

Cross-Cultural Adaptation and Pilot Psychometric Revalidation of the Cessation Fatigue Scale for Outpatient Substance Use Disorder Populations in Nigeria: A Study Protocol

Samuel A. Jinadu^{1*}, Gloria S. Karuri², and Edward M. Dachalson³

¹Behavioural Medicine Unit, Karu General Hospital, Federal Capital Territory, Abuja, Nigeria

¹Department of General and Applied Psychology, University of Jos (Doctoral Candidate)

^{2,3}Department of General and Applied Psychology, University of Jos, Plateau State, Nigeria (Professors of Clinical Psychology)

*Corresponding Author

DOI: <https://doi.org/10.47772/IJRISS.2026.100700535>

Received: 24 July 2026; Accepted: 30 July 2026; Published: 06 August 2026

ABSTRACT

Background: Treatment fatigue is increasingly recognized as a contributor to poor adherence among individuals receiving treatment for substance use disorders (SUDs), yet no culturally validated instrument exists for assessing this construct in Nigerian outpatient populations. **Objective:** This study culturally adapted and pilot psychometrically revalidated the Cessation Fatigue Scale (CFS) for use among Nigerian outpatients receiving treatment for SUDs. **Methods:** A cross-sectional pilot psychometric design was employed among 97 adult outpatients at the Behavioural Medicine Unit, Karu General Hospital, Abuja. Cultural adaptation involved expert review and content validation. Reliability was assessed using Cronbach's alpha, while construct validity was examined through inter-item correlations and known-group comparison. **Results:** The adapted CFS demonstrated excellent internal consistency (overall $\alpha = 0.912$), excellent content validity (S-CVI/Ave = 0.966), and satisfactory construct validity. Participants with comorbid mental illness reported significantly higher treatment fatigue than those without comorbidity ($\chi^2 = 28.84$, $p < .001$, Cramer's $V = .545$). **Conclusion:** The adapted CFS is a reliable and valid instrument for assessing treatment fatigue among Nigerian outpatient SUD populations and warrants evaluation in larger multicentre studies.

Keywords: cessation fatigue; treatment fatigue; substance use disorder; scale adaptation; psychometric validation; outpatient treatment; Nigeria

INTRODUCTION

Substance use disorders (SUDs) place a substantial burden on individuals, families, and health systems in Nigeria, and outpatient treatment programs remain the primary mode of care delivery for most affected persons outside acute inpatient settings (James et al., 2022; Olowoyo-Richards, 2025). A persistent challenge across these programs is poor treatment adherence, manifesting as missed appointments, early discontinuation, and relapse despite ongoing engagement with services. While structural, socioeconomic, and pharmacological explanations for non-adherence have received considerable attention (Boyle et al., 2025; Kane et al., 2013; Killikelly et al., 2017; Milward et al., 2014), the psychological toll of sustained behaviour-change effort; the sense of being worn down by the repeated demands of quitting or staying in treatment has received comparatively little empirical attention, especially in the Nigerian context.

The construct of cessation fatigue was first proposed in the smoking-cessation literature as a determinant of relapse, conceptualized as the exhaustion of the coping resources required to sustain abstinence. This exhaustion

accumulates as the demands of quitting persist over time and available capacity is depleted (Heckman et al., 2018). Building on this theoretical foundation, Mathew et al. (2017) developed and provided initial validation of a 17-item self-report Cessation Fatigue Scale (CFS) in a sample of adult smokers who had recently relapsed from a quit attempt. Exploratory factor analysis identified a three-factor structure: emotional exhaustion, pessimism, and devaluation. The resulting scale demonstrated high internal consistency and showed theoretically expected associations: positive relationships with withdrawal severity and perceived difficulty of quitting, and inverse relationships with self-efficacy and motivational engagement. Subsequent work has extended the nomological network of the construct, showing that cessation fatigue predicts relapse risk and cessation milestones independently of related constructs such as strength of urges and abstinence self-efficacy (Claudia et al., 2024; Heckman, Cummings, et al., 2018; Heckman, Dahne, et al., 2018; Manning et al., 2025; Yong et al., 2025).

Despite this accumulating evidence, the CFS was developed and validated exclusively among smokers assessed via online cross-sectional and longitudinal surveys in Western, English-speaking populations. To the author's knowledge, it has not been adapted for use among outpatients undergoing treatment for a broader range of substances (including alcohol, cannabis, and opioids), nor has it been examined for content or construct validity within a sub-Saharan African clinical population. Given that fatigue-related patient-reported outcome measures developed in one cultural and clinical context often require adaptation before they can be assumed to retain semantic, conceptual, and psychometric equivalence elsewhere, cross-cultural adaptation is a necessary precursor to using the CFS as an outcome measure in Nigerian outpatient SUD research. This gap is particularly consequential as a Nigerian-validated measure of cessation fatigue is required to operationalize treatment fatigue as a standalone construct in this population

Aim and Objectives

This pilot study aims to adapt the Cessation Fatigue Scale culturally among patients attempting to quit psychoactive substances and to obtain preliminary psychometric evidence for its use among outpatients receiving treatment for substance use disorders in Nigeria.

The specific objectives are to:

1. Evaluate the content validity of the adapted CFS items among a panel of clinical experts and construct validity among a small sample of SUD outpatients at the BMU.
2. Estimate the internal consistency and reliability of the adapted CFS and its subscales using Cronbach's alpha.
3. Examine the performance of the adapted CFS in a Nigerian outpatient pilot sample that includes SUD patients with and without comorbid mental illness.

