The Pattern of Substance Use and Characteristics of the Individuals Enrolled in Residential Treatment at Selected Rehabilitation Centers in Sri Lanka: A Descriptive Cross-Sectional Study

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ABSTRACT

INTRODUCTION: Substance use becomes censorious when it leads to harmful effects on individuals, their families, and the community. The nature of substance use in Sri Lankan context is poorly understood and empirical evidences are sparse. The study aimed to describe patterns of substance use and characteristics of the individuals enrolled in residential treatment at selected rehabilitation centers in Sri Lanka.

MATERIAL AND METHODS: A descriptive cross-sectional study was conducted among 205 individuals enrolled in selected rehabilitation centers. Pretested interviewer-administered questionnaire was used to collect data. Data were analyzed using descriptive statistics.

RESULTS: Most of the individuals who enrolled in residential treatment at selected rehabilitation centers were unmarried (n = 124, 60.5%), Sinhala (n = 186, 90.7%), Buddhist (n = 166, 81.0%), males (n = 202, 98.5%) and belonged to the young adult age (18-35 years) category (n = 178, 86.8%). All the participants were poly-drug users and cannabis was the most commonly used (n = 183, 89.3%) illicit drug followed by heroin (n = 172, 83.9%), methamphetamine (n = 150, 73.2%) and cocaine (n = 78, 38%). The most (n = 152, 74.1%) problematic substance for life was heroin. Most of the participants (n = 149, 72.7%) had used drugs several times per day. The mean duration of substance use was 7 ± 5 years. Participants (n = 177, 86.3%) reported that the substances were available in their residential areas and their friends (n = 197, 96.1%) were also using the substances.

CONCLUSIONS: Pattern of substance use and characteristics of the individuals were unique in Sri Lanka and need to be considered when implementing and strengthening the programs for drug prevention and rehabilitation.

KEYWORDS: Substance use, residential treatment, pattern of use, rehabilitees

Introduction

Substance use is a global health challenge and it's defined as the use of any psychoactive compound that is either legal or illegal.[1] Nicotine, alcohol, cannabis, opioids, cocaine, and amphetamines are the most often used substances globally.[2] Substance Use Disorder (SUD) is a chronic relapsing disorder, characterized by compulsive use of substances despite adverse consequences to the individuals and society.[3] In 2018, 269 million (range: 166-373 million) people had used a drug at least once in the previous year[2] and 11.8 million people died each year due to drug use, which is more than the number of deaths attributed to all cancers.[4] According to the global health risk report, drug addiction is among the top 20 risk factors for death and disability.[5] Globally, 1 in 10 people who use illicit drugs are identified as suffering from a form of substance use disorder that causes critical health issues for affected individuals, their families, and the community.[6] By reflecting on the population growth, it is projected that the number of people who use drugs will increase to 299 million people by 2030.[2]

Substance use is a critical dilemma and 16% of Sri Lankan adolescents had used at least 1 illegal substance during their life and lifetime prevalence of cigarette, alcohol, marijuana, and other drug use were: 6.1%, 13.6%, 2%, and 1%, respectively.[7] The western literature revealed that the social burden of SUD is massive associated with, health issues, impairment of education, an increasing tendency towards crime and unemployment[8] which is similar to the Sri Lankan context. In 2020, the total number of individuals arrested due to possession, selling, or

cultivation of illegal substances was 97 416 and of them, 23.2% were from Colombo district followed by 13.3% from Gampaha district.[9]

Caring for individuals with substance use problems places a heavy burden on the country. Several governmental and non-governmental organizations provide treatment and rehabilitation services for individuals with substance use problems and 3613 individuals were treated in 2019 who had enrolled to the residential treatment island-wide.[9] Inpatient medical detoxification, outpatient medical detoxification,[10] outpatient abstinence-oriented treatment, and long-term residential rehabilitation are the treatment systems available in Sri Lanka. Spiritual, religious and cultural, educational, vocational, family, social and community rehabilitation, psychological and creative therapies, sports, and extracurricular activities are the most commonly integrated components of the rehabilitation programs which exist in Sri Lanka.[11] However, it is noteworthy that, among individuals who had completed existing rehabilitation programs a large percentage (75%) reported relapses of substance use disorder.[12]

