Exploring The Mental Health Of Individuals In Recovery From Substance Use In Nepal

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ARTICLE INFO	ABSTRACT
This study aimed to assess the mental health of Nepalese individuals in substance abuse recovery, correlating it with drug recovery periods and identifying predictive factors in both genders. A total of 352 participants aged 18–50 years underwent evaluation using a descriptive cross-sectional design and quantitative methods at nine different rehabilitation centers in Kathmandu Valley, Nepal. Structured questionnaires, encompassing five established scales; Beck Anxiety Inventory, Beck Depression Inventory, Perceived Stress Scale, Rosenberg Self-Esteem Scale, and Multi-Dimensional Perceived Social Support Scale were administered to collect data on personal details and substance use. The analysis involved correlation studies, variance assessments, and multiple regression analyses. Results indicate that participants experienced mild to moderate anxiety, depression, and stress during recovery, with females exhibiting heightened vulnerability compared to males. Self-esteem levels were above average, while perceived social support was moderate among participants. Significantly, mental health factors emerged as predictors of recovery duration in Nepalese women, while their influence was not significant in Nepalese men during separate multivariate analyses. Notably, factors such as admission frequency to rehabilitation centers and self-esteem significantly impacted recovery duration for females. This study emphasizes the pivotal role of mental health in shaping recovery durations among Nepali substance users, highlighting gender-specific nuances. Findings offer valuable insights for tailored interventions and support strategies within substance abuse rehabilitation programs.

Keywords: substance use, mental health factors, anxiety, depression, stress, self-esteem, perceived social support and drug recovery period |

1. Introduction

"Substance" broadly refers to various psychoactive elements like alcohol, tobacco, marijuana, illegal drugs, or prescribed medications [1-2]. Substance use or abuse refers to the improper use of these substances, which leads to harm to the individual as well as to those around them negatively. It is considered as a drug-related problem or disorder. It is a global problem affecting a quarter of a billion adults, leading to social, economic, and health problems [3]. It causes health hazards, psychological disorders, and social nuisance, resulting in the loss of lives and productive years [4].

Nepal has a long history of drug use among free thinking hippies, Hindu yogis, and their adherents, and the matwali society, which is well-known for its alcoholism. The centuries-old custom was engrained in Nepalese social and cultural standards. Alcohol and cannabis were commonly used for a variety of reasons, including religious, medical, and recreational ones [5]. The consumption habits of alcohol and other substances have seen substantial changes in Nepal during the last few decades, primarily due to changes in geopolitics and a host of other variables. The boundaries based on ethnicity and culture that used to control alcohol use have notably decreased, which has resulted in a rise in its use among younger people. This change has been accompanied by a noticeable tendency toward the use different drugs such as marijuana being the gateway

substance for a majority of drug users to heroin, phensedyle, buprenorphine, nitrazepam, and marijuana. Injection of a mixture of various drugs, called a cocktail, is an alarming trend among drug users currently. Surprisingly, more than 22 percent of drug injectors (IDUs) in Nepal choose dangerous injection locations, such as neck and femoral veins, which provide significant health risks [6].

Factors contributing to substance use include ethnicity/culture, family relationships, and peer pressure [7-8]. In the Nepalese context, culture and religion also play a role [7]. Other factors include peer pressure, lack of support, unemployment, lack of education, and mental health issues like stress, anxiety, and depression [9]. Substance abuse has negative impacts on mental and physical health, relationships, work, school, and society [10-11]. Mental health, an important aspect of overall well-being, is made up of three components: emotional well-being, psychological well-being, and social well-being [12]. Substance abuse and mental illness are interrelated, with one often causing the other [13]. Studies have shown that substance abuse results in decreased neurogenesis and cognitive/affective dysfunction and can lead to depression-like behaviors [14-15].

Mental health issues such as anxiety, depression, and low self-esteem have been found to be significant predictors of substance abuse [16-17]. Substance and alcohol use is significantly more likely when anxiety is present. This occurs frequently when teenagers use drugs or self-medicate as an attempt to decompress. However, using un-prescribed medicines as a form of self-medication may put users at risk for mental disorders, substance abuse disorders, and even suicidal ideation [18]. It is also found that adolescent drug usage propensity is greatly influenced by depression. Depression frequently coexists with drug misuse. There is a greater likelihood of drug use in those who are experiencing severe depressive symptoms [19-20]. This might lead to a detrimental cycle whereby drug use exacerbates depressive symptoms [21] which leads to drug use, and then drug use further intensifies feelings of depression, creating a loop that's hard to break. Additionally, there is a considerable increase in the risk of suicide when drug use and depression coexist [22].

Epidemiological studies have shown that stress is a major risk factor for the development of drug addiction. It also sticks out as a strong predictor linked to stronger drug cravings and a higher chance of relapsing into drug use [23]. Adolescent drug use has been reported to be specifically triggered by social stressors like social networks, competition, parental conflict, and economic status [24–25]. On the other hand, early life lower self-esteem appears to be a moderate predictor of the start of anxiety and depression in late adolescence and the early stages of adulthood [26]. Depression was more likely to be predicted by low self-esteem than by depression's effect on self-esteem [27]. Antisocial conduct and mental illnesses have been proven to be closely linked to low self-esteem [28]. There is an extremely strong correlation between drug usage and low self-esteem. One important component in the fight against teenage drug usage is considered to be self-esteem. It plays a mediating role in the relationship between stress and substance abuse among adolescents [29].

Good mental health is regularly associated with perceived support, which is usually explained as the outcome of objectively supportive behaviors that reduce stress [30]. Perceived social support is defined as individual's perception of having social network adequately supported. It is argued that those who are loved and find help when they are in need, are more satisfied with their close relationships and get recovered soon with sound mental health [31]. At the family and school levels, perceived social support and social capital may help shield teenagers from substance abuse and suicidal thoughts. Social support, particularly from family and friends, is crucial for mental health improvement and recovery from addiction, as it significantly influences an individual's journey towards recovery [32].

Studies have demonstrated the positive effects of perceived social support on reducing stress, building psychological toughness, and maintaining general mental health. Perceived social support significantly influences substance use recovery by encouraging treatment-seeking behavior, maintaining recovery, and reducing the risk of relapse [33]. The success rate of addiction therapy may be increased by utilizing the emotional support of families, especially when it comes to their voiced feelings, as well as the perceived social support of those who are battling addiction.[34].

Mental health care in Nepal has received more attention in recent years. In Nepal, there is a high prevalence of substance abuse and mental health issues, and different measures have been taken to close the treatment gap for mental health problems [35-36]. Despite these advances, mental health opportunities and care remain inadequate. Most services are concentrated in urban areas, and access to services is limited in rural areas where the majority of the population lives [37].

In Nepal, the number of trained mental health professionals is insufficient, and the stigma associated with mental illness remains a significant barrier to receiving care [38]. There is significant evidence to support the idea that health professionals can provide effective mental health services through community services and partnerships [39]. It is important to change the roles of mental health professionals such as psychiatrists and psychologists by providing services to improve and manage mental health services. This change includes healthcare professionals, especially public healthcare workers (PHC), and increases their recognition in healthcare. Implementation of these strategies can expand mental health services, especially in low- and middle-income countries like, Nepal [40-41]. Though there are some positive advancements, much work remains to improve the mental health care landscape in Nepal. Increased funding, improved training of health care professionals, and public education to reduce mental health stigma are key areas for development [37].

