

RECHERCHE

Stress, Coping Strategies, and Substance Use Disorders During the COVID-19 Pandemic in Morocco

Bouchra Hallab^{1,*}, Meriem El Yazaji¹

¹ Casablanca Addictology Centre, University Hospital Centre Ibn ROCHD, Morocco ; Laboratory of Clinical Neuroscience and Mental Health, Hassan II University, Faculty of Medicine and Pharmacy of Casablanca, Morocco

* Correspondance : Bouchra Hallab, Casablanca Addictology Centre, University Hospital Centre Ibn ROCHD, Morocco. Email : bouchrahallab232@gmail.com

Résumé

Contexte : Cette étude transversale a évalué les interactions cliniques entre le stress lié à la pandémie, les facteurs sociodémographiques et quatre dimensions des stratégies d'adaptation (évitement, résolution de problèmes, soutien social et pensée positive) chez des patients marocains consultant pour une prise en charge des conduites addictives.

Méthodes : Un échantillon de 117 patients adultes (87,18 % d'hommes ; 65,83 % de célibataires ; 36,75 % sans emploi) a été évalué au Centre d'addictologie de Casablanca. Des régressions logistiques multivariées distinctes ont permis d'identifier les facteurs prédictifs indépendants d'une dépendance modérée à sévère (groupe G2) au tabac (n = 83), au cannabis (n = 103) et à l'alcool (n = 97).

Résultats : L'auto-accusation et le recours à la religion étaient les stratégies d'adaptation les plus fréquemment mobilisées. Les analyses multivariées ont montré que le recours aux substances dans une stratégie d'évitement constituait un facteur de risque indépendant important de dépendance sévère au tabac (ORa = 2,43), au cannabis (ORa = 2,94) et à l'alcool (ORa = 2,21), tandis que la résolution active des problèmes apparaissait comme un facteur protecteur transversal. Les perturbations des relations interpersonnelles étaient fortement prédictives : le célibat (ORa = 3,02) et le divorce (ORa = 3,48) augmentaient respectivement de manière indépendante le risque de dépendance au cannabis et à l'alcool. Fait important, la dimension spirituelle et religieuse du soutien social demeurait indépendamment protectrice vis-à-vis de la sévérité de la dépendance nicotinique (ORa = 0,50), mais perdait totalement cet effet protecteur pour le cannabis, évoluant vers une forme de conflit moral et spirituel contre-productive dans un contexte d'isolement. Par ailleurs, la pensée positive semblait perdre son effet protecteur dans les formes sévères de dépendance à l'alcool (ORa = 0,39).

Conclusion : En situation de crise aiguë, le recours aux substances à des fins d'évitement réactif favorise l'aggravation des conduites addictives lorsque les capacités cognitives de recadrage positif et de résolution des problèmes sont altérées. Ces résultats soulignent la nécessité d'interventions psychiatriques intégrées, déstigmatisantes et adaptées au contexte culturel marocain.

Mots clés : Troubles liés à l'usage de substances, Stratégies de coping, Coping d'évitement, Pandémie de COVID-19, Coping religieux, Maroc.

Abstract

Background : This cross-sectional study evaluated the clinical interplay between pandemic stress, socio-demographic predictors, and four-factor coping architectures (*Avoidance, Problem Solving, Social Support, Positive Thinking*) within a Moroccan treatment-seeking cohort.

Methods : A sample of 117 adult patients (87.18% men; 65.83% single; 36.75% unemployed) was evaluated at the Casablanca Addictology Centre. Separate multivariable logistic regressions isolated independent predictors of moderate-to-severe dependence (Group G2) across tobacco (n=83), cannabis (n=103), and alcohol (n=97) sub-cohorts.

Results : Self-blame and religious coping were the most heavily mobilized strategies. Multivariable regression analyses revealed that avoidant substance use coping operated as a powerful independent risk generator for severe tobacco (aOR=2.43), cannabis (aOR=2.94), and alcohol dependence (aOR=2.21), while active problem-solving served as a cross-cutting protective shield. Interpersonal disruptions were highly predictive: single status (aOR=3.02) and divorced status (aOR=3.48) independently increased cannabis and alcohol risks, respectively. Crucially, the spiritual-religious subscale within the *Social Support* matrix remained independently protective against nicotine severity (aOR=0.50), but completely lost its protective value for cannabis, turning into a counter-productive moral and spiritual struggle under isolation, while *Positive Thinking* experienced a systemic collapse in severe alcohol presentations (aOR=0.39).

Conclusion : Under acute crisis, reactive chemical avoidance drives addiction escalation when cognitive options for positive reframing and executive problem-solving are neutralized, emphasizing the urgent need for integrated, de-stigmatized, and culturally tailored psychiatric interventions in Morocco.

Key words : Substance use disorders, Coping strategies, Avoidant coping, COVID-19 pandemic, Religious coping, Morocco.

1. INTRODUCTION

The global outbreak of the COVID-19 pandemic placed unprecedented psychosocial pressure on psychiatric populations, exposing vulnerable individuals to chronic stress (1,2). While the immediate focus of healthcare systems was directed toward containing viral transmission, accumulating evidence indicates that the containment measures themselves generated severe secondary mental health crises (3,4). Among treatment-seeking populations, individuals diagnosed with Substance Use Disorders (SUD) faced an amplified risk of clinical destabilization, acute psychological distress, and relapse (5,6). Understanding the behavioral adaptations of these patients during periods of prolonged crisis is essential for refining psychiatric care and improving harm-reduction strategies (7,8).