Hence, it is timely to assess and understand the pattern of substance use, risk factors, and protective factors,[13] to diminish the mismatch between the root causes of substance use disorder and the rehabilitation approaches.[14] The effectiveness of the existing programs should be empirically assessed and enhanced based on evidence.[15]

The existence of social inequalities,[16] Post-Traumatic Stress Disorder (PTSD),[17] poor social support, living in urban areas, psychopathy, family history of substance use,[18] the influence of mass media,[19] stress, childlessness, and weekly working hours which amount to more than 50 hours[20] are known risk factors for the substance use. In contrast, involvement in sports activities,[21] religious activities,[22,23] not having friends who use illicit substances,[23] parental monitoring, disciplinary actions taken by parents, behavioral control, and rewarding systems[24] are protective factors against substance use. However, the prevalence and existence of those known factors in Sri Lankan context are poorly understood and empirical evidences are sparse.

Therefore, this study was designed to describe subjective and socio-cultural characteristics and patterns of substance use among individuals who are enrolled in residential treatment at selected rehabilitation centers in Sri Lanka.

Methods

Study design

A descriptive cross-sectional study was carried out among 205 individuals who were engaged in residential treatment at selected governmental and private rehabilitation centers.

Study setting. Current study was carried out in 6 selected residential treatment centers in Sri Lanka. The selected centers were,

"Mithuru Mithuro" Punarjeewa Treatment & Rehabilitation Center, Pelmadulla

"Talangama" Prevention, Treatment & Rehabilitation Centre, Colombo

"Nisansala" Treatment & Rehabilitation Center, Gampaha

"Jayawiru Samadhi Niwahana" Treatment & Rehabilitation Center, Awissawella

"Nawadiganthaya" Youth Prevention, Treatment & Rehabilitation Centre, Urapola, Nittambuwa

"Galle" Youth Prevention, Treatment & Rehabilitation Centre, Unawatuna, Galle

Ethical clearance for the study was obtained from the Ethics Review Committee of the Faculty of Medical Sciences, the University of Sri Jayewardenepura, Sri Lanka (46/20-FMS/USJP/ERC). Further approval was obtained from the authorities of the selected residential treatment centers prior to data collection.

Recruitment and participation. All the individuals who engaged in residential treatment at selected rehabilitation centers during the data collection period were verbally invited to participate in the study.

Information sheets were provided, and further details were verbally explained regarding the study, to the individuals who were interested in participating in the study. Volunteer individuals older than 18 years of age were enrolled after obtaining informed written consent. Those who had acute disturbances in the withdrawal period or participated in pre-testing of the questionnaire were excluded from the study. Thus, 205 individuals who engaged in residential treatment were recruited in the study. The selected centers and the number of recruited participants are presented in Table 1.

Methods of assessment. Initial pool of questionnaire items were developed, after an extensive review of published peer-reviewed literature.[23-27] The questionnaire items were reviewed by an expert panel, which consisted of research supervisors, a research methodologist, a statistician, and individuals with substance use problems, and suggestions were provided for modifications. The questionnaire was pre-tested with the 10 individuals who engaged in the residential treatment at 1 selected rehabilitation center (Thalangama). The pre-tested questionnaire was modified based on the feedback. After finalizing the questionnaire by the expert panel, it was administered to the participants by investigators.

The questionnaire consists of 4 sub-sections.

Part A—Demographic characteristics of the participants (eg, Age, Gender, Educational status)

Table 1. Number of participants recruited.

