Adaptation and validation of substance use risk profile scale for Pakistani population

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Abstract

Objective: To adapt, validate and establish psychometric property of the Substance Use Risk Profile scale for Pakistani population.

Method: The cross-sectional study was conducted from May to September 2021 in Lahore, Pakistan, and comprised clinical and non-clinical adult patients following the International Test Commission guidelines for the adaptation and validation of the Substance Use Risk Profile scale. A The scale's factor structure, internal consistency, content validity, face validity and convergent validity were examined. Confirmatory factor analysis, reliability analysis, and data analysis were done using SPSS 25.

Results: Of the 485 subjects, 243(50.1%) were non-clinical and 242(49.9%) were clinical subjects. The overall mean age was 4.68+/-2.3 years (range: 19-58 years). The scale had adequate internal consistency, criterion validity, and construct validity with Cronbach's alphas ranging 0.71-0.95.

Conclusion: The Substance Use Risk Profile was found to be a beneficial tool to be employed in research realted to substance use disorder in Pakistan.

Keywords: Adaptation, Substance use risk profile scale, Personality, Substance use disorder, Psychometric properties, Confirmatory factor analysis. (JPMA 72: 2473; 2022)

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Introduction

Substance use is a worldwide public health problem that has been increasing rapidly.[1] According to the World Health Organisation (WHO), 7.6 million people have substance-related problems in Pakistan.[2] Among all the substances, cannabinoids and opioids are the most widely used, and the usage is drastically increasing in Pakistan. Moreover, 8 million people aged 15-64 years use opioids regularly; 78% males and 22% females.[2] The rapid exposure to substance use disorder (SUD) impacts severely the social, occupational and interpersonal relationships of the substance abusers as it is a cluster of cognitive, physiological and behavioural symptoms.[3] Contemporary literature and extensive meta-analysis of functional magnetic resonance imaging (MRI) studies have highlighted the significance of the neurobiological basis of SUD[4,5] and it plays a pivotal role in creating distortions in someone's personality,[6] and it has been suggested that traits of dependency, impulsivity and poor coping skills would be one of the causes of SUD.[7] Moreover, many studies stated that the direct link of mood disorders, such as depression, hopelessness and usage of more than two substances, cause marked anxiety in people.[8] Another important feature of SUD is the underlying change in brain mechanism which persists

even after detoxification, particularly in cases of consistent severe drug usage.[3]

There is a dire need to assess the causes of substance use in Pakistan with a standardised tool, and the Substance Use Risk Profile (SURP) scale is a tool that was established to identify the reinforcement mechanisms of addictive behaviours.[9] It was devised with the underlying concept that addiction is a multi-ethological collection of disorders with few predictable physical characteristics and a predisposing component of personality characteristics that triggers motivational cues for substance abuse and increases the likelihood of relapse.[10]

The original scale was based on a behaviouristic model of operant conditioning that helps distinguish between positive and negative reinforcement and identification of four traits that are mainly responsible for the manifestation of substance use.[11] Contemporary literature suggests that poor locus of control and impulsivity can also be predisposed by neurobiological alterations and enhanced addictive behaviour.[12] Furthermore, sensation seeking is associated with experimentation which consequentially opens the gates for addiction.[13] Another study found that addiction is tied with mood alteration, such as negative affect, hopelessness and anxiety which can lead to addictive behaviour or SUD.[14]

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Moreover, the original scale was designed to provide two main themes; addiction risk (vulnerability) and drug abuse. High scores on anxiety sensitivity and hopelessness subscales are more likely to suggest substance use because addiction behaviour eliminates negative feelings, whereas high scores on impulsivity and sensation-seeking subscales assume that the use of addictive substances enhances positive emotions.[15]

The SURP scale has already been adapted to various languages for different populations, like English,[16] Brazilian,[17] Lithuanian,[18] Spanish,[19] Turkish,[20] etc.

The current study was planned to adapt and validate the standardised scale in the Urdu language for Pakistani population, and to investigate the different personality patterns of substance use in a clinical population, and the factors that differentiate between them and the non-clinical population.