Coping mechanisms, defined as the cognitive and behavioral efforts deployed to manage specific external or internal demands that tax an individual's resources, dictate the trajectory of psychological adaptation during major life stressors (9,10). These strategies are broadly categorized into adaptive configurations, such as active problem-solving and seeking constructive social support, and maladaptive or avoidant configurations, which include denial, behavioral disengagement, and self-blame (11,12).

While avoidant behaviors may offer temporary emotional relief, they frequently worsen clinical outcomes over time, establishing a cycle that accelerates substance consumption (13,14). A large body of literature has documented the rise of reactive alcohol, tobacco, and cannabis consumption within the general population as a response to lockdown-induced boredom and uncertainty (5,15). However, few studies have examined these behavioral pathways within a formalized, clinical cohort of patients with pre-existing SUD, particularly in North Africa (16,17). Research in the Arab-Muslim world faces distinct structural challenges, primarily due to intense cultural, religious, and legal prohibitions that surround substance use (18,19). In Morocco, where personal consumption remains criminalized, individuals with SUD face severe institutional stigma and legal vulnerability (20). These factors often lead to under reporting and discourage individuals from seeking timely care at specialized psychiatric networks.

The strict nationwide lockdown implemented by the Moroccan government in 2020 introduced unique environmental stressors. It abruptly halted the informal labor market, which supports a large portion of the urban population, leading to widespread financial precarity (21). To date, regional epidemiological research has relied mostly on univariable cross-tabulations, which fail to account for the overlapping effects of socioeconomic distress and psychological coping on addiction severity. The present study addresses this gap by utilizing a multivariable logistic regression framework to isolate independent predictors of dependence severity within a clinical cohort at the Casablanca Addictology Centre.

2. METHODOLOGY

2.1. Participants and Clinical Setting

This descriptive, cross-sectional clinical study was carried out between April and November 2020 at the Casablanca Addictology Centre of the Ibn Rochd University Hospital. This facility serves as the primary tertiary psychiatric and addiction reference center in Morocco. A total of 117 patients, encompassing both active inpatients and ambulatory outpatients, were enrolled using non-probability consecutive sampling.

The inclusion criteria required participants to be between 18 and 65 years of age, to be actively receiving care or follow-up at the center, to possess the cognitive capacity to consent, and to fulfill the diagnostic criteria for at least one Substance Use Disorder according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). The age threshold was strictly enforced in accordance with institutional protocols; adolescent patients were redirected to child psychiatry units, and individuals over 65 were managed by psychogeriatric teams. Patients presenting with altered states of consciousness, advanced cognitive decline, or acute psychotic symptoms that prevented a standard clinical interview were excluded from the study.

2.2. Measures and Psychometric Instruments

Data collection was conducted through face-to-face, semi-structured clinical interviews led by trained addiction specialists. The evaluation protocol comprised three core modules:

Socio-demographic and Perceived Pandemic Stress: Socio-demographic variables and perceived pandemic stress were compiled using categorical indicators. Perceived stress was captured through specific inquiries measuring psychological distress tied to pandemic health information, alongside confinement-related financial worries and immediate employment loss. (22,23)

- **Addiction Severity Scales:** Addiction severity was classified into distinct clinical strata using three internationally validated screening instruments. The Fagerström Test for Nicotine Dependence (FTND)

quantified tobacco dependence severity (24). The Cannabis Abuse Screening Test (CAST) measured cannabis consumption patterns (25), and the Alcohol Use Disorders Identification Test (AUDIT) evaluated alcohol use severity and dependence risks(26).

- **Coping Architecture (Brief COPE):** Psychological coping strategies were measured using the French version of the Brief COPE questionnaire (22,23). To ensure structural validity and statistical power within a North African clinical context, the 14 subscales were aggregated into the four-factor framework validated by **Baumstarck et al. (2017)**(22). This structure consolidates the inventory into four main dimensions: Social Support (emotional support, instrumental support, venting, and religion), Problem Solving (active coping and planning), Avoidance (denial, substance use, behavioral disengagement, self-distraction, and self-blame), and Positive Thinking (positive reframing, humor, and acceptance).

2.3. Statistical Analysis

Statistical processing was performed using SPSS version 22.0. Continuous variables were expressed as means (M) with standard deviations (SD), while categorical attributes were summarized as frequencies and percentages. To analyze clinical divergence, the cohort was stratified into two functional groups based on standardized psychometric cut-offs: Group G1 represented mild or non-dependent presentation, and Group G2 encompassed moderate-to-severe dependence.

Bivariate comparisons were conducted using the Chi-squared test or Fisher's exact test for categorical proportions, and Student's t-test or the Mann-Whitney U test for continuous scores.

To control for confounding variables and isolate independent predictors of severe addiction (Group G2), separate multivariable logistic regression analyses were computed for the tobacco (n = 83), cannabis (n = 103), and alcohol (n = 97) subgroups. Variables demonstrating a probability value below 0.20 in bivariate screening, alongside clinically relevant factors, were entered simultaneously into the regression models. Goodness-of-fit was evaluated using the Hosmer-Lemeshow test. Adjusted Odds Ratios (aOR) and their 95% Confidence Intervals (CI) were calculated, with the alpha level for statistical significance set strictly at $p < 0.05$. Continuous p-values were formatted to three decimal places, and values below 0.001 were standardized using the $p < 0.001$ notation.

2.4. Ethical Considerations

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Due to the exceptional operational constraints, administrative disruptions, and hospital reconfigurations during the first wave of the strict national COVID-19 lockdown in Morocco, formal prospective registration with an Institutional Review Board could not be completed.

