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Socio-demographic Characteristics, Kratom Use and Quality of Life (QoL) of Regular Kratom (Mitragyna speciosa Korth.) Users

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ABSTRACT

Introduction: Kratom which is a tropical plant use as traditional remedy in rural areas of Malaysia and Thailand has recently been a research focus worldwide due to its potential as substitution therapy for opioid addiction. However, data on its effect on the quality of life of kratom users is scarce. This study aimed to describe the socio-demographic and history of kratom use as well as assessing the quality of life and its associated factors in Malaysian kratom users.

Methods: This cross-sectional survey recruited 150 kratom users and they were administered with socio-demographic and substance history questionnaires, the World Health Organization Quality of Life- BREF (WHOQOL-BREF) to assess quality of life and the Kratom Dependence Scale (KDS) to assess severity of kratom dependence.

Results: Respondents were all males with mean age of 34.4 years old (SD= 11.2). Sixty-percent of respondents use kratom > 6 years (mean duration = 8.5 years, SD= 5.3) while 55% (n=83/150) used >3 glasses of kratom daily. Duration of kratom use, quantity of kratom use and severity of kratom dependence were not associated with all the domains of quality of life except severe kratom dependence users had significant lower physical quality of life score when compared to that of users with mild to moderately severe kratom dependence. Conclusion: Based on our study, kratom consumption does not cause impairment in quality of life of kratom users except for severe kratom dependence which may cause deterioration in physical well-being of users.

Keywords: Quality of life, Duration of kratom use, Quantity of kratom use, Severity of kratom dependence, Malaysian kratom users

INTRODUCTION

Mitragyna speciosa Korth (M.speciosa) is a naturally occurring tropical plant found mainly in Southeast Asia which belongs to a plant family of Rubiaceae. It is known as Ketum in Malaysia and Kratom in Thailand, in which its use both as traditional medicine and as an energy source are quite widespread (1-3). There are several benefits of kratom which has been highlighted in previous literatures such as kratom has long been used as traditional remedies for treatment of coughing, diarrhea, intestinal infection, muscle pain and to enhance tolerance working under the scorching sun for those who work as farmers, fisherman and machine operators (1, 3, 4). Recently, researchers began to pay more attention to the clinical implications of kratom in which there are several literatures reported the potential of kratom to be used as substitution therapy for treatment of opioid addiction due to its opioid-like properties and its ability to reduce and suppress opioid withdrawal symptoms, and as treatment of chronic pain. However kratom has fewer life-threatening side effects (even at high dose, kratom does not cause respiratory depression) and resulting in milder withdrawal despite regular use (5-7).

Although kratom may be associated with several beneficial effects, it was reported to exhibit concerning addictive properties include withdrawal symptoms upon abstinence from kratom use (such as frequent yawning, muscle pain, running nose, lacrimation, anxiety, depression, irritability, insomnia, restlessness and aggression), craving, tolerance and cross-tolerance to morphine (8, 9). Long-term kratom users have also reported difficulty to give up kratom use and kratom users have described kratom withdrawal symptoms as distracting and annoying (9). In addition, other side effects which have been reported by long-term kratom users are constipation, fatigue, headache, dehydration, weight loss and hyperpigmentation over the cheek (9, 10).
Since, kratom produces both beneficial effects and side effects, it would be vital to assess how kratom consumption affects the quality of life of chronic kratom users. Quality of life is the perception of one’s position in life in the context of the culture and values of the community one lives in and in relation to standard, goals, concern and expectations (11). Quality of life is an outcome measure and by assessing quality of life, we will be able to gauge how much is the impact of the effect of kratom consumption on the users, particularly in those who use kratom on regular basis and prolonged duration. Assessment of quality of life involved evaluation in many aspects of living such as physical health, psychological well-being, social relationship and the relationship with salient features of their surrounding environment (12). Hence, this study utilized the World Health Organization Quality of Life-BREF (WHOQOL-BREF) to assess quality of life of kratom users as this instrument covers all four aspects of living. To date, there is no study conducted to assess the quality of life of kratom users. Hence, this study aimed to describe the socio-demographic and history of kratom use, and determine the quality of life and its associated factors among Malaysian kratom users.