Rehabilitation and relapse prevention are important components of a positive approach to substance abuse. Rehabilitation aims to improve overall well-being and has been found to help people quit drugs and alcohol [42]. Research shows that recovery from drug addiction requires a multifaceted approach, including

detoxification, counseling, medication treatment, and long-term follow-up [43]. Recovery services are provided across the continuum of care, from hospital treatment to different types of community-based rehabilitation services. These services often occur in community settings and include formal (doctor, psychologist, social worker) and informal (family, friends, community members) community support [44].

Drug users typically start their recovery process in rehabilitation centers in Nepal. Community health centers play an important role in drug rehabilitation in Nepal. Their aim is to contribute to the local community and make it easier for those who need to participate in the process. However, many of these facilities lack adequately trained staff and are often managed by medical users, which can make it difficult to provide professional and good service [45]. The current state of healthcare facilities in Nepal has many limitations, including poor quality of care, limited funding, and inadequate government support. Many centers face a shortage of doctors and specialists in drug addiction, affecting the quality of patient care [36].

Additionally, the lack of adequate resources, especially access to supportive care, makes it more difficult to provide quality care [46]. In addition, the lack of government regulation and support has allowed such rehabilitation centers to operate independently, leading to treatment disparities between facilities. The lack of trained professionals is still a problem for these fields. While healthcare professionals and counselors (people with substance abuse experience) contribute greatly to the functioning of these facilities, the lack of doctors and nurses specially trained in substance addiction hinders the work of these centers [46-47].

However, relapse is common and recovery periods can vary greatly for each individual [9]. A study conducted in Dharan, Nepal, found that relapse is a common part of the recovery process for drug addicts. The majority of clients relapse within a year following treatment, with the first 90 days being particularly vulnerable. The study found that a lack of self-confidence, peer pressure, inability to give up old habits, and easy accessibility of drugs were the main contributing factors [48]. Similarly, another study in treatment centers in Nepal showed that 94.7% of drug addicts relapsed after detoxification. The main reason for the return is thought to be relationships between friends and family. Factors associated with recovery include age, education, economic status, family type, occupation, and education. Research shows that relapse can be prevented with supportive care, positive attitudes, and effective recovery efforts [49].

Positive mood, peer pressure, social issues, cravings, and difficulty concentrating were identified to be common causes of relapse in a study comparing clinical-demographic characteristics associated with relapse in men with alcohol and opiate dependency in Western Nepal. The research highlights that in order to enhance results, social influences must be addressed in addition to physiological and psychological ones [50]. Factors affecting drug detoxification and relapse were investigated in a study conducted in Nepal with twenty participants. The main factors linked to relapse were found to be frustration and insufficient support. The report emphasizes the need for rules covering coordination, supervision, monitoring, assessment, and accreditation in light of the lack of evidence supporting effective detoxification and rehabilitation in Nepal [51].

Gender differences exist in substance use, treatment, and during recovery periods. Women are more likely to experience depression, stress, and low self-esteem compared to men [52-53]. A study among Norwegian teenagers investigates gender differences in anxiety, self-esteem, and emotions among genders showing that girls have more anxiety and depression than boys but have lower self-esteem. Increased stress on many factors, including peer relationships and school performance, has been linked to depression, regardless of gender. Poor self-esteem affects emotional outcomes, some of which reduce emotional stress. [54].

According to a study on college students in the United Arab Emirates, females experienced higher degrees of loneliness than males, and this was associated with worse levels of self-efficacy and self-esteem. With a 22.9% variance explanation, self-esteem was shown to be the most significant predictor, followed by self-efficacy with 6.5% and gender with 6.5%. Women are also more likely than men to experience anxiety and mood problems. Situational, societal, and psychological factors all play a role in loneliness that results from differences in relationships [55].Women face more barriers to accessing treatment and tend to have more psychological distress during recovery [56]. Psychological and social conditions, including cultural and financial restrictions, play a crucial role in women's recovery [57]. A study on women and substance use disorder, compared to men results that women experience particular obstacles to treatment, such as a lower perceived need for treatment, shame and guilt, co-occurring disorders, unequal access to care, childcare responsibilities, and fear of child protective services.

Social norms, the possibility of violence, and trauma present particular difficulties for women. Barriers make it difficult to access treatment. Cultural factors reduce the disparity in substance use between genders. Men behave in an externalizing manner, whereas women deal with internalizing problems. It is vital to assist women in starting treatment. Women experience less difficulties at first, but once they become addicted, they stray more from society norms, which can have detrimental effects. Particularly in drug-using communities, stigma and social struggles are prevalent. Post-traumatic stress disorder is common in women who are addicts. Gender influences the beginning of treatment, with women in addiction programs experiencing a telescoping effect [58].

The literature on drug abuse and its impact on mental health is extensive. Still, limited research has been done on the mental health status of individuals during the recovery period from substance use. In the context of Nepal, the current literature lacks comprehensive studies specifically focusing on the mental health status of individuals in Nepal during their recovery from substance use. This fact highlights the urgency and necessity to investigate and comprehend the mental health factors that impact both male and female substance users in

Nepal during their recovery journeys. Understanding these mental health challenges will help to facilitate the development of targeted culturally relevant thorough and individualized interventions. It is essential to identify and comprehend these mental health aspects specific to the Nepalese setting, as they play a crucial role in shaping effective and tailored support mechanisms during the recovery process.

This study mainly endeavors to address a research gap by delving into mental health aspects that have not been adequately explored among Nepalese individuals undergoing recovery from substance abuse. For this purpose, research questions were designed to i) identify the status of mental health factors of Nepalese recoveries across sex and drug recovery period (what is the status of mental health of Nepalese recoveries?) and ii) access the influence of mental health variables on drug recovery period with Nepalese recoveries across gender differences (what is the influence of mental health with Nepalese recoveries on the drug recovering periods, What mental health factors predict drug recovering period in Nepalese women and Nepalese men?). The study used mental health-related variables such as anxiety, depression, perceived stress, self-esteem, and perceived social support as independent variables and drug recovery period as the dependent variable. Conducted within nine different rehabilitation centers in Kathmandu, which cater to a substantial population of individuals seeking treatment for drug use, the findings of this study aspire to provide a representative overview of Nepal. The paramount significance of this research lies in offering invaluable insights to concerned authorities and the Nepalese government. These insights can assist in the development of targeted and effective mental health programs tailored for individuals undergoing substance use recovery, thereby aiding them in achieving prolonged periods of being drug-free.

2. Method

2.1 Participants

The study included 352 Nepali substance users (76% male, 24% female), aged 18 to 50, undergoing treatment in Kathmandu's rehabilitation centers with at least 3 months of abstinence. Majority of male participants were in the 21-30 age group, while most female participants were below or equal to 20 years old. In terms of occupation, 52% of males had work, while 35% of females were unemployed. 55% of participants were single, and 38% were married. Also, more than half of participants were single and less than half were married and more than two-third of participants did not have any children. Majority of participants had completed or dropped out of secondary school, and minority of them held higher level of education.