To safeguard participant rights, clinicians provided a comprehensive verbal and written overview of the study's scientific objectives, data protection protocols, and the voluntary nature of participation. Formal written and oral informed consent was obtained from every patient prior to evaluation. No financial incentives were provided, and participants received a personalized feedback synthesis of their psychometric results as a direct clinical benefit.

3. RESULTS

3.1. Socio-Demographic Profile and Perceived Pandemic Stress

The final sample comprised 117 adult patients. As shown in **Table 1**, the sample exhibited a distinct male predominance (87.18%, n = 102) and a high concentration of young adults, with 47.86% (n = 56) of the participants falling into the 18–30 age range. Social precarity was prominent: 65.83% (n = 77) were single, and 36.75% (n = 43) reported being unemployed at the time of evaluation.

Baseline Characteristics	Sample Size (n)	Percentage (%)
Age Distribution (years)		
– 18–30	56	47.86
– 31–40	32	27.35
– 41–50	17	14.53
– > 50	12	10.26
Gender Stratification		
– Men	102	87.18
– Women	15	12.82

Baseline Characteristics	Sample Size (n)	Percentage (%)
Marital Status		
— Single	77	65.83
— Married	24	20.51
— Divorced	14	11.94
— Widowed	2	1.72
Educational Attainment		
— Primary education	14	11.96
— Secondary education	58	49.57
— Bachelor	27	23.07
— University degree	3	2.56
— Not Provided (NP)	15	12.84
Employment Status		
— Student	13	11.11
— Employed / Liberal	30	25.64
— Workman	6	5.12
— Unemployed	43	36.75
— Not Provided (NP)	25	21.38
Perceived Pandemic Stress (Health Information Overload)		
— Extremely	50	42.74
— Moderately	28	23.93
— Somewhat	24	20.51
— Not at all	11	9.40
— Not Provided (NP)	4	3.42
Perceived Pandemic Stress (Financial Precarity & Job Loss)		
— Extremely	49	41.88
— Moderately	20	17.09
— Somewhat	24	20.51
— Not at all	20	17.10
— Not Provided (NP)	4	3.42

Table 1. Socio-demographic profile and clinical stress configuration of the cohort (N = 117)

Note: N: Total number of participants; n: Sub-group frequency

Subjective pandemic stress was widespread. Extreme psychological anxiety regarding medical information related to COVID-19 was voiced by 42.74% (n = 50) of respondents, and 41.88% (n = 49) reported extreme distress stemming from confinement-induced financial disruption and potential job loss.

3.2. Psychometric Distribution of Coping Strategies

Psychometric individual profiling of the 14 behavioral subscales of the Brief COPE questionnaire showed that self-blame presented the highest mean score within the cohort (M = 2.83, SD = 0.86). This mechanism was followed by reactive substance use (M = 2.82, SD = 1.15), religious coping (M = 2.62, SD = 1.09), and emotional support seeking (M = 2.61, SD = 0.95). Factorial aggregation confirmed the general preponderance of the Avoidance cluster across the entire sample (Table 2).

Psychometric Subscales (Brief COPE)	Question Item A (M ± SD)	Question Item B (M ± SD)	Total Average (M ± SD)	Validated Four-Factor Dimension
1. Self-blame	3.01 ± 0.86	2.66 ± 0.82	2.83 ± 0.86	Avoidance
2. Religion	2.55 ± 1.08	2.68 ± 1.10	2.62 ± 1.09	Social Support
3. Using Emotional Support	2.60 ± 0.97	2.61 ± 0.93	2.61 ± 0.95	Social Support
4. Using Instrumental Support	2.53 ± 0.86	2.50 ± 0.90	2.51 ± 0.88	Social Support
5. Substance Use	3.11 ± 1.15	2.54 ± 1.16	2.82 ± 1.15	Avoidance
6. Venting (Focus on Emotions)	2.43 ± 0.93	2.40 ± 0.82	2.41 ± 0.88	Social Support
7. Acceptance	2.67 ± 0.86	2.14 ± 0.88	2.41 ± 0.91	Positive Thinking
8. Active Coping	2.25 ± 0.87	2.51 ± 0.85	2.38 ± 0.87	Problem Solving
9. Planning	2.39 ± 0.84	2.48 ± 0.86	2.43 ± 0.85	Problem Solving

Psychometric Subscales (Brief COPE)	Question Item A (M ± SD)	Question Item B (M ± SD)	Total Average (M ± SD)	Validated Four-Factor Dimension
10. Positive Reframing	2.46 ± 0.93	2.17 ± 0.70	2.32 ± 0.84	Positive Thinking
11. Behavioral Disengagement	2.21 ± 0.81	2.17 ± 1.06	2.19 ± 0.94	Avoidance
12. Self-distraction	1.31 ± 0.69	3.04 ± 0.84	2.18 ± 1.16	Avoidance
13. Denial	2.02 ± 1.06	1.98 ± 0.92	2.00 ± 0.99	Avoidance
14. Humor	1.92 ± 1.02	1.56 ± 0.77	1.74 ± 0.92	Positive Thinking

Table 2. Mean distribution of Brief COPE psychometric subscales and aggregated structural dimensions (N = 117)

Note: SD: Standard Deviation; Min: Minimum; Max: Maximum. Scores are based on the four-factor structural aggregation.

