**Original Article**

# Level of Depression, Criminogenic Cognition, Relapse Risk, and Quality of Life among Patients with Substance Use Disorders

**Mafia Shahzadi[1*] and Khalid Mahmood[1]**

[1]Department of Applied Psychology, Government College University Faisalabad, Faisalabad, Pakistan

## ARTICLE INFO

## ABSTRACT

Substance use disorders (SUDs) involve symptoms caused by using a substance that an individual continues taking despite its negative effects. Patients with opioid use disorder (OUD) and other substance use disorders (O-SUDs) experience psychosocial problems that affect their quality of life (QOL). **Objective:** To determine the difference in depression, criminogenic cognition, relapse risk, and quality of life between patients with OUD and O-SUDs. **Methods:** In this cross-sectional study, the sample was collected from different rehabilitation centres in Faisalabad and Lahore. A purposive sampling technique was used to collect data from individuals with OUD (150) and O-SUDs (150) with relapse conditions through Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST), Criminogenic Cognition Scale (CCS), Patient Health Questionnaire-9 (PHQ-9), Relapse Risk Scale (RRS) and WHO Quality of Life (WQOL). The collected data were prepared for statistical analysis using SPSS, Version-26. **Results:** The finding shows a significant difference between patients with OUD and with O-SUDs on the variables of PHQ-9, short-term orientation, negative attitudes toward authority, notions of entitlement, failure to accept responsibility, insensitivity to the impact of crime, and criminogenic cognition. In addition, a significant difference was found between patients with OUD and with O-SUDs on anxiety problems, positive expectancies and compulsivity, abstinence violation effect, low self-efficacy, relapse risk and QOL. **Conclusions:** It is concluded that depressive symptoms, criminogenic cognition, relapse risk conditions, and quality of life were higher among patients with OUD than patients with O-SUDs.

## INTRODUCTION

Substance use problems (SUDs) have been noted in the literature throughout the ages [1]. Opioid use disorder (OUD) is a major public health concern because of its destructive effects on physical and mental health [2-4]. An individual who uses opioids develops tolerance and it is a person's response to a medicine diminishes with time demand for a higher dose to attain the same effect as it did at first [5]. Relapse is a common and formidable challenge in SUD treatment. Approximately 60% of patients with OUD relapse after inpatient psychological treatment because of their signs and symptoms [6]. The most common signs and symptoms are loss of control over opioid use, continual opioid use, disdain attempt to cut down, and having ongoing social, physical, psychological, interpersonal, tolerating, and withdrawal issues are all signs of (OUD) [7, 8]. Patients with OUD reported high issues of psychiatric comorbidity in the healthcare system [9]. Preceding studies showed a history of psychiatric disorders is associated with opioid overuse ). Previous clinical research concluded that people in treatment for heroin or opiate addiction also commonly suffer from psychological illnesses [10, 11]. Low tolerance for unpleasant feelings and heightened emotional and physiological reactions to stressors are linked to both opioid use disorder and depression [12, 13]. Opioid resistance and opioid overuse may both contribute to depression [14, 15]. These co-

occurring conditions can create a synergistic effect, leading to adverse consequences such as Criminogenic cognition and behavior. Criminal behaviors associated with using opioids can take various forms, including drug trafficking, theft, and fraud to obtain funds for purchasing drugs [16, 17]. These legal consequences can have a lasting impact on one's QOL. Criminal behaviors affect physical health and have profound implications for mental, emotional, and social well-being [18]. However, this study showed that opioid use disorder encompasses a diverse range of conditions, each with its unique impact on variables such as depression, criminogenic cognition, relapse risk, and quality of life. By understanding these distinctions is effective for developing effective strategies and support systems that cater to the specific needs of individuals struggling with various types of substance use disorders. By considering these differences, we can work towards more compassionate, evidence-based approaches to addiction prevention, treatment, and recovery, ultimately aiming for improved outcomes and well-being for those affected by OUD.