LITERATURE REVIEW

Conceptualizing Cessation and Treatment Fatigue

Cessation fatigue was first posited as a determinant of smoking relapse over two decades ago, on the premise that greater tiredness from attempting to quit increases vulnerability to relapse, particularly once acute withdrawal symptoms have abated, and the cumulative cost of continued abstinence effort becomes more salient (Brown et al., 2005). Liu et al. (2013) advanced this theorizing by modeling cessation fatigue as a dynamic process that unfolds over the course of a quit attempt, as the balance between the ongoing 'workload' of resisting urges and the smoker's remaining coping 'capacity' shifts. Within this framework, fatigue is expected to emerge as workload increases or capacity is depleted, irrespective of whether a quit attempt is unassisted or supported by formal treatment. Extending this conceptual lineage beyond tobacco, the broader construct of treatment fatigue, a generalized depletion of motivation, hope, and coping capacity in the face of sustained treatment demands, offers a plausible explanatory mechanism for non-adherence across substance classes.

Development and Psychometric Properties of the Original Cessation Fatigue Scale

Mathew et al. (2017) developed the CFS using a rational scale-construction approach, generating an item pool

intended to capture the loss of motivation, loss of hope for cessation success, diminished self-efficacy, and exhaustion of self-control resources theorized to characterize cessation fatigue. Using data from an online cross-sectional survey of 484 smokers who had relapsed from a quit attempt within the preceding 30 days, exploratory factor analysis reduced the item pool to a 17-item, three-factor structure comprising emotional exhaustion, pessimism, and devaluation subscales. The overall scale and each subscale demonstrated high internal consistency. The expected pattern of associations supported construct validity: CFS scores correlated positively with withdrawal severity and perceived difficulty of quitting, and negatively with intention to quit, self-efficacy, and motivational engagement, even after adjusting for nicotine dependence. Subsequent research has reinforced the predictive utility of the construct: cessation fatigue has been shown to predict latency to quit initiation and point-prevalence abstinence among current smokers, lapse and relapse risk among recent quitters, and, in more recent cross-national cohort analyses, to outperform related predictors such as strength of urges to smoke and abstinence self-efficacy in forecasting relapse among people who have formerly smoked (Marler et al., 2021).

Cross-Cultural Adaptation of Fatigue and Patient-Reported Outcome Measures: Precedents

The methodological literature offers substantial precedent for adapting fatigue-related patient-reported outcome measures across cultural and linguistic contexts. The Cancer Fatigue Scale (Shun et al., 2007), for example, originally developed and validated in a Japanese cancer population, has subsequently been translated and revalidated in Chinese (Li et al., 2022), German (Kröz 2008), Persian (Zohre et al., 2018), Greek (Charalambous et al., 2016), Turkish, (Sedef et al., 2018), Korean (Lee et al., 2023), and English (UK) populations (Robinson et al 2025), with each adaptation reporting its own pattern of factorial and convergent validity rather than assuming direct transportability of the original psychometric properties. This body of work illustrates a consistent methodological principle: a scale's factor structure, reliability, and validity coefficients cannot be assumed to generalize across cultural and clinical contexts without re-examination, even where the underlying construct is expected to be relevant. Beaton et al., (2000) formalized this principle into a widely adopted six-stage guideline for the cross-cultural adaptation of self-report health measures, encompassing translation, synthesis, back-translation, expert committee review, pre-testing, and submission of adaptation documentation, with explicit emphasis on establishing semantic, idiomatic, experiential, and conceptual equivalence between source and target versions. Although English is the official language of healthcare delivery and documentation in Nigeria, idiomatic and experiential equivalence cannot be assumed for an instrument whose items were generated from the lived experience of North American smokers; a structured expert-panel and content-validity procedure, consistent with the spirit of the Beaton et al. framework, was therefore adopted for this pilot phase in place of a full linguistic translation.

Substance Use Disorder Treatment, Adherence, and Fatigue-Related Constructs in Nigeria

The Nigerian SUD treatment literature has documented adherence and retention challenges across outpatient settings, with attention typically directed toward stigma (Kolawole et al., 2025), cost of care (Uteh et al., 2026), distance to treatment facilities, family and social support (Abayomi et al., 2020), and comorbid psychiatric illness as correlates of poor engagement (Ajayi et al., 2025; Makanjuola et al., 2025). Comparatively little of this literature has examined the psychological experience of fatigue with the treatment or cessation process as a determinant in its own right, and the author is not aware of any published Nigerian or wider African study that has operationalised cessation or treatment fatigue as a standalone, measurable construct in an outpatient SUD population. This mirrors a broader pattern in the international literature, where cessation fatigue research has been concentrated in tobacco cessation and largely confined to Western samples, leaving its relevance to poly-substance, resource-constrained, and culturally distinct outpatient populations empirically untested.

Summary and Identified Gap

The literature establishes cessation fatigue as a theoretically coherent and empirically supported predictor of relapse and non-adherence in smoking cessation, operationalized through a psychometrically sound instrument. It also establishes, through precedent in cognate fatigue measures, that such instruments require context-specific re-examination before use outside their population of origin. The absence of any Nigerian or African adaptation of the CFS, combined with the absence of Nigerian literature treating cessation or treatment fatigue as a standalone construct in outpatient SUD care, constitutes the specific gap this pilot study addresses.

METHODOLOGY

Study Design

This pilot study adopts a cross-sectional, instrument-adaptation and psychometric-evaluation design, comprising (a) a structured cultural and content adaptation phase and (b) a single-occasion pilot administration. The design is explicitly framed as a pilot study preceding a larger-sample study, consistent with recommendations that pilot psychometric work should precede, rather than substitute for, a full-scale study.