RESIDENTIAL TREATMENT CENTER	NUMBER OF REHABILITEES AT TREATMENT CENTER	NUMBER OF PARTICIPANTS RECRUITED
"Mithuru Mithuro" Punarjeewa Treatment & Rehabilitation Center, Pelmadulla	54	50
Talangama" Prevention, Treatment & Rehabilitation Center, Colombo	22	11
"Nisansala" Treatment & Rehabilitation Center, Gampaha	30	26
"Jayawiru Samadhi Niwahana" Treatment & Rehabilitation Center, Awissawella	65	58
"Nawadiganthaya" Youth Prevention, Treatment & Rehabilitation Center, Urapola, Nittambuwa	51	46
"Galle" Youth Prevention, Treatment & Rehabilitation Center, Unawatuna, Galle	16	14
Total	238	205

Part B—Substance use details of the participants

For example

1. Which substance(s) did you use?

Cigarette	Alcohol	Cannabis	Heroin
Amphetamine	Cocaine	Morphine	Sedatives
Tramadol	Inhalants	Barbiturates	Other

If the answer is "other" please specify . . . .

2. How do you use the substance usually?

Smoke	Orally	Inject	Other

If the answer is "other" please specify . . . .

3. With whom do you use the substance?

Alone	With friend	With relative/ neighbor	With family member

Part C—Subjective factors of the participants

For example

NO	QUESTION	YES	NO
1	Did you engage in any leisure time activities?		
2	Did you attend Dhamma school?		
3	Do you use social media like Facebook, twitter, Viber, etc?		

Part D—Sociocultural factors of the participants

For example

1. Where is your home is located?

In a town	In a village	In a discouraging place	Other

If the answer is "other" please specify . . . .

2. How difficult was it to get the substance when you wanted?

Impossible	Difficult	Easy

All the investigators and data collectors were trained to administer the questionnaire by the principal investigator. All the participants were interviewed in a quiet room allocated by the center to safeguard privacy and confidentiality. Collected data were cross-checked and confirmed with their information files which are maintained by the rehabilitation center.

Data analysis

There were no missing data because questionnaires were administered by the investigators. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to describe the interested variables. No inferential statistics were performed due to the descriptive nature of the study and tables were used to present the data as appropriate. IBM SPSS version 26 was used to analyze the data.

Results

Enrollment of the participants

A total of 238 individuals were verbally invited to take part in the study and 205 individuals expressed their preference in participating in the study. Ten individuals who participated in pre-testing of the questionnaire and 23 individuals with acute disturbances in the withdrawal period were excluded from the study.

Sociodemographic characteristics of the participants

The majority of the participants were males (n = 202, 98.5%), belonging to the young adult (18-35 years) age group (n = 178, 86.8%) and 124 (60.5%) declared that they had never entered into a matrimonial relationship. Of the participants most were Sinhala (n = 186, 90.7%%), and Buddhists (n = 166, 81.0%). Nearly half of the participants (n = 99, 48.3%) were educated up

Table 2. Sociodemographic characteristics of the participants.

CHARACTERISTICS	FREQUENCY	PERCENTAGE (%)
Age		
Young adult (18-35 years)	178	86.8
Middle-aged adult (36-55 years)	26	12.7
Older adult	1	0.5
Gender		
Male	202	98.5
Female	3	1.5
Ethnicity		
Sinhala	186	90.7
Tamil	4	2.0
Muslim	14	6.8
Other	1	0.5
Religion		
Buddhism	166	81.0
Catholic	20	9.8
Hindu	4	2.0
Islam	15	7.3
Education		
Never been to a school	1	0.5
Primary (up to grade 5)	14	6.8
Secondary (up to O/L)	99	48.3
Collegiate (up to A/L)	62	30.2
Diploma	11	5.4
Degree	18	8.8
Civil status		
Married	81	39.5
Unmarried	124	60.5
Employment		
Unemployed	26	12.7
Employed	179	87.3

to GCE Ordinary Level, and 179 (87.3%) were employed (Table 2). The mean duration of rehabilitees engaged in residential treatment was 8 ± 5 months.

The pattern of substance use among the participants

The mean age of the participants when initiating substance use was 18 ± 5 years. The majority of participants (n = 126, 61.5%) reported cigarettes as the introductory substance consumed and the majority (n = 147, 71.7%) had approached the substances for the first time in their life with the assistance of a friend. The main reason to experiment with the first substance in their life was due to curiosity (n = 162, 79.0%).

