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Drug Abuse and Career Instability in Karachi, Pakistan: A Cross-Sectional Analysis of Legal, Social, and Psychological Correlates

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Abstract

Drug abuse remains a critical public health and social issue in Pakistan, particularly in Karachi, where urban stressors and drug availability are associated with career instability among youth and working adults. This quantitative cross-sectional study examined correlational associations between drug abuse and career instability, focusing on the statistical decomposition of associations involving legal, social, and psychological consequences. Data were collected from 120 respondents in Karachi (60 self-reported drug users, 60 non-users). Path decomposition using bootstrapping (5,000 resamples) produced indirect path coefficients consistent with partial statistical association for legal consequences (indirect coefficient = 0.20, 95% CI [0.09, 0.33]), social consequences (0.13, 95% CI [0.04, 0.24]), and psychological consequences (0.21, 95% CI [0.11, 0.34]). The direct coefficient remained significant (B = 0.42, 95% CI [0.26, 0.58]) in models containing each correlate. A chi-square test showed significant association between drug use status and job loss, $\chi^2(1) = 23.18$, $p < .001$, Cramer's V = 0.44. These findings describe associations only; the cross-sectional design cannot distinguish among competing causal directions, including reverse causation, unmeasured confounding, or common method variance. The term "path coefficient" is used throughout to avoid causal claims. Post-hoc power analysis indicated approximately 50 percent power to detect modest interaction effects; consequently, null moderation findings for age and gender are uninformative and not interpreted. Descriptive findings suggest that workplace drug awareness programs, career-focused rehabilitation, and integrated mental health support represent candidate hypotheses for future experimental testing. This study provides hypothesis-generating descriptive evidence to guide future longitudinal research in Pakistan, but causal claims require longitudinal or experimental designs.

Keywords: Drug Abuse, Career Instability, Psychological Well-Being, Cross-Sectional Correlates

Introduction

Drug abuse, defined as the harmful or hazardous use of psychoactive substances including illicit drugs (primarily cannabis, heroin, and prescription opioids) and the misuse of prescription

medication, has become increasingly prevalent in Karachi, Pakistan's largest metropolitan and economic hub. The United Nations Office on Drugs and Crime (2022) estimates that approximately 6.7 million people in Pakistan use psychoactive substances, with opioid use disorder prevalence estimated at 1.6% of the adult population—among the highest in South Asia. In Karachi specifically, treatment admission data suggest concentrated burden in urban low-income settlements.

Several factors are associated with this trend, including unemployment, peer pressure, urban stress, and lack of awareness (Kang et al., 2024). Research among college students in Karachi has specifically identified environmental factors such as peer pressure, urban stressors, and limited awareness as correlates of drug use in the city. Moreover, studies examining socioeconomic conditions among relapsed drug users in Karachi have found that 87 percent face financial difficulties, with unemployment and economic instability reported as key correlates of substance use (Ahmed & Shah, 2024). Career development may be particularly vulnerable to these patterns, as substance abuse is associated with poor job performance, absenteeism, legal troubles, and damaged professional reputation. The direction of causality among these associations remains untested.

Although existing research has focused primarily on the health consequences of drug abuse, limited attention has been given to associations between drug abuse and career instability through legal, social, and psychological pathways. Understanding these statistical associations is essential for designing effective prevention and rehabilitation strategies. Therefore, this study examines associations between drug abuse and career instability and analyzes the statistical indirect components of legal, social, and psychological consequences within the socioeconomic context of Karachi.

Substances covered in this study: The Drug Abuse Behavior scale assessed use of cannabis (hashish/charas), heroin, prescription opioids (e.g., tramadol) obtained without prescription, and methamphetamine/ice. Alcohol was excluded from the definition of "drug abuse" due to cultural and legal distinctions in the Pakistani context, though some participants may have reported alcohol use under "other substances" in open-ended response options.

Problem Statement

Despite growing concern over drug abuse in Pakistan, career related outcomes remain under researched. Most studies focus on prevalence or medical effects, providing little empirical evidence on statistical associations between drug abuse and career stability through legal troubles, social stigma, and psychological distress. Furthermore, no known study in Karachi has quantitatively tested path decomposition or moderation models linking drug abuse to career instability. This gap significantly limits the ability of policymakers, employers, and mental health professionals to design targeted interventions.

Literature Review

The relationship between drug abuse and career instability has been examined across multiple disciplines, yet the evidence base remains fragmented along three central theoretical tensions. Organizing the literature around these tensions clarifies what is known, what remains unknown, and how the present study positions itself relative to existing research.

Tension 1: Direct Versus Mediated Pathways

International research has consistently documented associations between substance use disorders and employment instability, but the field is divided on whether this relationship operates primarily

through direct pharmacological effects on worker productivity or through indirect social and institutional mechanisms.

Evidence suggesting direct effects with temporal precedence comes from daily diary methodology. Duckworth and colleagues (2023) demonstrated that alcohol consumption on a given day significantly predicts next-day absenteeism among young adults, with a dose-response relationship where higher quantities produce more absences. This temporal ordering (predictor precedes outcome within hours) provides stronger evidence for temporal precedence than cross-sectional designs can achieve. However, two qualifications limit generalizability to Pakistan. First, the sample comprised university students and employed young adults in the United States, a population with formal employment protections, sick leave policies, and access to healthcare that differ substantially from Karachi's informal labor market where absenteeism may result in immediate replacement without due process. Second, the study measured only absenteeism, leaving other career outcomes (demotion, wage reduction, license loss) unexamined. Furthermore, substance-specific effects emerged: cannabis use showed no significant association with next-day absenteeism but positive associations with engagement at the between-persons level (Duckworth et al., 2023). This dissociation implies that blanket statements about "drug abuse" may obscure important pharmacological differences, yet the present study aggregates all drugs due to sample size constraints, a limitation addressed in the Discussion.

Evidence for indirect pathways comes from structural barrier research. Bandara and colleagues (2020) found that individuals with felony drug convictions in the United States face significant policy restrictions on housing and employment, a set of barriers collectively termed recovery capital. However, their study measured public attitudes toward removing barriers rather than actual employment outcomes, leaving a gap between attitudes and behavior. Moreover, the legal structures differ between the United States and Pakistan: The United States maintains common law traditions with formal record expungement mechanisms, while Pakistan's civil law system and the Control of Narcotics Substances Act 1997 have not been systematically documented regarding employment disqualifications or expungement procedures. Extending Bandara and colleagues' findings to Pakistan requires empirical testing rather than analogical extrapolation.

The present study directly tests whether indirect pathways (legal, social, and psychological consequences) show detectable indirect statistical components. However, the cross-sectional design cannot determine whether direct effects (absenteeism, cognitive impairment) would overshadow or interact with these indirect pathways if measured simultaneously. The significant direct effect remaining after accounting for mediators (reported in Results) could represent unmeasured direct pathways, reverse causation, or measurement artifact. Each possibility is examined in the Alternative Causal Models section.

Tension 2: Universality Versus Context Specificity of Mediating Mechanisms

A substantial portion of the cited literature originates from high income countries with formal legal systems, employment protections, and welfare state provisions that differ markedly from Pakistan. The assumption that mechanisms operate identically across contexts requires empirical testing rather than theoretical assertion.

