p-value refers the chi-squared test for the univariate association of children PTSD symptoms with parental PTSD symptoms PTSD = Post-traumatic stress disorder.

Association between Parental PTSD and Children PTSD Symptoms

In Table 4, all the children without any parental PTSD are compared to those with only maternal PTSD symptoms, only paternal PTSD symptoms, single parental PTSD symptoms and both parents with PTSD symptoms. The result reveal significant differences in severity of PTSD symptoms between the children with no parental PTSD and those with either of their parents or both with PTSD symptoms after controlling for children's age, gender, education and general family functioning.

Children having both parents with PTSD symptoms were 6.72 [95% CI 4.21, 10.75] times more likely than children with parents having no PTSD symptoms to have severe symptoms of PTSD. Moreover, children having mother with PTSD symptoms were 2.56 times [95% CI 1.16, 5.64] and those with PTSD father were 3.85 times [95% CI 2.65,

5.58] more likely to have severe PTSD symptoms, compared to those without any parental PTSD.

Table 5. Association between Parental PTSD and Children PTSD symptoms

Parental PTSD types	Crude OR	Adjusted OR	p-value	P (LR-Test)
Children with no Parental PTSD (ref)	1	1[a]		<0.001
Children with Maternal PTSD only	2.46 (1.13,5.38)	2.56 (1.16,5.64)[b]	0.026*	
Children with Paternal PTSD only	3.88 (2.69,5.61)	3.85 (2.65,5.58) [b]	<0.001***	
Children with Both parents PTSD	6.72 (4.32,10.68)	6.72 (4.21,10.72)[c]	<0.001***	
Children with single Parent without PTSD Symptoms	0.97 (0.58,1.62)	0.97 (0.57,1.60) [a]	0.898	

Notes: Subgroups with different superscripts are significantly different with each other. PTSD = Post-traumatic stress disorder. OR = Odds ratio. P (LR-Test) = Likelihood Ratio Test. The odds ratios were obtained by logistic regression after controlling for demographics of child and family functioning.

Discussion

This study confirms the earlier findings that PTSD symptoms among the children after any traumatic or stressful situation are significantly influenced by their parent's psychopathology. The overall prevalence of severe symptoms of PTSD among the children was 51.12%, even after a year of earthquake. This is possibly due to the most severe magnitude of the earthquake in eight decades in Nepal and went on terrifying children and families several months after it occurred. Furthermore, there were multiple strong aftershocks that might have instigated children in re-experiencing the trauma.

The prevalence of PTSD symptoms among mothers of children was 56.2% and between fathers was 27.9%. This is in keeping with a previous study [8] where they reported higher prevalence PTSD symptoms among mothers than fathers. There have been several studies explaining the role of gender in the PTSD symptoms and its reactions. Females are found to be more vulnerable in the stressful situations and are at greater risk in development of PTSD symptoms than men [20] because of their lower threshold to threat appraisal as compared to men. Upon the examination of the prevalence of children PTSD symptoms by the parental status of PTSD symptoms, it is stressed that children's PTSD symptoms are affected by presence or absence of PTSD symptoms in the parents, and this finding is lined up with other previous studies [14]. It became clear that children who had parents with no PTSD symptoms have lower prevalence of severe PTSD symptoms.

The prevalence of severe PTSD symptoms among the children with maternal PTSD symptoms was higher than both parents having no PTSD and was much higher than in children living with parents and the relationship between children's and parent's PTSD symptoms was independent to the child and parent's socio-demographic characteristics and family functioning level. This finding confirms that children's reaction to trauma and experience of mental stress is influenced by parental psychopathology, which is lined up with several previous studies explaining the role of parents in children psychopathology [7, 21]. Our study provided additional support to the attachment theory explaining that children do well if parents are emotionally stable and provide security [22]. Emotionally available and stable parents provide the attachment of security, which acts as a protective shield against multiple bad outcomes [23].

In addition, it appears from several studies, females have fewer appraisals to a threat. Mother with PTSD symptoms is expected to have increased emotional regulation burden for both herself as well as her child [24]. As mother tries to restore the sense of safety to

both, herself and her child, the mother with PTSD symptoms or depressed mother may exhibit a lack of control over environment and may show more withdrawal that may create trouble while interacting with their children [25]. This reduces the maternal engagement and availability of mother with a child, which may result in a lack of support for the child's emotional and behavioral problem. Thus, it supports that mother's PTSD symptoms are likely to have strong association with the severity of PTSD symptoms in children.

Our result also extends the understanding of the association of paternal PTSD symptoms with PTSD symptoms in the children. Father is considered as a protector in Nepalese culture, and his role becomes salient in life threat and when there occur any adverse situations in the family. Their attachments with the children provide the sense of security. Father's mental-health problems are more important in creating the unhealthy family environment of child which in turn makes the child vulnerable to distress and anxiety disorder [15]. Moreover, father with PTSD symptomatology leads to other problems like increased arguments and physical punishment that may lead to the development of PTSD symptomatology in children [26]. Supporting this statement, we found that paternal PTSD symptoms were significantly associatedwith severe PTSD symptoms in the children.

Our result underlines the effect of both parents having PTSD symptoms on severity of PTSD symptoms among the children. Children with both parents with PTSD symptoms were strikingly at higher risk of having severe PTSD symptoms. Collective trauma [27] may be a possible explanation of this significant association. After a traumatic event witnessed by a bunch of people, society or family can stir up with similar sentiments, which often result in a shift of trauma among those people, society or family [28]. Parents are the protective core of the children who keep children away from threat, harm and stressful situation. Challenges to manage the stressful situations and to minimize the threat to their children often leave parents with sense of negative emotions and feeling of guilt, which induce PTSD symptoms among parents and such negative emotions in both parents serve to maintain symptoms among children [6]. There are some other existing studies explaining the other way round about sharing of trauma experience by the parents after the exposure of children with severe trauma [29,30]. However, it is unclear whether parent's PTSD symptoms can impact on their child's mental health or exposure of children in traumatic situation increases parental PTSD symptoms.

It is plausible that a number of limitations might have influenced the results obtained. To begin with the study design, cross-sectional study design limits the establishment of the temporal relationship. Limited research and explanation about the direction of shared trauma limit the understanding of the relationship between parental and children PTSD symptoms. Study limits the investigation of the variables such as child-parent relationship, severity of trauma exposure by parents which may have potential influence in the relationship of parental PTSD symptoms and PTSD symptoms among children. There might be potential recall bias in reviving past traumatic experience but its potential was minimized by interviewing with a professional psychological counselor.

Notwithstanding the limitations, study has gone some way towards enhancing our understanding of the parental PTSD symptoms in effecting the PTSD symptoms among children. Our result shows the significant association of the parental PTSD symptoms with children PTSD symptoms and suggests that the mental health care provider and policy maker should assess the status of parental PTSD while making an intervention for the children. As studies have explained that many parents do not seek help after a traumatic experience, different screening approaches or treatment models for intervention are recommended [31,32].

Study also confirms the need of careful evaluation of both father and mother PTSD symptomatology. Children with their both parents having PTSD symptoms should be given a priority while making an intervention. The study has explained an important aspect of parental stress in determining the severity of stress reactions in children. On a wider level,

research is also needed to determine the direction of relationship between parental PTSD symptoms and children answering whether children PTSD symptoms may traumatize parents and threat to oneself or parents with PTSD symptoms are unable in maintain emotional availability and lead to increase the sense of insecurity among children resulting PTSD symptoms.

Conflict of Interest

Authors declare no conflict of interest.

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Correspondence author: ***Shneha Acharya, Epidemiology Unit, Faculty of Medicine, Prince of Songkla University, Thailand.***

Email: aarfasneha@gmail.com

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ORIGINAL ARTICLE

WHAT PREDICTS LATE-NIGHT WHATSAPPING HABITS - USAGE CHARACTERISTICS OR PSYCHO-BEHAVIORAL ATTRIBUTES? A HEALTH WORKERS SURVEY

Kurubaran Ganasegeran*,**,, Sami Abdo Radman Al-Dubai****, Surajudeen Abiola Abdulrahman*****, Sivashunmugam Sangaran[#], Wilson Hau Wuei Yeow^, Pukunan Renganathan^^***

***Ministry of Health Malaysia, Parcel E, 62590 Putrajaya, Malaysia; **Medical Department, Tengku Ampuan Rahimah Hospital, 41200 Klang, Selangor, Malaysia; ***Clinical Research Centre, Seberang Jaya Hospital, 13700 Prai, Penang, Malaysia; ****Saudi Board in Community Medicine and Family Medicine, Ministry of Health, Al-Madinah Al-Munawarah, 41412 Saudi Arabia; *****Department of Public Health Medicine, Penang Medical College, 10450 George Town, Penang, Malaysia; [#]Quality Unit, Bintulu Hospital, 97000 Bintulu, Sarawak, Malaysia; ^Department of Anesthesiology, Tengku Ampuan Rahimah Hospital, 41200 Klang, Selangor, Malaysia; ^^Clinical Research Centre, Tengku Ampuan Rahimah Hospital, 41200 Klang, Selangor, Malaysia.**

Abstract

Objectives: **With the explosion in the use of WhatsApp Messenger globally, the prevalence of late-night WhatsApping is poised to show a commensurate increase. This has sparked debates on a possible new wave of technological addiction that could cause serious psycho-behavioral repercussions. Acknowledging the ubiquity of WhatsApp, healthcare professionals have adopted it as a preferred communication tool in clinical practice. This preliminary cross-sectional study aimed to explore the prevalence of and psycho-behavioral factors associated with late-night WhatsApping.** ***Methods:*** **It was conducted on a universal sample of 307 healthcare professionals across medical and casualty departments in a Malaysian public hospital. The self-administered questionnaire consisted of items on socio-demographics, WhatsApp usage characteristics, and psycho-behavioral attributes.** ***Results:*** **Majority of respondents (72.9%) reported late-night WhatsApping habits. In multivariate analyses, late-night WhatsApping was significantly higher among those who used WhatsApp for more than 12 months (Adjusted odds ratio, AOR = 4.4, 95% Confidence interval, CI 2.2–8.8, p < 0.001), those who frequently kept mobile data on to avoid missing WhatsApp messages (AOR = 3.2, 95% CI 1.3–5.8, p = 0.006), those with frequent social connections (AOR = 3.0, 95% CI 1.4–6.4, p = 0.003), and those living alone (AOR = 2.3, 95% CI 1.1–5.2, p = 0.038).** ***Conclusion:*** **Late-night WhatsApping was significantly associated with usage characteristics and psycho-behavioral attributes.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 226-235.***

Keywords: Mobile Technology, Habits, Psychology, Behavior, Addiction, Healthcare

Introduction

The exponential rise of smart phone utilization has sparked debates on behavior-oriented technological addiction, which is projected to reach epidemic proportions across different strata of populations [1]. Mounting evidence suggests that the predilection for smart phones is caused by the excessive usage of WhatsApp [2]. This novel technological addiction habit is poised to cause unprecedented psycho-behavioral repercussions such as low self-esteem, difficult social relationships, loneliness, and insomnia [2,3]. The relatively limited literature on this topic has motivated researchers to explore the WhatsApp addiction phenomenon, a novel subset of technology-driven addiction, to gain a deeper understanding of its associated factors and how to control it.

Malaysian WhatsApp users constituted about 2.3% of over 900 million monthly active WhatsApp users worldwide as of October 2015 [4]. This corresponds to a WhatsApp penetration rate of over 75% among mobile Internet users in Malaysia—the second highest penetration rate after South Africa [4]. Although data on the prevalence rate of late-night WhatsApping remains scarce in Malaysia, available evidence from digital monitoring by a consulting company showed that as of September 2014, about 35% of Malaysian Internet users use their mobile phones in bed before they sleep, while a similar proportion reached for their mobile phones before they get out of bed [5].

Modern medical practice demands the extensive mobility of healthcare providers for effective diagnostics and communication during patient management. The ubiquity of WhatsApp is perceived to be valuable in clinical settings [6]. Healthcare professionals could interact fast and efficiently for effective patient management during clinical practice [6]. However, despite the perceived benefits of WhatsApp, it can also have adverse effects. Limited evidence has shown that WhatsApp overuse during nighttime has a greater negative impact than overuse during the daytime [7-9]. Inadequate sleep due to late-night WhatsApping may lead to poor concentration, stress, and low productivity. These undesired effects are a major concern among healthcare staff, as the sensitive nature of their jobs requires maximum concentration and alertness to make the best clinical judgments in daily practice.

The preference and use of WhatsApp for instant messaging and social connection purposes among Malaysians has been on the rise [5]. With increased WhatsApp penetration and use among Malaysians, one could hypothesize that the prevalence of late-night WhatsApping will show a commensurate increase, although variability by socio-demographic and other psycho-social attributes can be expected. The domestication theory, which introduced the notion that "we adopt and adapt technologies, and we shape and are shaped by them," determines the complexity of how technological innovations fit into the structures and routines of individuals' daily lives; it also explores their associations within the social environment [10]. The 24/7 nature of healthcare jobs disrupts work-life balance, but equilibrium could be achieved with WhatsApp's real-time text-messaging functionality. Healthcare workers can communicate through WhatsApp for work purposes and at the same time be connected with their friends and family. However, owing to the wide reach and continuous use of WhatsApp, untoward psycho-behavioral effects such as distraction, lack of focus, cravings, nomophobia, i.e. fear of being without mobile phone communications, and a high prevalence of phantom vibration syndrome, particularly among medical staff [11], are strong indicators of its negative impact [12]. Thus, this study aims to determine the prevalence of and factors associated with late-night WhatsApping among healthcare staff in Malaysia.

Methods

Study setting and population

Between September 2015 and February 2016, we conducted a cross-sectional study among 307 healthcare staff members across medical and casualty departments at Tengku Ampuan Rahimah Hospital in Klang, the second busiest public health facility in Malaysia [13].

As this study was novel (hypotheses generating), we adopted a universal sampling technique and recruited all medical (internal and emergency medicine physicians, medical officers, and medical residents) and allied healthcare (nurses and medical assistants) staff for our study sample. We invited respondents to participate in a closed-ended survey during the hospital's Departmental Continuing Medical Education sessions. The respondents' anonymity and confidentiality were ensured. Written consent was obtained from those who agreed to participate in the study.

Ethics statement

This study complied with the guidelines established in the Declaration of Helsinki. The research protocol was approved by the Medical Research Ethics Committee of the Ministry of Health Malaysia (government approval number: NMRR-15-893-26047).

Study instrument

We employed universal sampling technique to recruit all medical (internal and emergency medicine physicians, medical officers, and medical residents) and allied healthcare (nurses and medical assistants) professionals within medical and casualty departments of the hospital between September 2015 and February 2016. Self-administered questionnaire that contained items on socio-demographics (five items), WhatsApp usage characteristics (two items), and psycho-behavioral attributes (four items) was used. Socio-demographics included gender, age, marital status, living circumstances, and profession. Two items assessed WhatsApp usage characteristics: (1) the duration of WhatsApp use and (2) a 4-point Likert-scale item that measured the frequency of WhatsApp use for social connections, ranging from 1 (rarely) to 4 (often). During the analysis, we dichotomized the Likert-scale item into two categories, "frequently" and "less frequently," to facilitate the interpretation.

The domestication theory, which incorporates the social relationships surrounding the complexity of information technology usage into the structure and routine of individual daily lives [10], provided the framework for this study to determine associations between novel psycho-behavioral attributes and late-night WhatsApping habits. Two validated items assessed psychological attributes. First, perceived nomophobia, which is the perception of fear of being unable to communicate through mobile phone was assessed in terms of severity using a 4-point Likert-scale, ranging from 1 (mild) to 4 (very severe) [14,15]. This item was dichotomized into two categories, "less severe" and "severe," to facilitate interpretation. Another psychological attribute measured was phantom vibration syndrome, which is an intermittent perception that the mobile phone is vibrating even though it is not [11]. This item was assessed on a 4-point Likert scale ranging from 1 (rarely) to 4 (often). In the analysis, these items were dichotomized into two categories, "frequently" and "less frequently," to facilitate interpretation.

Items that assessed behavioral factors were adapted and modified from previous measures [16]; the questions included (1) "How frequently do you crave to WhatsApp someone?" and (2) "How frequently do you keep mobile data on to avoid missing any WhatsApp messages?" These items were rated on a 4-point Likert scale ranging from 1 (rarely) to 4 (often). In the analysis, the items were dichotomized into two categories, "frequently" and "less frequently," to facilitate interpretation. Owing to the around-the-clock work of healthcare staff, the primary outcome measure "late-night WhatsApping" was adapted and modified based on the concept of "late-night text messaging," which includes midnight and after-midnight text activities (collectively termed "chronic nighttime exposure") [3,17]. Late-night WhatsAppping was assessed using the question "Do you WhatsApp even after midnight?" with the response items "Yes" or "No."

Statistical analyses

Analysis was performed using SPSS version 18.0 (SPSS Inc., Chicago IL, USA). A normality check showed that all quantitative data were normally distributed. Descriptive statistics were calculated for all independent variables. Chi-square tests were used to

determine the associations between late-night WhatsApping and the categorical variables in this study. Multiple logistic regression analysis using the backward Wald technique was performed to eliminate confounders and to determine the most significant factors associated with the primary outcome measure. All significant variables in the univariate analysis were included in the multivariate analysis. Multicollinearity between independent variables was checked for standard errors not exceeding five [18]. The accepted level of significance in this study was set below 5% ($p < 0.05$).

Results

Sample characteristics and WhatsApp usage

The sample consisted mostly of females (80.5%). The average age was 28.0 (± 5.8) years, and the age ranged from 19 to 56 years. The bulk of the respondents were allied health staff members (70.0%) and living with their families (74.3%). Nearly half of the total respondents used WhatsApp for more than 12 months (48.9%); the majority of them used WhatsApp for social connections (83.4%). A total of 248 (72.9%) respondents reported late-night WhatsApping habits.

Association between socio-demographics and late-night WhatsApping

Table 1 exhibits the association between socio-demographics and late-night WhatsApping among healthcare staff. Late-night WhatsApping was significantly higher among singles compared with married respondents (OR = 2.2, 95% CI 1.2–3.9, p = 0.008). Respondents living alone had significantly been higher late-night WhatsApping habits than those living with their families (OR = 2.2, 95% CI 1.0–4.7, p = 0.041). Respondents using WhatsApp for more than 12 months had significantly been higher late-night WhatsApping habits than those who had been using it for 12 months or less (OR = 4.4, 95% CI 2.2–8.5, $p < 0.001$). Respondents engaged in frequent social connections had significantly been higher late-night WhatsApping habits than those with fewer frequent social connections (OR = 2.5, 95% CI 1.3–5.0, p = 0.005).

Table 1. Association between socio-demographics and late-night WhatsApping among healthcare staff (n = 307)

Characteristics	Late-Night WhatsApping		OR (95% CI)	p-value
	Yes, N (%)	No, N (%)		
Gender				
Male	50 (83.3)	10 (16.7)	1.2 (0.6-2.6)	0.576
Female	198 (80.2)	49 (19.8)		
Age (years)				
≤ 30	198 (81.1)	46 (18.9)	1.1 (0.6-2.2)	0.749
> 30	50 (79.4)	13 (20.6)		
Marital status				
Single	144 (86.2)	23 (13.8)	2.2 (1.2-3.9)	0.008
Married	104 (74.3)	36 (25.7)		
Living circumstances				
Alone	70 (88.6)	9 (11.4)	2.2 (1.1-4.7)	0.041
Family	178 (78.1)	50 (21.9)		
Profession				
Medical staff	78 (84.8)	14 (15.2)	1.5 (0.8-2.8)	0.245
Allied health staff	170 (79.1)	45 (20.9)		

WhatsApp use (months)				
> 12	137 (91.3)	13 (8.7)	4.4 (2.2-8.5)	< 0.001
≤ 12	111 (70.7)	46 (29.3)		
Social connection				
Frequently	214 (83.6)	42 (16.4)	2.5 (1.3-5.0)	0.005
Less frequently	34 (66.7)	17 (33.3)		

(OR = Odds ratio; 95% CI = Confidence Interval)

Association between psycho-behavioral factors and late-night WhatsApping

Table 2 shows the association between psycho-behavioral factors and late-night WhatsApping. Late-night WhatsApping was significantly higher among healthcare staff with severe perceived nomophobia (OR = 2.2, 95% CI 1.0–4.9, p = 0.046), those with frequent experiences of phantom vibrations (OR = 3.9, 95% CI 1.2–13.1, p = 0.018), those with frequent cravings to WhatsApp someone (OR = 7.7, 95% CI 1.0–57.5, p = 0.020), and those who frequently kept their mobile data on to avoid missing WhatsApp messages (OR = 2.8, 95% CI 1.3–5.8, p = 0.004).