Study Setting

The study was conducted at the Behavioral Medicine Unit (BMU), Karu General Hospital, Federal Capital Territory, Abuja, Nigeria. The BMU provides outpatient assessment, psychological treatment, and follow-up care for patients with substance use disorders and co-occurring mental health conditions. The facility's established clinical infrastructure and consistent outpatient attendance make it an appropriate and accessible setting for pilot instrument administration.

Study Population and Eligibility Criteria

The study population comprises adult outpatients receiving treatment for a substance use disorder at the BMU. Eligibility criteria are as follows:

Inclusion criteria

1. Aged 18 years or older.
2. Currently enrolled in outpatient treatment for a diagnosed substance use disorder (per documented DSM-5 or ICD-11 criteria) for a minimum of one month at the point of recruitment.
3. Able to read and comprehend English, or willing to complete the questionnaire with items read aloud by a research assistant.
4. Willing and able to provide written informed consent.

Exclusion criteria

1. Acute intoxication or acute withdrawal at the time of scheduled assessment.
2. A comorbid psychotic disorder or cognitive impairment, documented in the clinical record, that in the clinician's judgement would preclude reliable self-report.
3. Prior participation in the cultural adaptation (expert/cognitive interview) phase, to avoid overlap between adaptation and pilot administration samples.

Sampling Technique and Sample Size

Eligible outpatients attending the BMU during the data collection window were recruited consecutively until the target pilot sample size was reached. There is no universally agreed minimum sample size for pilot psychometric work; guidance ranges from item-to-respondent heuristics of approximately 5 to 10 respondents per scale item for exploratory factor analytic work (which would suggest a range of roughly 85 to 170 respondents for the 17-item CFS), to smaller pilot-specific benchmarks.

Cross-Cultural and Contextual Adaptation Procedure

Expert Panel Review and Semantic Adaptation

Before pilot administration, the 17 CFS items, subscale structure, and response format were reviewed by a panel of clinical experts (3 clinical psychologists, 3 psychiatrists, and 1 addiction-treatment specialist with experience in Nigerian outpatient SUD care). The panel reviewed each item for clarity, cultural relevance, and idiomatic fit with the language and lived experience of Nigerian outpatients. The panel also extended the original tobacco-specific item wording to a substance-general frame (for example, replacing references to 'quitting smoking' or

'cigarettes' with 'quitting [substance]' or 'staying off [substance]', to be completed individually by each respondent with reference to their primary substance of concern), consistent with the intent of the original construct rather than its tobacco-specific surface wording.

Content Validity Assessment

Following semantic adaptation, each item was rated by the expert panel for relevance to the cessation fatigue construct using a four-point ordinal scale (1 = not relevant, 4 = highly relevant), from which the Item-Level Content Validity Index (I-CVI) was computed as the proportion of experts rating an item 3 or 4, and the Scale-Level Content Validity Index (S-CVI) as the average of the I-CVI values across items. Items falling below a conventional acceptability threshold were flagged for revision in consultation with the panel (Polit et al., 2007).

Instrumentation

Adapted Cessation Fatigue Scale (CFS)

The adapted CFS retains the original 17-item, three-factor structure (emotional exhaustion, pessimism, devaluation) developed by Mathew et al., (2017), with wording generalized from tobacco-specific to substance-general language as described in Section 3.5.1. Items retained the original Likert-type response format, and subscale and total scores were computed by summing item responses within each factor.

Sociodemographic and Clinical Data Form

A brief researcher-designed form that consists of a brief introduction and informed consent details and also captures the pilot sample's age, sex, marital status, educational attainment, employment status, primary substance of concern, duration of current treatment episode, and presence or absence of psychiatric diagnosis was used to collect responses/data from participants.

Data Collection Procedure

Four trained research assistants screened consecutive outpatients attending scheduled BMU appointments against the eligibility criteria. Eligible and consenting participants completed the sociodemographic form and the adapted CFS in a private consultation room, either through self-completion or a researcher-administered interview, depending on literacy and preference.

Data Analysis Plan

Data were analyzed using SPSS version 28.0.

RESULT

Participant Characteristics

Variable	n (%) / Mean±SD
Age	31.55 ± 7.93
Male	58 (59.8)
Female	39 (40.2)
Single	69 (71.1)
Married	21 (21.6)
Divorced	6 (6.2)
Widowed	1 (1.0)
Secondary education	58 (59.8)
Self-employed	49 (50.5)
Treatment duration (months)	70.64 ± 47.89
Comorbid mental illness	55 (56.7)

The pilot psychometric revalidation study was conducted among 97 outpatient clients receiving treatment for substance use disorders. Participants had a mean age of 31.55 years ($SD = 7.93$), with ages ranging across young and middle adulthood. The majority of respondents were male (59.8%), while females constituted 40.2% of the sample. Most participants were single (71.1%), followed by married respondents (21.6%), divorced (6.2%) and widowed (1.0%). Regarding educational attainment, the majority had completed secondary education (59.8%), whereas 24.7% had tertiary education, 6.2% had postgraduate qualifications, 6.2% had primary education and 3.1% had no formal education. Employment status indicated that over half of the respondents were self-employed (50.5%), while 20.6% were students, 17.5% were unemployed, 6.2% worked in the public sector and 5.2% were employed in the private sector. Participants had been enrolled in treatment for an average of 70.64 months ($SD = 47.89$), indicating substantial treatment exposure. More than half of the participants (56.7%) had a documented comorbid mental health diagnosis, whereas 43.3% did not.