Subjects and Methods

The cross-sectional study was conducted from May to September 2021 in Lahore, Pakistan, and comprised clinical and non-clinical adult patients, and followed the International Test Commission (ITC) guidelines[21] for translation and adaption procedure, which has three phases and each phase is further broken into many steps. The initial procedure began after obtaining consent from the copyright authors to adapt and validate the SURP scale in the local context. Phase 1 followed four steps. In step 1, forward translation was carried out by three expert bilingual speakers from the relevant field. Step 2 assessed Urdu and English versions of the scale by using face and content validity. Items were retained on the basis of the consensus of the participants. Step 3 comprised backward translation in which English translation was done by three bilingual experts using a blinded approach. Further, three experts in the clinical psychology field evaluated the backward and forward translation of SURP in the light of the original scale, ensuring that the items carried similar meaning. In the next step, pilot-testing was conducted with 30 clinical and non-clinical subjects. The sample size for the pilot study was calculated in the light of literature according to which the minimum number for a pilot study is 10.[22] Moreover, the number of participants was selected for the main study by using a participant-per-variable ratio, a normal distribution method, and an expert opinion was kept in mind.[23] A study suggested that a sample size of 200 is sufficient for confirmatory factor analysis (CFA).[24]

The smaple was raised using purposive sampling technique from different public and private addiction centres in Lahore. Those included were individuals aged >18 years who could comprehend Urdu. Participants suffering from any comorbid disorder and physical disability were excluded. After taking informed consent, the scale was administered individually to the clinical population. For the non-clinical population, data was gathered through an online medium due to the ongoing coronovirus disease -2019 (COVID-19) pandemic. Cronbach alpha reliability was established, and construct validity was calculated by using a 23-item SURP scale which is a self-reported questionnaire scored on a 4-point Likert type scale, having four personality trait factors; hopelessness (7 items); anxiety sensitivity (5 items); impulsivity (6 items); and sensation-seeking (5 items).[22] Besides, the Ten-Item Personality Inventory (TIPI) 25 was also used which assesses the Big-Five personality traits: extroversion, agreeableness, conscientiousness, emotional stability, and openness of experience. Each trait was tested using two items and having a seven-point scale, ranging from 1 = strongly disagree to 7 = strongly agree.

In the last phase, multivariate analysis, first-order confirmatory analysis was performed using AMOS 5 to assess the factor structure of the Urdu version of SURP scale. CFA, reliability and data analyses were done using SPSS 25.

Results

Of the 485 subjects, 243(50.1%) were non-clinical and 242(49.9%) were clinical subjects. The overall mean age was 4.68±2.3 years (range: 19-58 years). The most populous group 74(15.3) was that of subjects aged 54-58

Table-1: Demographic characteristics.

Demographics	f (%)
Participants	
Clinical	242 (49.9)
Non-clinical	243 (50.1)
Age	
19-23	62 (12.8)
24-28	49 (10.1)
29-33	57 (11.8)
34-38	59 (12.2)
39-43	61 (12.6)
44-48	55 (11.3)
49-53	68 (14.0)
54-58	74 (15.3)
Family System	
Joint	239 (49.3)
Nuclear	246 (50.7)
Socio-economic Class	
Lower	175 (36.1)
Middle	152 (31.3)
Upper	158 (32.6)

Table-2: Confirmatory Factor Analysis (CFA) of the Substance Use Risk Profile (SURP) scale (n= 485).

Model	NFI	CFI	RMSEA	χ^2(df)
Substance Use Risk Profile Scale	0.81	0.48	0.066	1.33

NFI: Normed fit index, CFI: Comparative fit index, RMSEA: Root mean square error of approximation.

Table-3: Correlation among sub-scales of SURP and TIPI.

	SURPS Hopelessness	SURPS Anxiety Sensitivity	SURPS Impulsivity	SURPS Sensation Seeking
TIPI Conscientiousness			-0.87**	
TIPI Emotional Stability	-0.54**	-0.84**		
TIPI Openness to Experiences				0.88**

TIPI: Ten-item personality inventory, SURP: Substance use risk profile.

Figure: Confirmatory Factor Analysis (CFA) of the Substance use risk profile (SURP) scale.

experiencing hopelessness, and items 9 and 12 from the subscale of sensation-seeking had lower factor loadings.

Most people avoid doing things that make them fearful because the element of social desirability is more prevalent in Pakistani collectivist culture compared to the other countries.[13] The SURP scale also demonstrated a positive correlation and strong construct validity.