Table 2. Association between psycho-behavioral factors and late-night WhatsApping among healthcare staff (n = 307)

Characteristics	Late-Night WhatsApping		OR (95% CI)	p-value
	Yes, N (%)	No, N (%)		
Perceived nomophobia				
Severe	64 (88.9)	8 (11.1)	2.2 (0.9-4.9)	0.046
Less severe	184 (78.3)	51 (21.7)		
Phantom vibration syndrome				
Frequently	43 (93.5)	3 (6.5)	3.9 (1.2-13.1)	0.018
Less frequently	205 (78.5)	56 (21.5)		
Crave to WhatsApp someone				
Frequently	29 (96.7)	1 (3.3)	7.7 (1.1-57.5)	0.020
Less frequently	219 (79.1)	58 (20.9)		
Keep mobile data on to avoid missing WhatsApp messages				
Frequently	90 (90.0)	10 (10.0)	2.8 (1.3-5.8)	0.004
Less frequently	158 (76.3)	49 (23.7)		

(OR = Odds ratio; 95% CI = Confidence Interval)

Predictors of late-night WhatsApping among healthcare staff in multiple logistic regression analyses

Multiple logistic regression analyses yielded four factors significantly associated with late-night WhatsApping. WhatsApp usage for more than 12 months was the most significant factor associated with late-night WhatsApping (Adjusted Odds Ratio, AOR = 4.4, 95% CI 2.2–8.8, p < 0.001), followed by frequently keeping mobile data on to avoid missing WhatsApp messages (AOR = 3.2, 95% CI 1.3–5.8, p = 0.006), frequent social connections (AOR = 3.0, 95% CI 1.4–6.4, p = 0.003), and living alone (AOR = 2.3, 95% CI

1.1–5.2, p = 0.038). The total model was significant (p < 0.001) and accounted for 25% of the variance in late-night WhatsApping (Table 3).

Table 3. Multiple logistic regression (backward Wald) results for factors associated with late-night WhatsApping among healthcare staff (n = 307)

Predictors	B	SE	Wald	Exp (B)	95% CI	p-value
Living circumstances						
Alone	0.8	0.4	4.3	2.3	1.1–5.2	0.038
Family	Ref	Ref	Ref	Ref	Ref	Ref
Whatsapp usage (months)						
> 12	1.5	0.4	18.2	4.4	2.2–8.8	< 0.001
≤ 12	Ref	Ref	Ref	Ref	Ref	Ref
Social connection						
Frequently	1.1	0.4	8.6	3.0	1.4–6.4	0.003
Less frequently	Ref	Ref	Ref	Ref	Ref	Ref
Keep mobile data on to avoid missing WhatsApp messages						
Frequently	1.1	0.4	7.6	3.2	1.3–5.8	0.006
Less frequently	Ref	Ref	Ref	Ref	Ref	Ref

Variables entered: All significant variables in bivariate analyses. Exp (B) gives the adjusted odds ratio (AOR); SE = Standard error; OR = Odds ratio; 95% CI = 95% Confidence Interval)

Discussion

To the best of our knowledge, this is the first study to explore and report the prevalence of late-night WhatsApping among Malaysians. Beyond the use of WhatsApp for official communication among healthcare staff in Malaysia, this study observed the specific use of WhatsApp for social connections late at night, exploring the psycho-behavioral impact of long-term usage.

We found that a longer duration of WhatsApp usage was highly predictive of late-night WhatsApping; those who had used WhatsApp for over 12 months were 4 times more likely to engage in late-night WhatsApping than those who had used WhatsApp for 12 months or less. While this is not an unexpected finding, it is perhaps more important that this association is explained in light of psycho-adaptation, which underlies the obsessive-compulsive behavior of late-night WhatsApping due to long-term usage [10]. Over time, long-term WhatsApp users find coping mechanisms and a self-perceived balance in mitigating the effects of WhatsApp overuse, which consequently predisposes them to late-night WhatsApping at the expense of adequate sleep or rest. With prolonged usage comes the tendency to find a way to incorporate late-night WhatsApping into the routine of an individual's daily life. Unearthing the specific pathways in which these coping mechanisms or adaptive behaviors predispose an individual to late-night WhatsApping, although beyond the scope of our study, will be beneficial for targeted preventive and behavior modification purposes.

Our findings also showed a significant association between late-night WhatsApping and frequency of usage for social connection purposes. Respondents who frequently used WhatsApp for social connection were significantly more likely to engage in

late-night WhatsApping. Most mobile phone users demonstrate the often compulsive behavior of checking news updates and social media messages first thing in the morning and late at night [19]. This behavior is even more compelling among employed individuals whose job tasks, and schedule may restrict their access to WhatsApp during working hours. Thus, they feel the need to catch up with their social connections late into the night. While this explanation may be the most plausible for the observed relationship between late-night WhatsApp-ing and frequency of usage for social connections among health-care staff in this study, the fact that profession type (medical staff vs. allied health staff) did not show any independent association with late-night WhatsApping also underscores the general desire for social connection (in this case, through WhatsApp) across professions [20]. Even among medical students, a study conducted in India showed that over 94% possessed at least one smart phone, which they used mainly for social networking and predominantly at night [21]. A similar finding was also reported among health science students in Swaziland [22].

The compulsive behavior of frequently keeping mobile data on to avoid missing WhatsApp messages was also predictive of late-night WhatsApping among our study sample. We found that respondents who frequently felt the need to keep their mobile data on to avoid missing WhatsApp messages were thrice more likely to engage in late-night WhatsApping than those who did not feel this need. Although this may be related with the need to stay in touch with social connections, particularly among healthcare staff who is generally perceived to be busy with sensitive jobs during the daytime, the deeper underlying personality traits that may be responsible for this behavior are extroversion and social anxiety. Hence, there is a need to take a closer look at this finding. In addition, the interaction of these factors may be explosive because extroverts are thought to reach out more often to their social contacts and utilize WhatsApp for much longer periods than introverts [23]. For these reasons, they may feel a much more compulsive need than introverts to frequently keep their mobile data on to avoid missing WhatsApp messages. This becomes even more important considering the financial implications, however inconsequential, of keeping mobile data on, especially for low-income earners who regularly have to part with some funds to sustain their mobile data access.

Our study revealed that respondents' living circumstance was a significant predictor of late-night WhatsApping. Respondents who lived alone were twice more likely to indulge in late-night WhatsApping than those who lived with their families. This is not surprising because respondents who live with their families would necessarily commit more of their off-work time to their families by physically engaging in conversations, watching movies, and dining together, among others. In contrast, respondents who lived alone tended to spend more time communicating with their family members through regular WhatsApp chats, in addition to social connection with friends. This is supported by the study findings of Church and de Oliviera [24], who reported that WhatsApp was used more often with partners than with any other communities/groups. Their study also found a higher frequency of WhatsApp usage with family and friends than with work colleagues and clients. For employees working in distant locations away from their families, late-night WhatsApping appears to be their best daily opportunity to catch up with their spouses and immediate family members. Again, based on the results from our study, this is true for most people, irrespective of their job titles/professional categories and social status.

Our study failed to establish any associations between gender, age group, and late-night WhatsApping. Unlike Montag et al. [2], who found that being female and younger were predictive of longer daily WhatsApp usage, we observed no such associations among our study sample. Although a higher proportion of persons who indulged in late-night WhatsApping in our study were females less than 30 years old, the association fell short of statistical significance, apparently due to the imbalance in gender and age categories. In addition, the independent effect of the fairly balanced marital status of the respondents appeared to be nullified by their living

circumstances in predicting late-night WhatsApping.

This study has some important limitations. First, the results of the study are at best descriptive and should be interpreted with caution, as they may not be generalizable to the population of healthcare staff across Malaysia owing to the non-probability sampling technique employed to select study participants. Second, the specific socio-demographic determinants of WhatsApp overuse among this largely urban-based cohort may be different from those in much more remote locations across Malaysia, with perhaps fewer Internet connectivity and differing from social networking characteristics. The appropriateness of measuring the novel attribute, "perceived nomophobia" in terms of severity could be debated in this study. Such attribute was difficult to measure, but evidence suggests that perception of a condition can be measured in terms of 'perceived severity' or 'perceived susceptibility' both of which are linked [25]. Although, most times perception of severity of a condition often follows appropriate diagnosis of the condition, however, it may not be inappropriate in this situation since perceived nomophobia can be adequately and correctly appraised by the respondent [26]. As the present study only showed a statistical significance in the univariate analysis and eliminated in the multivariable model, it was not powered to definitely reject the null hypothesis to claim this factor as a predictor to technological addiction habit. Future research should use robust methodological techniques to determine the temporality between these factors. Finally, although WhatsApp is reported to be the most widely used instant messaging app in the country, it would have been interesting to explore whether late-night WhatsApping is associated with an increased concurrent use of other social media apps such as Facebook and Instagram or vice versa.

Conclusion

In summary, the prevalence of late-night WhatsApping among healthcare staff in our study location is relatively high. Given the untoward effects of late-night WhatsApping, including poor sleep, poor concentration, stress, and low productivity, and the projected increase in WhatsApp penetration among Malaysians, it is imperative to create targeted, context-specific behavioral control and preventive strategies to address this problem. Qualitative research to provide deeper explanations for the psycho-behavioral factors exposed in this study will be of immense value in creating targeted behavioral control and preventive strategies. Real-time psycho-behavioral attributes could be measured through WhatsApp meta-data in future robust studies through psycho-informatics, which is part of the "big data" revolution in healthcare.

Author Contributions

KG conceived and designed the study, analysed the data, wrote the paper, prepared the tables, and responsible for the final version. SARA-D analysed the data, wrote the paper, and revised the final draft critically for important intellectual content. SAA wrote the paper, revised the final draft critically for important intellectual content. SS and WHWY recruited participants, prepared the tables and reviewed drafts of the paper. PR conducted literature search, recruited participants and collected data. All authors have contributed to and approved the final version of the manuscript.

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Corresponding author: ***Dr Kurubaran Ganasegeran, Ministry of Health Malaysia, Parcel E,*** **62590** ***Putrajaya, Malaysia.***

Email: medkuru@yahoo.com

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ORIGINAL ARTICLE

IDENTIFYING THE PATTERNS OF SELF-HARM AND SUICIDE ATTEMPTS IN CHILDREN AND ADOLESCENTS IN SINGAPORE

Goo Kai-Lin Sabrina, Radha Srikanth**, Ong Say How***,*
*Neo Hui Min Shaina[#], Tan Juanmin[#], Vicknesan Jeyan Marimuttu****

***Lee Kong Chian School of Medicine, Nanyang Technological University, 639798 Singapore; **Child and Adolescent (Wollemi Kids) Mental Health Unit, Western NSW Local Health District, New South Wales, 2800 Australia; ***Child and Adolescent Mental Wellness Service, KK Women's and Children's Hospital, 229899 Singapore; [#]Yong Loo Lin School of Medicine, National University of Singapore, 117549 Singapore.**

Abstract

Objective*: In the past decade, self-harm and suicidal behaviours in adolescents have increased with teen suicides in Singapore reaching a record high in 2015. Globally, completed suicide is reported to be second leading cause of death in this demographic. This study aims to explore the methods of self-harm and suicide attempts employed by young people who are admitted to a tertiary paediatric hospital in Singapore. *Methods*: A cross-sectional retrospective medical record review was conducted for a 3-year period from 2012 to 2014. All patients admitted with self-harm or suicide attempts and referred for inpatient consultation were included in the study. Data was collected on the following: age, gender, race, if the attempt was a suicide attempt or self-harm, and method used. *Results*: A total of 106 cases were referred for self-harm or suicide attempt; 15 of these cases were male patients and 91 were female patients. A total of 47% were categorized as self-harm, and 41% for the suicide attempt. In another 5%, the intention was recorded as ambivalent, and 7% cited other reasons. The 3 most common methods were drug ingestion (63%), self-cutting (18%) and chemical ingestion (12%). Results show that drug ingestion remains the preferred method, even after stratification according to gender, age and intention. Paracetamol was the most common drug ingested. *Conclusion:* Drug ingestion is the main choice for our youth when it comes to self-harm or attempting suicide. This could likely be due to the easy access of medications. Further studies can be done to determine how and where these medications were obtained. This could help explore areas for improvement when it comes to safe storage of medicine at home, disposing of expired medicines and drug regulations in terms of sale of medicines to minors over the counter. *ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 236-248.

Keywords: Self-Harm, Suicide, Children, Adolescents, Asia, Singapore

Introduction

A suicide attempt can be defined as a "self-destructive behaviour performed with the intent to end one's life independent of the resulting damage" [1, 2] whilst, deliberate self-harm (DSH) is defined as the "deliberate, direct destruction or alteration of body tissue without conscious suicidal intent, but resulting in injury severe enough for tissue damage (e.g., scarring) to occur" [3]. A key difference

between DSH and a suicide attempt is the intent to end one's life.

For the past few decades, the pace at which youths engage in suicidal behaviour and DSH has increased. Globally, suicide is now the second leading cause of death among 15-29 year olds [4] while DSH practices have become more ubiquitous among the young [5]. Large scale community studies suggest estimated DSH rates of 1.8% [6] to 17.0% in different international populations [7].

While rare in children less than 10 years of age [8], the existence of suicidal behaviours among the young is not new. The rise in its prominence and prevalence, however, is alarming. In the United States, where suicide has surged to a 30-year high, the number of individuals aged 15-24 committing suicide has increased steadily since the low of 1999, with a three-fold increase among girls aged 10-14 [9]. This phenomenon is not isolated to the West. Over in Asia, Korea and Japan have likewise experienced a surge in the volume of completed suicides and suicide attempts among their youth [10, 11]. Between 2001 and 2011, a 74.9% increase in the number of suicides [12] among adolescents in Korea was noted. In any given year, there are more suicide attempts than there are suicide deaths. There is presently a marked difference in completed suicide methods observed in Western and Asian countries. For instance, the use of firearms is a favoured method of completed suicide in many Western countries, but not in Asia where self-poisoning and hanging currently predominate [13, 14]. However it is worth noting that there is often little overlap between the methods used by suicide attempters and completers [15].

In Western countries, unsuccessful suicide attempts are commonly made by self-poisoning with medication such as analgesics, tranquillisers and antidepressants [15-18]. Within Asia, countries vary greatly in terms of religious, social-cultural, economic and legal backgrounds [19], influencing the leading method in attempted suicide across all age demographics. In developing Asian countries, particularly the rural areas, toxic agricultural poisons are widely available and hence employed [20]. In contrast, suicide attempts in developed Asian countries mirror that of in the West, with drug overdose being the method of choice [21-23].

The suicide rate of the general population in Singapore has remained relatively stable at 9.8 to 13 per 100,000 over the last 5 decades [24]. However, the most recent data shows a doubling (27 completed suicides in 2015 as compared to 13 in 2014) in the number of completed suicides in young people aged 10-19years old [25, 26]. It is unclear if this increase is an aberration or if there are significant changes in the overall mental health of young people. In addition, there is no recent study to explore suicide attempts in Singapore. A study published in 1999 using data from 1991-1995 and conducted on Singaporean youths, found drug overdoses as the prevailing method of attempted suicide [21]. Analgesics, specifically paracetamol, and benzodiazepines were the most common groups of medicines used by both genders in suicide attempts then. In the domain of deliberate self-harm, no large scale study has been conducted on the methods commonly used in Singapore. A 2014 Singaporean study of 30 participants from Child Guidance Clinic who engaged in DSH, however, found self-hitting (70%) occurred the most frequently, followed by cutting/carving skin (66.7%) and biting self (56.7%). A large number used more than one form of DSH [27].

As suicide attempts and DSH are frequently unplanned, there is a great tendency for accessibility to dictate the method used to accomplish the act. Current methods in use hence provide an indication of and are influenced by the availability of methods, in particular, the availability of technical means within the country [4, 13, 28]. In a local setting, it would be important to explore how these methods have evolved 20 years since this was last explored. The recent emergence of the internet and social media as major sources of information and communication may have some bearing on the methods chosen. It has been noted that the Internet has made it easier for both detailed information on suicide methods to be obtained [29].

Restricting access to such means is a feasible way to reduce the incidence of youth suicide [30]. This study aims to provide an up to date exploration of the methods used in suicide

attempts and DSH so as to best inform clinicians, healthcare professionals and parents so that they can safeguard and restrict the availability of these methods.

Methods

The Kandang Kerbau Women's and Children's Hospital (KKH) is located in the central area of the city state and is one of two government restructured hospitals that provides emergency paediatric care to children and adolescents. Children and adolescents who present with self-harm and suicide attempt are assessed at the Children's Emergency Department. Young people requiring medical intervention or observation are admitted to the paediatric wards of the hospital. The Child and Adolescent Mental Wellness Service (CAMWS) is a paediatric liaison psychiatry service that is staffed by psychiatrists and psychiatric case managers. One of the major roles of this team is to provide mental health assessments for young people admitted as an inpatient who have attempted suicide or self-harmed.

This study is based on a retrospective review of medical records of individuals admitted to the Paediatric wards at KKH. The period of study is a 3 year period between January 2012 and December 2014. The inclusion criteria for the study was that the young person was referred for inpatient psychiatric consultation and had either self-harmed or attempted suicide. There were no exclusion criteria. The local ethics board was consulted and it was deemed that ethical approval was not required for the data set was to be attained retrospectively from medical records and no patient identifiers would be used.

The research team utilised an existing database to identity cases that met criteria for this study. After identifying appropriate patients, medical case notes were reviewed to extract the necessary data. A data collection form was used to collect data on: age, gender, race, diagnosis, if the attempt was a suicide attempt or self-harm, the method of self-harm or suicide attempt, type of medication, and quantity of medication taken if the method was an overdose. Additional demographic information was not collected. All data was anonymised and no contact was made, either in person or telephone, with the patient or the caregivers during the study. The data was analysed using Microsoft excel.

Results

Between 2012 and 2014, a total of 106 cases of deliberate self-harm and attempted suicides among individuals aged 11-17 were referred for assessment. Of the 106 individuals, 15 were male and 91 were female. Over the three-year study period, there was a 2.8-fold increase in the number of cases. This was accompanied by a rise in the female to male ratio from 3.5:1 in 2012 to 6.29:1 in 2014.

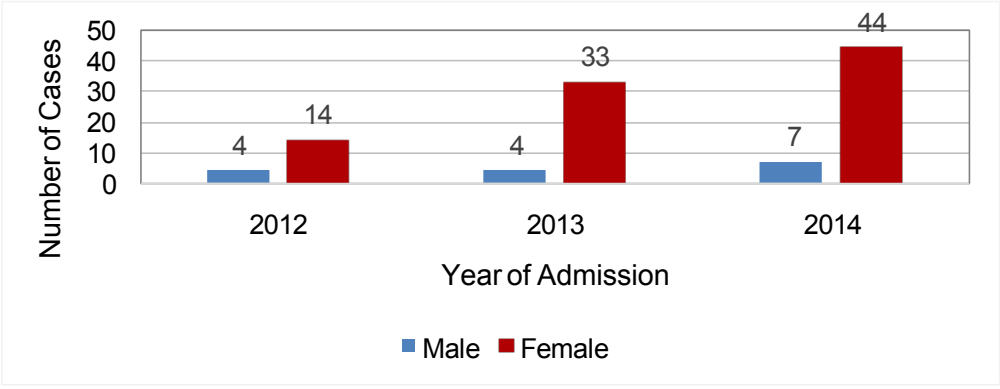

Figure 1. Number of Cases by Year of Admission

Of the three age groups, those aged 13-16 accounted for the majority of the cases, with a relatively lower incidence of self-harm and attempted suicides among those at both age extremes (Figure 2). Additionally, an upward trend in cases was observed in the 13-16 age group. Over the three year study period, 6 of those referred were aged 12 and below, 97 were between the ages of 13 and 16 and 3 were aged 17 and above. The average age of the individuals admitted was determined to be 14, 15 and 14 in 2012, 2013 and 2014 respectively.