The study also gathered information on the participants' history of drug abuse, including age at substance initiation, duration of their substance use, and period of abstinence. On average, participants started using drugs at 17.6 years, with the majority of 74% starting in their adolescence (11-20 years). The mean period of drug use was 144.25 months, and the mean recovery period was 7.06 months for females and 5.50 months for males. Most participants (47%) were admitted to rehab centers once and (27%) were admitted twice. The relapse rate was 53%, with 49% of females and 45% of males relapsing at least twice.

Table 1. Participant's information related to substance use

| Variables related to substance Use | | Sex | | |
		Male n=268(76.10%)	Female n=84(23.90%)	Total n=352(100%)
Age group of initiation of drug use in years (n=352)	10 and below	26 (89.7%)	3 (10.3%)	29 (100%)
	11-20	198 (78.90%)	53 (21.1%)	251 (100%)
	21-30	35 (64.80%)	19 (35.2%)	54 (100%)
	Above 30	9 (50.00%)	9 (50.0%)	18 (100%)
	Mean (SD)	16.97 (5.8)	19.57 (7.02)	17.6 (6.2)
Duration of using drugs in months (n=352)	6-12	3 (60.0%)	2 (40.0%)	5 (100%)
	13-24	3 (27.3%)	8 (72.7%)	11 (100%)
	25-60	34 (52.3%)	31 (47.7%)	65 (100%)
	61-120	65 (74.7%)	22 (25.3%)	87 (100%)
	121-180	77 (87.5%)	11 (12.5%)	88 (100%)
	181-240	33 (84.6%)	6 (15.4%)	39 (100%)
	241-360	44 (91.7%)	4 (8.3%)	48 (100%)
	361-480	9 (100.0%)	0 (0.0%)	9 (100%)
	Mean (SD)	160.8 (95.31)	91.3 (76.08)	144 (95.7)
Drug recovery period in months (n=352)	3-6	206 (76.9%)	62 (23.1%)	268 (100%)
	7-12	49 (83.1%)	10 (16.9%)	59 (100%)
	13-24	11 (52.4%)	10 (47.6%)	21 (100%)
	25 and above	2 (50.0%)	2 (50.0%)	4 (100%)
	Mean(SD)	5.50 (4.48)	7.06 (9.29)	5.87 (6.00)
Times of treated in hospital/	1 time	121 (73.8%)	43 (26.2%)	164 (100%)
	2 times	66 (70.2%)	28 (29.8%)	94 (100%)

rehab (n=352)	3 times	33 (82.5%)	7 (17.5%)	40 (100%)
	4 times	20 (80.0%)	5 (20.0%)	25 (100%)
	5 times	15 (100.0%)	0 (0.0%)	15 (100%)
	More than 5 times	13 (92.9%)	1 (7.1%)	14 (100%)
	Mean (SD)	2.27 (1.76)	1.74 (0.98)	2.14 (1.61)

2.2. Procedure

The study used a quantitative design to survey drug users in recovery at the registered rehabilitation centers in Kathmandu, Nepal. Ethical approval from relevant research committees and permission from rehab centers was taken before conducting the survey. Approval was acquired from NamSeoul University Research Committee (No. NSUIRB-201811-008) in South Korea and Nepal Health Research Council (NHRC No. 2957). Following the approval, nineteen rehabilitation centers were listed for survey, among them those with failed renew were excluded and among seventeen officially registered rehabilitation centers, nine centers were randomly selected. Participants were visited in person using structured questionnaires with five mental health scales to assess anxiety, depression, stress, self-esteem, and perceived social support. Before starting the research, the purpose and content of the study were well explained to the participants. Voluntary participation was ensured and written consent was obtained from the participants. Data was collected by the principal researcher herself along with four research assistants using systematic sampling. Participant's confidentiality and privacy were protected using anonymous codes and not disclosing individual information. Participants were encouraged with a gift for their interest in the study.

Chart 1: Flowchart for the procedure of data collection and survey
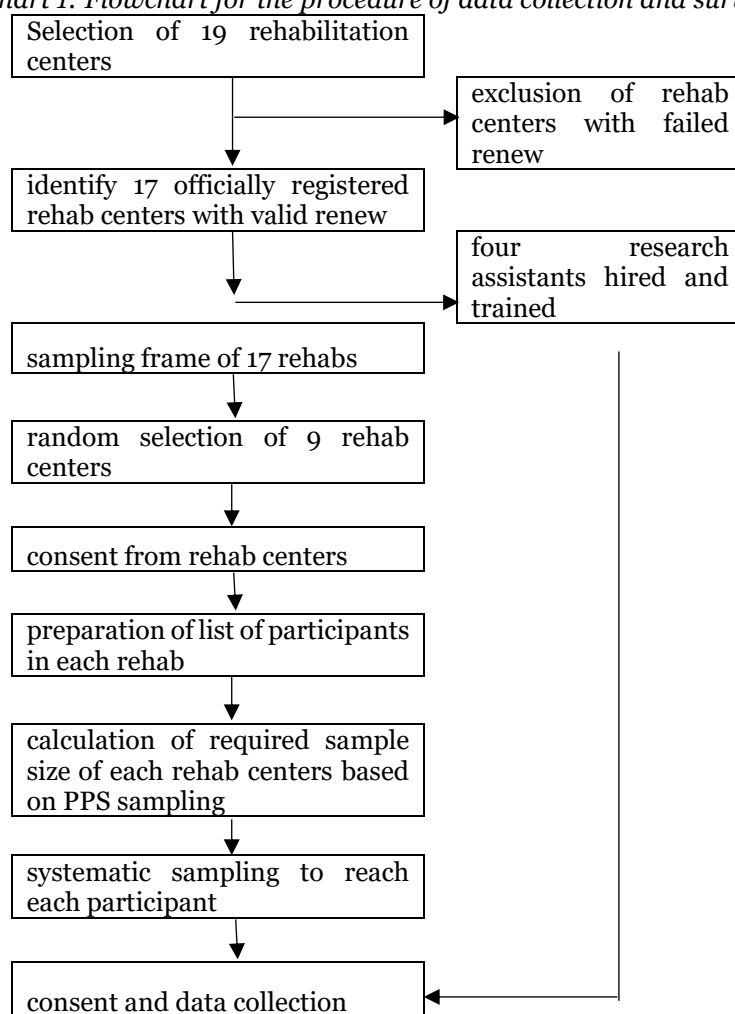
2.3 Data collection
2.3.1Beck Anxiety Inventory (BAI)
The study used the Beck Anxiety Inventory (BAI), created by Beck et al. (1987) which is used to measure the severity of anxiety symptoms. It is a self-report inventory with 21 items scored on a range of 0 to 3, with higher scores indicating more severe symptoms. The standardized cut offs for the scale are 0-9 for normal to minimal anxiety, 10-18 for mild to moderate anxiety, 19-29 for moderate to severe anxiety, and 30-63 for severe anxiety.

In this study, BAI"s Cronbach's α of the scale was 0.88.