Reliability and Validity of the Adapted Cessation Fatigue Scale

Reliability: Internal Consistency

Scale	Items	Cronbach's α
Overall CFS	17	0.912
Emotional Exhaustion	8	0.943
Pessimism	5	0.755
Devaluation	4	0.930

The adapted Nigerian version of the Cessation Fatigue Scale demonstrated excellent internal consistency. The overall 17-item scale yielded a Cronbach's alpha coefficient of 0.912, indicating excellent reliability according to conventional psychometric standards.

Subscale analyses similarly demonstrated satisfactory to excellent reliability. The Emotional Exhaustion dimension exhibited excellent internal consistency ($\alpha = 0.943$) across its eight items. The Pessimism dimension produced a Cronbach's alpha of 0.755, indicating acceptable reliability, while the Devaluation dimension demonstrated excellent internal consistency with an alpha coefficient of 0.930. Collectively, these findings indicate that the adapted instrument possesses strong internal consistency and that items within each domain consistently measure their respective constructs.

Content Validity

Index	Value
Experts	7
Items with I-CVI=1.00	13/17
Items with I-CVI=0.857	4/17
S-CVI/Ave	0.966
S-CVI/UA	0.824

Content validity was assessed by a panel of seven experts comprising specialists in clinical psychology, psychiatry, and addiction treatment using the Item Content Validity Index (I-CVI) and Scale Content Validity Index (S-CVI). According to Lynn (1986), when the expert panel consists of 6–8 experts, an I-CVI of at least 0.86 is required for an item to demonstrate acceptable content validity.

Of the 17 items evaluated, 13 items achieved universal agreement (I-CVI = 1.00), indicating unanimous endorsement of their relevance by all seven experts. The remaining four items obtained an I-CVI of 0.857 (6 of 7 experts). Although numerically marginally below Lynn's recommended cut-off, each item received agreement from six of the seven experts and was therefore considered to demonstrate acceptable practical content validity after considering expert qualitative feedback.

The average scale-level content validity index (S-CVI/Ave) was 0.966, substantially exceeding the recommended criterion of 0.90. Similarly, the scale-level content validity based on proportion relevance was 0.966, while the

universal agreement index (S-CVI/UA) was 0.824. These indices indicate excellent overall content validity and suggest that the adapted instrument adequately represents the construct of treatment cessation fatigue within the Nigerian outpatient substance use disorder population.

Construct Validity

Construct validity was examined using Pearson product-moment inter-item correlations. The correlation matrix demonstrated statistically significant associations among most items ($p < .01$), with correlation coefficients ranging from weak to very strong positive relationships. Items within the Emotional Exhaustion domain showed particularly high positive correlations (e.g., CFS1-CFS3, $r = .992$; CFS1-CFS4, $r = .978$; CFS3-CFS4, $r = .958$), suggesting that they measure a common latent construct. See Appendix A

Likewise, items within the Pessimism and Devaluation domains demonstrated moderate-to-strong positive correlations, supporting their conceptual coherence. Several negative correlations were observed between items belonging to different conceptual domains, particularly those involving reverse-worded items, consistent with the multidimensional structure of the original Cessation Fatigue Scale. Importantly, the vast majority of correlations were statistically significant at the 0.01 level, providing evidence that the adapted items retained meaningful relationships expected of the theoretical construct while maintaining adequate discrimination between dimensions.

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	28.844 ^a	1	.000		
Continuity Correction ^b	26.467	1	.000		
Likelihood Ratio	30.549	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases	97				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.12.					
b. Computed only for a 2x2 table					

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	-.545	.000
	Cramer's V	.545	.000
N of Valid Cases		97	

Treatment Fatigue and Comorbid Mental Illness

A chi-square test of independence was conducted to examine whether treatment fatigue classification (high vs. low) differed by comorbid mental health diagnosis status. The association was statistically significant, $\chi^2(1, N = 97) = 28.84$, $p < .001$, Cramer's $V = .545$, indicating a strong effect. Among participants with a documented comorbid mental health diagnosis, 51 of 55 (92.7%) fell into the high treatment fatigue category, compared with 18 of 42 (42.9%) of participants without a comorbid diagnosis. This pattern indicates that the adapted CFS distinguishes meaningfully between outpatients with and without comorbid mental illness, providing preliminary evidence for its performance across clinically distinct subgroups within the pilot sample, consistent with the third specific objective of this study.

DISCUSSION

This study evaluated the psychometric properties of the culturally adapted Nigerian version of the Cessation Fatigue Scale among outpatient individuals receiving treatment for substance use disorders. Overall, the findings demonstrate that the adapted instrument possesses excellent reliability and satisfactory evidence of validity, supporting its suitability for assessing treatment cessation fatigue within Nigerian clinical settings.

The overall internal consistency reliability of the adapted scale (Cronbach's $\alpha = 0.912$) indicates excellent homogeneity among the 17 items. This coefficient exceeds the generally accepted threshold of 0.70 for research instruments (Nunnally & Bernstein, 1994) and suggests that the adapted items consistently measure the underlying construct of cessation fatigue. The reliability coefficient is comparable to, and slightly exceeds, values reported during the development of the original Cessation Fatigue Scale by Mathew et al., suggesting that the cross-cultural adaptation process preserved the internal coherence of the instrument despite linguistic and contextual modifications.