3.3. Bivariate Associations with Addiction Severity

3.3.1. Tobacco Subgroup (n = 83)

As shown in **Table 3**, bivariate screenings indicated that moderate-to-severe tobacco dependence (Group G2) was significantly linked to single status (84.00% in G2 vs 48.48% in G1; $p < 0.001$), unemployment ($p = 0.005$), and extreme information-induced stress ($p = 0.007$). Psychometrically, severe profiles displayed significantly higher substance use coping scores ($M = 2.78 \pm 1.04$ vs $M = 1.94 \pm 1.24$; $p < 0.001$). Conversely, the mild group G1 relied significantly more on active coping ($p < 0.001$), planning ($p < 0.001$), and spiritual-religious coping ($M = 3.17 \pm 1.06$ vs $M = 2.39 \pm 1.07$; $p < 0.001$).

Clinical and Psychometric Variables	Group G1 (Mild) n = 33	Group G2 (Mod-to-Sev) n = 50	p-value
Socio-Demographic Stratification			
Male gender	29 (87.87%)	46 (92.00%)	0.231
Age > 50 years	7 (21.21%)	2 (4.00%)	0.010
Single marital status	16 (48.48%)	42 (84.00%)	< 0.001
Married marital status	13 (39.39%)	4 (8.00%)	0.0005
Unemployed / Precarious status	7 (21.21%)	23 (46.00%)	0.005
Pandemic Environmental Stress			
Extreme health information stress	20 (60.60%)	15 (30.00%)	0.007
Extreme financial worry	19 (57.57%)	22 (44.00%)	0.211
Brief COPE Dimensions (M ± SD)			
Active coping (<i>Problem Solving</i>)	2.78 ± 0.83	2.25 ± 0.81	< 0.001
Coping planning (<i>Problem Solving</i>)	2.71 ± 0.87	2.13 ± 0.78	< 0.001
Substance use coping (<i>Avoidance</i>)	1.94 ± 1.24	2.78 ± 1.04	< 0.001
Behavioral disengagement (<i>Avoidance</i>)	2.48 ± 0.99	2.07 ± 0.91	0.009
Spiritual-Religious coping (<i>Social Support</i>)	3.17 ± 1.06	2.39 ± 1.07	< 0.001
Positive reinterpretation (<i>Positive Thinking</i>)	2.61 ± 0.76	2.17 ± 0.86	0.0008
Instrumental support seeking (<i>Social Support</i>)	2.76 ± 0.77	2.35 ± 0.88	0.001
Expressing emotion (<i>Social Support</i>)	2.70 ± 0.82	2.25 ± 0.81	0.0008
Self-blame (<i>Avoidance</i>)	2.89 ± 0.95	2.80 ± 0.84	0.612

Table 3. Bivariate clinical screening of factors associated with Tobacco addiction severity (n = 83)

Note: Dependency severity determined by the Fagerström Test for Nicotine Dependence (FTND). Bold p-values indicate statistical significance at the $p < 0.05$ threshold.

3.3.2. Cannabis Subgroup (n = 103)

In **Table 4**, severe clinical presentations (G2) were significantly associated with younger age ($p = 0.009$), single status (80.95% vs 52.45%; $p = 0.003$), and unemployed status ($p = 0.030$). Behaviorally, group G2 preferentially used substance-based coping ($M = 3.01 \pm 0.90$ vs $M = 2.10 \pm 1.16$; $p < 0.001$). Mild profiles (G1) displayed higher scores for active coping ($M = 2.67 \pm 0.81$ vs $M = 2.04 \pm 0.81$; $p < 0.001$) and spiritual-religious configurations ($M = 2.82 \pm 1.15$ vs $M = 2.33 \pm 0.94$; $p = 0.001$).

Clinical and Psychometric Variables	Group G1 (Mild) n = 61	Group G2 (Mod-to-Sev) n = 42	p-value
Socio-Demographic Stratification			
Male gender	50 (81.96%)	38 (90.47%)	0.211
Age range 25–30 years	4 (6.55%)	10 (23.80%)	0.010
Single marital status	32 (52.45%)	34 (80.95%)	0.003
Married marital status	18 (29.50%)	4 (9.52%)	0.010
Unemployed status	17 (27.86%)	20 (47.61%)	0.030
Pandemic Environmental Stress			
Extreme health information stress	35 (57.37%)	9 (21.42%)	0.0005
Moderate job/financial worry	8 (13.11%)	15 (35.71%)	0.006
Brief COPE Dimensions (M ± SD)			
Active coping (<i>Problem Solving</i>)	2.67 ± 0.81	2.04 ± 0.81	< 0.001
Coping planning (<i>Problem Solving</i>)	2.49 ± 0.83	2.14 ± 0.81	0.003
Substance use coping (<i>Avoidance</i>)	2.10 ± 1.16	3.01 ± 0.90	< 0.001
Spiritual-Religious coping (<i>Social Support</i>)	2.82 ± 1.15	2.33 ± 0.94	0.001
Positive reinterpretation (<i>Positive Thinking</i>)	2.48 ± 0.85	2.11 ± 0.82	0.002
Instrumental support seeking (<i>Social Support</i>)	2.48 ± 0.87	2.37 ± 0.89	0.020
Expressing emotion (<i>Social Support</i>)	2.60 ± 0.88	2.21 ± 0.81	0.001
Self-blame (<i>Avoidance</i>)	2.91 ± 0.90	2.77 ± 0.82	0.311

Table 4. Bivariate clinical screening of factors associated with Cannabis addiction severity (n = 103)

Note: Dependency severity determined by the Cannabis Abuse Screening Test (CAST). Bold *p*-values indicate statistical significance at the *p* < 0.05 threshold.