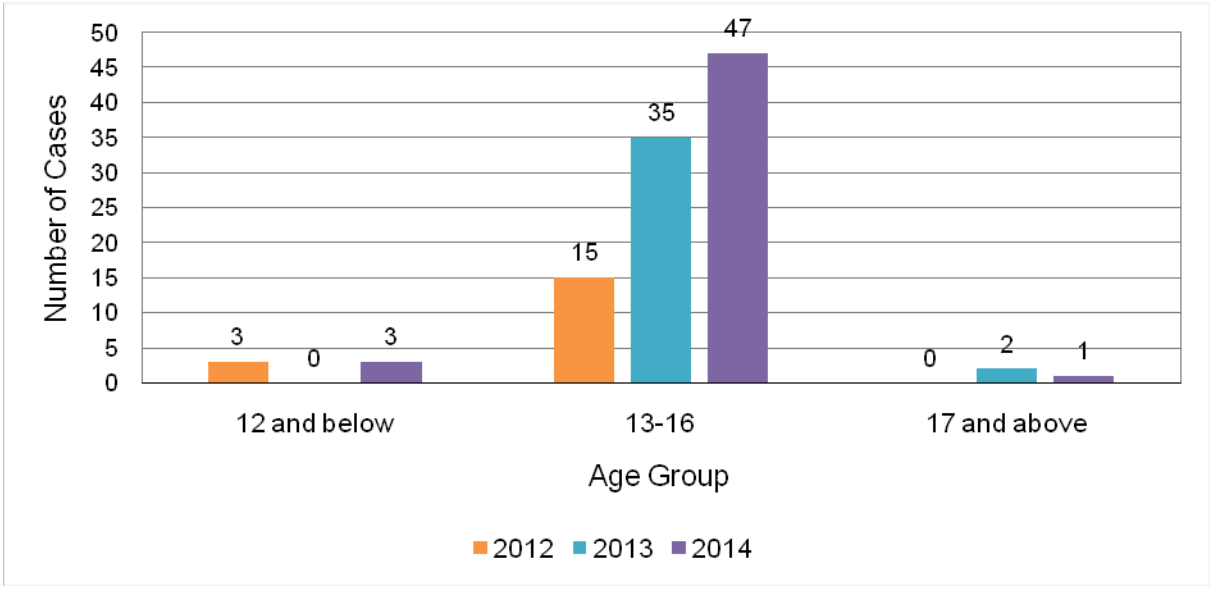

Figure 2. Number of Cases by Age between 2012-2014

The majority of people who attempted suicide or self-harmed were Chinese (54 individuals, 50.9%), followed by Malays (24 individuals, 22.6%), Indians (17 individuals, 16.0%) and others (11 individuals, 10.4%). After psychiatric assessments, 47.2% of the 106 cases were concluded as DSH and 41.5% were suicide attempts. As category distinct from attempted suicide and DSH, ambivalence (4.7%) was noted less frequently. Others (5.7%) reported being unsure of the reason behind their act, doing what they did as a means to a specific end (ie: missing an examination), being curious, while another did not want to specify a reason. Among the methods employed for the above intentions, drug overdose (63.2%) was the most common, followed by self-cutting (17.9%) and chemical ingestion (12.3%) involving household cleaning agents and toiletries. Self-hitting (3.8%) and jumping from a height (1.9%) were also featured, albeit less frequently. While one method was used in most cases, two individuals relied on more than one. There was no association between the underlying intention and the method used.

Of the group who overdosed on medications, analgesics were the most common class of medications ingested (65.7%). Other frequently used medications include antihistamines (20.9%) and selective serotonin reuptake inhibitors (SSRI) (16.4%). Notably, of all the named medications, Paracetamol was the single most used drug, featuring in 62.7% of all cases and accounting for 93.2% of all analgesic use. Paracetamol was ingested in both 500mg tablet andsuspension forms. The concentration of Paracetamol taken in suspension formwas not specified and is assumed to be 250 mg/5 ml. After adjusting for dosage, the number of 500mg Paracetamol tablets taken by individuals ranged between 1.5 to 40, with an average of 16 consumed. 18 individuals used more than one class of medications. It was observed that in suicide attempts and DSH, drug ingestion was the primary method chosen by individuals of both genders.

There was a clear preference for the use of over-the-counter medications (OTC) (73.1%), consisting of analgesics and antihistamines, among other medications in the 67 overdoses (Figure 3). Paracetamol consumption, in particular, made up 70% of OTC ingestion, either on its own or together with other medications. The medical records reviewed did not indicate if Paracetamol was obtained over the counter or via a prescription; it is categorised as an OTC medication in all instances of its use in this study. The classes of OTC medications taken included analgesics, antihistamines, antitussives, antispamodics, anti-inflammatories and antiemetics. Similar classes of drugscategorised as prescription-

only medications (POM) were used, with the exception of the ingestion of a beta-blocker by an individual. Overall, OTC medications were used the most widely in all 3 years with Paracetamol consumption averaging 82.7% of all cases where at least one OTC medication was ingested. This trend holds true across all ethnic groups, ages and intentions behind the act of overdosing on drugs.

After a diagnosis was made in each case and tallied, it emerged that there was a high incidence of stress-related disorders (45.9%) and depression (35.1%). Eating disorders were diagnosed in 5.4%.

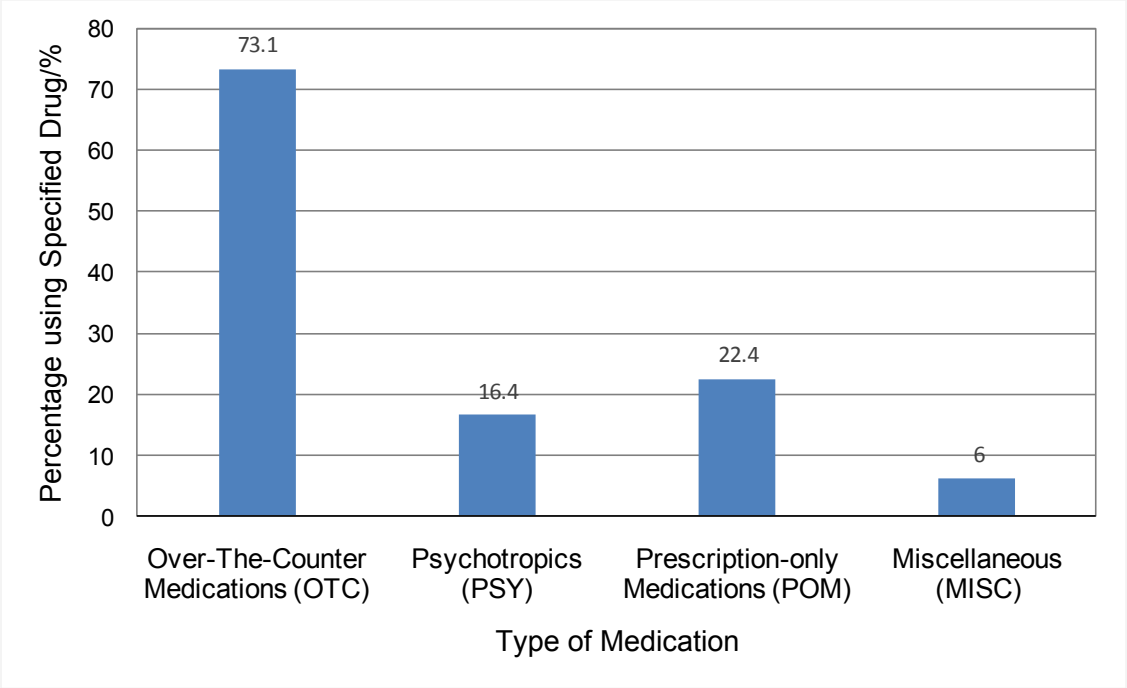

Figure 3. Types of Medications Used by the 67 Individuals

Discussion

How are things different or the same from 20 years ago?

The findings from this study mirror that of other published reports in certain aspects. Females were more likely to engage in deliberate self-harm (DSH) or attempt suicide than males and drug overdose remained the most widely employed method, with analgesics featuring most commonly.

Of the age groups, suicide attempts and DSH were observed to be more common in individuals aged 13-16. Few individuals were aged 12 and below. Whether the lower rates of DSH and suicide among young children are attributable to the lack of motivation to take one's own life due to an inability to conceptualize death as irreversible nonexistence [31] is disputable, however, it is likely that under-reporting occurs, to a certain extent, as attempts by children are frequently mistaken to be accidents at first glance [32, 33] and self-harm can be missed by carers. It has been noted in previous studies that rates of completed and attempted suicide generally increase with age [34-36]. In our study, cases involving individuals aged 17 and above featured less as KKH Children's Emergency Department (ED) does not routinely see patients above 16. However, there are exceptions in instances whereby the individual has prior medical records in the hospital or has just turned 17.

The racial profile of the presenting cases deviated from that of the general population. Chinese individuals made up the majority of cases but were underrepresented in the data while Malays and Indians were

overrepresented in relation to their proportion in the general population.

Traditionally, Malays have always had the lowest suicide rate in Singapore [24, 37]. The religion of Islam, to which most of them identify with, regards suicide as a cardinal sin and this has effectively served as a deterrent. Other protective features among Malays include a close-knit community and a less aggressive approach to material pursuits [38]. However it is still possible that the growing secularism that is associated with modernisation and exposure to more liberal lifestyles may serve to attenuate the protective factor of religion in the coming decades. A reluctance to be seen as mentally ill could have kept reported rates of suicide attempts and DSH deceptively low in the past. A possible rise in acceptance of mental illness within the Malay community, following a trend observed in the general population, may have served to reveal a more precise level of suicide attempts and DSH, accounting for any increases.

Indians have consistently appeared to be more at risk of suicide and DSH [8, 21, 39]. This has often been ascribed to the more tolerant view the Hindu religion has of suicide [40] and the presence of stressors in the form of cultural expectations of the individual to subordinate his personal wishes to the interests of the family. In females, this takes the form of arranged marriages and the fostering of a subservient disposition towards men. However, no local study seeking to account for this phenomenon has been conducted thus far and further research is required to determine if the above factors are generalisable to Singaporean Indians. The presence of a mental disorder, which may arise due to sociocultural stressors, is also an important risk factor for suicide. Generally, over 90% of those who commit suicide have a psychiatric diagnosis at the time of death. In Singapore, a 2012 population survey found that Indians had the highest lifetime risk of being afflicted with at least one mental disorder among all the races [41], possibly accounting for higher suicide rates.

In this study, the number of individuals who attempted suicide or engaged in DSH occurred in roughly the same proportion. However, it is unlikely that this is a true reflection of the prevalence of such behaviours, especially DSH. DSH usually serves as a coping mechanism and is done without suicidal intent. Decidedly less lethal methods which inflict little actual harm, such as self-cutting, are hence frequently used. These cases often do not present to emergency departments, with only 5% of college students reporting ever seeking medical treatment for the injuries caused in a 2011 American study [42]. In instances where medical treatment was obtained, numerous cases may have just warranted outpatient care and would not have been included in this study. In addition, the methods of DSH can be broadly categorised into that of self-injury and self-poisoning. Individuals who self-poison are more likely to seek help [43] and it is estimated that 90% of cases referred to a hospital following self-harm were people who self-poisoned [44]. Correspondingly, 80% of people who present to the emergency department after self-harming would have taken an overdose of over-the-counter or prescription-only medications [45]. Indeed, this study has found drug overdose to be the most common method of DSH or attempted suicide among those presenting to the ED.

Ambivalence, where there are mixture of wishes to end life and to live on, is typical of the suicide process [46], was recorded in fewer cases than expected. This might be due to difficulties in attaining this information clearly from the medical notes. An ambivalent intention may be described in the form of a recording of various thoughts and events in the medical notes. However, there was frequently no clear mention of the term “ambivalent intention” for the research team to take note of. An ambivalent intent, with competing wishes to die and to live, is important to note especially when formulating suicide and self-harm prevention policies. Ambivalence underpins the majority of unplanned suicide attempts or self-harming behaviour; it follows that premeditation is usually absent in adolescent suicides and that the methods used are those that are most readily available. A preference for the most accessible means of suicide, coupled with the fact that most suicidal crises are short-lived, would imply that by restricting access to these methods, overall suicides rates should decrease without

a concomitant increase in the use of other means [46].

Of all the drugs used, paracetamol emerged as the most popular. This study also found that the majority of medications used in overdoses could be obtained over the counter. Availability rather than perceived lethality seemed to dictate the choice of medication. Analgesics were the most common class of medications used, followed by antihistamines. This is a departure from that of found in the 1999 study on suicidal behaviour among young people in Singapore [21]. Benzodiazepines were the second most used drug then. In this study only two individuals were found to have overdosed on them. This could be explained by a change in prescription patterns. The issue of the over prescription of benzodiazepines by primary care physicians has been highlighted in the past [47] leading to the introduction of clinical practice guidelines on the prescription of benzodiazepines by the Ministry of Health in 2008. Consequently, as more caution when dispensing such medication has been advised, there could have been a possible decrease in its availability and hence, use in DSH or suicide attempts.

Unfortunately, a similar fall in the use of analgesics in drug overdoses has not materialised despite its long-held notoriety as the leading class of drug used in DSH and suicide attempts over the years [48-50]. It remains that they are easily available, commonly prescribed and can be purchased without a prescription. In view of this, there have been calls to curtail the availability of such medications, in particular, paracetamol. In overdoses, paracetamol is known to cause mild to severe hepatic damage leading to acute liver failure and death despite the availability of an antidote therapy.

DSH and suicide attempts made by an overdose on paracetamol are not isolated to Singapore. This problem has long plagued countries such as the United Kingdom (UK) which has since legislated a limit on the size of packs of paracetamol, among other analgesics, sold at pharmacies and other retail outlets. Previously unrestricted sale limits were reduced to 32 tablets for pharmacies and 16 tablets for non-pharmacy outlets in an attempt to trim household stocks and overdoses associated with these supplies [51-53]. Naturally, this was met with scepticism as there were concerns about a displacement effect where restricted drugs were simply substituted with other types of drugs. Early data, however, did show that little substitution to other kinds of analgesics such as ibuprofen occurred [54]. In the years since the 1998 bill, there have been follow-up studies with conflicting results on the effectiveness of the legislation. While some studies have reported drops in overdoses involving paracetamol [55], others have cast doubt on such findings [56]. It remains unclear if the inability to obtain unequivocal findings of the law's effects is due to the short follow up periods of the studies and the restriction of their data to small geographical areas [57]. Promisingly, one of the first studies examining the long-term effects of the law has found a 43% decrease in the number of poisoning deaths and a 61% fall in the number of people requiring liver transplants which were made necessary due to liver failure associated with hepatotoxicity arising from paracetamol overdoses [58].

Efforts to reduce DSH and suicide attempts

When it comes to suicide prevention, it is generally recognised that suicidal crises are usually of a short duration and are preceded by little to no planning. It is posited that a restriction might bring about a longer delay between the suicidal thought and the actual attempt by making it more cumbersome for an individual to obtain all the necessary material to commit the fatal act, allowing a period of high risk to pass without complications [59]. At worst, when method substitution does occur, reduced access to lethal means could mean that more people survive an attempt because of their use of alternative and possibly, less deadly methods [46].

It is critical to recognise that means restriction alone should not be seen as a panacea to alleviating the problem of youth suicides and deliberate self-harm. In addition to good enforcement, it has to be accompanied by education regarding the safe storage and disposal of medications or toxic chemicals and extra caution on the part of healthcare professionals when prescribing medications to vulnerable individuals. All in all, effective

suicide and DSH prevention necessitates the presence of a vigilant family, a cooperative patient and alert healthcare providers.

It has been said that DSH and suicide attempts among adolescents are less of a function of psychopathology and intent and more of a matter of easy access to means and impulsiveness. The high prevalence of stress-related disorders among the young people in this study and their use of easily obtainable, over-the-counter medication are perhaps a reflection of the above statement. This suggests a need to go beyond the restriction of means, to address the poor coping strategies that these at-risk individuals possess.

While dismissively, and falsely, labelled as 'attention seeking', DSH is in fact a coping mechanism [60], taking away the means to do it does not solve the underlying emotional distress that predates it. The same can be said about suicide. It may be inevitable that some degree of method substitution may occur, but the multifaceted nature of DSH and suicide makes it impractical to rely on a single mitigation method. Multilevel intervention, ranging from the level of the community to clinical services, is warranted.

The role of specialty mental health care providers in managing those seemingly predisposed to suicidal behaviour and DSH is extensively covered in research but for primary healthcare providers this is less so. Undoubtedly, as general practitioners, among all healthcare professionals, are most likely to have been visited by individuals in the period leading up to DSH or suicidal behaviour, they play a decisive role in the prevention of suicide and aftercare of DSH patients [61]. In addition, a suicidal individual's access to a lethal dose of prescription-based medications is very much linked to prescription attitudes among primary care physicians. Prudence in the prescription of drugs, that would include prescribing the minimum effective dose on a more frequent basis, has to be emphasized as the majority of those who self-poison use the, often, excessive amount of medication prescribed to them [62].

Limitations

As this is a study on inpatient cases seen at a single hospital, it does not provide a wholly accurate representation of the pervasiveness and characteristics of suicide attempts and DSH among young people in the community. It was observed that drug ingestion occurred most frequently but such a presentation could be related to the potential lethality of method used rather than true incidence. A study of emergency department presentations may provide a more comprehensive picture of the rates of such acts and the methods used to accomplish them, although the findings would likely reflect methods arising from the more severe end of the spectrum of self-harming behaviour. Our sample is further limited to the individuals who actually presented to services; Studies have found that a significant proportion of young people who self-harm or attempt suicide do not seek medical help [63, 64]. While rarely done, community studies involving schools and self-reporting are valuable in determining the true prevalence of suicidal behaviour and DSH among youths. As DSH is often done in secret [65], hospital samples tend to underestimate its rates when compared with that of determined by community samples [43, 66].

A prospective study should be conducted in the future to better ascertain the motivation behind acts of DSH or suicide attempts, risk factors and the rate of repetition. This would aid in the early identification of at-risk individuals and prevent more engaging in DSH from regressing to a point where taking one's life appears to be the only viable option. Additionally, to plan services aimed at reducing the suicide rate, an estimate of the link between DSH and suicidal behaviour should be made given the strong association between the two [67, 68].

Conclusion

Our study has documented an increase in the rates of suicide attempts and DSH among adolescents, with differences in age, gender and racial distributions. Females, adolescents, and Malays and Indians appear to be more at risk. There was an overall preference for drug overdose as a method of DSH and suicide attempts, mirroring that of trends in the past locally and internationally.

In conclusion, the observed pattern of DSH and suicide attempts is very likely dictated by the easy access to medications. Curtailing the rising rates of DSH and attempted suicides would include, primarily, lowered access to means accompanied by culturally relevant anti-stigma campaigns, public education and a heightened awareness of any unusual changes in the behaviour of the adolescent. Further studies seeking an improvement in the storage of medicines at home and regulations in the sale of over-the-counter medications to minors can be done to tackle this problem. From our study, stress-related disorders were associated most frequently with the decision to self-harm or attempt suicide. In light of this, it would seem that finding healthier avenues and strategies to deal with stress, and interpersonal skills training have to be explored in conjunction with the removal of means. Potential triggers for DSH and attempted suicide in young people in Singapore should also be looked into.

Conflict of Interest

The authors declare that there are no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Corresponding author: ***Vicknesan Jeyan Marimuttu, Consultant Psychiatrist (Child and Adolescent), Child and Adolescent Mental Wellness Service, KK Women's and Children's Hospital, 229899 Singapore.***

Email: vicknesan.jeyan.marimuttu@singhealth.com.sg

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ORIGINAL ARTICLE

PSYCHOPATHOLOGY EXPERIENCED IN PREGNANCY LOSS: DOES POST ABORTION SYNDROME EXIST?

Ng Kah Wee, Jintana Tang**, Helen Chen***

***Department of Psychiatry, Singapore General Hospital, Singapore 169865;**
****Psychological Medicine (Mental Wellness Service), Kandang Kerbau Hospital, Singapore 229899.**

Objective*: Pregnancy loss is associated with numerous psychological sequelae. The aim of this study is to examine patients with recent pregnancy loss for possible psychiatric diagnoses and the associated psychopathology. Features of post abortion syndrome were also examined for. *Methods:* Forty seven patients referred to a perinatal psychiatric service following recent termination of pregnancy or miscarriage consented for this prospective case notes review. Data on demographic characteristics, clinical history and management was collected, as well as detailed case histories of women diagnosed with post-abortion syndrome. *Results:* About two-thirds were between ages 31 to 40 years. Majority (87.2%) was married and childless. Seventy percent did not have previous psychiatric history. Ten patients were suspected to have post abortion syndrome, presenting with guilt, self-blame and having to hide terminations from spouses. *Discussion:* These findings describe the characteristics of patients who are at risk of developing psychiatric conditions after pregnancy loss. Surveillance for such factors may enable earlier detection and diagnosis. *ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 249-258.