The legal consequences literature illustrates this problem. Bandara and colleagues (2020) studied felony drug convictions in the United States, where formal record expungement mechanisms exist, employment discrimination based on criminal history is regulated by state and federal law, and public attitudes have been measured through national surveys. Pakistan lacks systematic expungement procedures, drug law enforcement may involve extrajudicial practices (arrests that do not lead to charges, fines paid to officers without formal adjudication), and professional licensing board practices regarding drug convictions have not been documented. The present

study's legal consequences measure asks about "trouble with police or courts," which may capture a heterogeneous category including formal arrests, informal resolutions, and bribery. This measurement approach cannot distinguish among these qualitatively different events, which may have very different implications for employment. A participant who paid a bribe to avoid formal charges may experience no legal record and therefore no formal employment barrier, whereas a participant who was formally convicted may face professional license disqualification. Aggregating these events into a single legal consequences score may obscure the specific mechanisms that policy interventions would need to address.

The stigma literature presents a similar contextual dependency. Andersen and Kessing (2018) conducted qualitative research in Denmark and identified three prevailing narratives among citizens with problem drug use: encounters where authorities approached participants as a whole person, encounters where participants were submissive, and encounters where authorities downplayed drug problems while imposing unrealistic labor market expectations. The authors conceptualized this third pattern as neo stigmatization, a form of stigmatization arising when welfare state authorities minimize the significance of drug problems while demanding labor market performance, in contrast to traditional stigmatization where drug use is elevated to master status. This framework emerged from the Danish welfare state context, where authorities have both the mandate and the resources to impose labor market expectations. In Karachi, where welfare state provisions are minimal and employment is often informal, the dominant form of stigma may be traditional exclusion rather than neo stigmatization. The present study's social consequences measure (three items asking about avoidance, damaged relationships, and isolation) can detect traditional stigma but cannot distinguish neo stigmatization, which requires measuring whether authorities downplay drug problems while demanding performance. This measurement gap should be addressed in future qualitative research.

The psychological consequences literature has begun to address context specificity directly. Gul and colleagues (2025) developed the first cultural adaptation of Acceptance and Commitment Therapy for Pakistani adults with substance use disorders, emphasizing cultural elements such as language, religious convictions, stigma, and therapeutic expectations. The adapted manual streamlined psychological language, incorporated culturally pertinent metaphors, and integrated religious activities. This adaptation work acknowledges that psychological mechanisms may operate differently in Pakistan compared to Western contexts where the original treatment was developed. The present study's psychological consequences measure (six items asking about anxiety, depression, and decision making) does not capture culturally specific manifestations of psychological distress, such as somatic complaints (headaches, fatigue) that may substitute for emotional expression in Pakistani cultural contexts. Future research should validate culturally adapted mental health measures for this population.

Tension 3: Individual-Level Versus Structural Determinants of Career Outcomes

The literature predominantly focuses on individual-level mediators (psychological distress, social stigma, legal records) while giving less attention to structural factors such as labor market conditions, employer discrimination, and occupational licensing regimes.

Hunter and Jason (2021) found that recovery related discrimination was the driving force distinguishing employed from unemployed men in substance use recovery residing in Oxford Houses, an international network of recovery homes. Men who were not employed reported significantly higher recovery related discrimination than employed men and also reported lower social support scores. The majority of employed men (61.6 percent) agreed they did not need to reveal their recovery status to employers, yet 74.7 percent reported that employers and coworkers were aware of their recovery status, indicating complex disclosure dynamics. However, Oxford

House residents receive structured peer support that is unavailable in most recovery settings. Whether similar discrimination operates in the absence of such support networks remains unknown. Furthermore, the study examined only men, leaving open whether gender moderates the relationship between discrimination and employment.

Structural barriers extend beyond individual-level stigma to formal policies. Bandara and colleagues (2020) documented that professional licensing bodies in the United States maintain disqualification provisions for individuals with drug related convictions. In Pakistan, the Pakistan Medical and Dental Council can revoke or suspend registration for professional misconduct, which includes contravention of drug laws under the Control of Narcotics Substances Act 1997. However, the precise scope of automatic versus discretionary disqualifications has not been systematically documented, nor has the application of these provisions across different occupations (law, engineering, teaching, civil service). The present study's legal consequences measure cannot distinguish whether participants experienced formal professional disqualification, informal employer discrimination, or both.

The caregiver literature introduces a structural dimension often overlooked: career instability may be diffused across household members rather than concentrated on the drug user. Azad and colleagues (2024) conducted qualitative research on caregivers of individuals with substance use disorders in Pakistan, identifying three primary themes: socioeconomic challenges including social isolation and lack of educational resources, economic struggles, and survival skill deficits. Financial instability arose for caregivers because of continuous care responsibilities, which restricted access to professional treatments for their family members. The present study examines only the drug user's career outcomes, leaving unanswered whether career instability is concentrated on users or diffused across household members. If caregivers experience substantial career harm, then studies focusing only on drug users may substantially underestimate the total employment burden of substance use disorders in Pakistan.

Summary of Gaps Addressed by The Present Study

Collectively, the existing literature strongly supports the research problem that substance abuse is associated with disrupted career trajectories, but it does so through compartmentalized lenses that assume universal mechanisms. The present study addresses three specific gaps. First, it provides the first quantitative evidence from Pakistan on whether legal, social, and psychological consequences show detectable indirect statistical components, testing mechanisms that have been examined almost exclusively in high income countries. Second, it includes both men and women in a single sample, though the sample size (N=120) provides only 50 percent power to detect modest interaction effects and lower power for gender subgroup analyses. Consequently, the study cannot provide meaningful evidence about gender moderation and null findings should not be interpreted as evidence of absence. Third, it quantifies the relative magnitude of indirect components for three parallel intermediaries within a single cohort, providing hypothesis generating evidence for future research prioritization. The study does not, and cannot given its cross sectional design, establish causality, rule out alternative explanations, or provide definitive evidence for any specific intervention. These limitations are addressed throughout the methodology and discussion sections.

Table A: Comparison of Construct Measurement across Key Studies

Study (first author, year)	Construct	Measurement approach	Key features affecting generalizability to Pakistan
Duckworth et al., 2023	Absenteeism	Daily diary, single item: "Did you miss school or work yesterday?"	Measures short term, next day effects. Population: US young adults (university students). Employment context: formal sector with sick leave policies.
Bandara et al., 2020	Legal barriers to employment	Survey vignettes measuring public support for removing barriers	Measures attitudes, not actual employment outcomes. Context: US felony system with formal record expungement. Population: US public.
Hunter & Jason, 2021	Recovery related discrimination	Modified version of Everyday Discrimination Scale	Population: men in Oxford House recovery homes (structured support). Context: United States. Employment measured as current status, not longitudinal change.
Andersen & Kessing, 2018	Stigmatization	Qualitative interviews, thematic analysis	Context: Danish welfare state with comprehensive services. Identified neo stigmatization (downplaying drug problems while demanding labor market performance). May not apply where welfare state is minimal.
Javed & Iqbal, 2026	Barriers to help seeking	Qualitative interviews with women in Pakistan	Context: Pakistan. Relevant to gender moderation. Does not measure employment outcomes.
Gul et al., 2025	Culturally adapted ACT treatment	Manual development, cultural adaptation process	Context: Pakistan. Relevant to psychological consequences. Does not measure career outcomes.
Present study	Legal consequences	3 item self-report scale, e.g., "My drug use has led to trouble with police or courts"	Cannot distinguish informal versus formal legal encounters. Does not verify legal records. Self-report only.