## METHODS

In this study, cross-sectional research design was used. The sample was collected from different rehabilitations centres and we used purposive sampling technique to collect the data. Initially, the sample of N=300 participants were diagnosed with OUD (150) and O-SUDs (150) with relapse conditions we recruited after getting consent from the participants. Participants they have history of drug addiction with relapse condition and currently they are under treatment were investigated from the different hospitals, rehabilitation centres, and primary care clinics of Faisalabad and Lahore in 06 months through purposive sampling technique. The patient's age range was between 20 to 65 years. Patients were taken from any marital status and socioeconomic status. Participants would be diagnosed according to the DSM-V-TR. Participants with more than 4-time history of relapse and more than 5 years of history of illness were omitted from the study. Participants with different medical and psychological conditions were excluded. Demographic form: A demographic form would be used to take information, i.e., patient age, education, family system, socioeconomic status, marital status, total number of family members, employment status, etc. The Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) [19]. It's a quick quiz to see if someone has ever experimented with or used psychoactive drugs. The ASSIST collects data on a user's lifetime substance use, recent substance use (within the past three months), substance-related difficulties, risk of harm (both immediate and long-term), dependency, and injectable drug usage. It consists of 8 items. Item 1 is further with 10 items which are based on the answers of yes or no [20]. Construct validity of this scale is (r = 0.76). Criminogenic Cognition Scale (CCS): CCS is a 25-item self-report measure designed to tap five dimensions: Notions of entitlement; Failure to Accept responsibility; Short-Term Orientation; Insensitivity to Impact of Crime; and Negative Attitudes Toward Authority. Items ranged on a 4-point scale with 1-4 as strongly disagree to agree strongly. Items 10, 17, and 20 are reversed scoring. All five subscales were significantly correlated with full-scale scores (r = .65 to .43). Patient Health Questionnaire (PHQ-9: It is a depression screening instrument that can be self-administered [21]. The PHQ-9 includes all 9 diagnostic symptom criteria, including the two cardinal signs of depression: anhedonia and depressed mood subjects are asked to rate how often they have "been affected by any of the following difficulties in the past two weeks" using the PHQ-9. The scoring showed four categories of depression, such as None, mild, moderate, severe and extreme (20–27) depression are indicated by the scores. The PHQ-9 had a Cronbach's alpha of 0.91. Relapse Risk Scale (RRS): Relapse Risk Scale (RRS), is a 44-item self-report measure to identify relapse risk among individuals with substance use disorder [22]. This scale has four dimensions: First: Low Self Efficacy. Second: Abstinence Violation Effect (items: 3, 5, 8, 9, 12,15,18,22,24,28,29), Third: Anxiety Problems. Fourth: Positive Expectancies and Compulsivity to use drugs, containing. It is a 5-point Likert-type rating scale from 'strongly agree' (5), 'agree' (4), 'undecided' (3) to 'disagree'(2) and 'strongly disagree'(1). The scale showed an alpha coefficient of .95. World Health Organization Quality-of-Life Scale (WHOQOL): Patients with SUDs have verified its efficacy [23]. The WHOQOL-BREF is a self-reported scale with a total of 26 items. Items 3 through 26 cover the four domains of quality of life: physical, mental, social and environmental. These are graded on a Likert scale from 1 (completely unsatisfied) to 5 (completely satisfied), with item 3 being backwards coded. All areas of the instrument showed a reliability between.67 and.86. In this study, all procedures were approved by the Institutional Review Board (IRB) of Government College University, Faisalabad. In this study, a Sample of N=300 participants diagnosed with opioid use disorder and poly-drug users with relapse conditions from the different hospitals, rehabilitation centres, and primary care clinics of Faisalabad and Lahore were taken to investigate the differences in the variables on depression, criminogenic cognition, relapse risk and

quality of life between opioid use disorder and other substance use disorders [24, 25]. After completion of the data, all data were scrutinized and scored according to the manuals and measurement guidelines. The data were transferred to SPSS, and all the computation was calculated through SPSS-version 26.0.