Keywords: Psychopathology, Pregnancy Loss, Post-Abortion Syndrome

Introduction

In 2011, Singapore's total number of reported induced abortions was 11940, equivalent to an abortion ratio of 301.1 per 1000 live births [1]. Termination of pregnancy is associated with minimal physical complications. However, depending on the cultural background, personality and past difficult experiences of the woman [2] and the support available to her prior and after the procedure, one is predisposed to developing serious psychological sequelae. Established data on rates of miscarriage in Singapore is lacking, but it has been estimated to be occurring in 12 to 30% of all clinical pregnancies internationally [3, 4].

There exist methodological difficulties to establish causal relationship between risk factors and subsequent psychological impact in women who underwent the termination of pregnancy or miscarriage. Studies were marked by poor sampling, poor comparison group selection, inadequate control of confounding factors and misattribution of causes [5]. In a conservative society, women may also choose to omit history of pregnancy loss, due to embarrassment, shame and taboo surrounding the whole topic. Some women may even terminate their follow up with the physician after abortion [6].

Development of nervous disorders, sleep disturbance [7] and even suicide following pregnancy loss [8,9], has been documented. Several studies found that psychiatric disturbances experienced by women who underwent termination of pregnancy were mainly anxiety and depression [10,11,12]. A review study reported that 8 to 23% of women experienced high levels of general distress within a month of their pregnancy termination [13]. The long-term adverse outcomes,

however, appear ameliorated, for this same review also found that after 10 years, women who had terminations did not fare worse than women who delivered wanted or unwanted children. An earlier study also reported similar findings that clinically important levels of anxiety and depression may occur as early within the first week following miscarriage but by the 12th week, these symptoms diminished [14].

There are also reports of post-traumatic stress disorder in women who suffered pregnancy loss. A prospective study assessed 113 women with pregnancy loss and at one month after the event, prevalence of post-traumatic stress disorder was 25% [15]. In Lavin's [16] case study of 10 patients who described features of post-traumatic stress disorder following induced abortion, the diagnostic criteria of Post Abortion Syndrome was described.

Pregnancy loss is also demonstrated to have social implications. Parental relationships are reported to have higher risk of dissolution after a miscarriage or stillbirth, compared with live births [17].

All of the above studies were conducted on Caucasian populations, which is inherently different from our multi-cultural and ethnicity population. Studies more applicable to our local setting, include a Japanese study which reported that conservative attitude toward induced abortion was the most significant predictor of post abortion anxiety, even after controlling for the level of pre-abortion anxiety [18] and a Taiwan study which conducted a 2 years prospective follow up on 20 mothers who had stillbirth experiences [19]. This study uncovered 4 major themes namely "transforming the meaning of death", "doing something for the deceased", "anticipation of another pregnancy" and "rebuilding a social fabric".

There is currently no local study on the psychopathology of patients who suffered pregnancy loss. This study aimed to study the demographics and characteristics of patients who were referred to the hospital's psychiatric service after a recent pregnancy loss, the type of psychiatric disorders they were diagnosed with and to examine the occurrence of possible post abortion syndrome. A detailed examination of 10 patients who presented with features of post abortion syndrome was conducted.

Methods

The study was part of a prospective clinical audit of the hospital's perinatal psychiatric service, conducted with approval by the institution review and ethics board. Informed consent was obtained from the patients and personal identifiers were removed to preserve patient confidentiality. Between May 2006 and February 2011, 47 patients with history of pregnancy loss were referred, and case notes were reviewed between March and August 2011. Data was collected using a standardized data collection form and was analyzed using the SPSS Windows SmartViewer Version 15.0.

Results

Table 1 shows the patients' demographics and characteristics. Ninety-four percent of the patients were between 21 to 40 years of age at presentation, of which close to two-thirds were between 31 and 40 years. Two (4.3%) were less than 21 years, and one (2.1%) was 41 years or older. Majority (74.5%) of them were referred by obstetricians and medical social workers, whilst 25.5% of the referrals were self-initiated. Most of the patients were of Chinese ethnicity (76.6%) while four (8.5%) were Malays, two (4.3%) were Indians and five (10.6%) were of other ethnicities (Nepalese, Japanese, Eurasian, Caucasian and Filipina). Majority (89.4%) of the patients received at least secondary school education. Forty one (87.2%) patients were married. Most of them (51.1%) did not have any live children at the time of presentation to the psychiatric service.

Table 1. Patients' characteristics at first presentation

	Number (n=47)	Percentage (%)
Age at presentation (yrs)		
18 - 20	2	4.3
21 - 30	15	31.9
31- 40	29	61.7
>41	1	2.1
Source of referral		
Study hospital / Private O&G[a]	29	61.7
Medical social worker	2	4.3
Other hospitals/ Outpatient clinics	4	8.5
Self	12	25.5
Ethnicity		
Chinese	36	76.6
Malay	4	8.5
Indian	2	4.3
Others[b]	5	10.6
Highest Education		
Graduate/Post Graduate	16	34.1
Diploma	14	29.8
Secondary education	12	25.5
Primary education	3	6.4
ITE	1	2.1
Current student	1	2.1
Marital Status		
Married	41	87.2
Single	4	8.5
Cohabit	1	2.1
Separated	1	2.1
Antenatal status at first consult		
Antenatal check-up	20	42.6
Not pregnant	27	57.4
Number of living children		
0	24	51.1
1	17	36.2
2	4	8.5
$\geq$ 3	2	4.2
Previous pregnancy loss		
1 previous TOP/miscarriages	30	63.8
2 previous TOP/miscarriages	12	25.5
3 previous TOP/miscarriages	4	8.5
4 previous TOP/miscarriages	1	2.1
Types of last pregnancy loss		
Evacuation of uterus	35	74.5
Mid-term pregnancy termination (MTPT)	8	17.0
Others[c]	4	8.5
Previous psychiatric condition		
None	33	70.2
Depression	3	6.4
Antenatal depression	2	4.3
Postnatal depression	2	4.3
Others[d]	7	14.9

[a] 3 were from private O&G
[b] 1 of each ethnicity: Nepalese, Japanese, Eurasian, Caucasian, Filipina
[c] 1 of each type of termination: Salphingectomy, Septic abortion, Failed IVF, Selective reduction of IVF pregnancies
[d] 1 of each previous psychiatric condition: Anxiety disorder, Attention deficit disorder, Childhood depression, Depression with self harm, Depression with alcohol abuse, Postnatal depression with dysthymia, Psychosis

Approximately half of them with history of pregnancy loss (42.6%) were in the antenatal stage of their subsequent pregnancies during the time of assessment by the psychiatrist. Majority (63.8%) of them had only 1 pregnancy loss. Data on the mode of termination of the last pregnancy was recorded. Thirty-five (74.5%) women had undergone an uncomplicated evacuation of uterus, of which 26 were induced abortions and 9 were miscarriages. Eight (17.0%) had undergone a mid-term termination of pregnancy (MTPT) and four had complicated termination of pregnancies (salphingectomy, septic abortion, failed in-vitro fertilization, selective reduction of in-vitro fertilized conception). Two thirds (70.2%) of them did not have any prior psychiatric conditions at the time of presentation. Three (6.4%) had past history of depression, two (4.3%) had previously been diagnosed with antenatal depression, two (4.3%) had previous postnatal depression and seven patients had other previous diagnoses of anxiety disorder, attention deficit disorder, childhood depression, depression with self-harm, depression with alcohol abuse, postnatal depression with dysthymia and psychosis.

Table 2 shows the diagnoses and treatment the patients received. Three patients were found to have no psychiatric diagnosis while close to two fifths were diagnosed with some form of depression. Five (10.6%) were still in acute grief reaction from the pregnancy loss when they were referred to the psychiatric service and eight (17.0%) had diagnoses of psychosis, major depression with alcohol abuse, major depression with dysthymia, postpartum psychotic disorder, psychotic depression, antenatal anxiety disorder with depression, antenatal depression with anxiety disorder and adjustment disorder.

Most (85.1%) of them received some form of medication on presentation. Majority (74.5%) of them also received some form of supportive therapy while the rest received grief management, relaxation therapy of cognitive-behavioral therapy. For those who were seen for a subsequent pregnancy, a case management model was adopted to promote and maintain mental well-being of would-be-mothers, which has demonstrated to be beneficial in perinatal care [20]. Only five (10.6%) did not require any form of psychotherapy at presentation.

Table 2. Diagnoses and treatment

	Number (n=47)	**Percentage (%)**
Psychiatric diagnosis on presentation		
Major depressive disorder	13	27.7
Antenatal depression	11	23.4
Acute grief reaction	5	10.6
Adjustment disorder with depressive features	3	6.4
Antenatal anxiety disorder	2	4.3
Postnatal depression	2	4.3
Others*	8	17.0
No psychiatric diagnosis	3	6.4
Medication prescribed on first presentation		
Yes	40	85.1
No	7	14.9
Types of therapy given on first presentation		
Supportive	35	74.5
Grief management	4	8.5
Relaxation technique	2	4.3
CBT	1	2.1
None	5	10.6
Suspected post abortion syndrome		
Yes	10	21.3
No	37	78.7

*1 of each concurrent psychiatric diagnosis: Psychosis, Major depression with alcohol abuse, Major depression with dysthymia, Psychotic disorder – postpartum, Psychotic depression, Antenatal anxiety disorder with depression, Antenatal depression with anxiety disorder, Adjustment disorder; CBT = Cognitive Behavioural Therapy

Ten patients were suspected to have post abortion syndrome, and their clinical case summaries are detailed as follows:

A, an India-born lady, 35 year-old came to Singapore 7 years ago. As a degree-holder, she worked in informatics at the time of presentation. She had a daughter and had undergone abortion at the 8th week gestation of her second pregnancy. She was into the 10th week of gestation of her third pregnancy when she was referred to the psychiatrist for loss of appetite, feeling of weakness, low energy and thoughts of life being meaningless for duration of a month. Screening for diabetes was done as part of routine antenatal monitoring, which was normal. She also complained of memories of the abortion, which was described by A to have not been entirely her choice then. She felt her husband had influenced her to abort because of financial constraints and marital conflicts then. Surrounding the memories of the abortion were feelings of "guilt", "anger" and regrets that she "should have insisted on keeping the pregnancy". A also reported subsequent anniversary reaction at the time of abortion. She was diagnosed with moderate to severe antenatal depression with post abortion syndrome and received supportive counseling and case management care.

B was an 18 year-old single Chinese student who was referred to the psychiatrist two months after termination of pregnancy at 10-week gestation. She was a victim of rape, and the alleged perpetrator was a distant relative. B's symptoms started even before the termination, which included auditory hallucinations of derogatory content, paranoid delusions that her flat was spooked, and depressive symptoms. After the gestational termination, B felt guilty and showed anger. She talked and wrote to the aborted fetus, and had recurrent nightmares of blood and the termination. She experienced hyper-arousal symptoms and avoided the place where the rape occurred. She was diagnosed with psychotic disorder with depression and post abortion syndrome. B subsequently underwent a tumultuous period as she was required to recount the rape account during police investigations and court appearances, or when relatives probed. B was started on antipsychotic Chlorpromazine and antidepressant Dothiepin, which later was switched to Fluoxetine due to lack of response, but she defaulted treatment subsequently.

C was 36 year old and 20 weeks into her third pregnancy during the referral. She was into the first year of her marriage and had not revealed the history of 2 previous terminations of pregnancies to her husband. The two previous pregnancies were conceived with her abusive ex-boyfriend. During presentation to the psychiatrist, C complained of prominent depressive symptoms and emotional strain from having to keep her past from her husband. She was diagnosed with Adjustment Disorder with depressive features and post abortion syndrome. She received supportive counseling at her family service centre and had declined medication.

D was a 26 year-old Chinese, and she presented to the psychiatrist at six-week gestation of her second pregnancy, conceived with her boyfriend. She had a previous termination of pregnancy at 8 weeks gestation, conceived with the same boyfriend, because their relationship then was strained. D experienced low mood, loss of appetite and experienced nightmares of the fetus, flashbacks of the operating theatre and vivid images of the termination procedure. She was diagnosed with post abortion syndrome and was started on antihistamine Promethazine. D subsequently decided for termination of the second pregnancy as she ended the relationship with her boyfriend. She was also started on antidepressant Sertraline during the time of the breakup for features of depression, but she defaulted treatment soon after.

E was a 25 year-old Chinese, who had a two-year-old son. She had history of four terminations of pregnancies, which were unknown to her husband, and was at 16-week gestation of her 6th pregnancy, unplanned and unwanted, when she was referred to the psychiatrist. E was experiencing low mood ever since her 1st pregnancy, and also loss of appetite, insomnia and had thoughts that life was meaningless. She attempted suicide in the past. E complained of re-experiences of the terminations, when watching related television programs. E was diagnosed with perinatal depression with post abortion syndrome and was started on antidepressant Dothiepin.

However, it was switched to Sertraline due to side effects, and she also received supportive counseling at the family service centre. She eventually decided to keep her pregnancy and delivered a healthy son at full term.

F initiated a psychiatric referral after a recent termination of pregnancy. She was a 31 year-old Chinese and had married for three years. She had previously terminated a pregnancy conceived with her husband, but without his knowledge. After the second termination, F experienced low mood and frequent crying. She had repeated dreams of the termination and was guilt ridden. F was diagnosed with depression and post abortion syndrome. F was offered grief therapy and an antidepressant Escitalopram but she defaulted after the first psychiatric consult.

G was a 34 year-old Chinese lady with past episode of depression and a history of abusing weed. She presented at 10-week gestation in her second pregnancy. She had previously undergone the termination at 21 years old and was having recurrent nightmares of a "man in a hood" taking away her child then. G reported anxiety, insomnia and recurrent deliberate self-harm behavior. She was diagnosed with antenatal depression and post abortion syndrome. G suffered a strained relationship with her physically abusive husband. She frequently threatened suicide during her treatment even after her delivery. She was put on trials of various antidepressants, including Sertraline, Dothiepin and Venlafaxine, and also received intensive supportive counseling, psychotherapy, as well as marital therapy. After three years of marriage, G decided for divorce and soon after, defaulted treatment.

H, a 35-year-old mother of a seven-year-old son, presented at 17 weeks of pregnancy. She had previously undergone a termination of pregnancy at 12 weeks of gestation because of severe hyperemesis symptoms then. Since that termination, H was experiencing guilt and constantly blamed herself, particularly during the anniversary period. H presented with low mood, poor appetite, insomnia and suicidal thoughts. She even contemplated terminating the pregnancy because of initial hyperemesis symptoms. H was started on antidepressant Dothiepin and antihistamine Promethazine for sedation, and her symptoms resolved rapidly, and she defaulted treatment soon after.

J, a 32 year-old Malaysia-born lady went through mid-term termination of twin pregnancies at 18 weeks gestation because of confirmed Down's Syndrome. She presented ten months later with symptoms of low mood, poor concentration, tiredness and suicidal thoughts since the termination. She also felt that the nursing staff was curt in manner during the whole process. Menstrual periods also took on the representation of miscarriages for J after the terminations and she would re-experience the terminations every month. J was diagnosed with Major Depressive Disorder and post abortion syndrome. She was started on antidepressant Sertraline and received grief therapy. J responded to medication and subsequently defaulted treatment.

K was a 20 years-old Indian nursing student who had a termination at four-week gestation. She had a history of depression with a suicide attempt but had defaulted on treatment. She presented with symptoms of low mood, poor appetite and insomnia of two months' duration after the termination. At that time, she was under stress working in a hospital environment and feeling burnt out from the care of her patients. She received supportive counseling and treatment was continued with her initial psychiatrist.

The 10 patients described above depict features of post abortion syndrome in the unique background of our multi-cultural and ethnicity population.

Discussion

This is a descriptive study on 47 patients with history of pregnancy loss referred to the hospital's psychiatric service. Approximately two-thirds of the patients studied fall in the age range of 31 to 40 years. This may be due to the association of advanced maternal age with poor pregnancy outcome. It was previously reported that women who delayed their pregnancies are more likely to develop complications and adverse outcomes than their younger counterparts [21,22]. It was reported on another study that mothers older than 35 years of age increased risk of unexplained fetal

death [23] which may contribute to pregnancy loss.

Majority of our patients with history of pregnancy loss were still childless during the assessment with the psychiatrist. In most of these women, the pregnancies had been unplanned and unwanted, yet the resultant state was one of guilt and distress – as is characteristic of the nature of post-abortion syndrome. Whilst the initial defense is rationalization and relief with the removal of the unwanted fetus, in the aftermath, the repressed feelings resurface when depression ensues. Previous studies have concluded that poor social support and low social class were linked to suicide risk after abortion. It was reported that divorced women were twice more likely to commit suicide after an abortion suggesting that poor social support could be linked to a poor outcome [8]. Supportive partners and parents were also found to protect against poor psychological outcomes [24]. Although our patients were mostly (87.2%) married, a number of them were in strained relationships, mirroring the findings of Klier [25], that there was no association between the woman's marital status and development of psychiatric symptoms after pregnancy loss. Hence it is likely that good quality support was important rather than marital status per se. Some other studies have documented that intensity of the pregnancy loss may differ between gender, perception of the loss, personal ability to cope with the event [26] and in longitudinal studies, men and women with differences in the grieving process [27] may introduce even more destabilization to the marriage, which could contribute to development of future psychological effects in the woman. In fact, the Norwegian study of 80 women followed up for 2 years, reported that pressure from the male partner to have a termination of pregnancy could have a negative impact on the woman [28]. This is echoed in one of our case studies. A had expressed feelings of guilt and anger towards her husband whom she felt had influenced her into the decision of pregnancy termination.

Numerous studies reported that a history of psychiatric illness, depression and self-harm could be associated with higher prevalence psychological effects after pregnancy loss [9,11,24,25,29]. In one-third of our series of ten patients, there was a significant past psychiatric history.

The other significant factor which surfaced in our findings was that most of the patients referred were diagnosed with some form of depression, either Major Depressive Disorder (27.7%), antenatal depression (23.4%), adjustment disorder with depressive features (6.4%) and postnatal depression (4.3%). Some of our patients were also diagnosed with anxiety disorder (4.3%). These findings are similar to those reported by studies conducted in other countries such as London [10] and the United States of America [30,31]. Nonetheless, even though clinically significant symptoms of depression and anxiety could surface in the first week of miscarriage, these symptoms may steadily decline by twelve-week [14]. With such prevalence of psychological disorders in women who experience pregnancy loss, it is recommended that doctors screen for depression and anxiety in this high-risk population.

The stage of gestation when pregnancy was lost was also a factor we examined. In our series, most of the patients underwent evacuation of the uterus, within the first trimester, except eight who had undergone mid trimester pregnancy termination (MTPT). Understandably, women who underwent termination at a later gestational age should be predisposed to having negative psychological consequences, as they would have had MTPT carried out. Such a procedure is generally longer and involved medical induction of labor in the woman, followed by delivery of the fetus and finally the evacuation of uterus. It has been reported in an Australian study that late gestation termination, past psychiatric history and conflict with religious beliefs can contribute to negative outcomes after termination [24]. Women who suffered a stillbirth would also be expected to have more severe psychological consequences, as they would have felt fetal movement, heard fetal heart sounds and could have formed stronger and longer periods of attachment with the fetus [32]. It was reported that women who had stillbirths had a higher risk of dissolution of their relationship with their partners and this risk persisted up to ten years. This is in contrast to miscarriages, which the effect occurred only over a 1.5 to 3 years period [17].

The prospective study by Engelhard [15] had assessed their patients with the Post-traumatic Symptoms Scale and found that 25% of the 113 women with pregnancy loss fulfilled the criteria as early as within the first month, while at four months; only 7% met the criteria. There are common themes, which surfaced in our case series. In the clinical history of our ten cases characteristics similar to that of post-traumatic stress disorder were seen with prominent recurring features of guilt, regret, anger, shame, recurrent nightmares of the fetus and the operating theatre and anniversary reactions. These features were also described by Lavin [16] as the diagnostic criteria for post abortion syndrome.