3.3.3. Alcohol Subgroup (n = 97)

Analyses for alcohol (**Table 5**) associated advanced clinical severity (G2) with female gender (33.33% vs 10.53%; *p* = 0.010) and divorced marital status (33.33% vs 6.57%; *p* < 0.001). Group G2 deployed significantly higher substance use coping (M = 2.88 ± 0.91 vs M = 2.35 ± 1.21; *p* = 0.0036), paired with a systemic reduction in positive reinterpretation (*p* = 0.002) and planning (*p* = 0.010).

Clinical and Psychometric Variables	Group G1 (Mild) n = 76	Group G2 (Mod-to-Sev) n = 21	p-value
Socio-Demographic Stratification			
Male gender	68 (89.47%)	14 (66.66%)	0.010
Divorced marital status	5 (6.57%)	7 (33.33%)	< 0.001
Unemployed status	31 (40.78%)	6 (28.57%)	0.231
History of comorbid psychiatric disorders	35 (46.05%)	6 (28.57%)	0.114
Suicidal ideation during confinement	19 (25.00%)	6 (28.57%)	0.512
Brief COPE Dimensions (M ± SD)			
Substance use coping (<i>Avoidance</i>)	2.35 ± 1.21	2.88 ± 0.91	0.0036
Positive reinterpretation (<i>Positive Thinking</i>)	2.40 ± 0.85	1.98 ± 0.75	0.002
Coping planning (<i>Problem Solving</i>)	2.45 ± 0.89	2.10 ± 0.76	0.010
Active coping (<i>Problem Solving</i>)	2.44 ± 0.92	2.18 ± 0.75	0.155
Spiritual-Religious coping (<i>Social Support</i>)	2.68 ± 1.13	2.38 ± 1.05	0.198
Self-blame (<i>Avoidance</i>)	2.91 ± 0.88	2.66 ± 0.79	0.155

Table 5. Bivariate clinical screening of factors associated with Alcohol addiction severity (n = 97)

Note: Dependency severity determined by the Alcohol Use Disorders Identification Test (AUDIT). Bold *p*-values indicate statistical significance at the *p* < 0.05 threshold.

3.4. Detailed Multivariable Logistic Regression Findings

To isolate independent behavioral and socio-demographic predictors of advanced severity, separate multivariable logistic regression analyses were computed across all three clinical matrices as shown in **table 6**.

Tobacco Clinical Severity Model (n = 83): Unemployment status, which appeared highly significant during

univariable screening, lost clinical significance after simultaneous adjustment (aOR = 1.43, 95% CI [0.49 – 4.19], $p = 0.510$). Similarly, single marital status demonstrated only a non-significant statistical trend (aOR = 3.31, 95% CI [0.92 – 11.92], $p = 0.066$). Crucially, reactive substance use coping emerged as a highly powerful, independent predictor of severe tobacco dependence, multiplying the odds of falling into the severe clinical category (G2) by 2.43 (aOR = 2.43, 95% CI [1.32 – 4.43], $p = 0.004$). Conversely, active problem-focused coping (aOR = 0.42, 95% CI [0.19 – 0.93], $p = 0.032$) and communal spiritual-religious configurations (aOR = 0.50, 95% CI [0.29 – 0.87], $p = 0.014$) remained independently and highly protective against nicotine severity.

Cannabis Clinical Severity Model (n = 103): Univariable socioeconomic predictors like unemployment status were similarly attenuated and rendered non-significant (aOR = 1.78, 95% CI [0.71 – 4.48], $p = 0.215$). However, single marital status stood out as an independent risk generator, tripling the likelihood of advanced cannabis clinical severity (aOR = 3.02, 95% CI [1.12 – 8.09], $p = 0.027$). On a behavioral level, reactive substance use coping demonstrated an exceptionally strong risk profile, nearly tripling the odds of severe clinical dependency (aOR = 2.94, 95% CI [1.60 – 5.41], $p < 0.001$). Active problem solving remained highly protective against severe dependence (aOR = 0.53, 95% CI [0.30 – 0.92], $p = 0.026$). Spiritual-religious coping completely lost its independent significance within the cannabis subgroup once fully adjusted for avoidant variables (aOR = 0.76, 95% CI [0.49 – 1.18], $p = 0.233$).

Alcohol Clinical Severity Model (n = 97): In the multivariable regression matrix for alcohol dependencies, unemployed status remained statistically non-significant after adjustment (aOR = 1.12, 95% CI [0.38 – 3.29], $p = 0.831$). However, divorced marital status remained a powerful, independent predictor of severe alcohol clinical presentations, multiplying the likelihood of severe dependence (G2) by more than three (aOR = 3.48, 95% CI [1.41 – 8.58], $p = 0.007$). Behaviorally, reactive substance use coping maintained a significant independent risk profile (aOR = 2.21, 95% CI [1.22 – 4.01], $p = 0.008$). Conversely, positive reinterpretation maintained its independent protective value within this model (aOR = 0.39, 95% CI [0.18 – 0.85], $p = 0.018$).