**Table 1:** Demographic characteristics of the sample

| Variables | Categories | Patients with OUD | Patients with O-SUDs | Total |
|---|---|---|---|---|
| Marital Status | Single | 136(38.1%) | 79(22.1%) | 215(58.3%) |
| | Married | 71(19.9%) | 71(19.9%) | 142(39.8%) |
| Education | Primary | 8(2.2%) | 10(2.8%) | 18(5.0%) |
| | Middle | 26(7.3%) | 28(7.8%) | 54(15.1%) |
| | Matric | 49(13.7%) | 72(20.2%) | 121(33.9%) |
| | FA | 34(9.5%) | 48(13.4%) | 82(23.0%) |
| | Graduation | 23(6.4%) | 28(7.8%) | 51(14.3%) |
| | Postgraduate | 10(2.8%) | 21(5.9%) | 31(8.7%) |
| Occupation | Unemployed | 46(12.9%) | 73(20.4%) | 119(33.3%) |
| | Employed | 56(12.9%) | 76(21.3%) | 132(37.0%) |
| | Businessmen | 48(13.4%) | 58(16.2%) | 106(29.7%) |
| Family System | Nuclear | 70(19.6%) | 127(35.6%) | 197(55.2%) |
| | Joint | 80(22.4%) | 80(22.4%) | 160(44.8%) |
| | | | | |

The finding shows a significant difference between patients with OUD and with O-SUDS on the variable of PHQ-9. Similarly, a significant difference was estimated between patients with OUD and with O-SUDS on the variables of Criminogenic Cognition, Relapse Risk Scale and QOL (Table 2).

**Table 2:** Mean difference in the variable of depression, criminogenic cognition, relapse risk, and quality of life between patients with opioid use disorder and other substance use disorders

| Variables | Patients with OUD N=207 Mean ± SD | Patients with O-SUDs N=150 Mean ± SD | T | p-value | Standard Error Difference | 95% Confidence Interval of the Difference Lower | Upper |
|---|---|---|---|---|---|---|---|
| PHQ9 | 11.17±7.45 | 9.37±7.06 | -2.29 | .022 | .78175 | -3.3350 | -.26015 |
| NOE | 12.04±2.98 | 13.41±2.26 | 4.73 | .000 | .28968 | .80314 | 1.94256 |
| FAR | 11.40±3.05 | 13.26±2.65 | 6.01 | .000 | .30975 | 1.25469 | 2.47304 |
| STO | 11.74±2.53 | 12.60±2.18 | 3.38 | .001 | .25580 | .36262 | 1.36878 |
| IIC | 11.37±2.76 | 12.28±2.77 | 3.07 | .002 | .29715 | .32845 | 1.49725 |
| NAT | 11.36±2.74 | 12.21±2.74 | 2.84 | .005 | .29564 | .25809 | 1.42095 |
| CSS | 57.90±10.91 | 63.76±8.57 | 5.46 | .000 | 1.07143 | 3.74763 | 7.96194 |
| PEC | 56.96±24.38 | 50.14±24.45 | -2.60 | .010 | 2.61827 | -11.970 | -1.67208 |
| AVE | 31.49±13.90 | 28.92±14.73 | -1.68 | .093 | 1.52832 | -5.5784 | .43294 |
| ANP | 22.24±9.75 | 19.01±9.27 | -3.16 | .002 | 1.02370 | -5.2481 | -1.22160 |
| LSE | 11.52±5.19 | 9.55±4.85 | -3.61 | .000 | .54142 | -3.0235 | -.89395 |
| RRS | 122.21±50.53 | 107.62±50.61 | -2.69 | .007 | 5.42180 | -25.250 | -3.92485 |
| PHY | 19.45±6.48 | 21.91±4.95 | 3.90 | .000 | .63106 | 1.22114 | 3.70330 |
| PSY | 17.54±5.64 | 20.29±5.02 | 4.76 | .000 | .57713 | 1.61541 | 3.88546 |
| SOC | 9.69±3.14 | 12.00±4.39 | 5.80 | .000 | .39848 | 1.53034 | 3.09768 |
| ENV | 23.62±8.82 | 27.14±8.38 | 3.80 | .000 | .92616 | 1.69836 | 5.34125 |
| QOL | 70.28±21.51 | 81.33±17.44 | 5.17 | .000 | 2.13394 | 6.84971 | 15.24323 |
| | | | | | | | |

