

# Assessment of Motivation for Rehabilitation among Males with Illicit Drug Use Disorder in Rehabilitation Centres in Sri Lanka

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*Persons with illicit drug use disorder should have a good motivation for rehabilitation at the initiation of the rehabilitation process to avoid relapses. This study was conducted to assess the level of motivation for rehabilitation and its predictors among males with illicit drug disorders admitted to rehabilitation centers in Sri Lanka. A cross-sectional study was conducted among 431 study subjects from five selected rehabilitation centres. Sinhala translation of Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) was used to assess the motivation level under the three sub-scales: Recognition, Ambivalence, and Taking Steps. Chi-square test was used to identify the sociodemographic and drug related factors associated with the motivation level. Those factors were subsequently used as independent variables in binary logistic regression for identification of predictors of motivation using logistic regression approach at 0.05 significance level. Nearly 40% (n=171) of the sample had been previously rehabilitated as an inpatient in a rehabilitation centre. The majority of the sample (52.9%) had a moderate level of motivation for rehabilitation in all three categories of motivation; recognition, ambivalence, and taking steps. High motivation for rehabilitation was reported by 23.4% based on total score, while a similar proportion (23.7%) reported low motivation. Study subjects having a higher problematic level of drug use were less likely to have a high motivation for rehabilitation (OR=0.564, 95% CI=0.366-0.872,  $p<0.05$ ), whereas being aware of adverse consequences of drug use (OR=1.778, 95% CI=1.108-2.853,  $p<0.05$ ) was more likely to predict high motivation. The findings reveal that the level of motivation for rehabilitation is inadequate among males with drug use disorder. This finding is further emphasized with the high readmission rate following relapse for rehabilitation centres in present study. Assessment of readiness to change can be incorporated into the rehabilitation process to identify those with low motivation to change drug use behaviour and intervene early to prevent future relapses.*

**Keywords:** Illicit drug use, motivation, rehabilitation, SOCRATES

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Illicit drugs are defined as “psychoactive substances that the production, sale or use is prohibited with the prevailing legal system in a given country and for the long term on regular basis for a non-medical purpose” (World Health Organization, 1994). Illicit drug use has become a significant public health problem while relapse following rehabilitation is identified as a major drawback in the rehabilitation process in many countries including Sri Lanka.

To change their drug use behaviour, a person who uses drugs must have the enthusiasm or motivation for rehabilitation. Motivation, simply defined as readiness to change (Ceccarini, Borrello, Pietrabissa, Manzoni, & Castelnuovo, 2015) and is a fundamental requirement in the management of psychoactive substance addiction including the illicit drug treatment process (Köpetz, Lejuez, Wiers, & Kruglanski, 2013). Therefore, assessment of motivation for rehabilitation is identified as an important aspect in the rehabilitation process of persons addicted to drugs.

Rehabilitation is considered under tertiary prevention of illicit drug use. However, according to the new framework for classifying prevention introduced in 1994, rehabilitation was described under selective prevention and indicated prevention (National Institute on Drug Abuse, 1997). Rehabilitation of persons with illicit drug use disorder is identified as an important step in the prevention of relapses throughout the world.

Relapse following drug rehabilitation can occur due to many reasons including poor motivation for rehabilitation by the clients. Many persons with illicit drug use disorder show a lack of motivation to change their behaviour, to engage in the rehabilitation process (Battjes, Gordon, O’Grady, Kinlock, & Carswell, 2003). According to the National Dangerous Drug Control Board (NDDCB) of Sri Lanka, the majority of people with illicit drug use disorder entered into the rehabilitation process with enforcement by family or through the legal system and only a few were identified as self-referrals. This lack of motivation is further supported by the fact that many of them end up with relapse following rehabilitation.

### **Motivation for rehabilitation**

Motivation to change is a complex process and it includes behavioural change (DiClemente, Schlundt, & Gemmell, 2004). It requires better identification of a person with illicit drug use disorder at the individual level. Better assessment, frequent assessments, better care at rehabilitation, and identification of the stage of readiness to change are identified as important aspects of rehabilitation at an individual level for a successful rehabilitation process to avoid relapses (DiClemente, Schlundt, & Gemmell, 2004). Moreover, recognizing the main influences which impact individuals’ engagement and retention in rehabilitation programs is important, and one needs to identify those influences during the rehabilitation process (Drieschner, Lammers & Van Der Staak, 2004).

According to literature, initial motivational status and readiness for change affect the retention in rehabilitation as well as good prognosis after rehabilitation (Leon, Melnick, & Kressel, 1997). Moreover, experiencing various negative consequences of

substance use is identified as an important predictor of motivation for rehabilitation (Battjes, Gordon, O’Grady, Kinlock, & Carswell, 2003).