In our ten case studies, certain themes unique to our culture were also exemplified, with guilt prominently arising from hiding the history of pregnancy loss from their spouses. The recurring theme of self-blame in our patients could also indicate risks of future psychological problems and difficulty in working through the grieving process mirror the findings in the book written by Rando [33].

Having a problem with the in-laws was also reported as one of the precipitating factors for eventual development of psychiatric condition after a pregnancy loss. These unique features could be largely influenced by the Asian cultural background and conservative beliefs of our patients. As previously studied in Japan, conservative attitude towards abortion was a predictor of post-termination anxiety [18]. Negative attitude and doubt on the decision of termination were also found to be predictors of mental distress post termination [34]. Strong social support and the ability for the woman to express her emotions were found to be protective factors against development of post-traumatic stress disorder after a pregnancy loss [15]. Several of our patients described having to keep the previous pregnancy terminations from their spouses and in-laws and this could be one of the contributory factors for development of post-abortion syndrome.

The other unique feature identified in these ten cases was that most of the patients defaulted after the initial few psychiatric visits. This could be a reflection of the stigma against psychiatric conditions in our local Asian culture, or indeed, avoidance of the perceived shameful experience of pregnancy loss.

Although all of the above factors discussed represent the negative impact of pregnancy loss on the woman, there can still be positive consequences. An earlier study reported that women might benefit from the termination of pregnancy if the positive consequences outweigh the negative [35]. Women have also been documented to feel relief two years after the termination [30]. With the focus only on women presenting in distress, and not on those who do well, the challenge of doing large-scale and long-term population studies on such a controversial experience as pregnancy loss remains a block to our full understanding of its psychological sequelae.

Conclusions

Several prominent factors surfaced in our study. Maternal age, particularly between 31 to 40 years range, appears to play a role in placing a woman with history of pregnancy loss at risk of developing some form of psychiatric condition. Being married, having at least a secondary education and absence of past psychiatric history do not protect one from subsequent psychological sequelae after the pregnancy loss. Certain features identified in our case series of post abortion syndrome include stress from having to keep past pregnancy loss from spouse and problems with in-laws, pressure from the spouse to terminate the pregnancy and self-blame for failure to keep the pregnancy. Another significant feature is the fact that most of the patients in our case series defaulted after initial contact with the psychiatrist, likely due to the stigma associated with psychiatric conditions in our Asian culture. Surveillance for symptoms of depression and anxiety should be given to a woman with pregnancy loss, as earlier detection and diagnosis could lead to less morbidity during this unfortunate and difficult period of her life.

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Corresponding author: ***Ng Kah Wee, Consultant Psychiatrist, Department of Psychiatry, Singapore General Hospital, Singapore 169865.***

Email: ng.kah.wee@singhealth.com.sg

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ORIGINAL ARTICLE

COPING SKILLS AND PSYCHOSOCIAL ADJUSTMENTS AMONG PARENTS OF CHILDREN WITH LEARNING DISABILITIES (LD)

Dzalani Harun*, Emy Yew**, Mahadir Ahmad, Nur Sakinah Baharudin^***

***Program of Occupational Therapy, School of Rehabilitation Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia; **Program of Occupational Therapy, School of Rehabilitation Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia; ***Program of Health Psychology, School of Healthcare Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia; ^Program of Occupational Therapy, School of Rehabilitation Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.**

Abstract

Objectives: **This study investigated the relationship between coping skills and psychosocial adjustments among parents of children with LD.** ***Method:*** **A cross-sectional study with a convenience sampling method was applied to a total of 87 parents of children with LD from four non-government community rehabilitation centers. They were measured using a validated Malay version of the Family Crisis Oriented Personal Evaluation Scale (F-COPES) for coping skills. The Modified Psychosocial Adjustment to Illness Scale-Self-Report (PAIS-SR) was used to measure parents' psychosocial adjustments.** ***Results:*** **A Spearman's rho showed a correlation between total coping skills and psychosocial adjustments scores among parents (r_s= -0.43, p<0.01). The analysis showed that seeking social support (r_s= -0.33, p<0.05), reframing (r_s= -0.25, p<0.01), seeking spiritual support (r_s= -0.30, p<0.05), and mobilizing to acquire and accept help (r_s= -0.33, p<0.05) have significant correlations to the total score of PAIS-SR.** ***Conclusion:*** **The study suggested that parents with better psychosocial adjustment develop better coping skills. Therefore, strategies to improve coping skills and psychosocial adjustment should be considered for parents of learning disabilities.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 259-268.***

Keywords: Parents with LD, Parenting, Stress, Family, Health

Introduction

According to the National Joint Committee on Learning Disabilities (NJCLD), learning disabilities refers to "a heterogeneous group of disorders shown by significant difficulties in learning and the use of listening, speaking, reading, writing, reasoning or mathematical abilities. The e disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not, by themselves, constitute learning disabilities. Although learning disabilities may occur concomitantly with other disabilities, *e.g.* sensory irment,

intellectual disabilities, serious emotional disturbance, or with extrinsic influences, *i.e.* cultural differences, they are not the result of those conditions or influences" [1]. This study analyzed the life of parents who experienced a child with learning disability, included those who have high-functioning autism and attention-deficit hyperactivity disorders (ADHD), with excluded those who have intellectual disabilities.

Parenting a child with learning disability is challenging work and increases the stress level of the parents [2-4]. Two recent studies reported parental distress was higher among parents of children with learning disabilities compared to parents of typical children [5-6]. Furthermore, the level of parenting stress among parents of children with disabilities are associated with the child's behavior [3, 7-8]. As compared to normal peers, the children with learning disabilities were much more dependent on the parents to manage their selves [9-10]. Moreover, lack of resources to help a hyperactive child at school or in the home environment also adds to the existing stress of the parents [11]. In real life, once that they notice that their children have learning disabilities, the ability of the parents to cope with the stress and to adjust well is necessary.

Good parenting of children with learning disabilities was influenced by the selection of coping skills to adopt positive adjustments in everyday functioning [12]. Additionally, effective coping skill selected by parents was beneficial for prevention of acquiring poor health outcomes in psychological, emotional, social and physical aspects [13-14]. The parents who employed effective coping skills to handle children with learning disabilities reported decreased depression symptoms [15] and social isolation [16]. For example, the parents who used task-oriented coping skills may have less parenting stress in contrast to parents who used emotion-oriented coping skills [2, 6]. The above findings highlighted the benefits of practicing good coping skills to improve parental adjustments, especially among parents of children with learning disabilities.

Although there are many studies on psychosocial adjustments of the parents, the studies commonly focused on the factors that influenced family adaptation [17-18]. Raising children with disabilities can trigger an emotional reaction in parents, such as feeling guilty to spend more hours on them [19]. Parents who have highly stress reported having psychological distress such as loss of friendship, feeling of isolation, anger, grudge, shock and sadness [20]. Moreover, stress experienced among parents of children with disabilities also makes a high impact on psychosocial adjustments across the family system, including siblings [21]. Factors such as the economic status of family, loss of job, and marital problems while raising children with learning disabilities create additional stress on the families [22]. In particular, the family that has a lack of support from relatives, friends, and society have higher risks of social isolation [19].

A past study suggested that parents who positively responded to stress showed better emotional adjustment [17]. Therefore, the knowledge of coping skills and psychosocial adjustments are meaningful to help parents to manage the children with LD. Of these, a relationship between coping skills and psychological adjustments needs to be further explored to improve the well-being of the parents. Therefore, the aim of this study is to determine the relationship between coping skills and psychosocial adjustments among parents of children with LD. The hypothesis of this study is parents with better psychosocial adjustment would have better coping skills.

Methods

Participants

A cross-sectional study was conducted among 87 parents (n=61, mothers, n=26, fathers) who had children with learning disabilities. The participants were recruited using the convenience sampling method from four non-government community rehabilitation centers in the Federal Territory of Kuala Lumpur, between December 2013 and April 2014. The participants were the parent, either father or mother having one child diagnosed with learning disabilities which included dyslexia, and/or learning disabilities with concomitant disorders such as attention-deficit hyperactivity disorder (ADHD), high functioning autism and slow learners. The age

of children were ranged between 3 to 17 years of age. Parents were excluded in this study if, they (i) had more than one child diagnosed with learning disabilities, (ii) were parents of children with other disabilities such as mental retardation and moderate to severe autism, (iii) not actively involved in taking care of the child with learning disabilities, and (iv) were under medication or have history of any psychiatric disorders. Ethical approval was obtained from the university and ethics committee before implementing this study.

Procedure for data collection

The coordinator of the center were explained by the researcher about the study procedures, how to participate in this study, and what to fill up the questionnaires. Then, the coordinator of the center held an informational meeting about the study and parents were asked to participate in this study voluntarily. The coordinator distributed the consent form to all parents. Eighty seven parents returned the consent form agreing to take part. All parents were given instructions to complete the socio-demographic proforma and self-reported questionnaires: the Malay version of Family Crisis Oriented Personal Scale (F-COPES) and the Modified Psychosocial Adjustment to Illness Scale-Self Report (PAIS-SR). Parents ensured that their answers would remain entirely confidential. The researcher collected the completed form and questionnaires after one week of time. All 87 parents had answered the questionnaires and all data were included for analysis.

Materials

Malay Version of Family Crisis Oriented Personal Evaluation Scale (F-COPES): F-COPES was used to measure the coping skills of parents of children with learning disabilities. The tool recorded the problem-solving attitudes and behaviors that parents developed in response to problems in handling their children with LD. The F-COPES contains 30 items that were been divided into five coping skill domains: acquiring social support, reframing, seeking spiritual support, mobilizing family to acquire and accept help, and passive appraisal. A five point, self-reported Likert scale that ranged from "*strongly disagree*" (1) to "*strongly agree*" (5) was used to score the coping skills. Each item rated how much the parents or caregiver agreed or disagreed with the statement about their response to problems or difficulties that they encountered to handle their children. Total score and a score for each of the domain of F-COPES were calculated. The higher score represented the highest level of coping skills adopted by parents who handled children with LD. Prior to data collection, the reliability of the Malay version of F-COPES was tested among parents of children with LD and it showed a high Cronbach's α value 0.785.

Modified Psychosocial Adjustment to Illness Scale - Self-Report (Modified PAIS-SR):
The Modified PAIS-SR was used to measure the psychosocial adjustments of the parents. The scale had seven domains of adjustments: health care orientation, vocational environment, domestic environment, sexual relationship, extended family relationship, social environment, and psychological distress. There were 46 items on this self-reported questionnaire. Each item was rated on 4-point (0 to 3) scale of adjustment. Total score and score for each domains of PAIS-SR were calculated. The highest score represented poor adjustment status. Prior to data collection, the reliability of the Modified PAIS-SR was tested among parents of children with learning disabilities and it showed a high Cronbach's α value 0.723.

Data Analysis

The Statistical Package for Social Science (SPSS) version 22 software was used to analyze the obtained data. Analysis of the demographic data obtained from the parents was summarized by descriptive statistics. Coping skills and psychosocial adjustments employed by parents of children with learning disabilities were analyzed and presented in means and standard deviations. A correlation analysis was conducted to determine the relationship between total coping skills and total psychosocial adjustment score. Further analysis of bivariate correlation was completed to determine the relationship of domains of coping skills and total psychosocial adjustments. In addition, an analysis was conducted to explore the relationship between

individual domains of coping skills and psychosocial adjustments domains. The significant level was seen at 0.05 with a confidence interval of 95%.

Results

Descriptive demographic characteristics of 87 parents of children with learning disabilities were summarized in Table 1.

Table 1. Demographic background of parents (N=87)

Demographic characteristic		Frequencies	
		n	%
Gender	Male	26	29.9
	Female	61	70.1
Age (years)	<30	4	4.6
	30-39	37	42.5
	40-49	38	43.7
	>50	8	9.2
	Median (IQR)	40 (35-45)	
Marital Status	Married	76	87.4
	Separated	3	3.4
	Widow/widower	8	9.2
Educational Level	Primary	2	2.3
	Secondary	28	32.2
	Tertiary	57	65.5
Monthly Income	Low (≤ 2299)	9	10.3
	Moderate (2300-5599)	39	44.8
	High (≥ 5600)	39	44.8
	Median (IQR)	5000 (3500-10000)	
Age of Children (years)	3-6	21	24.1
	7-12	55	63.2
	13-18	11	12.6
	Median (IQR)	9 (7-10)	

IQR= inter quartil range

Demographically, the mean age of the participants was 40 (SD = 9.12 years). The majority of the participants were mothers, 70.l% (n=61) and married, 87.4% (n=76). There are 36 children with dyslexia, 41 children with high functioning autism, 4 with ADHD, and 5 with slow learner in this study. The score of coping skills and psychosocial adjustments obtained from the parents of children with learning disabilities were presented by means and standard deviations in Table 2.

The commonly utilized coping skill by the parents was reframing with a mean score (30.26 ±5.86). It was followed by seeking social support (28.93±7.17), mobilizing to acquire and accept help (16.03±3.29), and seeking spiritual support (15.13±3.64). The least utilized coping skill in this study was passive appraisal (11.78±3.26). Parents of children with dyslexia (59.5%), high functioning autism (56.1%) and ADHD (75.0%) were chosen reframing method. However, most parents of children with slow learner chose acquiring social support for the highest coping skills method (60.0%).

In psychosocial adjustments, parents most commonly identified problems in health care orientation (9.21±3.13). It was followed by psychological distress (7.01±4.81), domestic environment (6.41±4.60), social environment (5.33±4.73), vocational environment (4.68±3.24), and sexual relationship (3.37±3.97). The domain with the lowest score was extended family relationships (3.23±3.97).

Table 2. Means and standard deviation of coping skills and psychological adjustment

Measures	Item	M	SD
F-COPES	Seeking social support	28.93	7.17
	Reframing	30.26	5.86
	Seeking spiritual support	15.13	3.64
	Mobilizing to acquire and accept help	16.03	3.29
	Passive appraisal	11.78	3.26
Modified PAIS-SR	Health Care Orientation	9.21	3.13
	Vocational Environment	4.68	3.24
	Domestic Environment	6.41	4.60
	Sexual Relationship	3.37	3.97
	Extended Family Relationship	3.23	2.80
	Social Environment	5.33	4.73
	Psychosocial distress	7.01	4.81

M= Mean, average value, SD=standard deviation

The relationship between the total score of F-COPES and PAIS-SR are presented in Table 3. The result of Spearman's rho correlation showed there was a moderate, negative correlation between the total coping skills score and total psychosocial adjustment score (r_s= -0.43, p<0.01). Moreover, correlation results found that seeking social support (r_s= -0.33, p<0.05), reframing (r_s= -0.25, p<0.01), seeking spiritual support (r_s= -0.30, p<0.05), and mobilizing to acquire and accept help (r_s= -0.33, p<0.05) had significant moderate negative correlations with the total score of PAIS-SR. Only passive appraisal did not show significant correlation with the total score of PAIS-SR.

Table 3. Relationship between each domains in F-COPES and total score PAIS-SR

F-COPES Domain	Seeking Social Support	Reframing	Seeking Spiritual Support	Mobilizing to Acquire and Accept Help	Passive Appraisal	F-COPES Total
PAIS-SR Total	-.25 *	-.30**	-.33**	-.33**	-.16	-.43**

F-COPES = Family Crisis Oriented Personal Scale (F-COPES), *p<.05, **p<.01.

A further analysis was conducted to explore bivariate associations on all of the domains between F-COPES and PAIS-SR. Table 4 shows that the mobilizing to acquire and accept help score had a significant negative correlation (r>-.3, p<0.01) with the majority of the PAIS-SR domains. The seeking social support score also had significant correlation with a negative medium effect size (r>-.3, p<0.01), with five PAIS-SR domains, except sexual relationship and extended family relationship. In addition, significant correlation was also noted between reframing and seeking spiritual support with several PAIS-SR domains.

Table 4. Correlations *r* values between each domains of the F-COPES and the PAIS-SR

	F-COPES Domains				
Modified PAIS-SR Domains	**Seeking Social Support**	**Reframing**	**Seeking Spiritual Support**	**Mobilizing to Acquire and Accept Help**	**Passive Appraisal**
Orientation to health care	-.24*	-.26*	-.30**	-.31**	-.06
Vocational environment	-.28**	-.19	-.18	-.25*	-.03
Domestic environment	-.30**	-.22 *	-.25 *	-.31**	-.21

Sexual relationship	-.16	-.18	-.18	-.28**	.30**
Extended family relationship	-.18	-.21*	-.18	-.28**	.07
Social relationship	-.23*	-.04	-.17	-.12	-.16
Psychological distress	-.33**	-.26*	-.23 *	-.28**	.16

F-COPES = Family Crisis Oriented Personal Scale (F-COPES); PAIS-R = Modified Psychosocial Adjustment to Illness Scale-Self Report (PAIS-SR).*p<.05, **p<.01.

Discussion

The main aim of the current study was to identify the relationship between coping skills and psychological adjustments among parents of children with learning disabilities. A number of studies have documented the types of coping skills [23-24, 6] and effects of children with disabilities on family adaptation [25-26] among parents who have children with learning disabilities. However, no study on the relationship between coping skills and psychosocial adjustments of the parents has been published.

Findings from this study showed that most of the parents utilized the reframing (M=30.26) method as a coping skill while handling children with learning disabilities followed by acquiring social support (M=28.93). It indicates that parents with different characteristics of children did not influence the selection method of coping skills. Reframing is a positive acceptance of the problems faced by the parents while looking after their disabled child [15]. Acquiring social support is the abilty of the family to actively engage in acquiring support from relatives, friends, neighbours, and extended family (e.g. sharing difficulties with relative) [6]. The mean of acquiring social support result was below average with a previous study on examining the coping skills of parents who have children with special needs using the F-COPES. The previous study reported acquiring social support was the most utilized coping skills with a normative mean, M=33.0 [6] (Moawad 2012) before reframing method. However, a study done by Pritzlaff (2001) found that acquiring social support and reframing method (M=31.0) were the most utilized coping skills among parents. The previous study mentioned that availability of support in resources and good family structure helped the parents to respond to the stress successfully when taking care of children with learning disabilities [27-28]. In another study, it reported that, in handling children with learning disabilities such as autism, parents were more capable to tackle the problems after using the reframing method [29]. The advantage of positive acceptance encourages the parents to always accept their difficult situations and helps to reduce the stress. The results were in line with a previous study on examining the coping skills of parents who have children with disabilities [30]. In conclusion, the current study found that most of the parents in this study were positively accept their difficult situations while managing their children.

Meanwhile, the passive appraisal method was the least utilized coping skill among the parents. This finding was consistent with the previous reported evidence that parents of children with disabilities used a less passive appraisal method [6]. Passive appraisal or an emotion-focused strategy allowed parents to limit attention to a certain problem by doing or thinking other things [4]. Passive appraisal was also suggested as a problem avoiding coping skills adapted by the parents who could be destructive and eventually lead to family maladaptation behavior [31]. Hence, the results of the current study showed that parents of children with learning disabilities did not adapt passive appraisal as the main coping skill.

For psychosocial adjustments, the highest mean score in health care orientation domain in PAIS-SR showed that parents had the poorest psychosocial adjustments. Most parents of children with learning disabilities reported difficulties, and they did not receive appropriate information about health services provided for their children [32-33]. Therefore, the current study findings reiterate the need to improve health care orientation among parents of children with learning disabilities. Henceforth, the professional and counselor may have to provide health information for parents on various resources available to obtain appropriate health care for their

children. It will help parents to understand better their children's conditions, especially on ways to cope with difficult situations in everyday functioning. In certain instant, parents may seek medical intervention to deal with their child's emotional health condition. Studies among individuals with ADHD, a condition that often concomittenly occurred with learning disabilties reported that the anxiety and depression in adult ADHD can be managed with Bupropion medicine together with other bio-psycho-social intervention [34-35].