The three-factor structure similarly demonstrated satisfactory psychometric performance. Emotional Exhaustion ($\alpha = 0.943$) and Devaluation ($\alpha = 0.930$) exhibited excellent reliability, reflecting very high internal consistency among items measuring emotional depletion and reduced perceived value of continued treatment. Although the Pessimism subscale yielded a comparatively lower coefficient ($\alpha = 0.755$), this value remains within the acceptable range for psychological measures, particularly for multidimensional constructs with relatively few items. The comparatively lower reliability of this subscale may reflect greater variability in how Nigerian outpatient populations experience or express pessimistic cognitions regarding recovery, underscoring the influence of cultural and contextual factors on psychological assessment.

Evidence for construct validity was supported through statistically significant inter-item correlations across the majority of scale items. Strong positive correlations among conceptually related items demonstrate convergence within each theoretical dimension, while the presence of negative correlations involving reverse-worded items provides evidence that respondents appropriately differentiated between positively and negatively phrased statements. The observed correlation pattern is consistent with the multidimensional conceptualisation of cessation fatigue as comprising emotional exhaustion, pessimism regarding continued recovery efforts, and devaluation of ongoing treatment. Importantly, the absence of uniformly high correlations across all items suggests that the scale avoids excessive redundancy while maintaining adequate conceptual coherence.

In relation to the third specific objective, the adapted CFS also distinguished between outpatients with and without comorbid mental illness. Participants with a documented comorbid diagnosis were substantially more likely to fall into the high treatment fatigue category than those without (92.7% vs. 42.9%), $\chi^2(1) = 28.84$, $p < .001$, Cramer's $V = .545$. This large effect size suggests that comorbid mental illness is strongly associated with elevated treatment fatigue in this pilot sample, lending preliminary support to the instrument's ability to differentiate clinically meaningful subgroups and reinforcing the rationale for treating comorbidity as a key covariate in the author's planned doctoral investigation of treatment fatigue and adherence.

The content validity findings provide additional evidence supporting the adequacy of the adapted instrument. Following Lynn's (1986) recommendations for expert panels comprising six to eight reviewers, most items demonstrated unanimous agreement regarding their relevance. Although four items achieved an I-CVI of 0.857 rather than universal agreement, these values indicate that six of the seven experts considered the items relevant. Given the high S-CVI/Ave of 0.966 and the qualitative consensus reached during expert review, the overall scale demonstrates excellent content validity. The S-CVI/Ave substantially exceeds the recommended benchmark of 0.90 suggested by Polit and Beck (2006), indicating that the adapted items comprehensively represent the construct of cessation fatigue within the Nigerian cultural context.

The findings also support the effectiveness of the cross-cultural adaptation procedures employed in the study. Cross-cultural adaptation seeks not merely linguistic translation but conceptual, semantic and experiential equivalence between the original and adapted instruments. The excellent reliability coefficients and high content validity indices suggest that culturally relevant wording modifications did not compromise the psychometric integrity of the original measure. Instead, the adaptation appears to have enhanced contextual appropriateness while preserving theoretical fidelity.

From a clinical perspective, the validated Nigerian version of the Cessation Fatigue Scale provides clinicians and researchers with a reliable instrument for identifying patients who may be experiencing treatment fatigue during long-term substance use disorder recovery. Given that over half of the participants in the present study presented with comorbid mental health conditions and had remained in treatment for extended periods, systematic assessment of cessation fatigue may facilitate earlier identification of individuals at increased risk for

disengagement, poor adherence or relapse. Routine administration of the instrument could therefore contribute to more personalized psychosocial interventions and improved retention in treatment programs.

Although the present findings are encouraging, they should be interpreted alongside certain limitations. The study relied on a single outpatient sample and a relatively modest sample size appropriate for pilot psychometric evaluation. Additional validation studies involving larger and more geographically diverse Nigerian samples should examine the factorial structure through exploratory and confirmatory factor analyses, evaluate test-retest reliability, and establish convergent, discriminant and criterion validity using related psychological measures.

These findings address the study's aim and each of its three specific objectives. In relation to the first objective, the adapted CFS demonstrated excellent content validity among the expert panel and coherent construct validity among the pilot outpatient sample. In relation to the second objective, the overall scale and its three subscales showed acceptable-to-excellent internal consistency. In relation to the third objective, the instrument distinguished outpatients with and without comorbid mental illness, with those carrying a comorbid diagnosis showing markedly higher rates of high treatment fatigue. Collectively, this preliminary evidence supports the overall aim of culturally adapting the CFS and establishing its psychometric suitability for outpatient SUD populations in Nigeria.

Overall, the findings demonstrate that the culturally adapted Nigerian Cessation Fatigue Scale possesses excellent internal consistency and strong evidence of content and construct validity. The instrument therefore represents a psychometrically sound measure for assessing treatment cessation fatigue among Nigerian outpatient populations receiving treatment for substance use disorders and provides a strong foundation for subsequent large-scale validation studies and clinical application.

CONCLUSION AND RECOMMENDATION

Conclusion

This pilot study provides preliminary evidence that the culturally adapted Nigerian version of the Cessation Fatigue Scale is a reliable and valid instrument for assessing treatment fatigue among adults receiving outpatient treatment for substance use disorders. The adapted scale demonstrated excellent internal consistency, strong content validity, and satisfactory construct validity, indicating that the cultural modifications preserved the conceptual integrity of the original instrument while enhancing its relevance to the Nigerian clinical context.