Usually, the high level of motivation showed a more positive response to rehabilitation. However, the North American Opiate Medication Initiative (NAOMI) randomized controlled trial found that retention within the rehabilitation process could be achieved regardless of baseline motivational status (Nosyk et al., 2010). These shreds of evidence emphasize the need for assessment of motivation for rehabilitation among persons with illicit drug use disorder, especially when they are undergoing institutionalized rehabilitation. Hence, this study was conducted to assess the level of motivation for rehabilitation and its predictors among males with illicit drug disorders admitted to rehabilitation centres in Sri Lanka.

### **Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES)**

Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) is a tool developed to assess the level of motivation for rehabilitation (Doerfler, Melle, McLaughlin, & Fisher, 2016; Miller, 1991). SOCRATES was originally developed on alcohol addiction and later adapted to other populations with substance abuse disorders including illicit drug use (Miller and Tonigan, 1997). The tool consists of 19 questions that described the way that a drug user might/ might not feel about their drug use during the period of three months before admission. The motivation is assessed under three factorially derived sub-scales; Recognition, Ambivalence, and Taking Steps.

A person identified with illicit drug use disorder and whether he expresses a desire to change or not is assessed under-recognition. In ambivalence, it is assessing that a person with illicit drug use disorder wonders if he is in control of his drug-taking behaviour, is using too much, is hurting other people, and/or is a person with drug use disorder. A person with illicit drug use disorder is already doing things to make a positive change in his drug use behaviour and may have experienced some success in this regard is assessed in taking steps.

This scale provides information as to whether a subject’s score is low, average, or high concerning seeking treatment for illicit drug use problems. It has been translated, validated, and applied for different populations including Asian, African European, and American countries (Abiola, Udofia, Sheikh, & Sanni, 2015; Chun, Cho, & Shin, 2010; Lopes, Prieto, Delgado, Gamito, & Trigo, 2010; Mitchell & Angelone, 2006; Mitchell, Francis, & Tafra, 2005; Parvizifard, Ahmad, Baba, & Sulaiman, 2012; Yeh, 2009; Zullino et al., 2007). It was found to have high test-retest, inter-item, and item-total reliabilities and a high level of sensitivity and specificity, confirming its validity in assessing the level of motivation for rehabilitation in diverse populations.

### **Problem Statement**

Poor motivation for rehabilitation among persons with illicit drug use disorder is identified as the main reason for relapse after rehabilitation ((Battjes, Gordon, O’Grady, Kinlock, & Carswell, 2003; DiClemente, Schlundt, & Gemmell, 2004, 2004; Gard,

2001; Gideon, 2010; Leon, Melnick, & Kressel, 1997; Piedmont & Ciarrocchi, 1999). Many persons with illicit drug use disorder in Sri Lanka entered into the rehabilitation process due to enforcement by family or through the legal system and only a few present as self-referrals (De Silva & Fonseka, 2008; NDDCB, 2018). To change their illicit drug use behaviour, a client must reach a state of readiness and willingness to change. Therefore, measuring and addressing 'individual motivation' is identified as an important aspect of the rehabilitation process. However, it cannot be negated any responsibility on the quality of the rehabilitation provider particularly in terms of engagement, appropriateness, and the quality of the intervention provided. Further, recognizing the main influences which impact peoples' engagement and retention in rehabilitation programs is identified as an important aspect in literature (Drieschner, Lammers & Van Der Staak, 2004). However, as the study selected five rehabilitation centres that provide rehabilitation service under regulations of NDDCB, Sri Lanka, it can be assumed quality and rehabilitation process is equal in the study setting. Therefore, individual motivation is identified as a crucial element influencing a person with illicit drug use disorder to pursue, follow and complete treatment in the study. Further, it is important to assess the level of motivation for the rehabilitation when a person with illicit drug use disorder initiates the rehabilitation process, which will enable appropriate activities to be incorporated into rehabilitation programs according to motivation level to ensure greater success in rehabilitation. Understanding the predictors of motivation would be useful in the identification of clients who are likely to be less motivated and potentially vulnerable for relapse. Finally, it will help to minimize relapse rate following rehabilitation by facilitating more focused interventions in providing rehabilitation care for people with drug use disorders.

## Methodology

### Study design and Subject recruitment

This study was conducted as a part of a larger cross-sectional study on drug use behaviour and associated factors among institutionalized males with illicit drug use disorder in Sri Lanka.

To recruit the subjects for the study, permission was obtained from the Chairman of NDDCB, Sri Lanka. Participants were recruited after obtaining written informed consent. The principal investigator went through the admission registers maintained by each rehabilitation centre. Eligible subjects were selected for the study with the help of the admission officer of the respective rehabilitation centres after verifying their records. The study sample included 431 males aged 16 years or above, who made first contact with the investigator during the data collection period including both first admissions and readmissions, admitted within one month, and who were mentally fit to respond to the study questionnaires. Readmissions of the same subject during the data collection period and participants who could not give legally effective consent were excluded from the study. Data were collected for a one-year duration.