2.3.2 Beck Depression Inventory (BDI)
The study used the Beck Depression Inventory (BDI) created by Beck et al. (1987) is a multiple-choice self-report inventory for measuring the severity of depression. Each item is scored on a range of 0 to 3 and the sum score is used to determine the severity of depression. The standard cut-off scores are 0-9 for minimal depression, 10-18 for mild depression, 19-29 for moderate depression and 30-63 for severe depression. In this study, BDI's Cronbach's α of the scale was 0.82

2.3.3 Perceived Stress Scale (PSS)
The study used the Perceived Stress Scale (PSS) which is a widely used psychological tools for measuring the perceived stress by Cohen et al. (1994). It is a self-reported tool with 10 items and individual scores range from 0 to 40, with higher scores indicating higher perceived stress. The standard cut-off scores are 0-13 for low stress, 14-26 for moderate stress, and 27-40 for high perceived stress. In this study, PSS's Cronbach's α of the scale was 0.61.

2.3.4 Rosenberg Self-Esteem Scale (SES)
The study used the Rosenberg Self-Esteem Scale (SES) to measure self-esteem. It is a ten-item Likert-type scale with items answered on a four-point scale ranged from strongly agrees to strongly disagree by Rosenberg, (1965). It uses a scale of 0-30 where a score less than 15 may indicate problematic low self- esteem. In this study, Cronbach's α of SES was 0.55.

2.3.5 Multi-dimensional Scale of Perceived Social Support (MDPSSS)
The study used the Multi-Dimensional Social Support Scale (MDPSSS) developed by Zimet et al. (1988) and validated in Turkish by Eker et al. (1995). This tool measures perceived social support through 12 self-assessment items on a 7-point scale. The scale has three sub-scales, each addressing a different source of support, under three dimensions as family, friends and significant other support (Rosenberg, 1965). Sub-scale scores are calculated by averaging or summing specific items. A mean total score of 1 to 2.9 indicates low support, 3 to 5 suggests moderate support, and 5.1 to 7 signifies high support.. In this study, MDPSS's Crobach's α was found to be as high as 0.87.

2.4 Data Analysis
The data satisfied all the assumptions for the normality test. The study data was analyzed using descriptive statistics (frequency, percent, measure of central tendency and measure of dispersion). The descriptive analysis such as mean and standard deviation were calculated for all the five mental health variables and analysis of demographic data across sex and drug recovery period. Inferential analysis such as correlation, analysis of variance and multiple regression analysis were used to analyze the data in terms of mental health factors on drug recovery period across gender segregation at 95% confidence level ($p<0.05$). All data were analyzed using SPSS.

3. Results

3.1 Descriptive statistics of mental health factors across sex and drug recovery period
Table 2 shows that the mean of anxiety [M = 12.63 (0.49)] of Nepali drug users was within the range of 'mild to moderate' (10-18 points). The results of frequency analysis by anxiety level reported that majority of substance users (44%) were at normal to minimal severity of anxiety while around 15% of them had moderate to severe anxiety. Moreover, 6% of substance users had severe anxiety during recovery period. And there was a not significant difference between male and female drug users (t= -1.338, p = 0.182) and among drug recovery periods (F (3,348) = 0.611, p-value= 0.608). Especially, females having 7-12 months recovery period and males for 25 and above months had the highest level of anxiety and was within the range of 'mild to moderate'.
The mean of depression [M = 17.03 (0.50)] of participating drug users was found to be at 'Borderline Clinical Depression (17-20 points)' with mild mood disturbance (11-16 points) to moderate (21-30 points) in true population. The severity distribution of depression revealed that 9% of participants had severe or extremely severe depression. There was a significant difference between male and female substance users (t = -3.274, p = 0.001), however it was not significantly different among recovery periods (3,348) = 0.246, p-value= 0.864). Especially, females having 7-12 months recovery period and males for 25 and above months had the highest level of depression.
The mean of stress [M = 19.55 (0.27)] of Nepali substance users was also within the range of 'moderate' (14-26 points). The severity distribution of perceived stress revealed that 7% of participants had high level of stress. Results showed the perceived stress level of female participants (M = 21) was higher than male participants (M = 19) and the difference is significant (t = -2.870, p = 0.004). On other hand, there was no significant difference among recovery periods (F (3,348)= 2.524, p-value= 0.058). Especially, the stress level of female having recovery periods of 7-12 months and 13-24 months was the highest.
The mean of self-esteem [M Moreover= 26.79 (0.19)] of Nepali substance users belonged to the normal level (over 15 points); with three-fifth (63%) of participating substance users having high self-esteem. In addition,

the mean of self-esteem also slightly increased from 3-6 months [26.57 (0.22)] to 13-24 months [26.76 (0.76)] of recovery periods and it continued to rise to 25 and above months of recovery [28.25 (3.71)]. Nevertheless, the difference between male and female was insignificant (t = -1.063, p = 0.289), and among recovery periods [F (3,348)= 1.756, p-value= 0.155]. Especially, females having more than 25 months recovery period had the highest level of self-esteem.

The mean score of perceived social support [M = 53.64 (0.57)] of participating drug users indicates that there was moderate support in general for the study population. Moreover, among the three sub-scales, the maximum support was from family [M = 18.72 (0.25)], followed by significant others [M = 18.20 (0.26)] and then, friends [M = 16.72 (0.24)] in the third rank. In addition, the results of frequency analysis by sub-scales of perceived social support reported that majority of the participating previous drug users experienced moderate support from family, from friends and from significant others. Furthermore, when the periods of recovery increased from 3-6 months to 25 and above months, the mean (SD) of perceived social support gradually decreased from 54.12 (0.66) to 50.75 (4.75) respectively. In addition, male [M=53.79 (0.65)] had more social supports than female [M=48.00 (8.00)]. Especially, females with 25 and above months of recovery period had the highest level of support from the family and females with 3-6 months of recovery period had the highest level of support from significant others and friends respectively. There was no significant difference between male and female substance users and among recovery periods for perceived social support.

Table 2. Descriptive statistics of mental health factors across sex and drug recovery period