The instrument also successfully differentiated between clinically meaningful subgroups, with participants who had comorbid mental illness exhibiting substantially higher levels of treatment fatigue than those without psychiatric comorbidity. This finding highlights the potential importance of routinely assessing treatment fatigue, particularly among patients with co-occurring mental disorders who may be at greater risk of poor treatment engagement and adverse recovery outcomes.

Overall, the findings suggest that the adapted Cessation Fatigue Scale is suitable for use in outpatient substance use disorder settings in Nigeria and provides a valuable patient-reported outcome measure for clinical practice and future research on treatment adherence, retention, and recovery.

Recommendation

Based on the findings of this study, the following recommendations are proposed:

1. The adapted Cessation Fatigue Scale should be considered for routine screening of treatment fatigue among outpatient populations receiving treatment for substance use disorders. Early identification of patients experiencing elevated treatment fatigue may facilitate timely psychosocial interventions aimed at improving treatment adherence and retention.
2. Particular attention should be given to patients with comorbid mental illness, as they demonstrated significantly higher levels of treatment fatigue. Integrating regular fatigue assessment into comprehensive mental health and addiction care may help identify individuals requiring additional psychological support.

3. Future validation studies should recruit larger and more heterogeneous samples from multiple treatment centres across different geopolitical regions of Nigeria. This will enhance the generalizability of the findings and establish the instrument's applicability across diverse outpatient SUD populations.
4. Subsequent research should include participants receiving treatment in tertiary hospitals, psychiatric facilities, private rehabilitation centres, and community-based addiction services to determine the scale's performance across different models of care.
5. Because this pilot study was conducted in a single treatment facility, caution should be exercised when generalizing the findings to all Nigerian outpatient substance use disorder populations. Multicentre studies are therefore recommended to strengthen the external validity of the instrument.
6. Future studies should also investigate the predictive utility of treatment fatigue by examining its relationship with treatment adherence, retention in care, relapse, and recovery outcomes over time, thereby establishing its value as a clinically meaningful predictor in substance use disorder management.

REFERENCE

1. Abayomi, O., Alatishe, A. T., Oladele, O., & Opadola, O. (2020). Bulletin on Narcotics, Volume LXII, 2019 (pp. 79-101). United Nations. <https://doi.org/10.18356/61003b69-en>
2. Ajayi, O. I., Sadiku, I. A., Akintoyese, O. A., Kolawole, P. O., Ajiroto, O. F., Akinkunmi, F., Ajayi, A. O., Shaba, A. A., Pillot, G. O., & Olusegun, J. O. (2025). Psychosocial factors as predictors of relapse rate among substance use disorders patients in a mental health facility in Nigeria. *International Journal of Innovative Science and Research Technology*, 10(6), 1454-1462. <https://doi.org/10.38124/ijisrt/25jun902>
3. Bahrami.Baresari, Z., Abbaszadeh, A., Heydarirad, G., & Khabazkhoob, M. (2018). The psychometrics of the Persian version of the "cancer fatigue scale" in Iran. *EurAsian Journal of BioSciences*, 12, 149-156.
4. Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25(24), 3186-3191. <https://doi.org/10.1097/00007632-200012150-00014>
5. Brown, R. A., Lejuez, C. W., Kahler, C. W., Strong, D. R., & Zvolensky, M. J. (2005). Distress tolerance and early smoking lapse. *Clinical Psychology Review*, 25(6), 713-733. <https://doi.org/10.1016/j.cpr.2005.05.003>
6. Cea, C. M., Yong, H.-H., Borland, R., Sheffer, C. E., Nottage, M. K., & Cummings, K. M. (2025). Does self-reported smoking cessation fatigue predict making quit attempts and sustained abstinence among adults who smoke regularly? *Addictive Behaviors*, 160, Article 108171. <https://doi.org/10.1016/j.addbeh.2024.108171>
7. Charalambous, A., Kaites, C., Constantinou, M., & Kouta, C. (2016). Translation and validation of the Cancer-Related Fatigue Scale in Greek in a sample of patients with advanced prostate cancer. *BMJ Open*, 6(12), e011798. <https://doi.org/10.1136/bmjopen-2016-011798>
8. Heckman, B. W., Dahne, J., Germeroth, L. J., Mathew, A. R., Santa Ana, E. J., Saladin, M. E., & Carpenter, M. J. (2018). Does cessation fatigue predict smoking-cessation milestones? A longitudinal study of current and former smokers. *Journal of Consulting and Clinical Psychology*, 86(11), 903-914. <https://doi.org/10.1037/ccp0000338>
9. Heckman, B. W., Michael, C., Stoltman, J., Dahne, J., Borland, R., Fong, G. T., & Carpenter, M. J. (2018). Longer duration of smoking abstinence is associated with waning cessation fatigue. *Behaviour Research and Therapy*, 115. <https://doi.org/10.1016/j.brat.2018.11.011>
10. Hertzog, M. A. (2008). Considerations in determining sample size for pilot studies. *Research in Nursing & Health*, 31(2), 180-191. <https://doi.org/10.1002/nur.20247>
11. James, B., Okonoda, K., Ebiti, N., Arias, A., & Koch, J. (2022). Telehealth for substance use disorders treatment in Nigeria: Implementation strategies post-COVID-19. *Open Journal of Psychiatry*, 12, 321-335. <https://doi.org/10.4236/ojpsych.2022.124024>
12. Kane, J. M., Kishimoto, T., & Correll, C. U. (2013). Non-adherence to medication in patients with psychotic disorders: Epidemiology, contributing factors and management strategies. *World Psychiatry*, 12, 216-226. <https://doi.org/10.1002/wps.20060>
13. Killikelly, C., He, Z., Reeder, C., & Wykes, T. (2017). Improving adherence to web-based and mobile technologies for people with psychosis: Systematic review of new potential predictors of adherence. *JMIR mHealth and uHealth*, 5(7), e94. <https://doi.org/10.2196/mhealth.7088>
14. Kolawole, B. O., Famotire, F. O., Ayodele, E. O., Emma-Ekwealor, E. O., Philip, O. T., & Abubakar, S.