MATERIALS AND METHODS

Study design and respondents
This study received approval from the Human Ethics Committee of Universiti Sains Malaysia (code: USM/JEPEM/16050174). This cross-sectional survey recruited 150 regular kratom users for a duration of 1 year by snowball and purposive sampling. This study was conducted in three locations in the Malaysian state of Penang which has high prevalence of kratom use. Initially, key informants who were ex-drug users and kratom users were identified and recruited in three targeted locations and explained about the objectives of the study prior to data collection. Then, they were asked to refer potential kratom users for the study. Kratom users who fulfilled all inclusion criteria and without any exclusion criteria were enrolled in the study if they voluntarily agreed to participate and signed written informed consent. The inclusion criteria for the study includes: (a) 18 years and above, (b) self-reported as a regular kratom user (used kratom ≥2 times daily), (c) must have more than 1 year kratom use history, and (d) able to read and write in the Malay language. The respondents were administered the Kratom Dependence Scale (KDS) to assess severity of kratom dependence and the WHOQOL-BREF to assess quality of life.

Kratom Dependence Scale (KDS)
KDS is a self-administered questionnaire which was developed based on DSM and ICD diagnostic criteria to measure the severity of kratom dependence in regular kratom users. It consists of 16 items which are grouped into a single domain. It is scored in a Likert scale ranged from 0-3 (0 = never to 3 = almost always/always). The total score ranged from 0-48 with score of 0-13 designates mild severity, 14-34designates moderate severity and 35-48 designates severe dependence. It has excellent internal consistency (Cronbach’s α) of 0.97 (2). The Malay version of the KDS also demonstrated excellent internal consistency (Cronbach’s α) of 0.94 and exhibit a best fit one factor-model (13).

World Health Organization Quality of Life- BREF (WHOQOL-BREF)
WHOQOL-BREF is a self-administered questionnaire and was used in this study to assess the quality of life of the kratom users. It comprised of 26 items in which items 1 and 2 are general questions on quality of life while the rest of the items are grouped into 4 domains. Each item is scored in a Likert scale ranged from 1-5. WHOQOL-BREF has good psychometric properties and found to be a valid and reliable alternative to WHOQOL-100 for measuring quality of life (14). The WHOQOL-BREF was also used in studies determining quality of life in opioid users (11, 15). The Malay version of the WHOQOL-BREF also demonstrated excellent psychometric properties with internal consistency (Cronbach’s α) of 0.89 (16).

Mitragynine content
We measured the mitragynine content of kratom juice which we purchased from each targeted locations where the subjects were recruited using gas chromatography-mass spectrometry (GC-MS). Mitragynine is the most abundant psychoactive alkaloid constituent in kratom.
leaves. We found that the mitragynine content in each glass of kratom from the three targeted locations of subject recruitment had no significant difference. The range of mitragynine level in one glass of kratom juice was 24.06 to 28.93mg.

Data analysis
All data were analysed with Statistical Package for Social Sciences (SPSS) version 23. First, descriptive statistics were computed to describe the samples socio-demographic characteristics and history of drug use. Then, the WHOQOL-BREF scores between short term (≤6 years) and long term users (>6 years), users with mild to moderate kratom dependence (KDS score < 35) and severe kratom dependence (KDS score ≥ 35), and users who consumed ≤3 glasses of kratom daily and those who consumed >3 glasses daily were compared with independent t-test. All the statistical significance was set at level (p<0.05).

RESULTS

Socio-demographic characteristics and history of kratom use
The samples demographic characteristics and substance history are shown in Table I. The proportion of young adults (18-32 years old) was almost equal to the proportion of older adults (33 years old and older) which were 51% and 49% respectively. Mean age of the respondents were in the adult age group (mean age: 34.4 years, SD=11.2). All the respondents were males while almost all the respondents were Malays (99%). Most of the respondents had some amount of education as 91% had up to secondary education and majority of them were employed (92%). Almost seven tenth (67%) earned more than Ringgit Malaysia 1000 per month. Those who used kratom for more than 6 years comprised of 60% of total respondents with mean duration of kratom use of 8.5 years. All respondents used kratom daily with more than half of respondents (55%) consumed more than 3 glasses daily (mean daily kratom consumption was 4.1 glasses). However, seven tenth of the respondents (69%) consumed kratom at not more than 4 times a day while the rest of the respondents (31%) consumed kratom at five times a day or more.