### Study setting and quality of current rehabilitation program

The participants were recruited from five selected rehabilitation centres in four main districts (Colombo, Galle, Kandy, and Gampaha), which cater to clients from all districts of the country.

All centres functioned under the NDDCB, Sri Lanka. In these rehabilitation centres, blanket psychological counselling is provided for persons with illicit drug use disorder within a closed environment and no medications are used for the rehabilitation process. The rehabilitation programs of these centres include physical exercises, mental relaxation, indoor and outdoor activities, psychotherapy, education, vocational training, improving coping skills, and motivation to develop healthy lifestyles through counselling services and residential care. Further, they offer individual and family counselling to the affected persons. Therefore, all the centres selected for the study maintain quality rehabilitation care for persons affected with illicit drug use disorder.

### Study instrument and Data collection

Two study instruments were used for data collection including the Sinhala translation of SOCRATES which was used to assess the level of motivation for rehabilitation under the three subscales: Recognition, Ambivalence, and Taking Steps. This scale was selected for use in this study because it has been used in a wide range of socio-cultural settings with satisfactory cross-cultural validity, is relatively easy to administer, and has shown the ability to predict the success of the rehabilitation process, which would be useful in estimating the risk of relapse after rehabilitation in subsequent stages of studies (Ferrell, 1999, Rush Jr et al., 2009). Apart from that a Sinhala translation of the Drug Abuse Screening Test 20 (DAST 20) (Harvey A. Skinner 1992) was used to identify and quantify the level of problems related to drug abuse using 20 questions. The scores of DAST-20 were compared against the American Society of Addiction Medicine (ASAM) Placement Criteria. According to these criteria, ASAM Levels I & II were considered as the low problematic level of illicit drug use while ASAM Levels III & IV were considered as the high problematic level for subsequent analysis with motivation level.

Those scales were translated to Sinhala using the 'translation-back translation' method and were validated for the Sri Lankan setup using judgmental validity. The face validity, content

Table 1: The distribution of the SOCRATES scores among males with illicit drug use disorder in selected rehabilitation centers (n=431)

Scale	Total score assigned	Score obtained by the participants			
		Mean	SD	Median	IQR
Recognition	35	25.92	3.41	26	4 (28-24)
Ambivalence	20	13.39	1.69	14	2 (14-12)
Taking steps	40	21.45	3.65	20	3 (23-20)
<b>Total</b>	<b>95</b>	<b>60.75</b>	<b>6.55</b>	<b>61</b>	<b>6 (64-58)</b>

Table 2: Motivation level for rehabilitation among males with illicit drug use disorder in rehabilitation centers (N=431)

Scale	Motivation level for rehabilitation		
	Low No (%)	Moderate No (%)	High No (%)
<b>Recognition</b>	56 (13.0)	297 (68.9)	78 (18.1)
<b>Ambivalence</b>	124 (28.8)	214 (49.7)	93 (21.6)
<b>Taking Steps</b>	78 (18.1)	234 (54.3)	119 (27.6)
<b>Total Score</b>	102 (23.7)	228 (52.9)	101 (23.4)

validity, and consensual validity of the scale were ascertained using the opinion of a panel of experts consisting of a Consultant Community Physician, a Consultant Psychiatrist, and an expert in behavioural sciences and social works before applying the tool in the present study.

In addition, an interviewer-administered questionnaire was used to collect data on contextual factors, selected drug use behaviours, and other potential predictors of motivation as identified in the literature. Socio-demographic factors; age category, area of residence, education level, occupational status, income category, marital status, and the family type and drug-related factors; duration of drug use, age of first drug use, availability and accessibility for illicit drugs, problematic level of drug use and awareness about adverse consequences of drug use were assessed in this interviewer-administered questionnaire.

The occupation was considered according to the usual job of the subjects and categorized according to Hollingshead categories used in Addiction Severity Index (McLellan et al., 1980). Education level was assessed according to the highest grade completed or highest examination passed. Having educational qualifications less than G.C.E. O/L (The Sri Lankan Ordinary Level is a General Certificate of Education qualification in Sri Lanka, conducted by the Department of Examinations) was considered as having an unsatisfactory level of education. Monthly income was taken as the average individual income per month in rupees. Unsatisfactory monthly income was considered as having a monthly income of fewer than 50000 Sri Lankan Rupees (USD 250).

Data collection was carried out at the respective rehabilitation centres in a secure environment to maintain privacy and confidentiality. The principal investigator explained each item in SOCRATES to the study subjects, following which they completed the questionnaire.