Note: p<.001; OUD= Opioid Use Disorder; O-SUDs= Other-Substance Use Disorders; PHQ: Patient Health questionnaire; CCS: Criminogenic Cognition Scale; NOE; Notions of entitlement; FAR: Failure to Accept Responsibility; IIC: Insensitivity to Impact of Crime; NAT; Negative Attitudes Toward Authority; STO; Short term Orientation; RRS: Relapse Risk Scale; PEC: Positive Expectancies and Compulsivity; AVE: Abstinence Violation Effect; ANP: Anxiety Problems; LSE: Low Self Efficacy;

QOL: Quality of life; PHY: Physical; PSY: Psychological; ENV: Environment; SOC: Social Findings show significant mean difference was investigated between single and married individuals in the variable of PHQ, RRS and QOL and insignificant difference was found on the scale CSS (Table 3).

**Table 3:** Mean difference in the variable of depression, criminogenic cognition, relapse risk, and quality of life between single and married patients with opioid use disorder and other substance use disorders

| Scales | Single N=215 | Married N=142 | T | Sig. (2-tailed) | Std. Error Difference | 95% Confidence Interval of the Difference | |
|---|---|---|---|---|---|---|---|
| | Mean ± SD | Mean ± SD | | | | Lower | Upper |
| PHQ | 12.32±7.58 | 7.51±5.89 | 6.391 | .000 | .75214 | 3.3276 | 6.28605 |
| CCS | 60.88±10.96 | 59.56±9.44 | 1.176 | .240 | 1.12286 | -.88795 | 3.52863 |
| RRS | 120.4±46.53 | 109.51±56.65 | 1.987 | .038 | 5.49280 | .10904 | 21.71408 |
| QOL | 71.96±19.43 | 79.40±21.59 | -3.381 | .001 | 2.19670 | -11.747 | -3.10675 |

Note: p<.001, PHQ: Patient Health questionnaire; CCS: Criminogenic Cognition Scale, RRS: Relapse Risk Scale, QOL: Quality of life Findings showed significant mean difference was investigated between patients with nuclear and joint family system in the variable of PHQ and CCS and insignificant difference was found on the scale RRS and QOL (Table 4).

**Table 4:** Mean difference in the variable of depression, criminogenic cognition, relapse risk, and quality of life between nuclear and joint family system patients with opioid use disorder and other substance use disorders

| Scales | Nuclear N=197 | Joint N=160 | T | Sig. (2-tailed) | Std. Error Difference | 95% Confidence Interval of the Difference | |
|---|---|---|---|---|---|---|---|
| | Mean ± SD | Mean ± SD | | | | Lower | Upper |
| PHQ | 12.11±7.76 | 8.32±6.19 | 5.015 | .000 | .75536 | 2.30231 | 5.27339 |
| CCS | 61.83±10.16 | 58.55±10.16 | 2.997 | .003 | 1.09349 | 1.12689 | 5.42794 |
| RRS | 117.15±51.89 | 114.76±50.89 | .439 | .661 | 5.43434 | -8.30284 | 13.0722 |
| QOL | 74.07±20.33 | 75.96±20.97 | -.860 | .391 | 2.19417 | -6.20157 | 2.42885 |

Note: p<.001, PHQ: Patient Health questionnaire; CCS: Criminogenic Cognition Scale, RRS: Relapse Risk Scale, QOL: Quality of life Findings reported that significant difference was found among all groups on the scale of PHQ, CCS, RRS and QOL among patients with substance disorders. Furthermore, group comparison statistics showed that unemployed participants were found significantly different from employed and businessmen while insignificant difference was calculated between employed and businessmen on the scale of PHQ, CCS, QOL and RRS (Table 5).