Clinical Subgroups and Predictors Entered	Adjusted Odds Ratio (aOR)	95% Confidence Interval (CI)	p-value	Clinical Classification
Tobacco Severity Model (n = 83)				
Single Marital Status	3.31	(0.92 – 11.92)	0.066	Non-Significant Trend
Unemployed Status	1.43	(0.49 – 4.19)	0.510	Attenuated/Confounder
Active Coping (Problem Solving)	0.42	(0.19 – 0.93)	0.032	Independent Protective Factor
Spiritual-Religious Coping	0.50	(0.29 – 0.87)	0.014	Independent Protective Factor
Substance Use Coping (Avoidance)	2.43	(1.32 – 4.43)	0.004	Independent Risk Factor
Cannabis Severity Model (n = 103)				
Single Marital Status	3.02	(1.12 – 8.09)	0.027	Independent Risk Factor
Unemployed Status	1.78	(0.71 – 4.48)	0.215	Non-Significant Trend
Active Coping (Problem Solving)	0.53	(0.30 – 0.92)	0.026	Independent Protective Factor
Spiritual-Religious Coping	0.76	(0.49 – 1.18)	0.233	Attenuated/Confounder
Substance Use Coping (Avoidance)	2.94	(1.60 – 5.41)	< 0.001	Independent Risk Factor
Alcohol Severity Model (n = 97)				
Divorced Marital Status	3.48	(1.41 – 8.58)	0.007	Independent Risk Factor
Unemployed Status	1.12	(0.38 – 3.29)	0.831	Non-Significant Trend
Positive Reframing	0.39	(0.18 – 0.85)	0.018	Independent Protective Factor
Substance Use Coping (Avoidance)	2.21	(1.22 – 4.01)	0.008	Independent Risk Factor

Table 6. Multivariable Logistic Regression Predictors of Moderate-to-Severe Addiction (Group G2) across separate substance models

Note: aOR: Adjusted Odds Ratio; CI: Confidence Interval. Baseline models are adjusted for age, gender, and educational attainment. Bold p-values indicate statistical significance at the $p < 0.05$ threshold.

4. DISCUSSION

The results of this multivariable investigation demonstrate that under acute environmental crisis conditions, reactive chemical avoidance drives severe addiction escalation when cognitive options for positive reframing and executive problem-solving are neutralized. The powerful independent risk generated by avoidant coping strategies across all substance categories confirms that when patients face unprecedented environmental stress combined with limited social mobility, they default to chemical consumption as a primary, dysfunctional regulatory loop. This mechanism is particularly dangerous in individuals with pre-existing addictive disorders, as it accelerates the neurobiological transition toward compulsive drug-seeking behaviors.

The divergent behavioral profile observed regarding the use of religion as a coping strategy—effective in protecting nicotine users but ineffective against cannabis—highlights sociocultural and legal dynamics highly specific to the North African context (16). In Morocco, the institutional stigma and legal criminalization of illicit drug possession generate major moral conflicts for dependent individuals placed under forced confinement (27). While socially tolerated tobacco use can integrate into spiritual support networks, illicit cannabis use directly contradicts religious imperatives (28). For these patients, this misalignment breeds moral distress and heightened guilt, completely neutralizing the buffering effect traditionally expected from spiritual support (28).

Furthermore, the systemic collapse of positive thinking among severe alcohol patients indicates that severe configurations of alcohol use disorders significantly impair executive cognitive flexibility. This cognitive impairment leaves individuals uniquely unable to employ adaptive psychological reframing or maintain look-forward optimization strategies during periods of prolonged isolation. Interpersonal disruptions, such as single and divorced statuses, further interact with these deficits by removing the external accountability structures and emotional support systems that normally help mitigate behavioral drift.

The heavy predominance of men within our cohort (87.18%) also warrants critical clinical attention. Far from reflecting an epidemiological reality of lower addiction prevalence among Moroccan women, this asymmetry reveals the existence of deeply rooted barriers to care (29). In Morocco, female substance use remains an absolute taboo, triggering particularly violent familial rejection and social ostracization. Consequently, female patients suffering from SUD face a double stigma that increases clinical underreporting and creates an invisible barrier, drastically delaying or preventing their access to public reference centers such as the Casablanca Addictology Centre (30).

4.1. Comparative Analysis Based on the Four-Factor Coping Architecture and Substance Matrices

The clinical triangulation of univariable indicators with adjusted multivariable regression models allows for an explicit analysis of how distinct behavioral coping mechanisms dictate addiction severity under acute environmental restriction (9,22). A critical epidemiological finding of this study is that socio-economic precarity markers—such as unemployment—entirely lose their direct statistical significance once internal psychological coping architectures are introduced into the multivariable equations, as clearly demonstrated across the columns of **Table 6** (Tobacco: $p = 0.510$; Cannabis: $p = 0.215$; Alcohol: $p = 0.831$). This demonstrates that macro-environmental distress does not directly drive clinical severity; rather, it creates an absolute structural void, leaving specific psychological coping dimensions to dictate the trajectory of clinical escalation (1,10).

Furthermore, these findings validate the application of Lazarus and Folkman's transactional model within non-Western populations experiencing systemic trauma, showing that the cognitive appraisal of a threat acts as the primary gatekeeper for subsequent behavioral pathology (2,9). When external avenues for action are blocked, the internal processing of stress shifts from functional environmental manipulation to automated emotional regulation, frequently resulting in secondary clinical crises (3,31).

4.1.1. The Avoidance Cluster: Substance-Specific Profiles and Group Cleavages

The *Avoidance* dimension—comprising reactive substance use, self-blame, denial, behavioral disengagement, and self-distraction—emerged as the dominant behavioral response across the overall cohort, as statistically captured by the elevated baseline means in **Table 2** (12,22). In the adjusted predictive models consolidated in **Table 6**, reactive substance use coping stands out as the primary cross-cutting engine of severe clinical presentations (Group G2), yet its behavioral deployment reflects highly distinct neurobiological and substance-specific pathways (32,33):

The Cannabis subgroup : Patients in the severe group (G2) exhibited the highest substance-related avoidant scores ($M = 3.01 \pm 0.90$) compared to mild cases (G1) ($M = 2.10 \pm 1.16$) in **Table 4**, identifying cannabis as a

primary choice for chemical sedation against confinement distress (5). This behavioral mechanism was further exacerbated by interpersonal fragmentation, as single marital status functioned as a statistically robust independent risk factor exclusively in this subgroup (**Table 6**, aOR = 3.02, 95% CI [1.12 – 8.09]), showing how social isolation feeds avoidant consumption loops(13). Clinically, this suggests that the loss of structural daily interactions during lockdowns triggers an accelerated reliance on the sedative properties of tetrahydrocannabinol (THC) to numb existential emptiness and chronic boredom(34) .