In relation to the total score of F-COPES and PAIS-SR, a significant relationship indicates the dynamic relationship between positive coping strategies and psychosocial adjaustment. Parents who used effective coping skills might have better psychosocial adjustments, and parents who have better psychosocial adjustment may develop better coping skills in their day to day living. The findings provided evidence of the usefulness of coping skills in parents' psychosocial adjustments. To further explore and strengthen the above observed relationship, additional analyses were conducted between the different domains of the F-COPES and total score of PAIS-SR. We believed that such individual domain relationship analyses might help us to understand the influence of different domains of coping skills towards the better psychosocial adjustments by the parents. The results of additional sub analyses showed that several domains of F-COPES had significant relationship with the total score of PAIS-SR. As there were no previous studies that investigated the effect of different coping skills on the psychosocial adjustments among parents, it was difficult for the current study findings to be compared an evaluated. Nevertheless, evidence on the effect of certain specific coping skills on psychosocial adjustments was documented in literature and hence it could be compared with the current study findings [34, 12]. For example, the current study findings agreed with a past study that showed parents who employed social support to manage their children with LD reported lowered stress levels and better adaptation in their living [36, 12]. Also, the results of the current study agreed with past evidence that the parents who sought spiritual support had less stress in managing their psychological distress and exhibited better psychosocial adjustments [23]. Thus, the results of current study emphasized the relationship between the importance of good coping skills and healthy psychosocial adjustments of parents who take care of children with learning disabilities.

Limitations and strengths

The current study had a few limitations that need to be noted. First, this study involved parents of children with learning disabilities such as dyslexia and/or learning disabilities with concomitant disorders such as attention-deficit hyperactivity disorder (ADHD), high functioning autism and slow learner. It might be possible that there could be differences in coping skills and psychosocial adjustment between parents with different single and multiple diagnosis. In addition, the number of fathers and mothers were not equally distributed, and the perspectives of fathers and mothers in taking care their children are different. Nevertheless, the current study was primarily designed to study the relationship between the coping skills and psychosocial adjustments among parents, and it was not focused on looking at the different factors that might influence coping skills and psychosocial adjustments. A longitudinal study with multiple logistic regression analysis is warranted to understand the influence of various socio-demographic factors on coping skills and psychosocial adjustments.

Despite these limitations, the strength of the current study was the first study to highlight the importance of coping skills by parents over their psychosocial adjustments in daily living when handling children with learning disabilities. Moreover, the study population represented parents who were actively involved in looking after children with learning disabilities, which included those who are staying together with their children at home and spend more time in raising their children. In general, parents prefer to bring up their children on their own, hence the observed results of the study represented day to day reality and challenges of each parent.

Practical implications

The current study findings suggest several

clinical implications for clinicians, parents and researchers. For clinicians, it is necessary to consider measures to enhance better coping skills among parents as part of the management strategies during rehabilitation of children with learning disabilities. For parents, it is necessary to understand and practice better coping skills in their daily life while taking care of their children with learning disabilities. Researchers might consider the importance of coping skills and psychosocial adjustments encountered by parents as essential factors towards future studies on health promotion and health care management among parents who look after their children with learning disabilities.

Conclusion

In conclusion, the present study highlighted the relationship between coping skills and psychosocial adjustments of parents of children with learning disabilities. The effective coping skills used by parents were related to better psychosocial adjustments in everyday life. Thus, coping strategies intervention to manage psychosocial adjustments issues among parents of children with learning disabilities is essential for practitioners to include in the practice.

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Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Corresponding author: ***Dzalani Harun (PhD). Program of Occupational Therapy, School of Rehabilitation Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.***

Email: dzalani@ukm.edu.my

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ORIGINAL ARTICLE

THE PREVALENCE AND ASSOCIATED FACTORS OF PREMATURE EJACULATION (PE) AND ERECTILE DYSFUNCTION (ED) AMONG PATIENTS ON ANTIDEPRESSANTS IN A TEACHING HOSPITAL (TH)

Lim Jun Yi*, Mohammad Izzat Najmi Bin Kamaruddin*, Jamuna Vijayakumaran*, Nur Diyanah Talib*, Nur Diana Ahmad Fitri*, Hatta Sidi*, Shalisah Sarip*, Loo Jiann Lin**

***Department of Psychiatry, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, 56000 Cheras Kuala Lumpur, Malaysia;**
****Faculty of Medicine and Sciences, Universiti Malaysia Sabah (UMS), Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia.**

Objective: **Sexual problems are common among patients who are on antidepressants treatment. The objective of this study is to determine the prevalence of PE and ED, and their potential risk factors that may impair their sexual function in a TH.** ***Methods:*** **A cross-sectional study using simple random sampling was conducted among adult male patients who are on antidepressant treatment in the TH psychiatric outpatient clinic. Respondents' socio-demographic data were obtained. Participants were interviewed using a structured self-report questionnaire with 15-item International Index of Erectile Function (IIEF-15)where the scores lesser than 25 were indicative for having an ED. A validated Malay Premature Ejaculation Diagnostic Tool (MAPET) was used to assess PE and those with a score ≥ 23 were considered to have PE.** ***Results:*** **Hundred respondents were participated, and the prevalence of PE and ED was 66% and 85%, respectively. Using multivariate binary logistic regression, the potential risk factors of PE were race, i.e. being non-Malay (p=0.044), lesser in the frequency of sexual activity (p=0.03) and also an ED (p=0.03), respectively. The only risk factor for ED was PE (p=0.026). No significant association was noted for the other factors, including type of the antidepressant, dose and duration of antidepressant used (p>0.05). There was a strong correlation of MAPET and IIEF-15 (r=-0.345, p < 0.01) signifying patient with more severe PE had more severe ED.** ***Conclusions:*** **Due to very high rate of ED and PE in this group of respondents, it is pivotal to screen for sexual problem among patients who are taking an antidepressant in a psychiatric setup.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 269-277.***

Keywords: Sexual Dysfunction, Sexual Disorder, Premature Ejaculation, Erectile Dysfunction, Antidepressants

Introduction

Study has reported approximately 34% to 46% of men who are taking antidepressant have sexual dysfunction [1]. In a 2017 review, drugs that enhance the serotonin concentration, such as selective serotonin reuptake inhibitor, monoamine oxidase inhibitor and clomipramine known to have greater sexual side effects compared to drugs that predominantly effects on dopamine or norepinephrine concentration[2]. According to Peuskens et al 1998, sexual problems have been described as 'the unspoken side-effect of antidepressant and antipsychotics [3].

According to the Diagnostic and Statistical Manual of Mental Disorders, fifth edition 2013

(DSM-V), ED is characterized by repetitive inability to achieve or maintain a sufficient erection during partnered sexual activities following vaginal penetration and before the individual desires it. PE is defined as a persistent or recurring pattern of ejaculation occurring during partnered sexual activity within nearly 1 minute present for at least six months and must be experienced on almost all or approximately 75%–100% occasions of sexual activity [4].

In the study conducted among the Malaysia general population, the prevalence of self-reported sexual problems for ED and PE was 41.6% and 22.3%, respectively. In those subjects with ED, 33.5% reported to have PE[5]. A study covering Asia Pacific country was completed in 2009, and the prevalence showed PE among Malaysian men was 29% [6].However, a following study in 2011 reviewed that the prevalence of PE was 40.6% among patients in the primary health care clinic [7]. The prevalence of ED ranging from mild to severe was 56.4%, which was within the range of reported ED in past studies [8,9].Furthermore, according to cross-sectional study in Europe countries done in 2006 and 2010respectively, the prevalence of antidepressant induced sexual problems in males range from 34.2% to 46.4%[1,10].

These sexual adverse effects heavily infringed on diagnostic issues, management planning and prescribing practices, patients' quality of life (QoL) and their ultimate treatment adherence. Non-adherence may lead to tenacity relapse or recurrence of depression, which may have significant consequences[11].

To our knowledge, there is lack of information on ED and PE among patients who are taking antidepressants in Malaysia. This sex-related issue and taboo nature of sexual disclosure as well as embarrassment in seeking medical attention lead to under- reported and under-treated of PE and ED, especially in Asian culture like Malaysia[12]. The aim of this study was to determine the prevalence of PE and ED and its potential risk factors among patients who taking antidepressants in teaching hospital. We hypothesize that there is significant association between ED and PE among patients who are prescribed with an antidepressant.

Material and methods

This was a cross sectional study conducted among male out-patient who take antidepressant in psychiatric clinic at University Kebangsaan Malaysia Medical Centre(UKMMC), a teaching hospital (TH) in Kuala Lumpur, Malaysia. The study was conducted from 19 June 2017 to 12 September 2017. Ethical clearance was obtained from Health Research Ethics Committee of UKMMC with a code of FF 242-2017.

All male psychiatric out patients who are taking antidepressant and sexually active regardless of their marital status, aged between 18 to 70 years old, who could read and understand either Malay or English and able to give consents were eligible for the study. However, the patients who were taking antipsychotics, physically disabled and not sexually active were excluded from the study. After initial screening, a systemic random sampling method was used to recruit the respondent.

The sample size was calculated based on study conducted by Kish, L 1965 [13]. The calculated sample size was 96. Written informed consent was obtained from the participants prior to the study. Patients' socio-demographic data which include age, race, educational level, occupation, monthly income, marital status and duration, tobacco use, alcohol consumption and medical status, were obtained via self- administered questionnaire. The Malay version of International Index of Erectile Function (Malay-IIEF) and validated Malay Premature Ejaculation Diagnostic Tools (MAPET) were two assessment tools used in this study to obtain the data on ED and PE [14,15]. In Malay-IIEF, erectile function domain was used to evaluate patient's level of severity of ED. Those with a score of ≥25 were classified as individuals without ED and those with a score <25 were considered to have ED. Scoring on the domain of erectile function was further interpreted as severe (0-6), moderate (7-12) , mild to moderate (13- 18), and mild ED (19-24), respectively. The values of 25-30

for Malay-IIEF's score indicate no ED. For the sexual desire domain, it was concluded that the higher the score, the lesser the sexual dysfunction[14]. In MAPET, those with a score of < 23 were classified as individuals without PE and those with a score ≥ 23 were considered to have PE[15].

For data analysis, all analyses were performed using IBM SPSS version 20.0. A p-value less than 0.05 are taken as statistically significant with 95% confident intervals (95% CI). An appropriate statistical test was conducted and the correlation between the studies parameters were analysed accordingly. Descriptive analysis was conducted for the baseline characteristics of clinical features. Bivariate analysis was done using a Chi-square analysis. Significant independent variables will be included into the multivariate binary logistic regression analysis. The patients who were found to have sexual problems, i.e. PE and ED will be referred to seek the professional help.

Results

A total of 100 subjects who fulfilled the inclusion criteria and completed the questionnaire were included in this study. Most of the participants were within the age of 41 to 50-year age category(28%), followed by 61 to 70-year age category(26%), respectively. The sample was not normally distributed with a median age of 49 years and 48.5 years, for ED and PE, respectively. The majority of participants were Malay (58%), Chinese (39%) and Indians (3%).

The prevalence of ED among patients taking antidepressants, as diagnosed from the IIEF 15 was 85%. The distribution of ED was categorized based on mild dysfunction, 47%; mild to moderate,31%; moderate dysfunction, 2%; %; and severe dysfunction,5%. The demographic and clinical characteristics of ED were outlined in Table 1 wherebymissionary position and PE has significant association with ED (p = 0.04, and p<0.001, respectively). The other factorswhereby study, i.e. age, medical co-morbidities, smoking, consumption of alcohol werefound to be not significant.

Table 1. Demographic and clinical variables of patients on antidepressant treatment with or without erectile dysfunction

Variables	ED presence, n (%)	No ED presence, n (%)	p-value (Mann-Whitney-U Test, Pearson Chi-Square)
Total (n=100)	85	15	
Age, median (IQR)	49 (21)	45 (18)	0.242
Malay	47	11	0.192
Unemployed	21	3	0.694
Household Income < RM4500	45	7	0.654
Marriage Period, median (IQR)	20 (22)	17 (25)	0.992
With Perceived Partner Support	79	14	0.956
Family Planning	27	8	0.106
Co-morbidities			
Hypertension	22	3	0.628
Diabetes Mellitus	10	3	0.382
Dyslipidemia	10	4	0.125
Co-morbidities Medication			
Antihypertension	23	3	0.566
Oral Hypoglycaemic Agent	9	3	0.301
Cholesterol Lowering Agent	11	4	0.170
Smoking	28	4	0.631
Alcohol Intake	9	2	0.754
Missionary Position	**62**	**15**	**0.040***
Frequency of Sexual Intercourse >3 times per month	28	6	0.595
Duration of Psychiatry Illness, median (IQR)	6 (9)	7 (10)	0.288

With SSRI	76	13	0.754
Duration of Antidepressant, median (IQR)	6 (9)	7 (8)	0.467
Premature Ejaculation	**62**	**4**	**<0.001***
Sexual Desire	5	3	0.063
*=p<0.05; IQR = interquartile range; ED = erectile dysfunction			

On the other hand, the prevalence of PE among patients taking antidepressant was 66% and the demographic and clinical characteristics were outlined in Table 2. The prevalence of having both ED and PE were 62%.PE was found to be significantly associated with non-Malay race, having more than 3 timessexual activity per month, and co-morbidity with ED, i.e. p = 0.044, 0.004 and <0.001, respectively (Table 2).

Table 2. Demographic and clinical variables of patients on antidepressant treatment with or without premature ejaculation

Variables	PE presence, n (%)	PE not presence, n (%)	p-value (Mann-Whitney U Test, Pearson Chi-Square)
Total (n=100)	66	34	
Age, median (IQR)	48.5 (20)	48.5 (22)	0.954
Malay	**43**	**15**	**0.044***
Unemployed	18	6	0.286
Household Income < RM4500	34	18	0.892
Marriage Period, median (IQR)	20 (21)	22 (25)	0.503
With Perceived Partner Support	62	31	0.608
Family Planning	22	13	0.626
Co-morbidities			
Hypertension	17	8	0.807
Diabetes Mellitus	9	4	0.792
Dyslipidemia	10	4	0.644
Co-morbidities Medication			
Antihypertension	18	8	0.686
Oral Hypoglycaemic Agent	8	4	0.959
Cholesterol Lowering Agent	11	4	0.515
Smoking	24	8	0.192
Alcohol Intake	9	2	0.240
Missionary Position	50	27	0.681
Frequency of Sexual Intercourse >3 times per month	**16**	**18**	**0.004***
Duration of Psychiatry Illness, median (IQR)	5 (11)	8.5 (7)	0.323
With SSRI	59	30	0.861
Duration of Antidepressant, median (IQR)	5 (9)	8 (9)	0.406
Erectile Dysfunction	**62**	**23**	**<0.001***
Sexual Desire	5	3	0.828
*=p<0.05; IQR = interquartile range; ED = erectile dysfunction; SSRI = selective serotonin reuptake inhibitor			

The score of MAPET was negatively correlated with the score of IIEF-15 with spearmen rho (r = -0.345, p<0.001).Further analysis with multivariate binary logistic regression was conducted using Enter mode. For PE, the significant predictive factors include: Malay race, having more than 3 times of sexual activity per month, and co-morbid ED (Table 3) while other factors were not significant.

Table 3. Effect of associated factor and premature ejaculation by multivariate binary logistic regression

Variables	OR	SE	95% CI		p-value	Wald df=1
			Lower	Upper		
Race(Malay)	**4.278**	**0.525**	**1.529**	**11.972**	**0.006***	**7.663**
Frequency of Sexual Activity (≥3 Times Per Month)	**0.220**	**0.513**	**0.081**	**0.602**	**0.003***	**8.701**
Erectile Dysfunction	**11.907**	**0.708**	**2.973**	**47.685**	**<0.001***	**12.245**
constant	**0.206**	**0.740**			**0.033**	**4.554**
*=p<0.05; CI=confidence interval; OR=odds ratio; SE=standard error; df=degree of freedom						

The multivariate binary logistic regression for ED shows that the PE is the only predictive factor (Table 4).

Table 4. Effect of associated factor and erectile dysfunction by multivariate binary logistic regression

Variables	OR	SE	95% CI		p-value	Wald df=1
			Lower	Upper		
Premature Ejaculation	**7.906**	**0.652**	**2.203**	**28.378**	**0.002***	**10.056**
Missionary position	<0.001	7873.084	<0.001		0.998	<0.001
Constant	559339075.4	7873.0.84			0.998	<0.001
*=p<0.05; CI=confidence interval; OR=odds ratio; SE=standard error; df=degree of freedom						

Discussion

Patients who were on an antidepressant are commonly associated with sexual problems[2,16]. It is not uncommon to have a scenario where patients who have issues pertaining to sexual problems were going unnoticed by the treating physician. Most of the times, it is neglected in the management for patient with a mental-health problem. This situationmay cause further distressto patients and their partner. For some patients, they may suffer in silence.

Prevalence of ED and PE among male patients who are on antidepressant in our study population was very high, i.e. 85% and 66%, respectively. This result was much greater (85% vs. 56.4% in ED, 64% vs. to 29% in PE) than another local study in Malaysia. However, the population in the previous study consisted of the Malaysian general population [6,7]. In this study, there wasan association between a race i.e. being Malay,having lesser sexual activity, and ED, with the PE. However, it is contradicted with other study, Tang et al, 2011 found that Non-Malay, especially Indian has higher risk of getting PE [7]. This may due the distribution of the race where non-Malay is fewer than the Malays. This contributing factor needs to be explored more in the future research. There is significance found between the frequencies of sexual activity in a month with PE during our study. Patients who have fewer frequent sexual activities(less three times in a month) have more risk to get PE, which was consistent with the previous study[17]. This is because less frequency of sexual activity may cause men fewer opportunities to learn to control ejaculation.

PE is the only significant risk factor for ED. In this study, there is significant association between ED and PE. Similarly in a previous study by Malavige et al 2013 shows that PE is common in ED[18].Corona G et al in 2004 found that one-third of men with ED also suffer with PE[19]. Both study, explained that the association between PE and ED could be due to men suffered with ED forming a pattern of rushing to ejaculate before they are losing erection [18,19]. Previous study reported that there is a co-occurrence of ED and PE with the

prevalence of 50%. In that study, it explains that unidirectional relationship between the ED and PE, in which ED results in PE[20]. In our study, we found a strong relationship between ED and PE.

However, most of the socio-demographic factors such as age, education level, and duration of marriage, smoking, alcohol intakeshave no significant association with the prevalence of PE and ED. Similarly, for clinical factors such as sexual desire, medical co-morbidities, co-morbidities medication, antidepressant and its duration, duration of psychiatric illness has not shown to have significant association with PE and ED, even though factors such as co-morbidities medication, i.e. antihypertensive, oral hypoglycaemic agent, and lipid lowering agent have found to treat ED by restore the function and re-establish the smooth muscle tone through an increase arterial blood flow[21-23].

Quek et al 2008 found age was an important association with sexual problems, particularly ED. This may reflect its association with medical symptoms such as diabetes and hypertension, which rises in prevalence of age. However, the age of the men was not correlated with the PE [5]. Smoking risk factors was found to be associated with sexual problem which was consistent with numerous other studies that highlight the link between these two variables, even in former smokers [24,25]. Nevertheless, this was contradicted with our study, which shows no association between smoking and sexual problems. For the sexual desire, marital dissatisfaction such as a lack or loss of sexual desire also accounted for the increased prevalence of ED [5,26]. In contrast, the sexual desire was not correlated with the PE [26].Based on the previous study, there was a correlation between PE and poor overall health such as diabetes mellitus, and mental status. In patients with diabetes mellitus (DM) for 10 years and above, there is three times risk higher developing PE compared to patients with DM for less than five years. Besides, patients with poor metabolic control also have 10 times more risk to develop PE than patients with good or fair metabolic control [27]. Next, the potential associated factor is the patients' mental state condition. Patients with poor mental status were reportedly to be diagnosed with PE. The common cause for patients with poor mental status to develop PE is emotional stress such as anxiety. There is close association between anxiety and PE [27]. However, in our study, we did not find any significant relationship between medical co-morbidity and PE. This may due to small sample size in our study.

This study has some limitations. Firstly, the small sample size that may lead to potential error. Secondly, composition of the ethnic group is a limitation to this study as majority of the patients are Malay. We did not measure the state of the depression among the depression that may be attributed to the symptoms of PE or ED.. Furthermore, we also aware the other medication use may have attributed to ED or PE. This condition may occur if patient use other medication concurrently with the antidepressant. We recommend including these variables in future Malaysia's study. Thus, we have to interpret the results of this study cautiously within the context of its limitations.

This research has number of some strength. The results of this study reveal that despite of high prevalence of PE and ED among the patients who are taking antidepressant, both were under-reported and under-diagnosed. This result is useful in our practice because sexual side effect secondary to psychotropic medication may attributed to the non - compliance to medication and probability of relapse among the patient. The possible solutions can be offered to those having this problem can be modification of medication regime, additional medication, e.g. PD5-inhibitors, as well as individual psychotherapy and psychoeducation [28, 29].