Variables	G	Male					Female					Total				
	DRP in months	3-6	7-12	13-24	25 and above	Sum	3-6	7-12	13-24	25 and above	Sum	3-6	7-12	13-24	25 and above	Sum
	n	206	49	11	2	268	62	10	10	2	84	268	59	21	4	352
BAI	M	12.63	10.33	13.36	16.00	12.26	13.84	15.40	13.20	7.50	13.80	12.91	11.19	13.29	11.75	12.63
	SE	0.61	1.20	2.03	7.00	0.53	1.36	3.56	3.91	7.50	1.18	0.56	1.17	2.09	4.85	0.49
BDI	M	15.74	16.98	18.09	23.50	16.12	20.60	20.90	17.70	6.00	19.94	16.87	17.64	17.90	14.75	17.03
	SE	0.61	1.16	1.58	11.50	0.53	1.42	4.23	3.27	0	1.24	0.59	1.20	1.72	6.90	0.50
PSS	M	19.54	17.14	19.64	20.00	19.11	20.71	21.80	21.80	19.50	20.94	19.81	17.93	20.67	19.75	19.55
	SE	0.35	0.69	1.05	3.00	0.31	0.72	1.37	1.66	1.50	0.59	0.32	0.66	0.97	1.38	0.27
SES	M	26.65	27.22	25.55	22.50	26.68	26.32	30.10	28.10	34.00	27.17	26.57	27.71	26.76	28.25	26.79
	SE	0.26	0.52	0.99	3.50	0.23	0.41	1.23	1.06	2.00	.40	0.22	0.50	0.76	3.71	0.19
MDPSSS	M	54.48	51.82	49.64	53.50	53.79	52.94	55.50	53.40	48.00	53.18	54.12	52.44	51.43	50.75	53.64
	SE	0.74	1.55	3.02	7.50	0.65	1.46	3.22	2.81	8.00	1.19	0.66	1.40	2.06	4.75	0.57
MDPSSS1	M	18.45	18.10	17.64	18.00	18.35	18.00	17.60	17.80	10.00	17.74	18.34	18.02	17.71	14.00	18.20
	SE	0.32	0.71	1.63	4.00	0.29	0.70	1.78	1.67	2.00	0.60	0.30	0.66	1.13	2.94	0.26
MDPSSS2	M	19.06	17.86	16.27	18.00	18.72	18.23	21.50	18.10	24.00	18.74	18.87	18.47	17.14	21.00	18.72
	SE	0.30	0.72	1.57	3.00	0.28	0.62	1.38	2.28	0	0.57	0.28	0.66	1.34	2.12	0.25
MDPSSS3	M	16.97	15.86	15.73	17.50	16.72	16.71	16.40	17.50	14.00	16.70	16.91	15.95	16.57	15.75	16.72
	SE	0.31	0.64	0.97	0.50	0.27	0.69	1.75	1.28	6.00	0.58	0.29	0.61	0.80	2.66	0.24

G=Gender,; DRP=Drug Recovery Period; SE=Standard Error; M=Mean; BAI= Anxiety; BDI=Depression; PSS=Perceived Stress; SES=Self-Esteem; MDPSSS= Multi-Dimensional Perceived Social Support; MDPSSS1= Multi-Dimensional Perceived Social Support – "Significant Others"; MDPSSS2= Multi-Dimensional Perceived Social Support-"Family"; MDPSSS3= Multi-Dimensional Perceived Social Support-"Friends"

3.2. Correlation among mental health variables and drug recovery period

Table 3 shows the correlation between mental health variables such as anxiety, depression, perceived stress, self-esteem and perceived social support; and drug recovery period. The analysis showed drug recovery period was correlated negatively with anxiety, depression, stress and perceived social support while weakly but positively correlated with self-esteem. None of the correlation was significant. Moreover, among mental status variables, there was 11% positive correlation between self-esteem and perceived social support; and both the variables were significantly correlated (p=0.044). Self-esteem was highly significantly correlated with anxiety (p=0.004) and depression (p<0.0001) with 15% and 34% explanation in negative direction.

Table 3. Correlation matrix among mental health variables and drug recovery period

Variables	BAI	BDI	PSS	SES	MDPSSS	DRP
Anxiety (BAI)	1	.414**	.267**	-.153**	.038	-.042
		.000	.000	.004	.473	.427
Depression (BDI)		1	.248**	-.340**	.031	-.038
			.000	.000	.565	.478
Perceived Stress (PSS)			1	-.082	.065	-.007
				.125	.223	.898
Self-esteem Scale (SES)				1	.107*	.094
					.044	.077
Perceived Social Support (MDPSSS)					1	-.064
						.229
Drug Recovery Period (DRP)						1

**p<0.01 *p<0.05

3.3. The effects of mental health variables on drug recovery period

Table 4 and Table 5 show the results of multiple regression analysis on drug recovery period with mental health variables, and variables related substance use for female and male respectively. The regression model for female is a good fit of the data [F (8,75) = 3.185, p =.004]. The total model explained 25.4% of the variance of drug recovery period. The Times of admission in rehab (t = 2.317, p = .023) and Self-esteem (t = 2.574, p = .012), significantly predicted drug recovery period for female whereas duration of using drug in months (t= 2.068, p= .040) only significantly predicted drug recovery period for male. However, the regression model for male is not a good fit of the data [F (8,259) = 1.526, p =.148].

The general forms of the statement to predict drug recovery period for female (Table 4) from used variables are based on predicted drug recovery period for female is the addition of the constant term (-14.150) to times of admission in rehab with its beta coefficient (2.382) plus the self-esteem multiplied by its beta coefficient (.696).

Table 4. Multiple regression analysis on drug recovery period for female

N=84

Independent variables	β	SE	Std. β	t-value	p	R^2	F
Constant-term	-14.150	8.707		-1.625	.108		
Drug use initial age (years)	-.112	.146	-.084	-.763	.448		
Duration of using drug (months)	.019	.013	.154	1.440	.154		
Times of admission in rehab	2.382	1.028	.252	2.317	.023*	.254	F(8,75) =3.185**
Anxiety	-.068	.094	-.079	-.722	.472		
Depression	-.109	.093	-.133	-1.167	.247		
Perceived Stress	.152	.194	.089	.786	.434		
Self esteem	.696	.270	.276	2.574	.012*		
Perceived social support	-.027	.090	-.032	-.303	.763		

**p<0.01 *p<0.05

Table 5. Multiple regression analysis on drug recovery period for male

N=268

Independent variables	β	SE	Std. β	t-value	p	R^2	F
Constant-term	11.193	2.959		3.782	.000		
Drug use initial age (years)	-.056	.048	-.072	-1.167	.244		
Duration of using drug (months)	.006	.003	.134	2.068	.040*		
Times of admission in rehab	-.106	.164	-.042	-.647	.518	.045	F(8,259) =1.526
Anxiety	-.044	.036	-.084	-1.212	.227		
Depression	.033	.038	.063	.873	.383		

Perceived Stress	-.064	.057	-.072	-1.122	.263
Self esteem	-.091	.083	-.075	-1.090	.277
Perceived social support	-.035	.026	-.083	-1.352	.178

**p<0.01 *p<0.05

4. Discussion

This study examined the relationship between mental health and recovery status of Nepalese individuals who use substances. However, due to a lack of prior research in this area, the literature review was limited and the findings were unable to be compared to previous studies. Despite this, the study attempted to highlight the important findings and discuss their implications and limitations in the context of what little existing literature there is on the topic.

4.1 Status of mental health factors during the drug recovery period
The study investigated the anxiety, depression, and stress levels of Nepali drug users during their recovery period and found that these emotional challenges were generally in the mild to moderate range. This result was similar to a previous study involving 463 Nepali adolescents in Kathmandu and Bhaktapur [16]. Interestingly, the study observed that individuals with shorter recovery periods experienced higher levels of anxiety, depression, and stress, with the peak occurring at 13-24 months of recovery. The study suggests that it's important for future research to explore the factors associated with this peak.
Additionally, the study revealed that more than one-third of the recovering drug users in Nepal faced problems with self-esteem. The average of self-esteem was higher than the average scores of Nepali adolescents in a study by Kim and Thapa, 2019 [16] and young adults in a study by Waldron, Scarpa, and Kim-Spoon, 2018 [17]. The study also found that participants with 25 or more months of recovery had the highest level of self-esteem, and that self-esteem slightly increased from 3-6 months to 13-24 months of recovery and continued to rise after 25 months of recovery. This indicated that longer recovery periods were associated with higher self-esteem among the participants.
Moreover, the study assessed the level of perceived social support among Nepali drug users during recovery and found it to be moderate, which decreased as the recovery period extended. Family support was the most prominent, followed by support from significant others and friends. This finding aligned with some previous studies [59]. Notably, the mean score of perceived social support in Nepal is lower than the studies done by Celik, 2012 [30]. The study suggested that in Nepal, there is still high social support for drug users which may contribute to their high self-esteem and mild to moderate levels of anxiety, depression, and perceived stress among individuals in recovery.