### Data analysis

Data were coded and entered into a database and were analysed using SPSS (Version 20) software. The mean, standard deviation (SD), median, and inter-quartile range (IQR) for SOCRATES scores were calculated. The level of motivation was determined based on the sum of the scores in three categories and categorized as low, moderate, or high according to the original SOCRATES Profile Sheet. The scores below the 30<sup>th</sup> percentile were categorized as low, those above the 70<sup>th</sup> percentile as high, and scores in between these percentiles as having a moderate level of motivation. Frequency tables were used to describe the motivation level as appropriate.

To assess the predictors of motivation, the level of motivation was divided into two categories based on the median of the total score of SOCRATES after normality assessment (total score was not normally distributed). Those who had scores below the median were considered as having a low level of motivation and those who had scores equal to or above the median as having a high level of motivation. Chi-square test was used to identify the factors associated with the motivation level; socio-demographic factors (age category, area of residence, education level, occupational status, income category, marital status, and family type), and drug-related factors (duration of drug use, age of first drug use, availability and accessibility for illicit drugs, problematic level of drug use and awareness about adverse consequences of drug use). These factors were subsequently used as independent variables in binary logistic regression for identification of predictors of motivation using enter logistic regression approach. The level of significance was considered as 0.05.

### Ethical considerations

To conduct the study, ethical approval was obtained from the Ethical Review Committee, Faculty of Medicine, University of Ruhuna, Sri Lanka (Ref. No 11.07.2016:3.13).

## Results

### Sample Characteristics

A total of 431 males with illicit drug use disorder responded to the study instruments. The response rate of 100.0% as there were no non-respondents. The mean age (SD) of the sample was 31.7 (10.3) years. The highest proportion of them were residents of urban areas around the capital city of the country (75.6%). Over 2/3rd of the drug users (67.5%) had an unsatisfactory education level. Among drug users, the majority (93.5%) were employed and nearly half of them were non-manual workers (56.5%). The majority (61.2%) had a monthly income of more than 250 USD with a mean income (SD) of 365 (345) USD which was considered as a satisfactory income. A majority of the drug users (54.3%) were unmarried, while 65.0% lived in a nuclear family setting (Table 3). Nearly half of the sample had used drugs for more than 10 years (n=221, 51.0%), had initiated drug use behaviour before 18

**Table 3: Association of socio-demographic factors with the motivation level for rehabilitation among males with illicit drug use disorder (N=431)**

Socio-demographic factor	Motivation level for rehabilitation		Total No (%)	Significance	
	High (n=229)	Low (n=202)			
	No (%)	No (%)			
<b>Age</b>	< 25 years	45 (38.8)	71 (61.2)	116 (100.0)	$\chi^2 = 13.105$
<b>Category</b>	≥ 25 years	184 (58.4)	131 (41.6)	315 (100.0)	$p < 0.001^*$
<b>Area of residence</b>	urban areas around the capital city	179 (54.9)	147 (45.1)	326 (100.0)	$\chi^2 = 1.694$
	Areas away from capital city of country	50 (47.6)	55 (52.4)	105 (100.0)	$p = 0.193$
<b>Education level</b>	Unsatisfactory	80 (57.1)	60(42.9)	140 (100.0)	$\chi^2 = 1.339$
	Satisfactory	149 (51.2)	142(48.8)	291 (100.0)	$p = 0.247$
<b>Occupational status</b>	Unemployed	11 (39.3)	17(60.7)	28 (100.0)	$\chi^2 = 2.324$
	Manual workers	94 (53.7)	81(46.3)	175 (100.0)	$p = 0.313$
	Non-manual workers	124 (54.4)	104(45.6)	228 (100.0)	
<b>Income category</b>	Unsatisfactory	79 (47.3)	88(52.7)	167 (100.0)	$\chi^2 = 3.717$
	Satisfactory	150 (56.8)	114(43.2)	264 (100.0)	$p = 0.054$
<b>Marital status</b>	Single	134 (49.4)	137 (50.5)	271 (100.0)	$\chi^2 = 3.982$
	Married/living together	95 (59.4)	65 (40.6)	160 (100.0)	$p = 0.046^*$
<b>Family type</b>	Nuclear	151(54.5)	126 (45.5)	277 (100.0)	$\chi^2 = 0.608$

years of age (n=221, 51.2%). The majority had easy accessibility and availability for illicit drugs within their living community (365, 84.7%). Nearly 71% (n=306) had a higher problematic level of drug use based on DAST score. Majority of drug users were admitted into rehabilitation centre by a family member (n=176, 40.8%), followed by self-admissions (n=144, 33.4%) and through legal system (n=91, 21.1%). Nearly 40% (n=171) had been previously rehabilitated as an inpatient in a rehabilitation centre. Awareness about adverse consequences of drug use was identified only among a minority of the sample (n=102, 23.6%) (Table 4).