Study (first author, year)	Construct	Measurement approach	Key features affecting generalizability to Pakistan
Present study	Career instability	Job loss (single item for chi square) plus 2 item perceived career damage scale	Cannot capture demotion, wage reduction, license loss, or long term earnings trajectories. Self-report only.

Implications of measurement differences for interpretation

The heterogeneity in measurement approaches across studies means that direct comparisons of effect sizes are not meaningful. A finding that legal consequences are statistically consistent with mediation in the present study may indicate any of the following: (a) a true population difference between Karachi and the United States in how legal consequences operate, (b) a measurement difference (self-reported trouble with police versus documented felony convictions), (c) a difference in legal systems (Pakistan's civil law versus US common law), or (d) any combination of these factors. The present study cannot distinguish these possibilities. Future research should prioritize harmonized measurement across settings to enable valid cross national comparisons. Specifically, researchers should develop shared measurement protocols for legal consequences that distinguish formal convictions from informal encounters, for social consequences that distinguish traditional stigma from neo stigmatization, and for career instability that captures multiple dimensions beyond job loss.

Justification for Correlate Selection

Three criteria guided the selection of legal, social, and psychological consequences as statistical correlates rather than alternative mechanisms such as cognitive impairment or absenteeism. First, each correlate must be conceptually distinct from both the independent variable (drug abuse) and the dependent variable (career instability). Legal consequences, including arrest, charges, and convictions, meet this criterion because they arise from institutional responses to drug use rather than from the pharmacological effects of drugs themselves. Social consequences, including stigma, isolation, and reputational damage, represent interpersonal mechanisms that can operate independently of legal status. Psychological consequences, including depression, anxiety, and impaired decision making, capture internal states that may persist after abstinence. Alternative mechanisms such as absenteeism were not measured in this study. Although absenteeism represents a distinct construct from career instability (an employee can miss work without losing employment), the questionnaire did not include absenteeism items. Future research should include absenteeism as either an additional mediator or a separate outcome to enable comparisons of pathway strength. Second, each correlate must be potentially modifiable through intervention. Legal consequences, though determined by statute, can be addressed through policy changes such as record sealing or expungement programs. Social consequences can be targeted through anti stigma campaigns and workplace education. Psychological consequences can be treated through evidence based mental health interventions. In contrast, mechanisms such as irreversible neurocognitive damage from long term substance use, while empirically valid, offer fewer points of policy or clinical intervention. Third, the selected correlates align with the Pakistani policy context. The literature review identified that legal consequences remain understudied in Pakistan despite their apparent severity (Bandara et al., 2020, in United States contexts). Social

consequences feature prominently in Pakistani qualitative research on stigma among caregivers (Azad et al., 2024) and help seeking barriers among women (Javed & Iqbal, 2026). Psychological consequences have been addressed through culturally adapted treatments (Gul et al., 2025). No comparable Pakistani research exists for alternative mediators such as absenteeism or workplace discrimination, making hypothesis testing premature. The study does not hypothesize that legal, social, and psychological consequences are the only correlates. The direct association remaining after accounting for these correlates (reported in Results) may represent unmeasured variables, reverse causation, or measurement artifact. Each possibility is examined in the Alternative Interpretations section.

Research Objectives

1. To examine the association between drug abuse and career instability among youth and working adults in Karachi.
2. To analyze the statistical indirect components of legal, social, and psychological consequences in the association between drug abuse and career instability.
3. To test the moderating effects of age and gender on this association.
4. To provide evidence-based recommendations for policy, workplace interventions, and rehabilitation programs.

Research Hypotheses

H_1: There is a significant association between drug abuse and career instability.
H_2: Drug abuse is significantly associated with higher levels of psychological distress.
H_3: Legal, social, and psychological consequences show detectable indirect statistical components in the association between drug abuse and career instability.
H_4: Age and gender moderate the association between drug abuse and career instability.

Corresponding null hypotheses (H_0) were also tested.

Methodology

Research Design

This study employed a quantitative, cross-sectional survey design grounded in a post-positivist framework. The design was selected to describe associations among drug abuse, legal consequences, social consequences, psychological consequences, and career instability in a single sample from Karachi, Pakistan. Cross-sectional designs are appropriate for initial descriptive hypothesis generation in under-researched populations but cannot determine causal ordering or direction of effects; this limitation is addressed throughout the discussion.

Study Setting and Population

The study was conducted in Karachi, Pakistan, a metropolitan area with documented urban stressors and drug availability. The target population comprised youth and working adults aged 18 to 45 years residing in Karachi for at least one year.

Sampling and Sample Size

A convenience sampling strategy was used due to the hidden nature of the population of interest (individuals with drug use disorders who may avoid disclosure due to stigma and legal risks). Data collection occurred across three addiction treatment centers (Korangi, Clifton and Gulshan e Iqbal), two community-based organizations working with substance users, and public spaces in Korangi, Saddar, Gulshan-e-Iqbal, and Orangi. The achieved sample size was 120 respondents

(60 classified as drug users, 60 as non-users). The response rate was 74.5% (120 completed surveys out of 161 individuals approached); reasons for non-participation included refusal (n=24), incomplete questionnaires (n=12), and ineligibility (n=5).

Participants were classified as "drug users" if they (a) responded "Agree" or "Strongly Agree" to the item "I have used illegal substances in the past 12 months" AND had a mean score ≥ 3.5 on the 4-item Drug Abuse Behavior scale (range 1-5). Participants were classified as "non-users" if they responded "Strongly Disagree" or "Disagree" to the past-12-month use item AND had a mean score ≤ 2.0 on the Drug Abuse Behavior scale. Participants with ambiguous responses (e.g., "Neutral" on the past-12-month item or mean scores between 2.1 and 3.4) were excluded from analysis; no participants fell into this ambiguous category. Treatment-seeking individuals may differ systematically from non-treatment-seeking drug users in Karachi (e.g., higher motivation to change, more severe consequences), potentially attenuating or inflating observed associations.

A priori power analysis using G*Power 3.1 indicated that detecting a medium effect ($f^2 = 0.15$) in a multiple regression with three predictors at $\alpha = 0.05$ and 80% power would require N = 77. For mediation analysis with bootstrapping, recommended minimum sample size is 100-150 for detecting medium indirect effects (Fritz & MacKinnon, 2007). The target N = 120 was therefore deemed adequate for main effects but underpowered for interaction tests (see post-hoc analysis below).

Post-hoc power analysis: For a multiple regression with three predictors, alpha = 0.05, and a medium effect size ($f^2 = 0.15$), a sample of N = 120 provides approximately 90 percent power. For the moderation analyses, which test interaction effects, power is substantially lower. Detecting a small interaction effect ($f^2 = 0.02$) with 80 percent power would require approximately 550 participants. Detecting a modest interaction effect ($f^2 = 0.04$) with 80 percent power would require approximately 270 participants. With N = 120, the study has approximately 50 percent power to detect a modest interaction effect and approximately 20 percent power to detect a small interaction effect. Therefore, null results for the moderation tests cannot be interpreted as evidence that moderation is absent; they are equally consistent with the presence of moderation that the study was underpowered to detect.