4.2 Status of mental health factors across sex
Among Nepali substance users, mental health factors like anxiety, depression, and stress were found to be higher in females than male. This finding aligns with various studies conducted worldwide [16, 52, 53], which consistently show that women have 1.5 to 2 times higher odds of experiencing anxiety than men. Studies have also found that recovering females are more susceptible to depression, stress, and poor coping compared to males [56, 54]. In the context of Nepal, females have more cultural, social, educational and financial restrictions than males [57]. Thus, female substance users in Nepal are at a greater risk of anxiety, depression, and stress during their recovery period in comparison to male.
Moreover, there is no significant difference of self-esteem between male and female in Nepal. The finding is in consistency with several studies [16, 60]. However, on a study by Collison, Banbury & Lusher, 2016 [61] reported that female are more likely to have a below average self-esteem than male. This difference might be due to differences in background characteristics and structural disparity in society [57]. On the other hand, no significant difference was found in self-esteem between Nepali male and female recovering drug users. This result is steady with various other research results [16, 60]. Further studies are needed to understand the changes in self-esteem according to the sex of recovering drug users in Nepal.

4.3 The effects of mental health variables on drug recovery period
Previous studies, [62-63], have not found a significant link between substance use with depression or anxiety respectively. However, self-esteem is considered important in preventing drug use [64,16] also reported that depression and self-esteem affects drug use significantly, while anxiety and stress did not show significant associations. This suggests that mental health do not affects the initiation of substance use, either before treatment or during the recovery period. However, further research with robust methods is needed to draw more conclusive evidence regarding the effect of mental health variables on drug recovery [16].
Furthermore, the multiple regression analysis for drug recovery period with mental health variables, specifically for females and males separately, discovered that the regression model for females was a good fit, whereas the model for males was not. These differences may be attributed to psycho-social, cultural, and gender inequalities prevalent in Nepal. Females in Nepal faced higher risks of anxiety, depression, and stress during

their recovery, as indicated by various studies [52, 53, 56]. Additionally, females experienced lower social support compared to males, and stigma was a major psycho-social issue affecting females more than males [66].

Moreover, perceived social support was significantly correlated with self-esteem, and in turn, low level of self-esteem was interrelated with higher levels of anxiety, depression, and stress [16]. Another study by Alavi, 2011concluded that low self-esteem was interconnected to increased substance abuse [48]. Anxiety, depression, and self-esteem were also found to be significant factors of drug addiction [16]. Therefore, mental health factors significantly predicted drug recovery periods in Nepalese women, while they did not have the same significant effect in Nepalese men. Thus, cultural and gender disparities warrant further investigation.

To be more specific, the study identified that the number of admissions to rehab and self-esteem significantly predicted drug recovery periods for females. To improve recovery outcomes, it is recommended to increase the frequency of rehab admissions and work on enhancing self-esteem. Additional research has demonstrated an encouraging relationship between the duration of substance use disorders and the levels of anxiety, depression, and stress [67].

5. Conclusion

The study reported that the level of anxiety, depression, and stress of Nepali drug users experiencing recovery were within the range of mild and moderate level. Across gender segregation, female substance users were at a larger risk of anxiety, depression, and stress during recovery period than that of male substance users in Nepal. The participant's self-esteem during recovery period was found to be more than average while the perceived social support of participating drug users was moderate. Further, on gender differentiation during multivariate analysis, the mental health factors significantly predicted drug recovering period in Nepalese women while mental health factors could not significantly predict drug recovering period in Nepalese men. Moreover, the times of admission in rehab and self-esteem significantly predicted drug recovery period for female. The research result suggests that though Nepalese drug users are moderately anxious, depressed and stressful during recovery period with more than average self-esteem and moderate perceived social support. To increase drug recovery periods especially for female, programs should be designed to increase the times of admission in rehab and self-esteem while that for male, duration of using drug in months should be considered.

The study's findings indicate an urgent need for intervention strategies to increase drug recovery time, especially for female drug users. Specific recommendations include the need of counseling, therapy, and support groups tailored to the specific needs of each gender, especially for women who are vulnerable to stress, depression, and anxiety during recovery, creating intervention plans, including risk reduction and enhancing problem solving. Additionally, gender-specific psychological services are recommended to address stress, depression, and anxiety during recovery and focus on the specific needs of each gender. Psychological support, self-esteem and social support in treatment programs is very important in prolonging the recovery period. It is essential to fill information gaps by improving treatment access, and raising self-esteem by increasing admissions to rehab. Programs should be created to strengthen social support and keep in touch with recovering users through fellowship events. Both male and female users can benefit from the combination of social support programs like fellowship meetings with mental health and substance abuse treatment. Additionally, more research is needed to understand the relationship between mental health and substance abuse.

Also, the study's discoveries are intended to offer practical insights or suggestions for policymakers, rehabilitation centers, and healthcare providers in Nepal. These insights aim to help these entities better understand and address the mental health requirements of individuals undergoing recovery from substance abuse. Policymakers can utilize these insights to develop specialized mental health policies that allocate resources and establish programs specifically addressing gender-specific mental health challenges, ultimately aiming to enhance recovery outcomes. Rehabilitation centers can enhance their existing programs by integrating robust mental health support systems, fostering self-esteem, and promoting social support mechanisms, aiming to better assist individuals throughout their recovery. Additionally, healthcare providers and rehabilitation centers should adopt a gender-sensitive approach within their care protocols, tailoring interventions to effectively address the unique mental health challenges experienced during recovery by both male and female substance users highlighted in this study. These recommendations collectively strive to create an environment that addresses the diverse mental health needs of individuals undergoing substance abuse recovery in Nepal.

This study provides useful information and recommendations for policymakers, rehabilitation facilities, and medical professionals in Nepal. However, there are some limitations to be noted. This is a preliminary study and the results warrant replications in samples across situations. The results may be influenced by false positives and false negatives because of the small sample size. It focused on recovering female and male substance users who are admitted to recovery centers in the capital city - Kathmandu, which may restrict the generalization of the results to other types of substance users, especially those in rural areas or outside of rehab centers in the Kathmandu valley. Furthermore, the study only provides information about the current status of mental health and its related factors among recovering drug users, but it does not offer insights into the underlying causes of anxiety, depression, and stress experienced by the individuals. Future research is

necessary to investigate the specific factors contributing to the mental health challenges faced by recovering drug users in Nepal.