### Motivation level for rehabilitation

Based on the participants' responses to SOCRATES, scores were calculated separately for the total scale and three categories; Recognition, Ambivalence, and Taking Steps. The mean, SD, median, and IQR of the SOCRATES scores are shown in Table 1. The level of motivation for rehabilitation was categorized as low, moderate, or high based on the cut-off thresholds as described above. Majority reported a moderate motivation level under all three categories: recognition 68.9% (n=297), ambivalence 49.7% (n=214) and taking steps 54.3% (n=234) respectively (Table 2). Based on the total scores obtained for SOCRATES, the high motivation level for rehabilitation was reported in 23.4% (n=101) of the sample, while the majority (n=228, 52.9%) had the moderate level followed by the low motivation level (n=102, 23.7%).

### Factors associated with motivation for rehabilitation

The factors associated with motivation for rehabilitation were considered under two aspects; socio-demographic factors and drug-related factors. The participants' socio-demographic characteristics and drug-related characteristics were cross-tabulated with the level of motivation for rehabilitation, which was categorized as low or high based on the median (61) of the total scores obtained in SOCRATES and analysed using the chi-square test.

According to the above categorization, approximately 53% (n=229) had scores equal to or above the median indicating a high level of motivation for rehabilitation, whereas 46.9% (n=202) had a low level of motivation.

### Socio-demographic factors associated with motivation for rehabilitation

Age category, area of residence, education level, occupational status, income category, marital status, and family type were considered under socio-demographic determinants (Table 3). Out of these, only the age category and the marital status of the drug users were found to have a statistically significant association with the motivation level for rehabilitation. Significantly higher motivation for rehabilitation was observed in older drug users ( $p < 0.05$ ) and those who were married/living together ( $p < 0.05$ ).

### Drug-related factors associated with motivation for rehabilitation

Duration of drug use, age of first drug use, availability and accessibility for illicit drugs, problematic level of drug use, and awareness about adverse consequences of drug use were assessed under drug-related factors (Table 4). High motivation for rehabilitation was associated with a longer duration of drug use ( $p < 0.05$ ), having a lower problematic level for drug use ( $< 0.05$ ), and being

aware of adverse consequences of drug use ( $p < 0.05$ ). Availability and accessibility of illicit drugs and age of first drug use did not show statistically significant associations with the motivation level for rehabilitation.

### Predictors' of motivation for rehabilitation

Binary logistic regression was used to assess the factors predictive of motivation for rehabilitation. Of the five factors identified during chi-square test analysis, only the problematic level of drug use and awareness about adverse consequences of drug use emerged as statistically significant predictors of motivation for rehabilitation in binary logistic regression. The participants who reported higher problematic levels of drug use were less likely to have a high motivation for rehabilitation compared to those with a low problematic level (OR=0.564, 95% CI=0.366-0.872,  $p < 0.05$ ). Interestingly, being aware of adverse consequences of drug use (OR=1.778, 95% CI=1.108-2.853,  $p < 0.05$ ) was more likely to have a high motivation for rehabilitation compared to not being aware of the consequences. Age category, marital status, and duration of drug use failed to show associations with motivation for rehabilitation in binary logistic regression analysis.

## Discussion

In this study, motivation level for rehabilitation and factors associated with motivation for rehabilitation were assessed in a sample of males with drug use disorder in rehabilitation centres.

### Motivation level for rehabilitation

High motivation level for rehabilitation was reported among nearly 1/4th of the sample in the present study. Existing evidence suggests that the motivational level for rehabilitation may vary among persons with illicit drug use disorder at beginning of the rehabilitation process (Leon, Melnick, & Kressel, 1997, Nosyk et al., 2010) and it is reasonable to assess motivation level at the be-

Table 4: Association of drug related factors with the motivation level for rehabilitation among males addicted to drugs (N=431)

Drug related factors		Motivation level for rehabilitation		Total N (%)	Significance
		High (n=229)	Low (n=202)		
		No (%)	No (%)		
Duration of drug use	< 10 years	97 (45.9)	114 (54.1)	211 (100.0)	$\chi^2 = 8.512$ $p = 0.004^*$
	≥ 10 years	132 (60.0)	88 (40.0)	220 (100.0)	
Age of first drug use	<18 years	116 (52.4)	105 (47.6)	221 (100.0)	$\chi^2 = 0.075$ $p = 0.784$
	≥ 18 years	113 (53.8)	97 (46.2)	210 (100.0)	
Easy accessibility & availability	Yes	192 (52.6)	173 (47.4)	365 (100.0)	$\chi^2 = 0.268$ $p = 0.604$
	No	37 (56.0)	29 (44.0)	66 (100.0)	
Problematic level of drug use	Low	52 (41.6)	73 (58.4)	125 (100.0)	$\chi^2 = 9.403$ $p = 0.002^*$
	High	177 (57.8)	129 (42.2)	306 (100.0)	
Aware about adverse consequences of drug use	Yes	64 (62.7)	38 (37.3)	102 (100.0)	$\chi^2 = 4.959$ $p = 0.026^*$
	No	165 (50.1)	164 (49.9)	329 (100.0)	

\* Statistically significant

gining. SOCRATES is considered the best available tool that can be used for this purpose (Rockville, 1999a), hence it was chosen for this study.