Conclusion

The high prevalence of both PE and ED in this study suggests that it is pivotal to screen patients who are on antidepressant treatment, especially on the sexual history taking. Successful in managing their sexual difficulties, if sexual problem existed,should begin with the systemic approach to determine the type of sexual adverse effect. Management

strategy should be tailored to the need of the individual patient. Such plan can help the patient to continue with the ongoing treatment and at the same time achieve satisfactory of life, i.e. using a less adverse effect treatment medication like bupropion and agomelatine and supportive therapy like counseling.

Acknowledgement

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Corresponding author: ***Hatta Sidi, Professor and Senior Consultant Psychiatrist, Universiti Kebangsaan Malaysia Medical Centre (UKMMC), 56000 Cheras, Kuala Lumpur, Malaysia.***

Email: hattasidi@hotmail.com

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CASE REPORT

ANXIETY-DEPRESSION PSYCHOPATHOLOGY OF A PATIENT WITH VOYEURISM, MAJOR DEPRESSION AND PREMATURE EJACULATION

Nurazah Ismail, Rohayah Husain**, Hatta Sidi**

***Department of Psychiatry, Universiti Kebangsaan Malaysia Medical Centre, 56000, Cheras, Kuala Lumpur, Malaysia; **Faculty of Medicine, Universiti Sultan Zainal Abidin, Medical Campus, 20400 Kuala Terengganu, Terengganu, Malaysia.**

Abstract

Objective: **This case report highlights a case of young male referred for psychiatric evaluation due to paraphilic disorder. This 27-year old single male working as an assistant accountantwas noted to have voyeuristic behaviour andpresented with depressive symptoms since his teenage age. He has poor coping whenever he experiences stress in life. He started to watch pornographic videosand subsequently get involved by peeping pre-pubescent's undergarments. These activities are followed by a compulsive behavioursuch as masturbation to gratify his sexual arousal.** ***Results:*** **The patient undergone several psychotherapy sessions, and medical report was furnished for the court's purpose. Our assessment revealed that he was suffering from a lifetime major depressive disorder,and he was prescribed with Tablet Sertraline 50mg/daily.He also has premature ejaculation, severe in nature. He regretted his voyeuristic urge and psychotherapyfocused on how to channel his sexual needs.** ***Conclusion:*** **Mood disorder is seen in paraphilic disorder and has to be dealt with in order to establish good management care.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 278-280.***

Keywords: Depression, Voyeurism, Premature Ejaculation

Introduction

Paraphilic Disorder is one of the diagnoses in diagnostic and statistical manual, 5th edition (DSM-5) and it is common but has less intention in the society until they are caught due to their criminal offense. Paraphilic disorders are defined as an abnormal intense sexual deviant followed by the behaviors to fulfil the intense sexual erotic activities. They are few disorders that are subdivided under the big diagnosis of paraphilic disorder, which are voyeuristic disorder, exhibitionistic disorder, pedophilic disorder, frotteuristicdisorder, sexual masochism and sexual sadism and fetishistic disorder. These subdivisions are the commonest types of Paraphilic Disorder [1]. The paraphilic disordersmay be preceded by mood disorders such as a spectrum of depression, bipolar mood disorder and impulse control disorder, as there is a co-morbidity of these two important psychiatric diagnosis [2].

Case Report

A 27-year-old single gentleman, working as an assistant accountant, presented with recurrent depressive episodes for 9 years precipitated by failure of being accepted into local universities. Compared to his friend, he was not able to pursue his study due to his poor family socio-economic status. When he experienced low mood, he always felt that the 'world was injustice to him'. His father was a gambler and uses an abusive parenting style.

During each depressive episode, he experienced persistent low mood throughout the day, almost every day associated with other depressive symptoms such as disturbed sleep at night. He also experienced low energy, anhedonia, feeling hopeless and worthless as well as suicidal thoughts. The symptoms lasted for 2-months and eventually subsided. However, he was coping with his emotional distress by watching pornographic videos, and subsequently convinced that that this was the only way for him to cope with deal with his emotional stress. His first exposure towards watching pornographic videos was on the pornographic websites after he saw a customer in the cyber-café surfing those erotic materials. The last depressive episode was four years ago.

He started to get involved with recording videos about pre-pubescents' undergarment, and he found out that after recording the videos, he had an intense sexual arousal followed by masturbating activities. He denied having physical contact with the victims. He started to get addicted with the recording activities and the frequency of the activities gradually increased from once every 2 weeks to 2-3 times every weekend. During weekdays, he would compensate it by watching pornographic videos in his room. He claimed that, the strong urges to watch pornographic videos and recording the pre-pubescents' undergarment became much intensified whenever he is stressed-out. Prior to that, he experienced a brief episode of palpitation, body trembling and hands sweatiness but denies other anxiety symptoms. The anxiety symptoms subsided after he succeeded in recording the videos. Even though he has strong repetitive urges to peep through the pre-pubescents' undergarment, he found out that these behaviors gave him a positive effect upon his mood. He denied having other obsessive-compulsive symptoms.Although he claimed his sexual preference was by recording the videos followed by masturbating, Although he claimed he preferred achieving sexual gratification by recording the videos followed by masturbating,he had gone twice to the sex parlor and had unprotected sexual contact with the sex-workers. During the first time having sexual intercourse, he has premature ejaculation where ejaculation occurred immediately after penetration.

A month prior to his first presentation to our psychiatry clinic, he was caught red-handed by the victim's father during the recording videos activity in one of the bookstore premises. He was charged for his sexual offense and waiting for court hearing soon. Upon this incidence, he started to re-experience the depressive symptoms.

Discussion

We presented an interesting case of paraphilic disorder, i.e. voyeurism with concomitant psychiatric disorder of a life-time major depressive disorder (MDD) and premature ejaculation. We highlighted this case because of the scarcity of this kind of the cases in the literature. Prior starting the patient with medication, few psychological tests were done on him and subjected him to have depression and paraphilic disorder.

The patient fulfilled the criteria of psychiatric diagnosis of major depressive disorder and voyeuristic disorder as according to DSM-5. In a research by Katfa et al in 2002 [2], it was found that anxiety disorders (38.3%), especially the social phobia (21.6%), and psychoactive substance abuse (40.8%), especially alcohol abuse (30%), to be co-existed with the paraphilias. Another research by Guidry (2004) stated that the co-morbid mood and anxiety disorders are most prevalent in paraphilic disorder [3]. It is interesting to note that mental health issue can be an underlying problem, or co-morbidity in this sexual deviation disorder.

The sexual gratification caused him to do it more frequently in order to suppress his emotional stress. This can be due to the abnormal dopamine reward pathwayin the VTA and NA that leads to the rewarding behaviour. Paraphilia can be presented with addictive behavior, for instance, in this case was the addiction towards pornographic videos (Fig.1) [4].

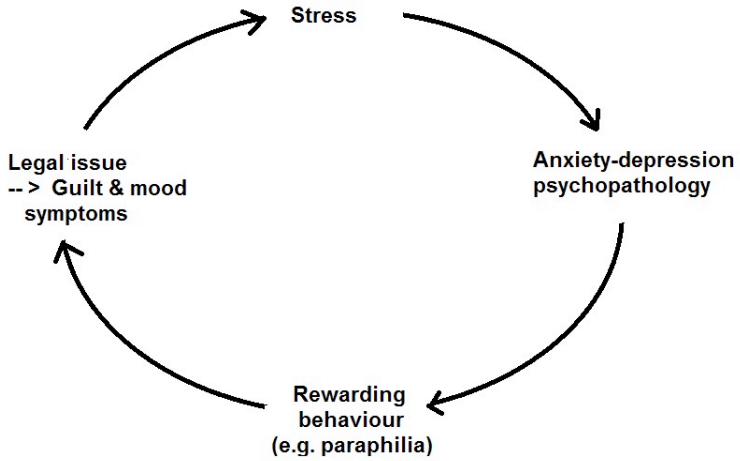

Figure 1. Stress, depression and paraphilia

After having started tablet Sertraline, he showed improvement in his mood and his sexual deviantfantasies ceasing. This showed that the mood disorder may predispose to his sexual deviance, and thus required appropriate treatment that can help him deal with his psychological distress. The Selective Serotonin Reuptake Inhibitors (SSRIs) has impact to the person's sexual functioning, especially in term of sexual desire [5,6]. The role of SSRIs was pivotal, especially in the presence of mood symptoms among the patient with paraphilia, as serotonin has an enormous effect to the person's sexual functioning as serotonin firing in the neuron will causes low in his sexual desire [5].

As a conclusion, mental health problem, i.e. stress and affective symptoms can predispose to and also be negatively associated with the paraphilia. Both psychological treatment and psychopharmacological intervention are important to be included in the strategy to help this special group of patients to deal with their emotional turmoil.

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Corresponding author: ***Hatta Sidi, Professor of Psychiatry, Department of Psychiatry, UniversitiKebangsaan Malaysia Medical Centre (UKMMC), 56000 Cheras, Kuala Lumpur, Malaysia.***

Email: hattasidi@hotmail.com

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CASE REPORT

ADULT ATTENTION DEFICIT HYPERACTIVE DISORDER (ADHD): HOW DOES COGNITIVE BEHAVIOR THERAPY (CBT) HELP PATIENTS?

Nuur Asyikin Mohd Shukor, Shalisah Sharip*, Rosliza Yahya**, Nurul Azmi Muhammad Rappek*, Hatta Sidi**

***Department of Psychiatry, Universiti Kebangsaan Malaysia Medical Centre (UKMMC), 56000 Cheras, Kuala Lumpur, Malaysia; **Faculty of Medicine, Universiti Sains Zainal Abidin, Kampus Kota, Kuala Terengganu, Malaysia.**

Abstract

Objective: **ADHD is a complex neurobiological disorder, which required tactful intervention. Besides pharmacotherapy, there is still limited information in addressing the efficacy of cognitive behavior therapy (CBT) for treating this developmental disorder.** ***Methods:*** **We report a case of late diagnosed of ADHD whose facing difficulty to cope with her undergraduate degree. She has to repeat her semester examination due to lack of attention. Denial was seen in both patient and family in accepting the diagnoses, and posed roadblock for successful intervention.** ***Results:*** **Six sessions of CBT were conducted, coupled with psycho education for both the family and patient. Consultation from the university's management helped her to accept and cope with her ADHD symptoms, i.e. attention and impulsivity. The patient showed improvement following this intensive bio-psycho-social intervention.** ***Conclusion:*** **The short duration of CBT was found suitable to be adapted and implemented in young adult ADHD.** ***ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 281-287.***

Keywords: CBT, Psychotherapy, Adult ADHD

Introduction

It was found that 2-8% of college student having ADHD symptoms whilst 25% were diagnosed as ADHD that was associated with poor academic performance, high risk of dropout and social problem despite having a good protective factor [1]. Often people of adult ADHD are undiagnosed or misdiagnosed until their children have been diagnosed with ADHD [2]. The predominantly inattentive type is more commonly seen in female patients [3]. Most of the time, the predominantly inattentive type is the one associated with impairments, which lead to adult patients to seek assessment and treatment [4]. Adults with ADHD have greater challenges such as higher rates of drop-out from school, lower employment status, change jobs frequently, obtained negative comments for work performance, higher rates of marital conflicts and higher risk for psychiatric and substance use disorders patients [4].

There is increasing recognition of using CBT for adult ADHD who did not want to take medication [3] due to patients reported limited responses to treatment with psychostimulant medication [2], despite the efficacy of medication were high in treating ADHD [5]. It is important to understand that the functional impairment associated with ADHD arises from the interaction between the patients' environment and their neurobiology. Therefore, with modification to the environment, the change in the clients' behavior may be able to help them overcome the negative consequences from ADHD [5]

but it does not preclude the importance of medications. Most patients with residual symptoms have reported to benefit from CBT in terms of self-management skills in order to fulfill their goals [5]. Although, previous research of CBT on children with ADHD did not prove to be able to ameliorate the symptoms, it was postulated that the failure might be due to limitation in terms of age-related ability to learn and understand the fundamental theories and principles of CBT [5]. This case report showed applicability short duration of the cognitive behavior therapy couple with psycho education and coaching from the university's management to a patient who have difficulty to accept and overcome her ADHD problem.

Case Report

Miss NF is a 22 years old, dental student, who was referred by her university clinical psychologist for assessment when as she was about to start her clinical years. She was asked to defer from her clinical years as the university was concerned the possibility of jeopardizing patients' safety due to previous history of impulsivity during her clinical years. She was also having problems with other areas in her studies as she was unable to: (i) complete her task as schedule, (ii) pay attention and sit still in the lecture hall when lectures were on going, (iii) finish the clinical task ahead before lecturers could give the completed procedural steps, and (iv) control temper and had episodes of an anger outburst when she was frustrated.

She had been having problems since kindergarten observed by her teachers, whereby she experienced hyperactive symptoms such as unable to sit still. She was active and always running around playing or climbing, could not remain sitting in her seat when she was in class, and most people around her felt she was naughty. She also showed difficulty to focus while working, procrastinating her work or quickly completing it but with careless mistakes and unable to sustain concentration to listen when spoken directly. Despite these problems, she was still able to excel in school that led her to take Dentistry course in university. Due to lack of awareness on ADHD, she was not brought for medical attention earlier on, and punitive treatment was given by parent and maid to cope with her behavior [2].

Neuropsychological test was conducted to determine any cognitive dysfunction associated with ADHD. The result showed that she performed above average than the normal population in cognitively areas with specific impairment in executive function, *i.e.* planning, emotion regulation, organization skill, and attention, as shown in Table 1. Her university reported similar complaints from academic staff and student, indicating patient having problems in areas related to impulsive behaviors, poor planning and organizing skills and concern with regards to patient's safety. She was advised to get medical help and be on medication. However, she refused during the initial period resulting in delay of treatment for more than a year. Once she was deferred, it was then she started to come to clinic regularly but was still not keen for pharmacotherapy. Similarly, her parents had difficulty accepting that patient had ADHD during the initial contact which caused them to be reluctant to allow patient to be on long term medications. Following brief psycho education session, patient and her parents agreed for CBT but were still not keen for pharmacotherapy.

Table 1. Cognitive Behavior Therapy for ADHD: A Step by Step Approach

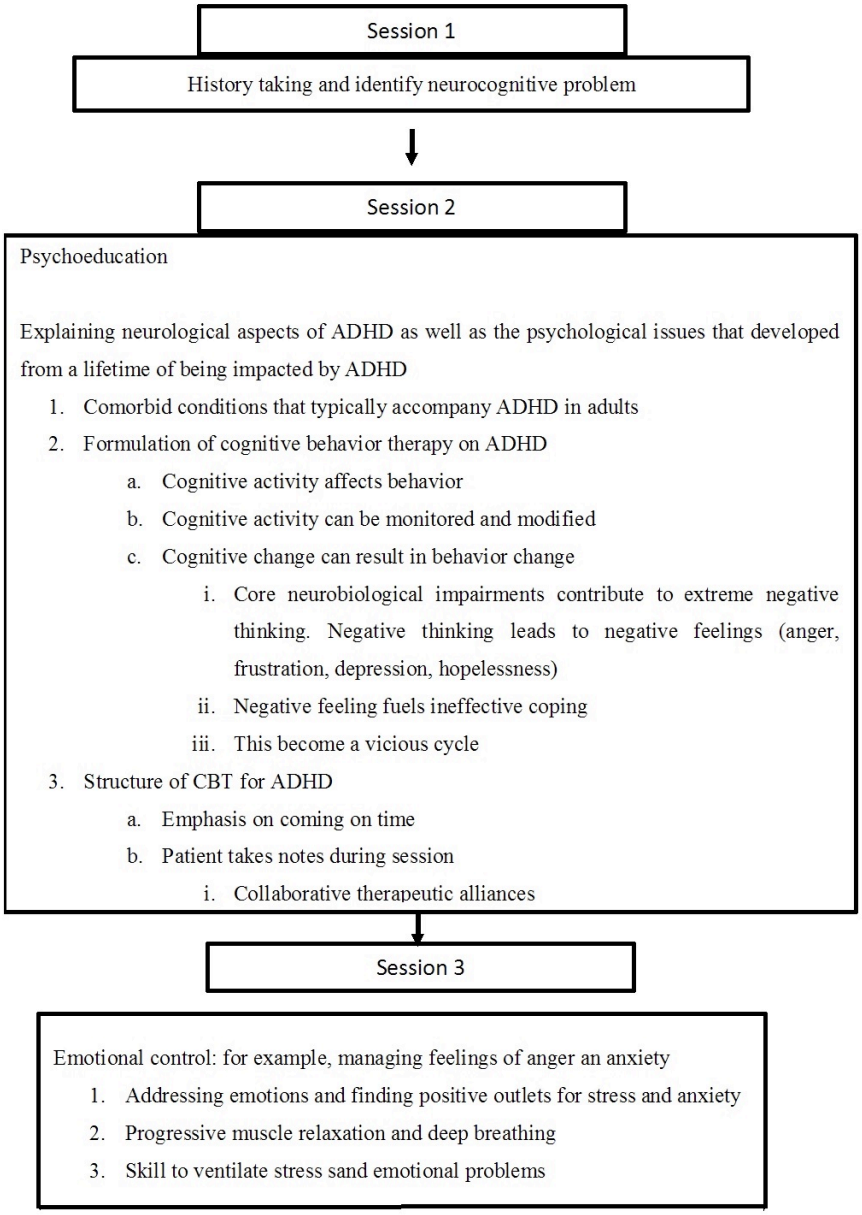
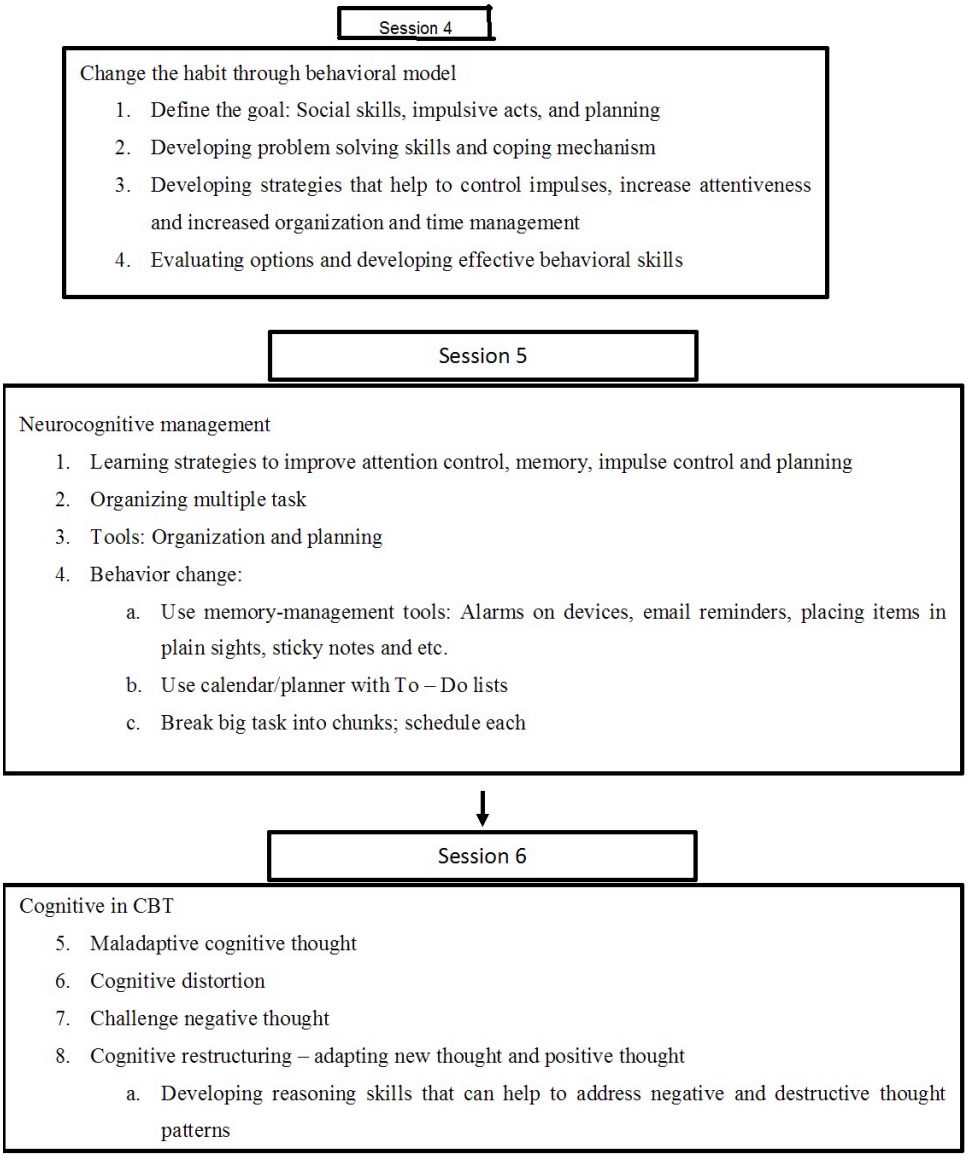


Table 1. Cognitive Behavior Therapy for ADHD: A Step by Step Approach *(continuation)*



She was suitable for CBT based on figure 1 and six session of CBT for about 45 minutes (Table 1) to help cope with the symptoms that caused impairments. Resistance to comply with CBT session was seen in the initial therapy period, psycho education sessions were included as well as coaching the university's management team to reduce the roadblock to CBT session.