References

1. McLellan, A. T. (2017). Substance misuse and substance use disorders: why do they matter in healthcare?. Transactions of the American Clinical and Climatological Association, 128, 112-130.
2. Kushwaha, R. P., Rauniar, G. P., Koirala, B., & Mandal, N. K. (2019). Prevalence of substance use among undergraduate students in a medical college of Nepal. JNMA: Journal of the Nepal Medical Association, 57(219), 315-319.
3. Burns, L. (2014). World drug report 2013 by united nations office on drugs and crime new york: United nations, 2013 isbn: 978-92-1-056168-6, 151 pp. Grey literature.
4. Kaur, K. (2017). Drug abuse! Problem is intense in Punjab, India. Human Biology Review, 6 (1), 20, 29.
5. Acharya, S. L., Howard, J., Panta, S. B., Mahatma, S. S., & Copeland, J. (2014). Cannabis, Lord Shiva and Holy Men: Cannabis Use Among Sadhus in Nepal. Journal of Psychiatrists' Association of Nepal, 3(2), Article 2. https://doi.org/10.3126/jpan.v3i2.12379
6. Niraula, S. R., Chhetri, D. B., Singh, G. K., Nagesh, S., & Connell, F. A. (2015). Drug abuse pattern and risk taking behaviors among drug abusers in Dharan, Nepal. J Subst Abuse Alcohol, 3(4), 1040.
7. Jha, C. K., & Plummer, D. (2014). Culture, identity and the embodiment of illicit drug use in Nepal. Mental Health and Substance Use, 7(1), 5-18.
8. Schafer, G. (2011). Family functioning in families with alcohol and other drug addiction. Social Policy Journal of New Zealand, 37(2), 135-151.
9. Volkow, N. D. (2010). Drugs, brains, and behavior: The science of addiction. Retrieved on March, 23(2011), 255-169.
10. Sahu, K. K., & Sahu, S. (2012). Substance abuse causes and consequences. Bangabasi Academic Journal, 9(12), 52-59.
11. Schulte, M. T., & Hser, Y. I. (2013). Substance use and associated health conditions throughout the lifespan. Public health reviews, 35(2), 1-27.
12. Bauer, G. F., Hämmig, O., & Keyes, C. L. (2014). Mental health as a complete state: How the salutogenic perspective completes the picture. Bridging occupational, organizational and public health: A transdisciplinary approach, 179-192.
13. Borsboom, D. (2017). A network theory of mental disorders. World psychiatry, 16(1), 5-13.
14. Radoman, M., Hoeppner, S. S., Schuster, R. M., Evins, A. E., & Gilman, J. M. (2019). Marijuana use and major depressive disorder are additively associated with reduced verbal learning and altered cortical thickness. Cognitive, Affective, & Behavioral Neuroscience, 19, 1047-1058.
15. Edlund, M. J., Forman-Hoffman, V. L., Winder, C. R., Heller, D. C., Kroutil, L. A., Lipari, R. N., & Colpe, L. J. (2015). Opioid abuse and depression in adolescents: Results from the National Survey on Drug Use and Health. Drug and alcohol dependence, 152, 131-138.
16. Kim, E., & Thapa, S. (2019). The Relationship between Mental Health and Drug-use among Nepali Adolescents. Medico-Legal Update, 19(1).
17. Waldron, J. C., Scarpa, A., & Kim-Spoon, J. (2018). Religiosity and interpersonal problems explain individual differences in self esteem among young adults with child maltreatment experiences. Child abuse & neglect, 80, 277-284.
18. Boschloo, L., Vogelzangs, N., Smit, J. H., van den Brink, W., Veltman, D. J., Beekman, A. T., & Penninx, B. W. (2011). Comorbidity and risk indicators for alcohol use disorders among persons with anxiety and/or depressive disorders: findings from the Netherlands Study of Depression and Anxiety (NESDA). Journal of affective disorders, 131(1-3), 233-242.
19. Conner, K. R., Pinquart, M., & Gamble, S. A. (2009). Meta-analysis of depression and substance use among individuals with alcohol use disorders. Journal of substance abuse treatment, 37(2), 127-137.
20. Lev-Ran, S., Roerecke, M., Le Foll, B., George, T. P., McKenzie, K., & Rehm, J. (2014). The association between cannabis use and depression: a systematic review and meta-analysis of longitudinal studies. Psychological medicine, 44(4), 797-810.
21. de León, E. A. M., Astudillo-García, C. I., & Durand-Arias, S. (2019). Depression, substance abuse, and suicide risk: a rising problem. Addictive Disorders & Their Treatment, 18(2), 99-104.
22. Mantsch, J. R., Baker, D. A., Funk, D., Lê, A. D., & Shaham, Y. (2016). Stress-induced reinstatement of drug seeking: 20 years of progress. Neuropsychopharmacology, 41(1), 335-356.
23. Bhargava, D., & Trivedi, H. (2018). A study of causes of stress and stress management among youth. IRA-International Journal of Management & Social Sciences, 11(03), 108-117.
24. Pariat, L., Rynjah, A., Joplin, M., & Kharjana, M. G. (2014). Stress levels of college students: Interrelationship between stressors and coping strategies. Journal of Humanities and Social Science, 19(8), 40-46.
25. Keane, L., & Loades, M. (2017). Low self-esteem and internalizing disorders in young people–a systematic review. Child and Adolescent Mental Health, 22(1), 4-15.
26. Sowislo, J. F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A meta-analysis of

longitudinal studies. Psychological bulletin, 139(1), 213.

27. Bartsch LA, King KA, Vidourek RA, Merianos AL. Self-esteem and alcohol use among youths. Journal of Child & Adolescent Substance Abuse. 2017 Jun;26(5):414-424. DOI:10.1080/1067828X.2017.1322018

28. Ikechukwu, U., Siti, N. Y., Talib, M. A., Mofrad, S., & Abdullah, R. (2013). Effect of self-esteem in the relationship between stress and substance abuse among adolescents: A mediation outcome. International Journal of Social Science and Humanity, 3(3), 214-217.

29. Wang, J., Mann, F., Lloyd-Evans, B., Ma, R., & Johnson, S. (2018). Associations between loneliness and perceived social support and outcomes of mental health problems: a systematic review. BMC psychiatry, 18(1), 1-16.

30. ÇELİK, A. (2012). A research levels of perceived social support on the responsible persons of the hospital units. Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 21(3), 357-370.

31. Banstola, R. S., Ogino, T., & Inoue, S. (2020). Self-esteem, perceived social support, social capital, and risk-behavior among urban high school adolescents in Nepal. SSM - population health, 11, 100570. https://doi.org/10.1016/j.ssmph.2020.100570

32. Uchino, B. N. (2009). Understanding the links between social support and physical health: A life-span perspective with emphasis on the separability of perceived and received support. Perspectives on psychological science, 4(3), 236-255.

33. Brown, S., Jun, M. K., Min, M. O., & Tracy, E. M. (2013). Impact of dual disorders, trauma, and social support on quality of life among women in treatment for substance dependence. Journal of Dual Diagnosis, 9(1), 61-71.

34. Atadokht, A., Hajloo, N., Karimi, M., & Narimani, M. (2015). The role of family expressed emotion and perceived social support in predicting addiction relapse. International journal of high risk behaviors & addiction, 4(1).