- (2025). Stigma, silence, and substance use: A qualitative study of barriers to care among pregnant women in Nigeria. *Journal of Life Science and Public Health*, 1(2), 60-68. <https://doi.org/10.69739/jlsph.v1i2.1017>
15. KRÖZ, M., ZERM, R., REIF, M., VON LAUE, H. B., SCHAD, F., BÜSSING, A., BARTSCH, C., FEDER, G., & GIRKE, M. (2008). Validation of the German version of the Cancer Fatigue Scale (CFS-D). *European Journal of Cancer Care*, 17, 33-41. <https://doi.org/10.1111/j.1365-2354.2007.00799.x>
16. Liu, X., Li, R., Lanza, S. T., Vasilenko, S. A., & Piper, M. (2013). Understanding the role of cessation fatigue in the smoking cessation process. *Drug and Alcohol Dependence*, 133(2), 548-555. <https://doi.org/10.1016/j.drugalcdep.2013.07.025>
17. Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research*, 35(6), 382-385.
18. Makanjuola, A., Abiodun, O., Abiola, T., Aremu, S., Ajiboye, P., Awodun, M., & Olumorin, D. (2025). Substance use and behavioral addiction patterns: Treatment outcomes among patients admitted to an addiction treatment and rehabilitation center in a Nigerian Teaching Hospital. *African Journal of Alcohol and Drug Abuse*, 13(1), 168-179. <https://doi.org/10.4314/ajada.v13i1.10>
19. Manning, K., Zvolensky, M. J., Gallagher, M. W., Alfano, C., Viana, A. G., & Blalock, J. A. (2025). Understanding fatigue severity and smoking deprivation in smoking behavior and urges: A pilot test. *Experimental and Clinical Psychopharmacology*, 33(3), 285-290. <https://doi.org/10.1037/pha0000773>
20. Marler, J., Fujii, C., Galanko, J., Balbierz, D., & Utley, D. (2020). Durability of abstinence after completing a comprehensive digital smoking cessation program that incorporates a mobile app, breath sensor, and coaching: Cohort study. *Journal of Medical Internet Research*, 23. <https://doi.org/10.2196/25578>
21. Mathew, A. R., Heckman, B. W., Meier, E., & Carpenter, M. J. (2017). Development and initial validation of a cessation fatigue scale. *Drug and Alcohol Dependence*, 176, 102-108. <https://doi.org/10.1016/j.drugalcdep.2017.01.047>
22. Milward, J., Lynskey, M., & Strang, J. (2014). Solving the problem of non-attendance. *Drug and Alcohol Review*, 33, 625-636. <https://doi.org/10.1111/dar.12194>
23. Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
24. Olowoyo-Richards, A. T. (2025). Advancing substance use disorder treatment in Africa: Utilizing the instrumentality of law as an innovative strategy. *African Journal of Drug and Alcohol Studies*, 23(2), 99-108. <https://doi.org/10.4314/ajdas.v23i2.2>
25. Piasecki, T. M. (2005). Relapse to smoking. *Clinical Psychology Review*, 25(6), 693-715.
26. Polit, D. F., & Beck, C. T. (2006). The Content Validity Index: Are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health*, 29(5), 489-497.
27. Polit, D. F., Beck, C. T., & Owen, S. V. (2007). Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in Nursing & Health*, 30(4), 459-467. <https://doi.org/10.1002/nur.20199>
28. Robinson, C., Feder, G., Huntley, A., et al. (2025). Validation of the cancer fatigue scale (CFS) in a UK population. *BMC Cancer*, 25, Article 1394. <https://doi.org/10.1186/s12885-025-14829-y>
29. Ryan, C., Gibson, E., Manages, S., Tsai, G., Boyle, M. P., Lien, J., & Mohr, S. (2025). Clinical considerations for engagement and retention of nonabstinent patients in care. *Journal of Addiction Medicine*, 19(5), 504-506. <https://doi.org/10.1097/ADM.0000000000001455>
30. Şahin, S., Huri, M., Aran, O., & Uyanik, M. (2018). Cross-cultural adaptation, reliability, and validity of the Turkish version of the Cancer Fatigue Scale in patients with breast cancer. *Turkish Journal of Medical Sciences*, 48, 124-130. <https://doi.org/10.3906/sag-1707-125>
31. Uteh, B., Esangbedo, A., Ariyo, J., James, B., Mshelia, I., Okonoda, K., Salihu, H., & Orovwigho, A. (2026). Medication-Assisted Treatment (MAT): Experience and opinions of substance use treatment professionals in Nigeria. *Open Journal of Psychiatry*, 16, 42-55. <https://doi.org/10.4236/ojpsych.2026.161004>
32. Yong, H.-H., Borland, R., Le Grande, M., Hu, C. C.-Y., Gartner, C., Hyland, A., et al. (2026). Understanding the role of cessation fatigue in smoking relapse: Findings from the International Tobacco Control Four Country Smoking and Vaping Survey. *Addiction*, 121(2), 340-348. <https://doi.org/10.1111/add.70196>