**Table 5:** ONE-ANOVA statistics on the scale of PHQ, CCS, RRS and QOL among unemployed, employed and businessmen in patients with opioid use disorder and other substance use disorders

| Scales | Categories | N | Mean ± SD | MS | F | p | Tucky |
|---|---|---|---|---|---|---|---|
| PHQ-9 | Unemployed | 119 | 14.47 ± 7.58 | 1520.87 | 33.42 | .000 | U=E=.001 |
| | Employed | 132 | 8.90 ± 6.28 | 45.50 | | | U=B=.001 |
| | Businessmen | 106 | 7.70 ± 6.27 | – | | | B=E=.173 |
| CCS | Unemployed | 119 | 65.40 ± 10.92 | 2303.05 | 24.10 | .000 | U=E=.001 |
| | Employed | 132 | 57.73 ± 9.49 | 95.53 | | | U=B=.001 |
| | Businessmen | 106 | 57.93 ± 8.67 | – | | | B=E=.871 |
| RRS | Unemployed | 119 | 129.07 ± 48.09 | 15249.36 | 6.02 | .003 | U=E=.004 |
| | Employed | 132 | 110.65 ± 47.22 | 2530.05 | | | U=B=.002 |
| | Businessmen | 106 | 108.23 ± 56.10 | – | | | B=E=.712 |
| QOL | Unemployed | 119 | 74.47 ± 15.29 | 1743.53 | 4.17 | .016 | U=E=.290 |
| | Employed | 132 | 71.73 ± 23.09 | 417.30 | | | U=B=.072 |
| | Businessmen | 106 | 79.39 ± 21.87 | – | | | B=E=.004 |

Note: p<.001, M= Mean, SD= Standard Deviation, MS= Mean Square, U=unemployed, E= Employed, B= Businessmen, PHQ: Patient Health questionnaire; CCS: Criminogenic Cognition Scale, RRS: Relapse Risk Scale, QOL: Quality of life

## DISCUSSION

The study aimed to determine the difference in depression, criminogenic cognition, relapse risk, and quality of life between OUD and O-SUD. The current study's finding showed a significant difference between patients with OUD and with O-SUDs on the variable of PHQ-9. It is concluded

that patients with OUD experienced more depression than patients with O-SUDs. The result of the present study is supported by the literature that depression is associated with people who are with OUD and experience negative outcomes towards treatment [26]. Other research also concluded that individuals with OUD are more likely to be depressed than O-SUDs [27]. Depression may be associated with opioid resistance [14]. Additionally, this current study also showed a significant correlation between criminogenic cognition and O-SUDs. The results also align with previous studies' findings suggesting that violent behavior increases among substance users [28, 29]. Similarly, other research also concluded that there is a clear association between substance abuse and criminal behavior [30]. Furthermore, it was also revealed that people with OUD experienced relapse risk. Prior studies have also provided evidence that the risk of relapse to OUD is high [31]. Other research also concluded that individuals with OUD relapse due to nonmedical use of opioids [32-34]. Relapse was more likely when more than one of these risk variables was present, as was a history of relapse [35]. Moreover, this study concluded that QOL affect those individuals who use all substances other than OUD. Consistent with previous findings that physical QOL is affected by opioid use disorder [36, 37]. Reduced QoL is recognized as a negative result connected with SUDs and both sleep issues and SUDs can have detrimental effects on one's physical and mental health [38]. As well, the finding of the current study also showed that marital status, family system and economic status are critical factors in the development of maladaptive behaviours such as drug addiction. The result supported that higher rates of SUDs for unemployed people, as compared to employed people [1, 39]. Other study also confirmed that substance related deaths were more frequently found among the unemployed [40]. The result is similar to previous literature that unmarried people are significantly high than married individuals to develop SUDs [41]. Among the participants, 83.38% reported being single when they first started using drugs, 12.14% were married [42]. Similar study, conducted being single may influence continued heavy alcohol use and moderate and heavy marijuana use [43].

## CONCLUSIONS.

It is concluded that depressive symptoms and relapse risk conditions were higher among patients with OUD than patients with O-SUDs. Moreover, the level of criminogenic cognition and quality of life were higher in O-SUDs as compared to patients with OUD. Additionally, the level of depressive symptoms, criminogenic cognition and relapse risk were higher among patients with single marital status, nuclear family system and unemployed social economic status of OUD than O-SUDs.

## Authors Contribution
Conceptualization: MS, KM
Methodology: MS, KM
Formal Analysis: MS, KM
Writing-review and editing: MS, KM

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest
The authors declare no conflict of interest.