All the participants were poly-drug users and cannabis were the most commonly used (n = 183, 89.3%) illicit drug followed by heroin (n = 172, 83.9%), methamphetamine (n = 150, 73.2%), tramadol (n = 113, 55.1%), and cocaine (n = 78, 38.0%). The substance that made the most problems in their life was heroin (n = 152, 74.1%). The 3 most widely used routes of administration of substances were inhalation (n = 173, 84.4%), oral consumption (n = 101, 49.3%), and injection (n = 42, 20.5%). Most of the participants (n = 149, 72.7%) had used drugs more than 2 times per day. Most of the individuals used the drugs at their homes (n = 152, 74.1%) or at the house of a friend (n = 127, 62.0%) (Table 3). The mean duration of substance use was 7 ± 5 years.

Socio-cultural characteristics of the participants

On examining the socio-cultural behaviors, most of the individuals engaged with leisure time activities (n = 172, 83.9%) and used social media (n = 182, 88.8%). However, 76.1% (n = 156) participated in religious activities while 45.4% (n = 93) reported that they engaged in anti-social activities. Of the participants, 43.4% (n = 89) had suicidal ideation and 21.5% (n = 44) of them attempted suicide. Ninety-two (44.9%) individuals reported aggressive behavior in childhood and 75 (36.6%) had encountered bad experiences in childhood. The majority of them (n = 177, 86.3%) reported that the substances are available close to their residential area and their friends (n = 197, 96.1%), were using the substances. Participants reported that their family members (n = 40, 19.5%) were also addicted to some substances. Commonly identified perceived reasons for substance use behavior of the participants were family negligence (n = 55, 26.8%), having addicted friends (n = 54, 26.3%), having strict parents (n = 42, 20.5%), loss of a family member (n = 25, 12.2%), having addicted relatives (n = 12, 5.9%), and divorce of the parents (n = 12, 5.9%).

Discussion

The majority of participants were males and young adults. In Sri Lankan culture, children and females are well protected within the family context and females who use substances are highly condemned within the society and hence, it can be suggested as a reason for the very low prevalence of substance use among females. This is further confirmed by the national statistics on treatment admission for drug addiction of females reporting 0.5% (n = 19). However, on contrary, the social stigma and culture can be act as a barrier for females for not reaching out for treatment.[28]

According to the World Drug Report 2021,[2] the most widely used illicit substance worldwide is cannabis followed

Table 3. Pattern of substance use among the participants.

CHARACTERISTICS	FREQUENCY (N = 205)	PERCENTAGE (%)
Substances used		
Cigarettes	200	97.6
Alcohol	180	87.8
Cannabis	183	89.3
Heroin	172	83.9
Methamphetamine	150	73.2
Cocaine	78	38.0
Morphine	42	20.5
Sedative	43	21.0
Tramadol	113	55.1
Inhalants	18	8.8
Others	78	38.0
Substance which had the highest influence		
Cigarettes	18	8.8
Alcohol	2	1.0
Cannabis	19	9.3
Heroin	152	74.1
Methamphetamine	28	13.7
Cocaine	7	3.4
Tramadol	5	2.4
other	10	4.9
Frequency of use		
Several times per day	149	72.7
Twice a day	27	13.2
Once a day	26	12.7
Once a week	3	1.5
Place of substance use		
Home	152	74.1
Street	49	23.9
Working place	57	27.8
Restaurant	58	28.3
Friends' house	127	62.0
Neighbor's house	38	18.5
Other	17	8.3
Partners in substance use		
Alone	160	78.0

(Continued)

Table 3. (Continued)