35. Luitel, N. P., Jordans, M. J., Adhikari, A., Upadhaya, N., Hanlon, C., Lund, C., & Komproe, I. H. (2015). Mental health care in Nepal: current situation and challenges for development of a district mental health care plan. Conflict and health, 9(1), 1-11.

36. Sapkota, S., Khadka, A., & Akela, G. (2016). Contributing factors to relapse of drug addiction among clients attending rehabilitation centres of Dharan, Nepal. Journal of Chitwan Medical College, 6(3), 20-25.

37. Shields-Zeeman, L., Pathare, S., Walters, B. H., Kapadia-Kundu, N., & Joag, K. (2017). Promoting wellbeing and improving access to mental health care through community champions in rural India: the Atmiyata intervention approach. International journal of mental health systems, 11(1), 1-11.

38. Kohrt, B. A., Hruschka, D. J., Worthman, C. M., Kunz, R. D., Baldwin, J. L., Upadhaya, N., ... & Nepal, M. K. (2012). Political violence and mental health in Nepal: prospective study. The British Journal of Psychiatry, 201(4), 268-275.

39. Van Ginneken, N., Tharyan, P., Lewin, S., Rao, G. N., Meera, S. M., Pian, J., ... & Patel, V. (2013). Non-specialist health worker interventions for the care of mental, neurological and substance-abuse disorders in low-and middle-income countries. Cochrane database of systematic reviews, (11).

40. Eaton, J., McCay, L., Semrau, M., Chatterjee, S., Baingana, F., Araya, R., ... & Saxena, S. (2011). Scale up of services for mental health in low-income and middle-income countries. The Lancet, 378(9802), 1592-1603.

41. Patel, V. (2009). The future of psychiatry in low-and middle-income countries. Psychological medicine, 39(11), 1759-1762.

42. Petrova, H. A., Zavarzina, O. O., Kytianova, I. P., & Kozyakov, R. V. (2015). Social and personal factors of stable remission for people with drug addictions. Psychology in Russia, 8(4), 126.

43. Kelly, J. F., & White, W. L. (2011). Recovery management and the future of addiction treatment and recovery in the USA. Addiction recovery management: Theory, research and practice, 303-316.

44. Best, D. W., & Lubman, D. I. (2012). The recovery paradigm: A model of hope and change for alcohol and drug addiction. Australian family physician, 41(8), 593-597.

45. Aryal, K. K., Dhimal, M., Pandey, A., Pandey, A. R., Dhungana, R., Khaniya, B. N., ... & Karki, K. B. (2016). Knowledge diversity and healing practices of traditional medicine in Nepal. Nepal Health Research Council.

46. Sherchan, S., Samuel, R., Marahatta, K., Anwar, N., Van Ommeren, M. H., & Ofrin, R. (2017). Post-disaster mental health and psychosocial support: experience from the 2015 Nepal earthquake. *WHO South-East Asia journal of public health*, 6(1), 22-29.

47. Karki, P., Shrestha, R., Huedo-Medina, T. B., & Copenhaver, M. (2016). The impact of methadone maintenance treatment on HIV risk behaviors among high-risk injection drug users: a systematic review. *Evidence-based medicine & public health*, 2.

48. Alavi H. R. (2011). The Role of Self-esteem in Tendency towards Drugs, Theft and Prostitution. Addiction & health, 3(3-4), 119–124.

49. Bhandari, S., Dahal, M., & Neupane, G. (2015). Factors associated with drug abuse relapse: A study on the clients of rehabilitation centers. *Hindu*, 99(1), 84-86.

50. Khan, T. A., Dutta, A., & Subedi, S. (2018). Factors associated with relapse in men with alcohol dependence versus opioid dependence: A comparative study from Western Nepal. *Journal of Nepalgunj Medical College*, 16(2), 69-73.

51. Kant, C. K., & Plumber, D. (2012). Unpacking drug detoxification in Nepal: in-depth interviews with participants to identify reasons for success and failure. *International Journal of Psychosocial Rehabilitation. Vol 16 (2) 55, 69.*

52. McLean, C. P., Asnaani, A., Litz, B. T., & Hofmann, S. G. (2011). Gender differences in anxiety disorders: prevalence, course of illness, comorbidity and burden of illness. Journal of psychiatric research, 45(8), 1027-1035.

53. Sorel, E. (2010). The WHO World Mental Health Surveys: Global perspectives on the epidemiology of mental disorders.

54. Moksnes, U. K., Moljord, I. E., Espnes, G. A., & Byrne, D. G. (2010). The association between stress and emotional states in adolescents: The role of gender and self-esteem. *Personality and individual differences*, *49*(5), 430-435.

55. Al Khatib, S. A. (2012). Exploring the relationship among loneliness, self-esteem, self-efficacy and gender in United Arab Emirates college students. Europe's Journal of Psychology, 8(1), 159-181.

56. Tuchman, E. (2014). Women and addiction: the importance of gender issues in substance abuse research. In Women, Children, and Addiction (pp. 15-26). Routledge.

57. Arpa, S. (2017). Women who use drugs: Issues, needs, responses, challenges and implications for policy and practice. Background paper commissioned by the European Monitoring Centre for Drugs and Drug Adicction for Health and social responses to drug problems: A European guide.

58. Hecksher, D., & Hesse, M. (2009). Women and substance use disorders. *Mens sana monographs*, *7*(1), 50.

59. Ioannou, M., Kassianos, A. P., & Symeou, M. (2019). Coping with depressive symptoms in young adults: Perceived social support protects against depressive symptoms only under moderate levels of stress. Frontiers in psychology, 9, 2780.

60. Khajehdaluee, M., Zavar, A., Alidoust, M., & Pourandi, R. (2013). The relation of self-esteem and illegal drug usage in high school students. Iranian Red Crescent Medical Journal, 15(11).

61. Collison, D., Banbury, S., & Lusher, J. (2016). Relationships between age, sex, self-esteem and attitudes towards alcohol use amongst university students. Journal of Alcohol and Drug Education, 60(2), 16-34.

62. Grattan, A., Sullivan, M. D., Saunders, K. W., Campbell, C. I., & Von Korff, M. R. (2012). Depression and prescription opioid misuse among chronic opioid therapy recipients with no history of substance abuse. The Annals of Family Medicine, 10(4), 304-311.

63. Goodwin, R. D., Grinberg, A., Shapiro, J., Keith, D., McNeil, M. P., Taha, F., ... & Hart, C. L. (2014). Hookah use among college students: prevalence, drug use, and mental health. Drug and alcohol dependence, 141, 16-20.

64. Orth, U., & Robins, R. W. (2014). The development of self-esteem. Current directions in psychological science, 23(5), 381-387.

65. Kohrt, B. A., & Worthman, C. M. (2009). Gender and anxiety in Nepal: the role of social support, stressful life events, and structural violence. CNS neuroscience & therapeutics, 15(3), 237-248.

66. Lee, N., & Boeri, M. (2017). Managing stigma: Women drug users and recovery services. Fusio: the Bentley undergraduate research journal, 1(2), 65.

67. Han, B., Gfroerer, J. C., & Colliver, J. D. (2010). Associations between duration of illicit drug use and health conditions: results from the 2005–2007 national surveys on drug use and health. Annals of epidemiology, 20(4), 289-297.