Moreover, the scale demonstrated good psychometric characteristics with the adult clinical and non-clinical population while the adolescents and community clinical populations are yet to be explored. The current study categorised 4 SURP subscales into 2 categories externalising and internalising variables. Impulsivity and sensation-seeking were the externalising sub-factors, and the score of the clinically diagnosed population was higher than the non-clinical population. Hopelessness and anxiety sensitivity were the internalising variables that were also high in the clinical population. The possible reason behind their high scores on internalizing sub-factors is a lack of social acceptance and the associated stigma of drug addiction which breaks the cycle of abstinence in the clinical population due to underlying hopelessness and reduction of anxiety sensitivity.[14]
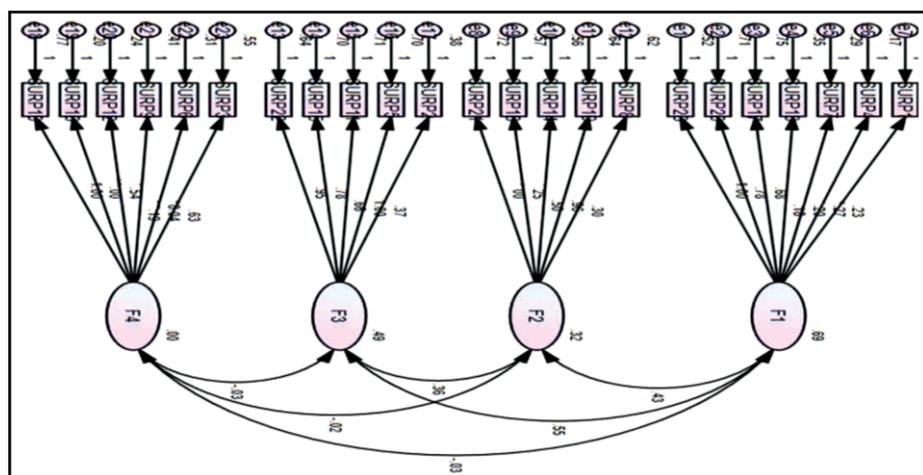
years (Table-1).

The scale had adequate internal consistency, criterion validity, and construct validity with Cronbach's alphas ranging 0.71-0.95.

CFA established the factor structure of the Urdu version of the scale (Table-2, Figure). Positive correlations were found among comparable personality traits of TIPI and SURP, and negative correlations among opposing traits of the two instruments (Table-3).

Discussion
The four-factor model offered a good model fit that was consistent with the theoretical frame, suggesting that the SURP scale is a culturally adapted tool for the Pakistani population. All CFA factor loadings were >0.30 except for item 4 ('1 am happy') from the hopelessness subscale. The reverse score for this item suggested that the person

Furthermore, the study discovered a positive correlation between SURP and TIPI with comparable personality traits and a negative correlation between SURP and TIPI subscales with opposing qualities. TIPI's emotional stability subscale is inversely correlated to the SURP's hopelessness and anxiety subscales. The TIPI conscientiousness subscale was negatively linked with the impulsivity subscale, whereas the sensation-seeking subscale positively correlated with TIPI's openness to experience subscale.[26]

The current study has limitations as it ws conducted in a single city and the scale was developed only in the Urdu language for a national population that is diverse and speaks a number of native languages.

Conclusion
The adapted SURP scale was found to have adequate validity. The scale exhibited a high discriminating value

for clinically diagnosed patients. Substance abusers scored higher on the SURP subscales of hopelessness, anxiety sensitivity, and impulsivity. The significance of different personality aspects aligned with SUD.

Disclaimer: None.

Conflict of Interest: One of the authors was also a member of the institutional ethics review board (IRB) which granted approval for the current study.

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References

1. Liu S, Nwabueze C, Pan Y, Walter SM, Su B, Xu C, et al. Polysubstance Use, Mood Disorders, and Chronic Conditions With Anxiety in Opioid Patients. West J Nurs Res 2021;e1939459211031988. doi: 10.1177/01939459211031988. [Ahead of print]

2. Strathdee SA, Bristow CC, Gaines T, Shoptaw S. Collateral Damage: A Narrative Review on Epidemics of Substance Use Disorders and their Relationships to Sexually Transmitted Infections in the United States. Sex Transm Dis 2021;48:466-73. doi: 10.1097/OLQ.0000000000001341.

3. American Psychiatric Association. Diagnostic And Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR), 5th ed. London, UK: American Psychiatric Association Publishing; 2022.

4. Heilig M, MacKillop J, Martinez D, Rehm J, Leggio L, Vanderschuren LJMJ. Addiction as a brain disease revised: why it still matters, and the need for consilience. Neuropsychopharmacology 2021;46:1715–23. doi: 10.1038/s41386-020-00950-y.

5. Klugah-Brown B, Di X, Zweerings J, Mathiak K, Becker B, Biswal B. Common and separable neural alterations in substance use disorders: A coordinate-based meta-analyses of functional neuroimaging studies in humans. Hum Brain Mapp 2020;41:4459-77. doi: 10.1002/hbm.25085.

6. Musharraf S, Bauman S, Anis-ul-Haque M, Malik JA. General and ICT Self-Efficacy in Different Participants Roles in Cyberbullying/Victimization Among Pakistani University Students. Front Psychol 2019;10:e1098. doi: 10.3389/fpsyg.2019.01098.