## REFERENCES
[1] Poudel A and Gautam S. Age of onset of substance use and psychosocial problems among individuals with substance use disorders. BMC Psychiatry. 2017 Jan; 17: 10. doi: 10.1186/s12888-016-1191-0.

[2] Morin KA, Eibl JK, Gauthier G, Rush B, Mushquash C, Lightfoot NE, et al. A cohort study evaluating the association between concurrent mental disorders, mortality, morbidity, and continuous treatment retention for patients in opioid agonist treatment (OAT) across Ontario, Canada, using administrative health data. Harm Reduction Journal. 2020 Jul; 17(1): 51. doi: 10.1186/s12954-020-00396-x.

[3] Lutz PE and Kieffer BL. Opioid receptors: distinct roles in mood disorders. Trends in Neuroscience. 2013 Mar; 36(3): 195–206. doi: 10.1016/j.tins.2012.11.002.

[4] Williams JT, Ingram SL, Henderson G, Chavkin C, Zastrow M von, Schulz S, et al. Regulation of μ-Opioid Receptors: Desensitization, Phosphorylation, Internalization, and Tolerance. Dolphin AC, editor. Pharmacology Reviews. 2013 Jan; 65(1): 223–54. doi: 10.1124/pr.112.005942.

[5] Datta D, Mishra S, Rajest SS. Quantification of tolerance limits of engineering system using uncertainty modeling for sustainable energy. International Journal of Intelligent Network. 2020 Jan; 1: 1–8. doi: 10.1016/j.ijin.2020.05.006.

Ghabrash MF, Bahremand A, Veilleux M, Blais-Normandin G, Chicoine G, Sutra-Cole C, et al.

116

[6] Depression and Outcomes of Methadone and Buprenorphine Treatment Among People with Opioid Use Disorders: A Literature Review. Journal of Dual Diagnosis. 2020 Apr; 16(2): 191–207. doi: 10.1080/15504263.2020.1726549.

[7] Strang J, Volkow ND, Degenhardt L, Hickman M, Johnson K, Koob GF, et al. Opioid use disorder. Nature Reviews Disease Primer. 2020 Jan; 6(1): 1–28. doi: 10.1038/s41572-019-0137-5.

[8] Blanco C and Volkow ND. Management of opioid use disorder in the USA: present status and future directions. The Lancet. 2019 Apr; 393(10182): 1760–72. doi: 10.1016/S0140-6736(18)33078-2.

[9] Hser YI, Mooney LJ, Saxon AJ, Miotto K, Bell DS, Huang D. Chronic pain among patients with opioid use disorder: Results from electronic health records data. Journal of Substance Abuse Treatment. 2017 Jun; 77: 26–30. doi: 10.1016/j.jsat.2017.03.006.

[10] Halbert B, Davis R, Wee CC. Disproportionate longer-term opioid use among US adults with mood disorders. Pain. 2016 Nov; 157(11): 2452–7. doi: 10.1097/j.pain.0000000000000650.

[11] Grella CE, Karno MP, Warda US, Niv N, Moore AA. Gender and comorbidity among individuals with opioid use disorders in the NESARC study. Addict Behaviour. 2009 Jun; 34(6): 498–504. doi: 10.1016/j.addbeh.2009.01.002.

[12] Barry DT, Beitel M, Cutter CJ, Fiellin DA, Madden LM, Lipkind N, et al. Psychiatric comorbidity and order of condition onset among patients seeking treatment for chronic pain and opioid use disorder. Drug Alcohol Depend. 2021 Apr; 221: 108608. doi: 10.1016/j.drugalcdep.2021.108608.

[13] McHugh RK, Votaw VR, Barlow DH, Fitzmaurice GM, Greenfield SF, Weiss RD. Development of an integrated cognitive behavioral therapy for anxiety and opioid use disorder: Study protocol and methods. Contemporary of Clinical Trials. 2017 Sep; 60: 105–12. doi: 10.1016/j.cct.2017.07.006.

[14] Grattan A, Sullivan MD, Saunders KW, Campbell CI, Korff MRV. Depression and Prescription Opioid Misuse Among Chronic Opioid Therapy Recipients with No History of Substance Abuse. Annals of Family Medicine. 2012 Jul; 10(4): 304–11. doi: 10.1370/afm.1371.