CHARACTERISTICS	FREQUENCY (N = 205)	PERCENTAGE (%)
With friend	155	75.6
With neighbor	42	20.5
With family member	9	4.4
The first substance used		
Cigarette	126	61.5
Alcohol	19	9.3
Cannabis	26	12.7
Heroin	13	6.3
Other	21	10.2
Person who helped to obtain substances for the first time		
No one	41	20.0
Friend	147	71.7
Relative	12	5.9
Neighbor	5	2.4
Reasons for the first-time use		
Curiosity	162	79.0
Stress	20	9.8
Peer pressure	60	29.3
Other	12	5.9

by heroin. Similarly, a population-based study showed that cannabis (40%), alcohol (33%), and opioids (15%) were the major substances used in neighboring India.[29] Following the same pattern, the current study revealed individuals used several substances and commonly used illegal substances were cannabis, followed by heroin, methamphetamine, tramadol, and cocaine. Cannabis is a medicinal plant that can be cultivated in Sri Lanka for the purpose of traditional medical requirements. This can be one reason for individuals to think, Cannabis as a herb than a drug that has an addictive property. However, illegally cultivated cannabis and availability may be reasons for using Cannabis by the majority of the study participants. As seen in this study population, it has been observed that opioids continue to be the second commonest substance used in Asia and Europe as it is utilized for treatment for medical disorders.[30]

Our study revealed that the majority had used the substances for the first time in their life with the assistance of a friend and the main reason to experiment with the first substance in their life was due to curiosity. Similar results are seen in a study by Biolcati and Passini,[31] in 2019 which shows that substance abuse behaviors are driven by various needs, such as socializing with friends or escaping negative moods in keeping

with the motives observed in Sri Lanka. The perceived notion among youth that the use of illegal substances makes an individual more masculine or popular in addition to peer pressure has been suggested as a key contributing factor for many adolescents and young adults to take up illegal substances. Personal relationships or interactions with individuals using illicit substances may also increase one's chances of getting into substance use.[32]

Some studies revealed that the limited leisure resources, leisure opportunities,[33] and low religiosity[22] increased the risk of substance use behavior. In contrast, the majority of the participants in this study engaged in leisure time activities, and of the participants, 87.8% attended dhamma (religious classes) school, and 76.8% engaged in religious activities. Involvement in religious activities may be done as rituals without too much impact on the behavior of these individuals. It is often seen that the multifactorial nature contributes to substance use and the positive enforcement of the religious activities outweigh the negative contributors which have a direct and significant relationship with substance use such as ease of access to substances,[34] substance usage within peer groups,[35] and neighborhood influences.[36] The most individuals reported that the substances were available close to their residential area and their friends were using the substances. According to the study findings friends and neighbors exert a substantial influence on substance use.

Some of the participants in the study had gone through an unpleasant experience during childhood which negatively affected their life. Adverse childhood experiences affect a person's lifelong characteristics and behaviors. Substance use can be associated with emotional abuse, having someone with mental illness in the household, physical abuse, and physical neglect in childhood.[25] Nearly half of the study participants reported aggressive behaviors during their childhood. A study published in 2002 stated that substance misuse has greater histories of aggressive behaviors and another study revealed that aggressive behavior was associated with early substance use initiation.[37]

Social media is very popular among most of the participants in this study and it may have been a trigger factor for use of substances. Further studies also indicate that media plays a major role in arousing curiosity about illicit substances in young minds, especially by anti-drug media advertisements producing a contrary effect to what is intended which is known to be a rampant marketing strategy for selling illicit substances.[38]

Conclusion

All the participants were poly-drug users. Furthermore, study concluded that, Cannabis was the most commonly used illicit drug and heroin, methamphetamine, tramadol, and cocaine were other prevalent substances used by the participants. Interestingly Cigarettes were observed as the main introductory substance to substance abuse in life. The majority of the

participants had been introduced to drugs during their teenage due to curiosity. Surprisingly, the majority of the rehabilitees engaged in leisure time activities and religious activities and had even attended dhamma school. Most participants reported that the substances were available close to their residential area and their friends were using the substances. The descriptive nature of this, would enlighten the policymakers and authorities to strengthen the current programs on drug prevention and rehabilitation.

Author Contributions
All authors have substantially contributed to the conception and design of the study. NDD drafted the manuscript. All authors of the paper have revised the content and approved the final version to be published. All authors are accountable for all aspects of the work.

Availability of Data and Materials
The datasets generated during the current study are available from the corresponding author on reasonable request.

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