The association of duration of kratom use, kratom dependence and quantity of kratom use with quality of life of kratom users

The associations of the above variables with quality of life in kratom users were summarized in Tables II, III and IV. Regarding the quality of life of users in relation to duration of kratom use, there were no significant differences in the scores of all domains of the WHOQOL- BREF (physical health, psychological, social relationships and environment domains) between those who used kratom for not more than 6 years and users who used kratom more than 6 years.

On the contrary, when we looked into the quality of life of users in relation to kratom dependence, those with mild to moderate kratom dependence had significantly
higher score in physical health domain of the WHOQOL-BREF when compared to those with severe kratom dependence (Mean physical health score [mild to moderate KDS score] = 26.42 (±4.70), mean physical health score [severe KDS score] = 24.42 (±5.05), p = 0.022). However, there were no difference in the scores of three other domains of the WHOQOL-BREF (psychological, social relationships and environment domains) between those with mild to moderate kratom dependence and severe kratom dependence.

Again, when assessing the quality of life of users in relation to quantity of daily kratom use, there were no significant differences in the scores of all domains of the WHOQOL-BREF between those who consumed kratom not more than 3 glasses daily and those with consumed more than 3 glasses daily.

**DISCUSSION**

This study aimed to describe the socio-demographic characteristics and history of kratom use, and evaluate the association between duration of kratom use, quantity of kratom use, kratom dependence and quality of life among Malaysian kratom users. None of the female users came forward to participate in this study although we did not exclude female users from the study. This can be explained by the non-acceptability of female kratom users in the society in Southeast Asian countries like Malaysia and Thailand, unlike male users who are less stigmatized by the society. Hence, although females in Malaysia do use kratom for treatment of mild medical illnesses like pain, fever and diarrhea, they usually do not revealed their kratom using behaviour due to fear of being stigmatized by the community (4, 17). Our study also reported that the age group which used kratom was adult age group and majority of the kratom users were employed, completed their secondary education and had regular monthly income. This was similar to the socio-demographic status reported in the neighbouring country of Thailand pointing towards the evidence that the functioning of kratom users were not impaired and they can cope well in their daily living in the community (4, 5, 18). Our study also reported kratom users need to consume kratom on daily basis with mean consumption of 4 glasses per day, chronic and prolonged consumption were also demonstrated (mean duration of kratom use was 8.5 years). This finding supported the notion that regular and long term use of kratom leads to kratom addiction and difficulty to abstain from kratom use as a result of uncomfortable withdrawal experienced by kratom users (4, 7, 10).

When we compared the domains of quality of life of kratom users in our study to a study involving 112 opioid-dependent users who had undergone nucleus accumbens ablative neurosurgery and 130 opioid-dependent users who had undergone detoxification (19), the scores of all four domains of quality of life were higher than that of the scores in opioid users (transformed score (0-100): 63-75 [kratom users] compared to 34-62 [opioid users]) (Tables II to IV). Similarly, when we compared the scores of all the domains of quality of life of kratom users in our study with that of a study involving 47 Indian heroin-dependent users (20), the scores of all the domains of quality of life of kratom users were higher than that of the heroin-dependent users. In addition, when the scores of all the domains of quality of life in this study is compared with a study involving 60 illicit drug users with history of polydrug use (alcohol, cocaine, cannabis, inhalant, hallucinogen and stimulants) (21), the scores of kratom users in this study were also higher than the scores of polydrug users (transformed score (0-100): 63-75 [kratom users])

### Table III. QOL and Kratom Dependence Scale score

<table>
<thead>
<tr>
<th>QOL domains</th>
<th>KDS &lt;35(\text{N=107}) mean raw score ±(SD)</th>
<th>KDS ≥35(\text{N=43}) mean raw score ±(SD)</th>
<th>t-test</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical health</td>
<td>26.42 (4.70)</td>
<td>24.42 (5.05)</td>
<td>-2.387</td>
<td>0.022**</td>
</tr>
<tr>
<td>Psychological</td>
<td>22.47 (4.00)</td>
<td>21.21 (4.41)</td>
<td>-1.453</td>
<td>0.093</td>
</tr>
<tr>
<td>Social relationship</td>
<td>11.65 (2.63)</td>
<td>10.79 (2.93)</td>
<td>-1.532</td>
<td>0.081</td>
</tr>
<tr>
<td>Environment</td>
<td>29.04 (5.19)</td>
<td>27.53 (5.46)</td>
<td>-1.087</td>
<td>0.116</td>
</tr>
</tbody>
</table>