7. Howitt D, Cramer D. Understanding Statistics in Psychology with SPSS, 8th ed. London, United Kingdom: Pearson; 2020.

8. Foulds JA, Boden JM, Newton-Howes GM, Mulder RT, Horwood LJ. The role of novelty seeking as a predictor of substance use disorder outcomes in early adulthood. Addiction 2017;112:e1629-37. doi: 10.1111/add.13838.

9. Saunders M, Lewis P, Thornhill A. Research Methods for Business Students, 5th ed. New York, USA: Pearson Education; 2009.

10. Fan H, Jackson T, Yang X, Tang W, Zhang J. The factor structure of the Mayer–Salovey–Caruso Emotional Intelligence Test V 2.0 (MSCEIT): A meta-analytic structural equation modeling approach. Pers Individ Differ 2010;48:781-5. doi: 10.1016/j.paid.2010.02.004

11. Fernández-Calderón F, Díaz-Batanero C, Rojas-Tejada AJ, Castellanos-Ryan N, Lozano-Rojas ÓM. Adaptation to the Spanish

12. Canfield M, Gilvarry C, Koller SH. Psychometric Proprities of the substance use risk profile scale-Brazilian version. Int J Ment Health Addiction 2015;13:204-14. doi: 10.1007/s11469-014-9522-1

13. Kaminskaite M, Pranckeviciene A, Bunevicius A, Janaviciute J, Jokubonis D, Plioplyte A, et al. Validation of the Substance Use Risk Profile Scale in Lithuanian population. Health Qual Life Outcomes 2020;18:276. doi: 10.1186/s12955-020-01527-5.

14. Shoptaw S, Weiss RE, Munjas B, Hucks-Ortiz C, Young SD, Larkins S, et al. Homonegativity, substance use, sexual risk behaviors, and HIV status in poor and ethnic men who have sex with men in Los Angeles. J Urban Health 2009;86(Suppl 1):s77-92. doi: 10.1007/s11524-009-9372-5

15. Cama E, Brener L, Wilson H, von Hippel C. Internalized stigma among people who inject drugs. Subst Use Misuse 2016;51:1664-8. doi: 10.1080/10826084.2016.1188951.

16. Foulds JA, Boden JM, Newton-Howes GM, Mulder RT, Horwood LJ. The role of novelty seeking as a predictor of substance use disorder outcomes in early adulthood. Addiction 2017;112:1629-37. doi: 10.1111/add.13838.

17. Evans SL, Norbury R. Associations between diurnal preference, impulsivity and substance use in a young-adult student sample. Chronobiol Int 2021;38:79-89. doi: 10.1080/07420528.2020.1810063.

18. Poulton A, Hester R. Transition to substance use disorders: impulsivity for reward and learning from reward. Soc Cogn Affect Neurosci 2020;15:1182-91. doi: 10.1093/scan/nsz077.

19. Marc L. Addiction and the brain: development, not disease. Neuroethics 2017;10:7-18. doi: 10.1007/s12152-016-9293-4.

20. Fernández-Calderón F, Díaz-Batanero C, Rojas-Tejada AJ, Castellanos-Ryan N, Lozano-Rojas ÓM. Adaptation to the Spanish population of the Substance Use Risk Profile Scale (SURPS) and psychometric properties. Adicciones 2018;30:208-18. doi: 10.20882/adicciones.909.

21. Muniz J, Elosua P, Hambleton RK. International Test Commission Guidelines for test translation and adaptation. Psicothema 2013;25:151-7. doi: 10.7334/psicothema2013.24.

22. Uygun SD, Cop E, Ozdel K, Unlu HK, Uneri OS. Advanced Psychometric Properties of the Turkish Adaptation of the Substance Use Risk Profile Scale. Turk J Child Adol Mental Health 2020;27:91-6.

23. Strathdee SA, Bristow CC, Gaines T, Shoptaw S. Collateral Damage: A Narrative Review on Epidemics of Substance Use Disorders and their Relationships to Sexually Transmitted Infections in the United States. Sex Transm Dis 2021;48:466-73. doi: 10.1097/OLQ.0000000000001341.

24. Woicik PA, Stewart SH, Pihl RO, Conrod PJ. The substance use risk profile scale: a scale measuring trait linked to reinforcement-specific substance use profiles. Addict Behav 2009;34:1042-55. doi: 10.1016/j.addbeh.2009.07.001.

25. Gosling SD, Rentfrow PJ, Swann Jr WB. A very brief measure of the Big-Five personality domains. J Res Pers 2003;37:504-28. doi: 10.1016/S0092-6566(03)00046-1

26. Wang S, Zhang M, Liu S, Xu Y, Shao Z, Chen L, et al. Impulsivity in heroin-dependent individuals: structural and functional abnormalities within frontostriatal circuits. Brain Imaging Behav 2021;15:2454-63. doi: 10.1007/s11682-020-00445-w.