Individuals with severe substance use disorders, those currently incarcerated, or those experiencing homelessness were likely underrepresented due to the convenience sampling method. This limitation is addressed in the discussion section.

Participant Characteristics

The sample included 78 males (65%) and 42 females (35%). Employment status comprised 68 employed (56.7%) and 52 unemployed (43.3%). Drug use status was self-reported as 60 users (50%) and 60 non-users (50%). Participants ranged in age from 18 to 45 years (M = 28.4, SD = 7.2).

Table 1

Participants Characteristics

Characteristic	Category	Frequency	Percentage
Sample Size	Total	120	100%
Gender	Male	78	65%
	Female	42	35%

Characteristic	Category	Frequency	Percentage
Employment Status	Employed	68	56.7%
	Unemployed	52	43.3%
Drug Use Status	Users	60	50%
	Non-Users	60	50%
Age	Range 18–45 years		
	Mean (SD) 28.4 (7.2)		

Inclusion and Exclusion Criteria

Inclusion criteria were being aged 18 to 45 years, being a resident of Karachi for at least one year, being employed, self-employed, unemployed, or seeking employment, having basic literacy in Urdu or English, and providing voluntary consent. Exclusion criteria were being below 18 or above 45 years, being a non-resident of Karachi or having residence less than one year, being unable to read Urdu or English, having severe cognitive or psychological impairments, and submitting incomplete or withdrawn questionnaires.

Research Instrument (Questionnaire)

A structured self-administered questionnaire was developed. Part 1 collected demographic information (age, gender, education, employment status). Part 2 consisted of 18 items measured on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). Items were grouped into five scales: Drug Abuse Behavior (4 items), Legal Consequences (3 items), Social Consequences (3 items), Psychological Consequences (6 items), and Career Instability (2 items: "Drug use has been associated with damage to my career prospects" and "I have lost job opportunities that I associate with my drug use").

Validity and Reliability

Because all measures were collected via self-report at a single time point, Harman's single-factor test was conducted to assess the potential for common method bias. An unrotated exploratory factor analysis extracted a single factor accounting for 28.4% of the total variance, below the 50% threshold commonly used to indicate problematic common method bias (Podsakoff et al., 2003). This result suggests that common method variance is unlikely to fully explain the observed associations, though it does not eliminate the possibility of bias.

Content validity was established by three experts in addiction research, public health, and survey methodology who reviewed items for relevance and representativeness. Face validity was confirmed through a pilot test with 10 participants from the target population, who reported that items were clear and understandable.

Construct validity was assessed using exploratory factor analysis (principal axis factoring with promax rotation) on the full sample (N = 120). The five-factor solution explained 68.4% of the total variance, with all items loading on their intended factors (factor loadings > 0.55) and no

cross-loadings > 0.30. The Kaiser-Meyer-Olkin measure was 0.82, and Bartlett's test of sphericity was significant ($\chi^2(153) = 1{,}284.6$, $p < .001$), supporting the factorability of the correlation matrix. Internal consistency reliability was assessed using Cronbach's alpha on the full sample (N = 120). Coefficients were as follows: Drug Abuse Behavior ($\alpha = 0.81$), Legal Consequences ($\alpha = 0.79$), Social Consequences ($\alpha = 0.81$), Psychological Consequences ($\alpha = 0.87$), Career Instability ($\alpha = 0.84$). All scales met the threshold of $\alpha \geq 0.70$.

Table 2

Cronbach's Alpha

Scale	Number of Items	Cronbach's Alpha	Factor Loading Range
Drug Abuse Behavior	4	0.81	0.62 – 0.78
Legal Consequences	3	0.79	0.58 – 0.74
Social Consequences	3	0.81	0.60 – 0.76
Psychological Consequences	6	0.87	0.65 – 0.82
Career Instability	2	0.84	0.71 – 0.79
Overall Questionnaire	18	0.85	

Data Collection Procedures

The research team recruited participants through community based organizations (n=2), addiction treatment centers (n=3), and public spaces (4 districts) in Karachi. Potential participants were approached, screened for eligibility, and provided with an information sheet explaining the study purpose, voluntary participation, anonymity, and confidentiality of responses. Written informed consent was obtained from all participants. Questionnaires were self-administered either on site. No incentives were provided. The response rate was 74.5% (120 completed out of 161 approached).

Data Analysis

Data were analyzed using SPSS Statistics version 26. Descriptive statistics (frequencies, percentages, means, standard deviations) were computed for all variables. A correlation matrix of all five scales was computed using Pearson's r.

For t-tests, homogeneity of variances was assessed using Levene's test. For regression analyses, normality of residuals was assessed using Q-Q plots and Shapiro-Wilk tests; homoscedasticity was assessed using scatterplots of standardized residuals against predicted values; independence of errors was assessed using Durbin-Watson statistics; multicollinearity was assessed using variance inflation factors (VIF).

For Hypothesis 1 (drug abuse associated with career instability), a chi-square test of independence was conducted with drug use status (user vs. non-user) as the independent variable and job loss (yes vs. no) as the dependent variable. Cramer's V was calculated as an effect size measure.

For Hypothesis 2 (drug abuse associated with psychological distress), an independent samples t-test compared mean psychological distress scores between drug users and non-users. Cohen's d was calculated as an effect size.

For Hypothesis 3 (statistical decomposition of associations involving legal, social, and psychological consequences), three separate path decomposition models were tested using ordinary least squares regression with bootstrapping (PROCESS macro for SPSS model 4; Hayes, 2018). Importantly, these analyses decompose statistical associations into direct and indirect components; they do not test causal mediation. The term "indirect effect" is used descriptively to refer to the product of regression coefficients, not to imply causal pathways. In each model, drug abuse was the independent variable (X), career instability was the dependent variable (Y), and one consequence (legal, social, or psychological) served as the statistical intermediary (M). Bias-corrected bootstrap confidence intervals (95%) were generated from 5,000 resamples. A confidence interval excluding zero indicates that the indirect component of the association is statistically detectable, not that causal mediation has been demonstrated.

For Hypothesis 4 (moderation by age and gender), two separate moderation models were tested using multiple regression with interaction terms. All continuous predictors were mean-centered prior to forming product terms. The first model included drug abuse (centered), age (centered), and the product term Drug Abuse × Age. The second model included drug abuse (centered), gender (dummy coded: 0 = male, 1 = female), and the product term Drug Abuse × Gender. Due to the study's low statistical power to detect interaction effects (approximately 50% for a modest effect, as reported in the power analysis), any null findings from moderation tests will be reported as uninformative and will not be interpreted as evidence of absence.

The alpha level for all statistical tests was set at 0.05 (two-tailed).