The Tobacco subgroup: Avoidant substance use coping remained a significant independent risk predictor, multiplying the odds of advanced clinical dependence by 2.43 (**Table 6**, aOR = 2.43, 95% CI [1.32 – 4.43], $p = 0.004$). This strong adjusted effect controls for the raw univariable cross-tabulations in **Table 3**, where avoidance operated as a highly repetitive, background emotional stabilizer to manage chronic environmental uncertainty (1,35). Nicotine's short half-life promotes a high frequency of consumption, making it an ideal ritualized regulator of psychophysiological tension during periods of prolonged restriction(14) .

The Alcohol Cleavage: As shown in **Table 5**, Group G2 displayed a significant univariable elevation in avoidant substance coping ($M = 2.88 \pm 0.91$) compared to Group G1 ($M = 2.35 \pm 1.21$). This maladaptive deployment was heavily concentrated among female and divorced patients in bivariate screenings (36), bringing to light a hidden, gendered vulnerability within the Moroccan urban matrix. This is confirmed by the alcohol multivariable model in **Table 6** where divorced status acts as an independent risk generator (aOR = 3.48, 95% CI [1.41 – 8.58]), illustrating how severe marital disruption exalts avoidant chemical coping mechanisms under isolation (6). In a socio-cultural setting where female alcohol consumption is heavily stigmatized, the home environment under lockdown became a closed ecosystem where private, avoidant drinking could escalate undetected by public healthcare networks (7,16).

Neurobiologically, this heavy reliance on chemical avoidance reflects a maladaptive modulation of an over-activated allostatic load. Chronic, unresolving distress dysregulates the hypothalamic-pituitary-adrenal (HPA) axis and increases extrahypothalamic corticotropin-releasing factor (CRF) activity, triggering intense, unmodulated cravings within the meso-corticolimbic dopamine pathway that drive immediate consumption loops (32,37). Over time, this repetitive chemical self-medication downregulates endogenous dopamine receptors, locking the patient into an allostatic spiral where the substance is required merely to maintain a baseline affect, accelerating clinical deterioration from Group G1 to Group G2 (32).

4.1.2. The Problem Solving Cluster: The Clinical Shield of Group G1

The *Problem Solving* dimension, driven by active coping and planning, functioned as a critical mechanism for maintaining clinical stability across the entire sample (**Table 2**, Active Coping $M = 2.38 \pm 0.87$; Planning $M = 2.34 \pm 0.85$) (22,38). It established a robust statistical boundary between the two severity profiles:

In both the **tobacco** and **cannabis** groups, mild patients (G1) displayed significantly higher scores for active coping and planning ($p < 0.001$) than severe patients (G2) in **Table 3** and **Table 4**. For Group G1, the capacity to structure daily environments and actively solve immediate life stressors served as a protective shield (**Table 6**, Tobacco active coping: aOR = 0.42 ; Cannabis active coping: aOR = 0.53)(39). This preservation of executive functioning allows patients to engage in proactive behavioral reframing, maintaining substitute routines (such as home exercise or structured remote work) that intercept the automatic cue-reactivity cycles of addiction (15,21).

In the **alcohol** cohort, a sharp neuro-cognitive divide appeared: Group G1 successfully maintained problem-focused planning scores ($M = 2.45 \pm 0.89$), whereas Group G2 experienced a near-total collapse of this capacity ($M = 2.10 \pm 0.76$) in **Table 5**. This indicates that moderate-to-severe alcohol dependence actively compromises the executive functions required to implement problem-solving strategies, widening the functional gap between G1 and G2 (37). Prolonged ethanol exposure induces neurotoxicity in the prefrontal cortex, specifically impairing working memory, cognitive flexibility, and long-term planning (37). Under crisis conditions, this executive deficit leaves the individual cognitively unequipped to map out complex, non-substance-related solutions, forcing an automated regression to immediate chemical gratification (32).

4.1.3. The Social Support Cluster: The Dual Nature of the Spirituo-Religious Axis

The *Social Support* dimension (emotional support, instrumental support, venting, and religion) revealed a deep polarization, split between the loss of external social interfaces and the reconfiguration of internal religious coping, which was highly mobilized in the baseline data (**Table 2**, Religion $M = 2.62 \pm 1.09$; Emotional Support $M = 2.61 \pm 0.95$) (22,40):

Tobacco G1 vs G2: The spiritual-religious component of the social support matrix functioned as a highly effective protective buffer (**Table 6**, aOR = 0.50, 95% CI [0.29 – 0.87], $p = 0.014$)(41,42). Group G1 patients effectively used devotional practices ($M = 3.17 \pm 1.06$) compared to Group G2 ($M = 2.39 \pm 1.07$) in **Table 3** as

an adaptive cognitive scaffold to suppress continuous nicotine cravings (43). In this sub-cohort, private religious practices (such as individual prayer, Quranic recitation, and internalizing themes of patience/Sadr) provided an alternative cognitive framework that re-anchored the individual's locus of control, successfully neutralizing autonomic anxiety without a reliance on clinical escalation (44,45).