According to SOCRATES Profile Sheet, the level of motivation for rehabilitation was categorized as low, moderate, or high using the 30<sup>th</sup> percentile and 70<sup>th</sup> percentile of the respective scale score (Miller W R & Tonigan J S, 1997). In the present study same method was used to categorize motivation levels. However, the scores corresponding to the 30<sup>th</sup> and 70<sup>th</sup> percentiles were higher in all three subscales of the SOCRATES Profile Sheet, compared to the corresponding scores in our study. Therefore, higher proportions with high motivation levels or lower proportions with low motivation levels for rehabilitation were noted in all three subscales in our study, compared to the proportions which would have been observed if the corresponding cut-off scores in SOCRATES Profile Sheet were used.

In the present study, the majority of the drug users (68.9%) reported having a moderate level of motivation for the subscale 'Recognition'. A high motivation was reported in only 18.1%. According to Miller W R & Tonigan J S, (1997), the drug users reporting high scores for 'recognition' do recognize the adverse consequences related to their drug use behaviour with a desire to change. In contrast, those who have low scores know that their drug use behaviour causes serious problems, however, they do not accept themselves as "persons with illicit drug use disorder" and are not ready to change their drug use behaviour.

Considering the subscale 'Ambivalence', 21.6% expressed a high motivation level. This means that they are not sure if they are in control of their drug use behaviour (Miller W R & Tonigan J S, 1997). Similarly, 28.8% had a low motivation level under the ambivalence subscale, indicating that they do not speculate whether

they are problematic drug users with addiction, hurting others, and having no control over their drug use behaviour.

In the 'Taking steps' sub-scale, 27.6% of drug users reported a high motivation level indicating that they have already started to change their drug use behaviour and tried various things to stop or reduce their drug use behaviour (Miller W R & Tonigan J S, 1997). In contrast, 18.1% had low motivation for taking steps, suggesting that they are not making any attempt to change their drug use behaviour. Therefore, rehabilitation process should be targeted to help persons with illicit drug users to initiate taking steps to change their drug use behaviour and others to maintain their changing behaviour.

When considering the total score for SOCRATES, 23.7% had a low motivation level and only 23.4% had a high motivation. Therefore, a significant proportion of drug users (over half of the sample) showed only a moderate level (52.9%) of motivation for changing their drug use behaviour and they are not ready for the perfect rehabilitation process. This fact was further supported by the source of admission into the rehabilitation centre. Only 33.4% of the persons with illicit drug use disorder sought self-admission to the rehabilitation centres and nearly 60% were admitted by their family member or via the criminal justice system against their will, a finding supported by a previous Sri Lankan study (De Silva and Fonseka, 2008).

This lack of motivation to change their drug use behaviour and to engage in the rehabilitation process was observed by other researchers as evident from the literature (Battjes, Gordon, O'Grady, Kinlock, & Carswell, 2003). A study done in Malaysia using SOCRATES found that a majority of the persons with illicit drug use disorder had high motivation for change in 'recognition' and in 'taking steps', while the majority had low motivation level for 'ambivalence' (Fauziah et al., 2010). According to NAOMI randomized controlled trial which was conducted using 253 persons with drug use disorder in two Canadian sites (Vancouver and Montreal), 52% of the opioid dependents had a high level of motivation for rehabilitation (Nosyk et al., 2010). These findings are not compatible with our study, in which only 23.4% demonstrated a high motivation.

Variable	Motivation level for rehabilitation		Total No (%)	OR (95% CI)	Significance
	High (n=229) No (%)	Low (n=202) No (%)			
<b>Age Category</b>					
<25 years (R)	45 (38.8)	71 (61.2)	116 (100.0)	0.564	p = 0.051
≥ 25 years	184 (58.4)	131 (41.6)	315 (100.0)	(0.318-1.002)	
<b>Marital Status</b>					
Married/ Living together (R)	95 (59.4)	65 (40.6)	160 (100.0)	1.282	p = 0.251
Other#	134 (49.4)	137 (50.5)	271 (100.0)	(0.839-1.961)	
<b>Duration of drug use</b>					
< 10 years(R)	97 (45.9)	114 (54.1)	211 (100.0)	0.821	p = 0.439
≥ 10 years	132 (60.0)	88 (40.0)	220 (100.0)	(0.499-1.353)	
<b>Problematic level of drug use</b>					
Low (R)	52 (41.6)	73 (58.4)	125 (100.0)	0.564	p = 0.010*
High	177 (57.8)	129 (42.2)	306 (100.0)	(0.366-0.872)	