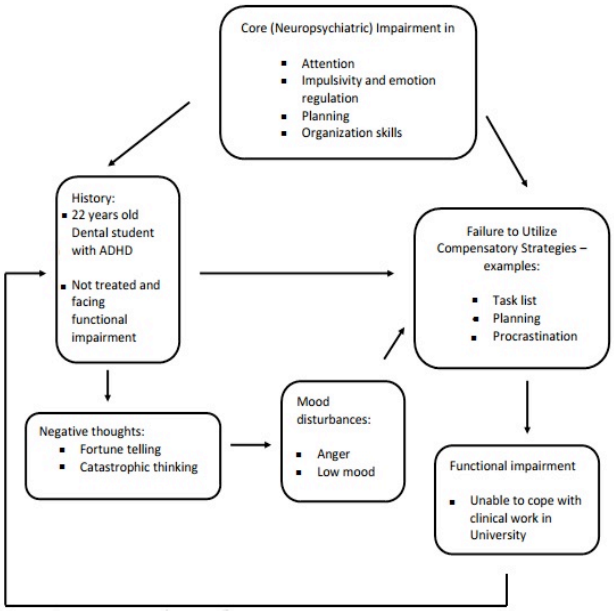


Figure 1. Cognitive behavior therapy (CBT) model of attention deficit hyperactive disorder (ADHD), adapted from CBT literature [6]

Discussion

The initial plan of the session of CBT planned for this patient was six; however, there was difficulty engaging patient during the initial process because of both patient and parents have difficulty accepting the illness. Patients may still have been differing from commitment to treatment despite having knowledge about the effects of ADHD [7]. Part of the reason behind the difficulty was because the patient was an intelligent student and managed to go through primary and secondary school without showing much impairment and performed well in studies. She only started experiencing impairments when she entered university and the demand of commitment from Dentistry course was great, which was evident through her performance in class. Due to this, session 2 for psycho education was extended to two more sessions in order to ensure that subsequent session could run smoothly. Both family and patient became more receptive after the therapist with treating psychiatric team arranged a session with University's Administrative officer to further psycho educate all parties involved and discuss about possible ways to overcome her symptoms in order to allow her to complete her studies.

Subsequent session went well whereby patient could engage and commit to get involved in the task given to be completed at home. She demonstrated improvement in terms of everyday functioning through proper planning, quality of live and reduction in maladaptive automatic thinking. ADHD is a neurodevelopmental syndrome. Therefore, it was pertinent the patient understood that she required the ability to overcome ongoing conflict and to maintain order to manage the effects of executive dysfunction and motivational deficits she faces daily [7]. She had managed to cope well during her deferment period after completing the CBT session, but her greatest challenge would be once she re-entered her clinical years in Dentistry.

There is no evidence to suggest that CBT for adult ADHD has an established time frame [7]. The most important goal is that both therapist and patient felt that the treatment objectives had been reasonably achieved [7]. In previous study, combination of pharmacotherapy and standard CBT was reported to reduce the Clinical Global Impression (CGI) of ADHD from 5.28 to 3.40 [4]. To best of knowledge, their pilot randomized control trials studying the efficacy of short period CBT. It would be interesting to

look at large-scale study with regards to efficacy of short period CBT. In this case, patient showed improvement in most targeted areas such as planning, organizing, emotional regulation and minimizing distraction. Should she require subsequent session to overcome new problems in her live, she could always return to CBT.

Patients with ADHD are often stigmatize due to the illness. Thompson and Lefler, in their study publish in 2015, it was reported that college students and young adults were rated more negatively compared to those without ADHD, and less preferred when needed to work in academic or professional settings as a team [8]. This could explain the reason for higher negative impact adult ADHD due to lack of support and stigmatization [9 - 12].

At the end of session, Miss NF could work for a few months prior to restarting her clinical years in Dentistry. She was more organized and had better time control. She was recently given the approval to continue her clinical years after reassessment by the University's management. Patient refused for medication therapy due to fear that it would have negative implication on her. Despite explaining and reassurance, she was reluctant. Therefore, it was decided for her to go for trial of psychotherapy. She improved with psychotherapy but there could still be greater room of improvement in functioning should she agrees to combine the pharmacotherapy and psychotherapy, as reported in case report [13] and reviews [14].

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Corresponding author: ***Shalisah Sharip, Department of Psychiatry, Universiti Kebangsaan Malaysia Medical Centre (UKMMC), 56000 Cheras, Kuala Lumpur, Malaysia.***

Email: shalisah@ppukm.ukm.edu.my

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SHORT REPORT

THE UNDER PORTRAYAL OF ELECTROCONVULSIVE THERAPY (ECT) PROCEDURE IN THE ASIAN MEDIA

Ahmad Izzat Ahmad Tajjudin,*
*Dayana Asilah bt Mohd Nasaruddin**, Hatta Sidi****

***Department of Psychiatry, Fakulti Perubatan dan Sains Kesihatan, Universiti Sains Islam Malaysia, 55100, Pandan Indah, Kuala Lumpur, Malaysia; **National University Ireland, Cork, Republic Of Ireland; ***Department of Psychiatry, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre (UKMMC), 56000 Cheras, Kuala Lumpur, Malaysia.**

Abstract

Objective*: Mental health is often stigmatized in Asia, and electroconvulsive therapy (ECT) is portrayed negatively in the media. The objective of this short report is to obtain an insight on Asian countries' perception on Electroconvulsive Therapy, mainly through the media. *Methods:* Several online movie databases were searched, with emphasis on Asian movies' portrayal of Electroconvulsive Therapy. *Results:* Electroconvulsive Therapy (ECT) was portrayed in 9 television programme, 4 in films and 2 on Youtube. All patients (15) had no proper information given on possible side effects and consent not taken in all of them. 5 patients (33%) were tortured via ECT, 3(20%) of them had, ECT for Schizophrenia. In all scenes (15/15, 100%) ECT were given without general anaesthesia and the patients were fully awake. Basic monitoring (2/15, 13%) was performed, and all patients had no oxygenation. Tonic Clonic seizures were visible because all patients received no muscle relaxant. Bilateral electrode's placements (13/15, 87%) were common. One (6.6%) patient had a trilateral electrode placement. Most patients (9/15, 60%) received one shock, 4 patients (27%) received 2 shocks. One patient (6.6%) received 3 and 1 patient (6.6%) 4 shocks. 100% of patients were in obvious discomfort and ECT was portrayed as barbaric. There was no death depicted post ECT. *Conclusion:* ECT is under portrayed in the Asian media. Only the Indian and Pakistani medium broached the subject. In the majority of the scenes, ECT was portrayed negatively. This shows a total lack of knowledge of ECT among the Asian population. Alarmingly, ECT was used as a torture device in 5 mediums. This only adds to the stigma of ECT in Asia. More needs to be done to correct the misconceptions of ECT in Asia. *ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: 288-293.

Keywords: Portrayal, ECT, Asian Media

Introduction

History

When Laszlo Meduna, then a 38 year old Hungarian Psychiatrist administered 10ml of oily solution containing 20% camphor to 5 patients with Schizophrenia in 1934, he birthed convulsive therapy as a physical treatment for Schizophrenia. Two patients then had a therapeutic effect, although there was no direct evidence that their subsequent therapeutic responses were due to the convulsive therapy, Meduna was unperturbed. One of his mentors was a strong opponent of this avenue of treatment and regarded it as

implausible. Because Camphor was associated with a number of adverse effects such as pain on the injection site, abscesses and nausea, Meduna switched to pentamethylenetrazol [1]. Initial results were favourable and treatment units sprung up before the Second World War.

However, Meduna's convulsive treatment was eventually sidelined when an Italian Psychiatry Professor Ugo Cerletti and his assistance Lucio Bini developed convulsions by directly applying electricity to the brain. They also selected patients with Schizophrenia for their trials, and the trials were overwhelmingly successful. It was truly a significant moment in Psychiatry, one that caused quite a stir. This development gained traction in the United States, and Electroconvulsive therapy quickly became popular worldwide. By the 1950s Electroconvulsive therapy (ECT) became one of the standard treatments for hospital depression [2].

Throughout the years, Electroconvulsive therapy was steadily modified. From the introduction of muscle relaxants to unilateral or bilateral placement of electrodes, it flourished. Alas nowadays, ECT is demonised as something barbaric. This is most likely due to the extremely negative portrayal of ECT in the media. If you ask any to lay person regarding, ECT the answers would almost be uniform; ECT is akin to torture. This misinformation has been ingrained through the incorrect portrayal of ECT in the media as something that is ineffective and inhumane.

ECT in the media has been discussed a few times before. Garry Walter and Andrew McDonald touched on the misinformation given among Hollywood films in regard to psychiatry and especially ECTs [3]. Charles H. Kellner in his article written in 2008 [4], found that the attitude towards ECTs was favourable. However, the medium whom he explored on was not entirely mainstream, and this was a pity. In this short report, we highlighted the actual technical portrayals of ECTs in the media; mainly in films and television. The methodology will be discussed further, but it is only apt to explain, ECT briefly first.

Mechanism of Action

The exact mechanism of action of ECT is still unclear. The stimulus dose needed must be just large enough to induce a seizure, of which the activation of the whole brain is necessary to produce a therapeutic effect. Repeated ECTs showed slower waves on electroencepahalogram (EEG), a change observed for about a month post ECT. ECT-induced changes in various neurotransmitter systems have also been reported. The neurochemical transmitters involved are Serotonin (5-hydroxytryptamine, 5-HT), Glutamate, gamma-aminobutyric acid, noradrenaline and dopamine [5].
Some studies have also shown increase neural growth post ECT and immune system modulation. Perhaps we will never fully understand ECT in our lifetime but this should not negate the use of ECT in our practice.

Indications and Contraindications

The National Institute for Health and Care Excellence (NICE) [6] guideline recommended ECT to be used in order to achieve a rapid and short term improvement in severe symptoms after adequate alternative treatments proved ineffective or when the condition is potentially life threatening, in individuals with: (i) catatonia, (ii) prolonged or severe mania, (iii) severe depression; life threatening or refractory to treatment [7] .

The Royal College of Psychiatrist England published a guideline on ECT in 2013. ECT has been shown to be the most beneficial treatment for severe depression. It is used as a fourth line treatment in severe depression that is refractory to treatment[7]. This is when in spite of adequate trials of antidepressant, the patient still does not exhibit any therapeutic effects from it. Patients who had undergone, ECT and had a good therapeutic effect are most likely to benefit from it if they experience the relapse in their depression. It is also offered in patients who have had severe side effects from antidepressants and further treatment with medications are not recommended. Patients who have severe depression who do not drink or eat enough

would warrant treatment with ECT. This also applies to patients with severe depression with serious risk of suicide. There are some researches in the use of ECT in Parkinson's Disease and in patients who suffer from side effects of some psychotropics [8].

Absolute contraindication for ECT is pheochromocytoma, because of the likely large effect of ECT on cerebral blood flow and intracranial pressure. Relative contraindications are few and do not lead to the prohibition of the use of ECT [8]. It is still safe to perform ECT on patients with a raised intracranial pressure if there is no mass effect. This also applies to patients with brain tumours.

Recent stroke does not preclude patients from receiving ECT. It is still safe to conduct ECT on patients with cardiac conduction defects; even on the ones with a pacemaker. Obstetrics consults, and fetal monitoring is recommended for patients with high-risk pregnancy who would benefit from ECT. Having an aortic or cerebral aneurysm is a relative contraindication to having ECT. In asthmatic patients on Theophylline, additional care must be taken. This is because the potential of causing a prolonged seizure which could lead to status epilepticus.

Benefits

The likely beneficial effect of ECT is much more rapid than medications. In certain intances, ECT is indicated where drug treatment fails (treatment resistant depression). Rarely, a single treatment would not be effective; 6-12 courses of ECTs are the norm for treatment resistant depression. Catatonia usually resolves after 3-5 treatments, whereas mania and treatment resistant psychosis usually needing multiple courses (up to 20 treatments). A few patients would need additional treatments during the 6-month period in order to prevent relapse. There is no recommendation from NICE guideline in maintenance ECT, some college bodies do accept that as per case by case basis, some will need maintenance treatment [9].

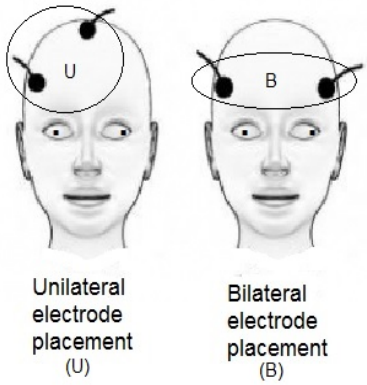
Risks

The risk in ECT is primarily due to the General Anaesthesia risk, as any other patients having a procedure under anaesthesia. The risk of death is 1 in 100,000. The most common side effects of having ECT are muscle pain, nausea, headcahe, weakness and confusion. Temporary short term memory loss has been documented in various studies. However this is hotly debated because some psychiatric disorders do have an effect on cognitive functioning [8].

ECT Procedure

As per the NICE guideline, adequate informations should always be given and consent taken appropriately. Consent must be gained without coercion and the patient reserve the right to reconsider their decision to accept treatment. This applies to individuals who agree to the treatment on a voluntary basis. In circumstances where patients are unable to give consent and treatment is deemed necessary, they would received ECT as an involuntary patient. Different countries have different Mental Health Act governing this situation.

Generally, the patients will be brought from the pre-op room to the main procedure room, where they would be attached to a monitor and receive oxygen. An Intravenous cannula will be inserted before the induction of patients for general anaesthesia. A muscle relaxant would be given before the actual electrical stimulus. The electrode placements depend on the treating psychiatrist, either unilateral or bilateral. Because of the muscle relaxant, the only observable muscle twitches would be minimal. Most often an EEG recording will demonstrate the convulsion. Afterwards, the patient will be nursed in the recovery room and most often discharged on the same day. Frequently, patients will undergo between 6-9 ECT sessions about twice a week. They will have to continue taking their psychotropics because of the beneficial effect of medications in continuing the benefits of ECT. The placements of electrodes have bearings on the efficacy and also on the possible side effects [10].



Unilateral placement; one electrode positioned on the temporal area on the right side (d'Elia placement). The centre of the other electrode placed 2–3 cm to the right of the vertex of the skull [11].

Bilateral placement; bifrontal, in which the centre of each electrode is placed 4–5 cm above the outer canthus of the eye along a vertical line perpendicular to a line connecting the pupils. Bitemporal, in which the centre of the stimulus electrodes are applied 2–3 cm above the midpoint of the line connecting the outer canthus of the eye and the external auditory meatus on each side of the individual's head [11]

When bilateral ECT is used, it leads to a greater proportion of patients with cognitive dysfunction. The most common complaint would be short term memory impairment, however there were case reports that documented long term memory impairment. Bilateral ECT leads to a quicker reduction in symptoms compared to unilateral ECT.

Methods

We targeted Asian based films and television programmes with psychiatric narrative. The films and Television programmes were then filtered further accordingly. A study pro forma was design and used during the data collection. The exact ECT procedures were documented using the study Proforma. We looked at the ECT procedure portrayal in detail from the pre procedural stage(information giving/consent), during the procedure and post procedure(adverse events).

The films and television were searched using standard Internet search engine. The corresponding ECT scenes were documented using the study pro forma. No statistical package was used to analyse the data. All media contain subtitles, the ones which do not were excluded.

Results

The data originated mostly from South Asia, mainly from Indian and Pakistani media. About 15 ECT scenes in total. A total of 4 (27%) were from films and 2(13%) were from Youtube. Most of the bulk of the scenes were derived from television[9(60%)].

Pre ECT there was 1 (6.7%) case where ECT was explained in detail to the patient. About 14(93%) patients did not receive any adequate information regarding ECT. The possible adverse effects were not discussed at all in 15(100%) cases pre ECT. The indications for ECT were unclear in 9(60%), 3(20%) were use for possible Schizophrenia. The motive was entirely vindictive. There was one scene where the doctor was shown to receive private payment for performing ECT on a patient; implying that the doctor had an ulterior motive in performing the procedure. 13(87%) of patients received ECT unwillingly and was restrained either by a physical or chemical manner.

100% (15) of all patients did not receive any kind of sedation or general anaesthesia. All of them were awake [15(100%)] during the procedure. None of the patients received any Oxygen before or during the procedure. 2(13%) had a heart tracing monitoring whereas the rest did not [13(87%)].

As the resulting effect of no administration of muscle relaxant [15(100%)], all patients had a

visible and quite graphic tonic clonic seizure [15(100%)].13(87%) had bilateral electrode placement and 1(6.6%) had no electrodes placed at all. One patient (6.6%) actually had a trilateral electrode placement, something the authors had never seen previously. As ECTs were depicted as something inhumane in all of the cases (100%), this is quite concerning. All of the patients [15(100%)] were in some kind of pain or discomfort. Post procedure, 14 cases(93%) did not exhibit any apparent side effects. One (7%) suffered from temporary confusion.

Alarmingly about 5(33%) patients were tortured using ECT. This is a total disregard of the Hippocratic Oath which states Do No Harm. There were no recorded deaths during or after ECT in all the patients [15(100%)].

Discussion

It is quite shocking that ECT is not depicted or discussed much in the Asian media. It was mostly among Indian and Pakistani media where the data arose from. ECT does not seem to have much exposure in the Asian media. Is this a blessing or a curse? This is in stark contrast among the Western society where ECT is always depicted as something barbaric and the practice should be discontinued. Even among many psychiatric centres in Europe, the use of ECT is dwindling. The author could count with one hand how may ECTs were actually performed in the training centre where the author was attached previously.

This brings us to our second point of discussion: awareness of ECT as a physical treatment option among Asian population. If you ask any to lay person regarding ECT, how many will actually know what it is? Maybe this should be the next survey performed.

The depiction of ECTs in the media that were surveyed was a total misconception of the procedures. One which does the disservice to the patients whom some day might need the procedure. How terrified can a patient be if they looked up on the Internet and find this negative portrayal of ECT. Keep in mind all the media surveyed were easily accessed from the worldwide web.The most appalling thing about this survey is that ECT was something the film producers thought was used to torture people with.

We as the experts need to take a more hands-on approach in educating the public regarding mental health. Stigma is a big factor that would prohibit any patients in accessing the mental health system. The film and television industries have always maintained a tight hold on society. Perhaps we should reach out and give consultations on these mediums in order to amplify our reach to society. We could provide on site consultations to these producers. In this way, we can educate and correct any misconceptions on psychiatry.

The growing trend in Europe is making it harder for clinicians to access ECT. Most often they will resort to multiple sequences of medications without considering ECT. This is not entirely their fault, this is an access issue. Some centres have an unused ECT suite because of the lack of funding to recruit staffs. Frequently, clinicians were informed to refer patients to a centre that is 4-5 hours drive in order the access ECT. The logistics and red tapes on this arrangement are sometimes prohibitive. This certainly will impact the future training in psychiatry and subsequent use of the service.

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Corresponding author: ***Ahmad Izzat Ahmad Tajjudin, Lecturer and Consultant Psychiatrist, Faculty of Medicine, Universiti Sains Islam Malaysia, Level 13, Menara B, Persiaran MPAJ, Jalan Pandan Utama, Pandan Indah, 55100 Kuala Lumpur, Malaysia.***

Email: izzattajuddin@usim.edu.my

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