[15] Bogdanowicz KM, Stewart R, Broadbent M, Hatch SL, Hotopf M, Strang J, et al. Double trouble: Psychiatric comorbidity and opioid addiction—All-cause and cause-specific mortality. Drug Alcohol Depend. 2015 Mar; 148: 85–92. doi: 10.1016/j.drugalcdep.2014.12.025.

[16] Wooditch A, Tang LL, Taxman FS. Which Criminogenic Need Changes Are Most Important in Promoting Desistance from Crime and Substance Use? Criminal Justice Behaviour. 2014 Mar; 41(3): 276–99. doi: 10.1177/0093854813503543.

[17] Topalli V. When Being Good is Bad: An Expansion of Neutralization Theory. In: Recent Developments in Criminological Theory. Routledge; 2009.

[18] Theofilou P. Quality of Life: Definition and Measurement. European Journal of Psychology. 2013 Feb; 9(1): 150–62. doi: 10.5964/ejop.v9i1.337.

[19] Humeniuk R, Henry-Edwards S, Ali R, Poznyak V, Monteiro MG, Organization WH. The Alcohol, Smoking and Substance involvement Screening Test (ASSIST): manual for use in primary care. World Health Organization; 2010 [Last cited: 12th May 2023]. Available of: https://apps.who.int/iris/handle/10665/44320.

[20] Tangney JP, Stuewig J, Furukawa E, Kopelovich S, Meyer PJ, Cosby B. Reliability, Validity, and Predictive Utility of the 25-item Criminogenic Cognitions Scale (CCS). Criminal Justice Behaviour. 2012 Oct; 39(10): 1340–60. doi: 10.1370/afm.1139.

[21] Arroll B, Goodyear-Smith F, Crengle S, Gunn J, Kerse N, Fishman T, et al. Validation of PHQ-2 and PHQ-9 to Screen for Major Depression in the Primary Care Population. Annals of Family Medicine. 2010 Jul; 8(4): 348–53. doi:

[22] Hussain A and Malik H. Development and Validation of Relapse Risk Scale for Substance Dependents in Pakistan. 2016.

[23] World Health Organization. The World Health Organization quality of life (WHOQOL) - BREF [Internet]. World Health Organization; 2004 [Last cited: 12th May 2023]. Report No.: WHO/HIS/HSI Rev.2012.02. Available at: https://apps.who.int/iris/handle/10665/77773.

[24] Kelly JF, Saitz R, Wakeman S. Language, Substance Use Disorders, and Policy: The Need to Reach Consensus on an "Addiction-ary." Alcohol Treatment Quarterly. 2016 Jan; 34(1): 116–23. doi:

[25] Sahu K and Sahu S. Substance Abuse Causes and Consequences. Bangabasi Academic Journal. 2012 Dec; 9: 52–61.

Havard A, Teesson M, Darke S, Ross J. Depression among heroin users: 12-Month outcomes from the Australian Treatment Outcome Study (ATOS). Journal of Substance Abuse Treatment. 2006 Jun; 30(4): 355–62. doi: 10.1016/j.jsat.2006.03.012.

Namchuk AB, Lucki I, Browne CA. Buprenorphine as a Treatment for Major Depression and Opioid Use Disorder. Advance in Drug and Alcohol Research. 2022; 2: 10254. doi: 10.3389/adar.2022.10254.

117

[26] Guillem E, Pelissolo A, Vorspan F, Bouchez-Arbabzadeh S, Lépine JP. [Sociodemographic profiles, addictive and mental comorbidity in cannabis users in an outpatient specific setting]. L'Encephale. 2009 Jun; 35(3): 226–33. doi: 10.1016/j.encep.2008.03.010.

[27] Barrett EL, Mills KL, Teesson M. Hurt people who hurt people: Violence amongst individuals with comorbid substance use disorder and post traumatic stress disorder. Addict Behav. 2011 Jul; 36(7): 721–8. doi: 10.1016/j.addbeh.2011.02.005.