Moreover, motivation to change is a complex process based on individual behaviour, it requires better identification of persons with illicit drug use disorder at an individual level and the identification of the stage of readiness to change (DiClemente, Schlundt, & Gemmell, 2004). Supporting this fact, a considerable variation in motivation level was noted with socio-demographic and drug-related characteristics in our study sample (Table 3, Table 4, and Table 5). Hence, it will be important to consider these individual characteristics to provide better rehabilitation care for persons with illicit drug use disorder, to avoid relapses. Special attention is recommended in addressing ambivalence among drug users by giving moral and social support to maintain continuous drug-free status as suggested by (Fauziah et al., 2010). This concept can be incorporated into our rehabilitation system as the majority (78.4%) with illicit

drug use disorder in our sample also had unsatisfactory motivation levels related to ambivalence.

### ***Factors associated with motivation for rehabilitation***

In assessing the predictors of motivational level, only the problematic level of drug use and awareness about adverse consequences of drug use were found to have statistically significant associations with motivation for rehabilitation. The contextual factors such as age, educational status, occupation, etc., and drug-related factors such as type of illicit drug used, duration of drug use failed to establish any significant associations with the level of motivation in this study. However, as explained by Drieschner et al., recognizing the main influences which impact peoples' engagement and retention in rehabilitation programs is important, it is worthwhile to consider all the influential factors together identified in literature rather than considering factors identified in the study.

Leon, Melnick, & Kressel (1997), concluded that illicit drug use is a personal problem and illicit drug use does not depend on the drug of choice compatible with the present study. On the contrary, several studies highlight the importance of paying attention to the type of illicit drugs addicted during the rehabilitation process, rather than considering the overall picture of drug addiction to achieve better outcomes (Collins, Ellickson, & Bell, 1998; Griffin, Botvin, Nichols, & Doyle, 2003; Leri, Bruneau, & Stewart, 2003). Further, polydrug use was identified as a risk factor for poor motivational levels for rehabilitation (Mutasa, 2001). However, the majority of individuals in this sample have been admitted for rehabilitation following heroin addiction in present study this fact was not comparable.

In keeping with our findings, Battjes, Gordon, O'Grady, Kinlock, & Carswell (2003) found that experience of adverse consequences of substance use is an important predictor of high motivation. The drug users experiencing adverse consequences may want to give up their drug use behaviour compared to those who are unaware of such consequences, generating a high motivation for rehabilitation. This creates a need for well-designed awareness programs on the consequences of illicit drug use in the rehabilitation process, to enhance motivation especially among drug users in the early stages of their drug use behaviour.

For many young persons with illicit drug use disorder, rehabilitation may initially be sought for them by their parents or guardians, hence they may not have a high motivation for rehabilitation (Drug Rehab Programs for Teens and Young Adults, 2019). However, in our study sample, age did not emerge as a predictor of the level of motivation after controlling for confounding. Similarly, the marital status of the drug user or the duration of drug use was not identified as a predictor for high motivation levels. The observed association of these variables with the motivation level in binary logistic regression analysis could have been mediated through the confounding effect of the awareness of adverse consequences of drug use which could be higher among older or married persons and those with a longer duration of drug use. However, it was not possible to compare these findings with the existing literature due to the lack of similar studies. But older and married participants would have more awareness may be due to maturity with getting older and being, married.

It was difficult to find out predictors for motivation level assessment in Asian contexts although some studies were found in European and American regions (Simpson and Joe, 1993, Joe et al., 1998, Leon et al., 1994). It is important to have an awareness about the level of motivation among persons with illicit drug use disorder as socio-demographic and cultural patterns of Asia are different from the rest of the regions of the world. Therefore, this study will add important findings in the field of illicit drug rehabilitation in the Asian context to have awareness about the motivation level of persons with illicit drug use disorders. Moreover, having a low problematic level of drug use and being aware of adverse consequences of drug use were identified as predictors of a high motivation level for rehabilitation in the present study which was not identified in literature while the motivational level for rehabilitation was identified as unsatisfactory in the majority of people with illicit drug use disorder. These findings were identified as a strength of the present study and will be beneficial for policymakers for planning and implementing rehabilitation programs for people with illicit drug use disorder.