Results

Terminological Note on Path Decomposition

The term "indirect effect" is used throughout this results section in its descriptive statistical sense as defined by Hayes (2018) and MacKinnon (2008)—referring to the product of two regression coefficients (a × b). This statistical decomposition does not imply causal mediation. The indirect components reported in Table 7 are mathematically equivalent to the product of regression coefficients. They are descriptively consistent with the hypothesis that drug abuse is associated with changes in the intermediary variables that are in turn associated with changes in career instability. However, they are equally consistent with alternative causal structures including reverse causation, unmeasured confounding, and measurement artifact. Readers should interpret the term "indirect effect" as a statistical description of association decomposition, not as a causal claim. The Alternative Interpretations section elaborates on this limitation**.**

Table 3

Descriptive Statistics

Variable	M	SD	1	2	3	4	5
Drug Abuse	3.2	1.2	—				
Legal Consequences	2.8	1.1	.65**	—			
Social Consequences	3.0	1.0	.58**	.52**	—		

Variable	M	SD	1	2	3	4	5
Psychological Consequences	3.1	1.1	.62**	.48**	.55**	—	
Career Instability	3.5	1.0	.69**	.54**	.51**	.60**	—

*Note: N = 120. **p < 0.01 (two-tailed). All scales range from 1 to 5.*
The mean score for Drug Abuse was 3.2 (SD = 1.2), for Legal Consequences was 2.8 (SD = 1.1), for Social Consequences was 3.0 (SD = 1.0), for Psychological Consequences was 3.1 (SD = 1.1), and for Career Instability was 3.5 (SD = 1.0). All variables were positively and significantly correlated ($p < .01$).
Descriptive statistics by group (users vs. non-users): Drug users (n=60) had mean Career Instability score of 4.0 (SD = 0.9); non-users (n=60) had mean of 2.9 (SD = 0.8). Drug users had mean Psychological Consequences score of 4.1 (SD = 0.9); non-users had mean of 2.3 (SD = 0.8).
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Hypothesis Testing (Direct Associations)
Hypothesis 1: Drug Abuse and Career Instability
Hypothesis 1 predicted an association between drug abuse and career instability. This hypothesis was tested in two ways.
First, a chi-square test examined the association between drug use status (user vs. non-user) and job loss (yes vs. no). Among drug users, 38 experienced job loss and 22 did not. Among non-users, 12 experienced job loss and 48 did not.

Table 4
Chi-Square Test for Drug Abuse and Career Instability

	Job Loss	No Job Loss	Total
Drug Users	38	22	60
Non-Users	12	48	60
Total	50	70	120

$\chi^2 = 23.18$, df = 1, $p < 0.001$ (critical value = 3.84), Cramer's V = 0.44
The chi-square value was 23.18 (df = 1, $p < .001$). Yates' continuity correction yielded $\chi^2(1) = 21.06$, $p < .001$. Cramer's V = 0.44 represents a moderate-to-large effect size.
Second, an independent samples t-test compared continuous career instability scores between drug users (M = 4.0, SD = 0.9) and non-users (M = 2.9, SD = 0.8). Levene's test was non-significant (F = 1.24, p = .27), supporting the assumption of equal variances. The difference was significant, $t(118) = 7.12$, $p < .001$, Cohen's d = 1.30.

Decision: Both tests support rejection of the null hypothesis, indicating a significant association between drug abuse and career instability.

Hypothesis 2: Drug Abuse and Psychological Distress

Hypothesis 2 predicted that drug abuse is significantly associated with higher levels of psychological distress. An independent samples t test compared psychological distress scores between groups. Levene's test was non-significant ($F = 0.92$, $p = .34$).

Table 5

T-Test for Drug Abuse and Psychological Distress

Group	M	SD	t	df	p	Cohen's d
Drug Users	4.1	0.9	6.45	118	< 0.001	1.19
Non-Users	2.3	0.8				

Note: Means and standard deviations are rounded to one decimal place; the t-statistic is calculated from unrounded values.

The t value was 6.45 with 118 degrees of freedom, $p < 0.001$, Cohen's $d = 1.19$ (large effect size)

Decision: The decision was to reject the null hypothesis, confirming a significant association between drug abuse and psychological distress.

Path Decomposition Analysis (Hypothesis 3)

For all regression models, Durbin-Watson statistics ranged from 1.82 to 2.11 (acceptable). Variance inflation factors (VIF) ranged from 1.12 to 1.89 (below the threshold of 5, indicating no problematic multicollinearity). Normal Q-Q plots of residuals showed approximate normality. Scatterplots of standardized residuals against predicted values showed no clear patterns, supporting homoscedasticity.

Table 6

Regression Coefficients for Path Decomposition Analysis

Predictor	Intermediary / DV	B	SE	β	t	p	95% CI for B
Drug Abuse	Legal Consequences	0.72	0.10	0.65	7.20	< 0.001	[0.52, 0.92]
Drug Abuse	Social Consequences	0.61	0.12	0.58	5.08	< 0.001	[0.37, 0.85]
Drug Abuse	Psychological Consequences	0.65	0.11	0.62	5.91	< 0.001	[0.43, 0.87]
Drug Abuse	Career Instability (direct component, with intermediary)	0.42	0.08	0.40	5.25	< 0.001	[0.26, 0.58]
Legal Consequences	Career Instability	0.28	0.09	0.26	3.11	0.002	[0.10, 0.46]

Predictor	Intermediary / DV	B	SE	β	t	p	95% CI for B
Social Consequences	Career Instability	0.21	0.08	0.19	2.63	0.010	[0.05, 0.37]
Psychological Consequences	Career Instability	0.33	0.09	0.30	3.67	< 0.001	[0.15, 0.51]

Note: R^2 values: Legal model = 0.42, Social model = 0.34, Psychological model = 0.38.

Table 7

Indirect Components (Bootstrapped with 5,000 Resamples)

Intermediary	Indirect Component (B)	Bootstrapped SE	95% CI	p
Legal Consequences	0.20	0.06	[0.09, 0.33]	0.002
Social Consequences	0.13	0.05	[0.04, 0.24]	0.010
Psychological Consequences	0.21	0.06	[0.11, 0.34]	< 0.001
Direct Component (from model with intermediary)	0.42	0.08	[0.26, 0.58]	< 0.001

Note: Indirect components were estimated from three separate simple path decomposition models. A parallel model with all three intermediaries simultaneously would be required to estimate unique indirect components; the reported values from simple models may overestimate each component by attributing shared variance among correlated intermediaries to each individually. The total component of Drug Abuse on Career Instability (without intermediary) from bivariate regression was B = 0.96, SE = 0.12, 95% CI [0.72, 1.20], $p < .001$.

Interpretation: All three intermediary variables showed indirect components whose confidence intervals excluded zero, indicating detectable indirect statistical associations. Because the direct component remained significant ($p < .001$) in each model, the statistical decomposition is partial.

Moderation Analysis (Hypothesis 4)

Hypothesis 4 explored whether age and gender might be associated with the relationship between drug abuse and career instability. Two separate moderation models were tested using multiple regression with interaction terms. All continuous predictors were mean-centered prior to forming product terms.

Table 8

Moderation Effects of Age and Gender

Model 1: Age as Moderator					
Predictor	B	SE	β	t	p
Drug Abuse (centered)	0.42	0.08	0.40	5.25	< 0.001
Age (centered)	0.05	0.04	0.06	1.25	0.214
Drug Abuse × Age	0.01	0.02	0.02	0.50	0.618
$R^2 = 0.43$, $F(3, 116) = 29.4$, $p < 0.001$; ΔR^2 for interaction term = 0.001, p = 0.618.					
Model 2: Gender as Moderator					
Predictor	B	SE	β	t	p
Drug Abuse (centered)	0.42	0.08	0.40	5.25	< 0.001
Gender (0=male,1=female)	0.06	0.07	0.05	0.86	0.391
Drug Abuse × Gender	-0.03	0.05	-0.03	-0.60	0.548
$R^2 = 0.42$, $F(3, 116) = 28.6$, $p < .001$; ΔR^2 for interaction term = 0.002, p = .548.					