QOL= Quality of Life, SD= standard deviation, *significant at p < 0.05, **KDS score < 35= mild and moderately severe kratom dependence, KDS score ≥35= severe kratom dependence

### Table IV. QOL and daily quantity of kratom use

<table>
<thead>
<tr>
<th>QOL domains</th>
<th>≤ 3 Glasses (N=67) mean raw score ±(SD)</th>
<th>&gt; 3 Glasses (N=83) mean raw score ±(SD)</th>
<th>t-test</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical health</td>
<td>25.97 (4.95)</td>
<td>25.75 (4.84)</td>
<td>-0.342</td>
<td>0.781</td>
</tr>
<tr>
<td>Psychological</td>
<td>22.48 (4.03)</td>
<td>21.81 (4.24)</td>
<td>-0.802</td>
<td>0.326</td>
</tr>
<tr>
<td>Social relationship</td>
<td>11.49 (2.85)</td>
<td>11.34 (2.67)</td>
<td>-0.382</td>
<td>0.731</td>
</tr>
<tr>
<td>Environment</td>
<td>28.76 (5.13)</td>
<td>28.48 (5.45)</td>
<td>-0.150</td>
<td>0.749</td>
</tr>
</tbody>
</table>

QOL= Quality of Life, SD= standard deviation
compared to 47-56 [polydrug users]) (Tables II to IV). These findings were not surprising as beneficial effects of kratom has been reported in a few literatures which includes increasing focus, decreasing pain, increasing energy, elevation of mood, reducing posttraumatic stress disorder symptoms, produce antidepressant and anxiolytic effects, allow reduction and cessation of opioid analgesic use, and treating opioid addiction (22, 23). Hence, these beneficial effects of kratom use may increase the physical health, psychological, social and environmental quality of life of the users. In addition, kratom’s negative mental health concern which is mainly withdrawal symptoms is relatively milder when compared to that of opioid (7).

Our study also demonstrated that longer duration of kratom use, higher quantity of kratom use and greater severity of kratom dependence were not associated with worsening of quality of life of users in all domains except physical health-related quality of life which was significantly lower in severe kratom dependence when compared to mild to moderate kratom dependence. This important information indicates that kratom consumption may not cause any significant impact onto the physical health, psychological well-being, social relationship and the management of environmental activities of the users even if there was prolonged and heavy use of kratom. However, severe kratom dependence may worsen physical well-being of users which may be due to more severe withdrawal symptoms affecting pain, sleep and work capacity.

There were a few limitations to take note of in this study. First, this study is a cross-sectional study, it does not demonstrate causal relationship and time-dependent interaction between kratom use related factors and quality of life in kratom users. Hence, we recommend prospective study to be conducted in the future. Second, this study was conducted only in the state of Penang and hence, the findings cannot be generalized to represent the entire kratom user population of the country. We recommend future study to involve kratom users from other states as well.

Despite these limitations, this study was the first study to evaluate quality of life in kratom users. This study provided preliminary findings that the quality of life of kratom users was not significantly impaired by prolonged and regular kratom use, supports the potential of kratom to be utilized for treatment of opioid addiction. However, the efficacy of kratom, its safety profile as well as the appropriate dosage for treatment of opioid addiction should be extensively studied in future research as our findings demonstrated that severe kratom dependence was significantly associated with reduced physical well-being of users (24). Furthermore, longer duration of kratom use, severe kratom dependence and larger quantity of daily kratom consumption did reduce the quality of life scores in kratom users, although these association were statistically insignificant.

CONCLUSION

This cross sectional study was the first study to assess quality of life and its associated factors in kratom users. Our findings indicated that quality of life was not significantly affected by regular and prolonged kratom use. However, physical well-being was reduced in severe kratom dependence. Our study provided preliminary findings regarding the possible potential of kratom use for medicinal purposes but future prospective study with control group studying the effect of kratom on quality of life of users is warranted to validate our findings. Future study should also investigate the reason why kratom use is associated with impaired physical well-being of users. Safety profile of kratom use should be thoroughly investigated before we can conclude the potential of kratom use for medicinal purpose.

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