Cannabis G1 vs G2: Religion completely lost its independent protective value after multivariable adjustment, showing a non-significant outcome in **Table 6** (aOR = 0.76, 95% CI [0.49 – 1.18], $p = 0.233$). Due to the nationwide mandatory closure of mosques, the horizontal, collaborative network of Islamic coping was fractured (18,44). In Moroccan society, spiritual resilience is deeply relational, relying on congregational prayers, communal spiritual gatherings, and localized mutual aid networks(18) . By locking down these physical spaces, severe patients were cut off from their primary supportive matrix, preventing positive religious reappraisal.

Consequently, in patients with advanced addiction severity, this intense isolation triggered a distinct psychiatric phenomenon known as "**spiritual struggle**"(43). Within a cultural setting where cannabis and alcohol consumption are surrounded by strict religious prohibitions (*Haram*), severe patients experienced extreme moral anxiety and internalized stigma, which closely aligns with the cohort's elevated self-blame scores in **Table 2** ($M = 2.83$, $SD = 0.86$).

Instead of acting as an adaptive, protective buffer, religiosity transformed into an acute source of distress, where patients perceived their addiction and the global pandemic as a form of divine abandonment or punitive judgment(45) . This internal crisis trapped advanced patients in a self-destructive cycle: the psychological pain of spiritual guilt and existential alienation drove an immediate, reactive search for avoidant chemical relief, a pattern heavily pronounced among severe cannabis users due to heightened local legal risks (7,32).

4.1.4. The Positive Thinking Cluster: Cognitive Fragmentation in Alcohol Dependency

The *Positive Thinking* dimension—consisting of positive reframing, acceptance, and humor—showed the lowest overall baseline utilization across the severe chapters (G2), highlighting a significant degree of cognitive exhaustion (**Table 2**, Humor $M = 1.74 \pm 0.92$) (22,46):

While acceptance remained stable across the mild tobacco and cannabis subgroups, **severe alcohol profiles (G2)** exhibited an extensive and systematic reduction in positive reinterpretation ($p = 0.002$) compared to Group G1 in **Table 5**.

This specific collapse is validated by the alcohol multivariable model in **Table 6**, where positive reframing stands out as an independent protective anchor (aOR = 0.39, 95% CI [0.18 – 0.85], $p = 0.018$) that is completely lost in severe clinical presentations. Cognitive reframing is an effortful, top-down psychological mechanism that relies heavily on cortical energy reserves and positive environmental feedback(45,46) . When structural options disappear (such as informal daily labor, which was disrupted for 36.75% of the unemployed sample in **Table 1**) and relational boundaries collapse (evidenced by the elevated risk among divorced individuals), the psychological capacity for positive reframing fails(6,20) . For Group G2, the total breakdown of positive thinking left chemical avoidance as the final, accessible option for distress management, highlighting a clear path of neuro-cognitive fragmentation under prolonged environmental restriction(47).

4.2. Methodological Limitations

Several limitations must be considered when interpreting these results. The cross-sectional design precludes any definitive causal inferences regarding the direction of the relationship between pandemic stress, coping configurations, and dependence severity. Furthermore, our sample size ($N = 117$) and its confinement to a single tertiary reference facility in Casablanca restrict the generalizability of these findings to non-treatment-seeking or rural populations across Morocco. Additionally, we acknowledge a potential psychometric overlap between the specific "substance use" coping items within the Brief COPE inventory and the clinical symptoms of severe dependence quantified by the AUDIT, CAST, and FTND. However, our multivariable models demonstrate that even when controlling for general socioeconomic factors, the explicit intentionality of using chemical substances as a primary cognitive regulatory loop remains a highly distinct predictive risk pathway. Finally, while the findings regarding severe alcohol dependencies (Group G2, $n = 21$) isolate crucial gendered and marital risk factors within the Moroccan urban matrix, the relatively small size of this severe sub-cohort requires caution, and these specific multivariable indicators should be replicated in larger regional samples. Reliance on face-to-face self-reported psychometric inventories remains vulnerable to social desirability and recall biases. These biases are likely amplified by the legal landscape surrounding illicit substances in Morocco, highlighting the value of incorporating longitudinal designs and biological toxicology validations in future prospective research to firmly trace behavioral adaptation pathways over time.

5. CONCLUSION

This empirical study demonstrates that individuals with SUD followed at the Casablanca Addictology Centre predominantly relied on maladaptive avoidance—principally reactive substance use and self-blame—to navigate the acute psychological distress of the COVID-19 pandemic. Our multivariable analysis isolates reactive substance use as a powerful, independent risk engine for severe dependence across tobacco, cannabis, and alcohol matrices, while confirming that active coping acts as an independent protective shield. Consequently, future public health strategies and emergency preparedness frameworks in Morocco must transition away from purely restrictive medical models toward integrated, culturally competent interventions. A successful response requires a comprehensive approach that incorporates various healthy coping mechanisms, such as physical exercise, social support, and appropriate clinical monitoring for existing health issues. Clinically, these data support the systematic implementation of structured Cognitive Behavioral Therapy (CBT) protocols at the Casablanca Addictology Centre, specifically focused on relapse prevention and the enhancement of executive "Problem Solving" skills to intercept automated chemical avoidance during acute life crises. Crucially, mental health frameworks should formally integrate localized cultural and religious practices—remodeling them into verified tools of active, non-stigmatized coping to enhance long-term resilience and therapeutic retention during national crises.

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