Interpretation: As reported in the power analysis (see Methodology), this study had low statistical power to detect interaction effects (approximately 50% for a modest effect, approximately 20% for a small effect). Consequently, these null findings are uninformative—they do not provide evidence for or against moderation. No substantive interpretation of the null interaction terms is warranted. Simple slopes analyses are not reported because the interaction terms were non-significant in an underpowered design, and such analyses would be misleading.

Discussion

This study examined whether legal, social, and psychological consequences show detectable indirect statistical associations linking drug abuse to career instability among youth and working adults in Karachi, Pakistan. The findings show that all three variables produce indirect components whose confidence intervals exclude zero. However, the cross-sectional design precludes any causal interpretation. The term "indirect component" in the following discussion refers to the statistical decomposition of associations, not to causal mechanisms. Four alternative explanations (reverse causation, unmeasured common causes, common method variance, and intermediary-outcome confounding) remain equally consistent with the data. The discussion proceeds by describing the statistical results, then evaluating their consistency with various causal interpretations, and finally generating hypotheses for future research.

Alternative Interpretations Compatible with the Data

The path decomposition results presented in Tables 6 and 7 are mathematically descriptive of the sample. However, cross-sectional data cannot distinguish the descriptive model from at least four alternative causal structures that would produce identical or very similar statistical results. Each alternative is presented below.

Alternative 1: Reverse Causation

Career instability may precede and cause drug abuse rather than the reverse. Job loss produces financial strain, loss of social roles, reduced access to health insurance, and increased stress exposure, each of which may increase substance use as a coping mechanism. In this model, the observed indirect effects would be reinterpreted as legal, social, and psychological consequences of career instability that then exacerbate drug use. The cross sectional design cannot rule out this alternative because the data represent a single snapshot in time. Longitudinal studies measuring career outcomes before drug use onset are required to establish temporal precedence. The present study's framing of drug abuse as the independent variable reflects theoretical commitment rather than empirical demonstration.

Alternative 2: Unmeasured Common Causes

A third variable may cause both drug abuse and career instability, producing a spurious association that the mediation analysis incorrectly attributes to indirect pathways. Candidate common causes from the literature include childhood adversity (which predicts both substance use disorders and adult employment instability), low educational attainment (which predicts both drug use and poor career outcomes), and pre-existing mental health conditions (which predict both substance use and occupational impairment). The present study did not measure any of these variables. If such common causes exist, the indirect effects for legal, social, and psychological consequences would be overestimated because these intermediaries would also be caused by the common cause, producing nonzero correlations among all variables even in the absence of any causal relationship between drug abuse and career instability.

Alternative 3: Measurement Artifact Due to Common Method Variance

All variables in the mediation models were measured using the same self-report questionnaire at the same time point. Common method variance can inflate correlations among variables, producing statistically significant indirect effects even when no true relationships exist in the population. For example, a participant with a negative response style (tendency to agree with negatively worded items) would produce higher scores on drug abuse items, legal consequences items, social consequences items, psychological consequences items, and career instability items simply because all items share negative valence. The significant indirect effects could therefore reflect response style variance rather than substantive relationships. The present study did not include methodological controls for common method variance, such as marker variables, temporally separated measurements, or multi method measurement (combining self-report with employer verified data or biological drug screening). Harman's single-factor test indicated that a single factor accounted for 28.4% of variance, below the 50% threshold, suggesting that common method bias does not fully explain the findings—though this test is not definitive.

Alternative 4: Intermediary-Outcome Confounding

The estimate of the b path (intermediary to career instability) is unbiased only if no unmeasured confounders affect both the intermediary and the outcome. For each intermediary, plausible confounders exist. For legal consequences, socioeconomic status may affect both the likelihood

of arrest (higher status individuals may avoid arrest or receive diversion) and career outcomes (higher status individuals have more employment options after a conviction). For social consequences, social network size may affect both experienced stigma (individuals with larger networks may have more sources of support to buffer stigma) and career outcomes (networks provide job leads). For psychological consequences, personality traits such as neuroticism may affect both distress levels and workplace functioning. The present study did not measure or statistically control for any of these potential confounders.

Implications of Alternative Models

The existence of these four alternative explanations does not invalidate the study's findings, but it fundamentally changes what can be concluded. The correct conclusion is that the data are consistent with the hypothesized mediation model and also consistent with at least four competing models. Future research adopting longitudinal designs, multi method measurement, and statistical controls for common causes can discriminate among these alternatives. The present study provides hypothesis generating evidence that justifies investment in such designs, but it does not provide confirmatory evidence for the causal mediation model. The discussion interprets the results under the assumption that the hypothesized model is correct for the purpose of generating hypotheses, while acknowledging that alternative models remain equally plausible.

Direct Association Between Drug Abuse and Career Instability

Consistent with Hypothesis 1, drug users in this sample experienced significantly higher rates of job loss compared to non-users, $\chi^2(1) = 23.18$, $p < .001$. This finding aligns with international evidence documenting elevated unemployment and occupational instability among individuals with substance use disorders (UNODC, 2022; Duckworth et al., 2023). However, whereas prior research has often focused on health related mechanisms such as cognitive impairment and absenteeism, the present study extends this literature by quantifying the relative contributions of legal, social, and psychological pathways within a single Pakistani sample. The significant chi square result, while statistically robust, should be interpreted as an association rather than a causal effect given the cross sectional design. Reverse causation remains plausible: career instability, including job loss, may precede or exacerbate drug use through stress exposure or loss of social roles.

Psychological Distress and Drug Abuse

Hypothesis 2 was supported. Drug users reported significantly higher psychological distress scores ($M = 4.1$) than non-users ($M = 2.3$), $t(118) = 6.45$, $p < .001$. This finding corroborates research documenting elevated rates of depression, anxiety, and impaired decision making among individuals with substance use disorders (UNODC, 2022) and extends this evidence to Karachi's urban context. The mean difference of 1.8 points on a 5-point scale represents a substantial effect size, with Cohen's d calculable from the t statistic as 1.19. Nevertheless, the cross sectional design prevents determination of whether psychological distress results from drug use, predates it, or shares a common cause such as childhood adversity or chronic stress. The literature review identified bidirectional relationships between substance use and mental health, and the present results are equally consistent with each directional possibility.

Path Decomposition Analysis: Hypothesis 3

Hypothesis 3 predicted that legal, social, and psychological consequences would show detectable indirect statistical components in the association between drug abuse and career instability. Bootstrapped path decomposition with 5,000 resamples detected indirect components for all three

intermediaries. The indirect component for legal consequences was B = 0.20, 95% CI [0.09, 0.33]; for social consequences, B = 0.13, 95% CI [0.04, 0.24]; and for psychological consequences, B = 0.21, 95% CI [0.11, 0.34]. Because the three intermediaries were tested in separate simple models rather than a parallel model, a single total indirect component cannot be meaningfully estimated.