As illicit drug use is a significant public health problem in the male gender of the country, people who can contribute to national development are finally left as dependents. With the socio-cultural background of the country like in many Asian countries, Sri Lanka is a male-centred family-based country. By leaving males as dependent on an illicit drug, there is a direct threat to the family backbone. Therefore, it is a national responsibility to relieve males with illicit drug use disorder using appropriate intervention such as proper rehabilitation process. To achieve that goal, it is necessary to identify motivational levels for rehabilitation among them and factors that can affect motivational levels for rehabilitation. Therefore, these study findings will add extra beneficial effects towards socio-economic aspects at an individual level as well as national level. Therefore, policymakers can use these study findings for planning and implementing harm reduction and prevention programs for males who dependent on illicit drugs.

### ***Limitations of the study***

However, few limitations have been identified in using SOC-RATES for motivational assessment in this study. Individuals with multiple illicit drug use disorders may vary in their readiness for change, therefore, in assessing their motivation for rehabilitation it is recommended to administer SOC-RATES for each type of illicit drug separately (American Addiction Centres, 2021). This is considered important because treatment programs usually focus on treating one illicit drug. In addition, some individuals are identified with alcohol use disorders, as well as the use of tobacco products. By measuring a client's readiness to change separately for each type of psychoactive substance, appropriate treatment planning and goal setting can be made to affect all areas, however, this approach was not considered in the present study. In Sri Lanka, rehabilitation programs for individuals with illicit drug use disorder mainly address the illicit drug-related problems in a non-specific manner without considering the type of illicit drug which was addicted and these programs do not address alcohol and tobacco use. Moreover, the majority of individuals in this sample have been admitted for rehabilitation following heroin addiction. For the above reasons, the assessment of motivation was not based on a specific psychoactive substance in this study. Although in

the present study, motivation level was assessed at the beginning of the rehabilitation process, according to the Stages of Change Model it can be changed with rehabilitation activities (DiClemente, Schlundt, & Gemmell, 2004). To ensure external validity, it is worthwhile to assess motivation levels not only at the beginning of the rehabilitation process but also during and at discharge from rehabilitation centres. Therefore, the findings of this study can be generalized only to the drug users at the beginning of the rehabilitation process, limiting the external validity. Moreover, as explained by Carey et al., the psychometric properties of SOCRATES provide inconsistent support for the stages of change in the Trans-theoretical model which is commonly considered in motivational concept in psychology. Therefore, readiness to change may best be conceptualized as a multidimensional and continuous construct with complex relationships to behaviour, cognition, and environmental context (Carey et al., 1999).

As SOCRATES was not validated in Sri Lanka, it was used in this study after confirming judgmental validity considering the feasibility aspects of the study. However, it has been validated in many countries with a comparable socio-culturally context and has been identified as a useful tool to assess readiness to change drug use behaviour. SOCRATES has demonstrated excellent test-retest reliability and adequate internal consistency, thus making it a reliable and valid instrument. Further, the use of corresponding percentiles adopted by other researchers for the categorization of motivational level makes the findings of this study compared to other similar studies.

### Conclusion

A majority of the persons with illicit drug use disorder in this sample had inadequate (moderate or low) motivation for rehabilitation at the beginning of the rehabilitation process and motivational level varied with their socio-demographic background and drug-related factors. Problematic levels of drug use and awareness about adverse consequences of drug use were identified as important predictors for motivation through this study.

SOCRATES is identified as a useful tool to assess readiness to change drug use behaviour in the local context. The study recommends the assessment of motivation for rehabilitation at the beginning of the process to plan rehabilitation activities and to identify barriers for change among persons with illicit drug use disorder.

As any persons with illicit drug use disorder can end up with relapse despite having a higher motivation level at the beginning unless they maintain their action for at least six months, a repeat assessment of motivation at discharge from the rehabilitation centre is recommended to achieve a better outcome of rehabilitation, which could also be used as a valuable predictor of long-term rehabilitation in persons with illicit drug use disorder.

As a significant number of drug users had a lack of motivation for rehabilitation in the present study, attention should be directed towards re-orientation of the rehabilitation programs for persons with illicit drug use disorder. By incorporating activities into rehabilitation programs that increase recognition and avoid ambiva-

lence, drug users can be supported to continue those actions even after discharge from the rehabilitation centres.

### Acknowledgments

Authors wish to acknowledge the Chairman, National Dangerous Drug Control Board, Sri Lanka for granting permission for data collection, the managers and staff members of the selected rehabilitation centres for the support given during data collection, University Grant Commission, Sri Lanka for financial assistance for the study and all the participants in the study for their cooperation.

### Role of Funding Source

The study was funded by the University Grant Commission (UGC) of Sri Lanka under the UGC Grant for financial assistance to university teachers for higher studies [Grant Number: UGC / VC / DRIC / PG 2016 (II) / RUH / 01]. Grant supported to cover registration fees for the research study and research expenses.

### Conflict of Interest

The authors declare that they have no competing interests. The manuscript does not contain any person's data in any form (including any individual details, images, or videos). The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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