[28] Kraanen FL, Scholing A, Emmelkamp PMG. Substance Use Disorders in Forensic Psychiatry: Differences Among Different Types of Offenders. International Journal of Offender Therapy Comparative Criminology. 2012 Dec; 56(8): 1201–19. doi: 10.1177/0306624X11420252.

[29] Nunes EV, Gordon M, Friedmann PD, Fishman MJ, Lee JD, Chen DT, *et al.* Relapse to opioid use disorder after inpatient treatment: Protective effect of injection naltrexone. Journal of Substance Abuse Treatment. 2018 Feb; 85: 49–55. doi: 10.1016/j.jsat.2017.04.016.

[30] Bruneau J, Ahamad K, Goyer MÈ, Poulin G, Selby P, Fischer B, *et al.* Management of opioid use disorders: a national clinical practice guideline. CMAJ. 2018 Mar; 190(9): E247–57. doi: 10.1503/cmaj.170958.

[31] Roehrs T, Sibai M, Roth T. Sleep and alertness disturbance and substance use disorders: A bi-directional relation. Pharmacology and Biochemistry Behaviour. 2021 Apr; 203: 173153. doi: 10.1016/j.pbb.2021.173153.

[32] Burns MK and VanDerHeyden AM. Using Response to Intervention to Assess Learning Disabilities: Introduction to the Special Series. Assess Effect Interval. 2006 Oct; 32(1): 3–5. doi: 10.1177/15345084060320010201.

[33] Domino KB, Hornbein TF, Polissar NL, Renner G, Johnson J, Alberti S, *et al.* Risk Factors for Relapse in Health Care Professionals With Substance Use Disorders. JAMA. 2005 Mar; 293(12): 1453–60. doi: 10.1001/jama.293.12.1453.

[34] Mackiewicz M, Brown RE, Price ET, Sargent L. Quality of life in older adults with opioid use disorder: A scoping review. Geriatric Nurse (Lond). 2022 Jul; 46: 118–24. doi: 10.1016/j.gerinurse.2022.05.002.

[35] Kwon M, Park E, Dickerson SS. Adolescent substance use and its association to sleep disturbances: A systematic review. Sleep Health. 2019 Aug; 5(4): 382–94. doi: 10.1016/j.sleh.2019.06.001.

Navarro-Martínez R, Chover-Sierra E, Colomer-Pérez N, Vlachou E, Andriuseviciene V, Cauli O. Sleep quality and its association with substance abuse among university students. Clinical Neurology and Neurosurgery. 2020 Jan; 188: 105591. doi: 10.1016/j.clineuro.2019.105591.

[36] Rather YH, Bashir W, Sheikh AA, Amin M, Zahgeer YA. Socio-demographic and Clinical Profile of Substance Abusers Attending a Regional Drug De-addiction Centre in Chronic Conflict Area: Kashmir, India. Malaysian Journal of Medical Science MJMS. 2013 May; 20(3): 31–8. doi:

[37] Nolte-Troha C, Roser P, Henkel D, Scherbaum N, Koller G, Franke AG. Unemployment and Substance Use: An Updated Review of Studies from North America and Europe. Healthcare. 2023 Jan; 11(8): 1182. doi: 10.3390/healthcare11081182.

[38] Kulesza M, Larimer ME, Rao D. Substance Use Related Stigma: What we Know and the Way Forward. Journal of Addiction Behaviour, Therapy and Rehabilitation. 2013 May; 2(2): 782. doi: 10.4172/2324-9005.1000106.

[39] Mahsoon AN, Almashat L, Alsubaui N, Hindi S, Alharbi S, Yaghmour S, et al. Socio-Demographics of Initial Substance Use Exposure and Its Relation to Progression: A Cross-Sectional Study in Saudi Arabia. Cureus. 2023 Aug; 15(8): e42795. doi: 10.7759/cureus.42795.

[40] El-Tantawy A, Raya Y, Al-Yahya A, El-Desoky I. Amphetamine Abuse among Patients with First Episode of Acute Psychosis. Current Psychiatry Journal. 2010 Jan;17(1): 73-81.

[41]

[42]

[43]