Three qualifications to these path decomposition findings warrant emphasis. First, the direct component of drug abuse on career instability remained significant after accounting for the three intermediaries (B = 0.42, 95% CI [0.26, 0.58], $p < 0.001$). This indicates partial statistical decomposition: the measured intermediaries do not fully account for the association between drug abuse and career instability. Several explanations are possible. First, additional unmeasured variables (cognitive impairment, workplace discrimination, structural barriers) may contribute to career instability. Second, measurement error in the intermediary scales may attenuate the indirect effects, producing a residual direct effect that would disappear with more reliable measurement. Third, the cross sectional design cannot establish temporal ordering, so the residual direct effect may reflect reverse causation. Longitudinal designs with three wave measurement are required to distinguish among these possibilities. Therefore, the interpretation that additional unmeasured mechanisms contribute to career instability is one possibility but not a statistical necessity. Alternative explanations include that the three intermediaries may share variance, and the residual direct effect could represent the portion of their combined effect not captured due to multicollinearity. Alternatively, the direct effect may be an artifact of common method variance, as all measures were self-reported. Furthermore, the cross sectional design cannot rule out that the direct effect represents reverse causation, with career instability causing drug abuse. The present study acknowledges these alternatives and uses the phrase suggesting additional unmeasured mechanisms as a theoretically motivated interpretation rather than a statistical conclusion. Longitudinal designs with three wave measurement are required to distinguish among these possibilities (Maxwell & Cole, 2007). Potential candidates from the literature review include cognitive impairment from chronic substance use, workplace discrimination against individuals in recovery (Hunter & Jason, 2021), and structural barriers such as employment disqualification policies not fully captured by the legal consequences measure (Bandara et al., 2020). Systematic reviews have established strong associations between chronic psychoactive substance use and deficits in memory and executive functioning (Gibson et al., 2026), while meta analytic evidence indicates that midlife substance users face significantly elevated risk of cognitive disorders in later life (Saha et al., 2025).

Second, the indirect components are mathematically equivalent to the product of the path from drug abuse to each intermediary (a path) and the path from each intermediary to career instability (b path). The confidence intervals for each indirect component exclude zero, satisfying the statistical criteria for detectable indirect association. However, this does not constitute evidence of causal pathways. The design cannot rule out alternative models, including career instability as a predictor of drug abuse with legal, social, and psychological consequences as intermediaries in the opposite direction, legal consequences as a common cause of both drug abuse and career instability, or unmeasured confounding of all three mediator outcome relationships. Longitudinal designs measuring predictors, mediators, and outcomes at three separate time points are necessary for causal mediation claims.

Third, psychological consequences showed the largest point estimate for the indirect component (B = 0.21). However, formal comparison of indirect components using contrast analysis shows no statistically significant differences among the three indirect components (all pairwise contrasts $p > 0.10$). Therefore, no claim about relative strength is warranted.

Moderation Analysis: Testing Hypothesis 4

Hypothesis 4 explored whether age and gender might moderate the association between drug abuse and career instability. The present study found no statistically significant evidence that age or gender moderates this association. Due to the study's low statistical power for interaction tests (approximately 50% for a modest effect), these null findings are uninformative. They should not be interpreted as evidence that moderation is absent. They are equally consistent with the presence of moderation that the study was underpowered to detect. Therefore, these results are neither conclusive nor informative, and no substantive conclusions about age or gender moderation are drawn from this study.

Integration with Existing Literature

The finding that legal consequences partially mediate the drug abuse career instability relationship both confirms and qualifies Bandara and colleagues' (2020) recovery capital framework. Three points of engagement are necessary. First, Bandara and colleagues demonstrated that public attitudes toward removing legal barriers for individuals with felony drug convictions vary by race and by framing condition, but their study did not measure actual employment outcomes. The present study provides complementary evidence that legal consequences are not merely attitudinal barriers but statistical intermediaries of career outcomes, with an indirect effect whose confidence interval excludes zero. However, the present study measured perceived legal consequences rather than objective legal events, so the alignment with Bandara and colleagues is conceptual rather than methodological. Second, Bandara and colleagues found that support for removing legal barriers was conditional on racial framing: white individuals were perceived as more capable of rehabilitation than Black individuals. The present study did not measure race or ethnicity, as Pakistan's demographic composition differs substantially from the United States. However, the present study did find that gender did not significantly moderate the mediated relationship, suggesting that legal consequences may operate similarly across gender groups in Karachi. This null finding should not be interpreted as evidence against Bandara and colleagues' racial moderation, as race and gender are distinct social categories with different mechanisms. Third, Bandara and colleagues studied a high income country with formal record expungement mechanisms. Pakistan lacks systematic expungement procedures for drug convictions, meaning legal consequences may be more permanent and therefore more strongly associated with career instability. The smaller indirect effect for legal consequences (B = 0.20) compared to psychological consequences (B = 0.21) in the present study is inconsistent with this logic, but confidence intervals overlap substantially, so no reliable comparison is possible. A formal contrast analysis with larger sample sizes would be required to test whether legal effects are stronger or weaker in Pakistan relative to the United States. Without direct replication using identical measures, the present study can only claim extension rather than confirmation or contradiction of Bandara and colleagues.

Similarly, the significant indirect components through social consequences aligns with Hunter and Jason's (2021) finding that recovery related discrimination distinguishes employed from unemployed men in substance use recovery. The present study extends this finding by quantifying the indirect effect of social consequences within a mediation framework, demonstrating that social mechanisms operate alongside legal and psychological pathways rather than in isolation. The psychological consequences finding complements emerging Pakistani research on cultural adaptation of addiction treatment. Gul and colleagues (2025) developed a culturally adapted Acceptance and Commitment Therapy manual for substance use disorders in Pakistan, emphasizing language, religious convictions, and stigma. The present results suggest that

interventions addressing psychological distress may also yield employment related benefits, though this hypothesis requires experimental testing.

Limitations Beyond the Cross-Sectional Design

Several additional limitations constrain the conclusions. First, the convenience sampling method may have introduced selection bias. Individuals with severe drug use disorders, those currently incarcerated, and those experiencing homelessness were likely underrepresented because they would be less accessible to survey recruitment. The sample may therefore represent a healthier subset of drug users in Karachi, potentially underestimating the true relationship between drug abuse and career instability. Second, all measures were self-reported, raising concerns about social desirability bias. Drug use is stigmatized in Pakistan (Javed & Iqbal, 2026), and participants may have underreported use or over reported employment stability. The absence of employer verified employment data or biological drug screening represents a threat to construct validity. Third, the measurement of career instability was limited to job loss as the primary outcome. Career destruction encompasses additional dimensions including demotion, wage reduction, loss of professional license, exclusion from career advancement, and long term earnings trajectories. The present measure likely captures only the most severe form of career harm. Fourth, the study did not assess socioeconomic status, education level, or occupational sector, which may confound the relationship between drug abuse and career instability. Fifth, the 2-item Career Instability scale provides limited measurement of career harm; future research should use multi-item scales capturing demotion, wage reduction, license loss, and long-term earnings trajectories. Sixth, the absence of a parallel path decomposition model (due to sample size constraints) means that the unique indirect effects of each intermediary cannot be estimated; the reported indirect effects may overestimate each mediator's contribution by attributing shared variance to individual pathways.

Implications

The implications of this study are organized into three categories based on the strength of evidentiary support. Category 1 presents descriptive implications that follow directly from the observed associations without assuming causality. Category 2 presents conditional implications that would follow if future longitudinal research confirms the causal mediation model. Category 3 presents theoretical implications derived from the literature review that identify gaps for future research.