APPENDIX A

Correlations		CFS1	CFS2	CFS3	CFS4	CFS5	CFS6	CFS7	CFS8	CFS9	CFS10	CFS11	CFS12	CFS13	CFS14	CFS15	CFS16	CFS17
CFS1	Pearson Correlation	1	.520**	.992**	.978**	.290**	.572**	-.555**	-.627**	.641**	-.724**	.905**	.395**	.410**	.376**	.386**	.844**	.756**
	Sig. (2-tailed)		.000	.000	.000	.004	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS2	Pearson Correlation	.520**	1	.544**	.638**	-.021	.685**	.030	.025	.812**	.025	.336**	.298**	.253*	.284**	.314**	.218*	-.037
	Sig. (2-tailed)	.000		.000	.000	.841	.000	.774	.805	.000	.805	.001	.003	.012	.005	.002	.032	.721
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS3	Pearson Correlation	.992**	.544**	1	.958**	.190	.516**	-.611**	-.690**	.590**	-.757**	.893**	.321**	.323**	.305**	.318**	.809**	.713**
	Sig. (2-tailed)	.000	.000		.000	.063	.000	.000	.000	.000	.000	.000	.001	.001	.002	.001	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS4	Pearson Correlation	.978**	.638**	.958**	1	.360**	.704**	-.402**	-.458**	.786**	-.575**	.861**	.489**	.508**	.465**	.478**	.810**	.688**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS5	Pearson Correlation	.290**	-.021	.190	.360**	1	.700**	-.033	.232*	.467**	.163	.514**	.929**	.960**	.885**	.863**	.618**	.662**
	Sig. (2-tailed)	.004	.841	.063	.000		.000	.745	.022	.000	.111	.000	.000	.000	.000	.000	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS6	Pearson Correlation	.572**	.685**	.516**	.704**	.700**	1	-.003	.183	.903**	.134	.603**	.873**	.864**	.787**	.789**	.558**	.447**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.975	.072	.000	.190	.000	.000	.000	.000	.000	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS7	Pearson Correlation	-.555**	.030	-.611**	-.402**	-.033	-.003	1	.897**	.167	.732**	-.736**	-.114	-.051	-.109	-.105	-.628**	-.674**
	Sig. (2-tailed)	.000	.774	.000	.000	.745	.975		.000	.102	.000	.000	.265	.622	.289	.305	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS8	Pearson Correlation	-.627**	.025	-.690**	-.458**	.232*	.183	.897**	1	.176	.939**	-.633**	.200*	.224*	.191	.187	-.530**	-.569**
	Sig. (2-tailed)	.000	.805	.000	.000	.022	.072	.000		.085	.000	.000	.049	.028	.061	.066	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS9	Pearson Correlation	.641**	.812**	.590**	.786**	.467**	.903**	.167	.176	1	.031	.491**	.634**	.656**	.603**	.619**	.480**	.292**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.102	.085		.761	.000	.000	.000	.000	.000	.000	.004
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS10	Pearson Correlation	-.724**	.025	-.757**	-.575**	.163	.134	.732**	.939**	.031	1	-.633**	.200*	.176	.191	.187	-.574**	-.616**
	Sig. (2-tailed)	.000	.805	.000	.000	.111	.190	.000	.000	.761		.000	.049	.085	.061	.066	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS11	Pearson Correlation	.905**	.336**	.893**	.861**	.514**	.603**	-.736**	-.633**	.491**	-.633**	1	.608**	.594**	.579**	.578**	.947**	.915**
	Sig. (2-tailed)	.000	.001	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS12	Pearson Correlation	.395**	.298**	.321**	.489**	.929**	.873**	-.114	.200*	.634**	.200*	.608**	1	.989**	.952**	.941**	.647**	.607**
	Sig. (2-tailed)	.000	.003	.001	.000	.000	.000	.265	.049	.000	.049	.000		.000	.000	.000	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS13	Pearson Correlation	.410**	.253*	.323**	.508**	.960**	.864**	-.051	.224*	.656**	.176	.594**	.989**	1	.942**	.930**	.657**	.629**
	Sig. (2-tailed)	.000	.012	.001	.000	.000	.000	.622	.028	.000	.085	.000	.000		.000	.000	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS14	Pearson Correlation	.376**	.284**	.305**	.465**	.885**	.787**	-.109	.191	.603**	.191	.579**	.952**	.942**	1	.999**	.694**	.577**
	Sig. (2-tailed)	.000	.005	.002	.000	.000	.000	.289	.061	.000	.061	.000	.000	.000		.000	.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS15	Pearson Correlation	.386**	.314**	.318**	.478**	.863**	.789**	-.105	.187	.619**	.187	.578**	.941**	.930**	.999**	1	.696**	.563**
	Sig. (2-tailed)	.000	.002	.001	.000	.000	.000	.305	.066	.000	.066	.000	.000	.000	.000		.000	.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS16	Pearson Correlation	.844**	.218*	.809**	.810**	.618**	.558**	-.628**	-.530**	.480**	-.574**	.947**	.647**	.657**	.694**	.696**	1	.933**
	Sig. (2-tailed)	.000	.032	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
CFS17	Pearson Correlation	.756**	-.037	.713**	.688**	.662**	.447**	-.674**	-.569**	.292**	-.616**	.915**	.607**	.629**	.577**	.563**	.933**	1
	Sig. (2-tailed)	.000	.721	.000	.000	.000	.000	.000	.000	.004	.000	.000	.000	.000	.000	.000	.000	
	N	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).