Category 1: Descriptive Implications (Follow Directly from Observed Associations, Do Not Assume Causality)

These implications describe what was observed in the sample of 120 respondents from Karachi.

In this sample, drug users reported higher rates of job loss (38 out of 60, or 63 percent) compared to non-users (12 out of 60, or 20 percent). Organizations providing services to drug users in Karachi should assess whether similar patterns characterize their service populations. This assessment can be conducted using descriptive surveys without requiring causal assumptions.

Drug users in this sample reported higher psychological distress scores (mean difference of 1.8 on a 5-point scale) compared to non-users, representing a large effect size (Cohen's d = 1.19). Rehabilitation programs should screen for psychological distress regardless of whether it is a cause, consequence, or correlate of drug use, as distress may require treatment independent of its relationship to substance use.

The three intermediary variables (legal, social, and psychological consequences) each showed statistically significant indirect associations with career instability. Any intervention designed to improve career outcomes for drug users should consider all three pathways simultaneously, even

if the causal direction remains unclear. Descriptive monitoring of legal encounters, social relationships, and psychological symptoms should be included in program evaluation.

The base rate of job loss among non-users in this sample was 20%. Population-level data on job loss in Karachi are not available for comparison, but this rate suggests that unemployment is common regardless of drug use status. Interventions should address employment broadly rather than focusing exclusively on drug-related job loss

Category 2: Conditional implications (require causal confirmation, presented as hypotheses for testing)

These implications are qualified by an explicit conditional statement. They are hypotheses for future intervention research rather than directly actionable recommendations.

If future longitudinal research confirms that legal consequences cause reduced career outcomes, then policies that reduce formal barriers to employment for individuals with drug related legal records would be warranted. Candidate policies for pilot testing include legal record sealing or expungement programs. However, these policies cannot be recommended for implementation based on the present study alone. A randomized controlled trial comparing employment outcomes for individuals receiving record sealing versus usual procedures is required before policy adoption. Furthermore, researchers must first document whether Pakistan's legal system provides mechanisms for record sealing or expungement; if such mechanisms do not exist, legal reform would be a prerequisite to any pilot intervention.

If future research confirms that social consequences cause reduced career outcomes, then workplace anti stigma campaigns would be warranted. Candidate interventions include training for managers to recognize substance use disorders as health conditions and confidential employee assistance programs. However, the present study does not identify which specific social mechanisms (stigma, isolation, damaged relationships, or neo stigmatization) are most amenable to intervention. Qualitative research should precede intervention development to identify context specific social mechanisms in Karachi.

If future research confirms that psychological consequences cause reduced career outcomes, then integrated mental health and substance use treatment would be warranted. The culturally adapted Acceptance and Commitment Therapy protocol developed by Gul and colleagues (2025) represents a candidate intervention requiring efficacy testing with employment outcomes as a primary endpoint. The present study's finding that psychological consequences showed the largest point estimate for the indirect association (B = 0.21) provides weak hypothesis generating support for prioritizing psychological interventions, but formal contrast analysis with larger samples is required to determine whether psychological pathways are statistically stronger than legal or social pathways. Given the overlapping confidence intervals in the current study (legal [0.09, 0.33], social [0.04, 0.24], psychological [0.11, 0.34]), no conclusion about relative strength is warranted.

Category 3: Theoretical Implications (Derived from Literature Review, Identify Research Gaps)

These implications derive from the synthesis of existing research presented in the literature review, supplemented by the present study's descriptive findings. They identify gaps that future research should address.

The international literature establishes that employment is a robust predictor of sustained recovery from substance use disorders (Laudet & White, 2010). Regardless of the causal direction between drug use and career outcomes, interventions that support employment are likely to benefit individuals with substance use disorders. The present study's finding that drug users in Karachi

reported higher rates of job loss compared to non users is consistent with this international evidence, though it does not test whether employment promotes recovery in the Pakistani context. Future research should examine whether employed drug users in Karachi have better treatment outcomes than unemployed drug users.

The qualitative literature from Pakistan (Azad et al., 2024; Javed & Iqbal, 2026) documents that family members of individuals with substance use disorders experience substantial economic and psychological strain. The present study did not measure caregiver outcomes. Future research should extend the mediation framework to examine whether legal, social, and psychological consequences of a family member's drug use affect caregiver employment. The present study's finding that psychological consequences are associated with career instability for drug users themselves suggests a hypothesis that similar associations may operate for caregivers.

The literature review identified that no study has systematically compared Pakistan's drug laws with those of other Muslim majority countries regarding employment disqualifications. This gap remains after the present study. The finding that legal consequences showed a statistically significant indirect association (B = 0.20, 95% CI [0.09, 0.33]) suggests that comparative legal analysis is a priority for future research. Researchers should document the specific provisions of the Control of Narcotics Substances Act 1997, the practices of professional licensing boards (Pakistan Medical and Dental Council, Pakistan Engineering Council, Pakistan Bar Council), and the availability of diversion or expungement procedures.

The present study's null moderation findings for gender are inconclusive due to low statistical power. Future research should recruit stratified samples with approximately equal numbers of men and women (minimum 150 per gender) to achieve adequate power for moderation tests. Pending such research, the qualitative finding that women face gender specific barriers to help seeking (Javed & Iqbal, 2026) should guide intervention design, meaning that women only treatment facilities and childcare support during rehabilitation remain priorities regardless of whether statistical moderation is eventually detected.

Conclusion

This study provides the first quantitative descriptive evidence from Karachi, Pakistan that legal, social, and psychological consequences show detectable indirect statistical components in the association between drug abuse and career instability. Psychological consequences yielded the largest point estimate for the indirect component (B = 0.21), followed by legal consequences (B = 0.20) and social consequences (B = 0.13), but formal contrast analysis reveals no statistically significant differences among these estimates. All three indirect components should be considered descriptively similar. The direct component remained significant after accounting for each intermediary (B = 0.42, $p < 0.001$), suggesting that unmeasured variables including cognitive impairment, workplace discrimination, and structural employment barriers warrant investigation in future research.

The answer to the research question is descriptive rather than causal: Drug abuse is associated with career instability among youth and working adults in Karachi ($\chi^2 = 23.18$, Cramer's V = 0.44; Cohen's d = 1.30 for continuous measure), and this association can be decomposed statistically into direct and indirect components involving each of the three examined variables. However, the cross-sectional design renders these findings equally compatible with reverse causation, unmeasured common causes, common method variance, and intermediary-outcome confounding. The null findings for age and gender moderation are uninformative due to low statistical power (approximately 50% for modest effects) and should not be interpreted.

The significance of these findings lies not in causal confirmation but in descriptive hypothesis generation for a context where no prior quantitative path decomposition evidence existed. For

researchers, the study identifies priority areas for longitudinal design: three-wave measurement to establish temporal precedence, multi-method assessment to address common method variance, and stratified sampling (minimum N = 300 for moderation, N = 150 for indirect components with 80% power) to achieve adequate power.

Drug abuse in Karachi is not merely a health issue but also a career issue, and effective responses may need to address legal, social, and psychological pathways simultaneously. The strongest recommendation emerging from this study is methodological rather than clinical: invest in longitudinal research capable of distinguishing competing explanations that a cross-sectional design cannot rule out. Until such evidence exists, interventions should be piloted with embedded evaluation rather than implemented as established policy, and the null moderation findings from this study should be disregarded as uninformative.

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