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Relapse Within One Year after Inpatient Drug Rehabilitation in Peshawar, Pakistan: The Role of Employment and Family Support

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Research Article

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Abstract

Background

The problem of the high rates of post-rehabilitation relapse is an obscure issue in the field of addiction medicine, especially in such resource-based situations as Pakistan. This research paper assessed the 12-month relapse pattern and determined structural foreteller of abstinence amid male patients after residential care in Peshawar.

Methods

There were 60 men with a mean age of 30.5 +- 8.4 years who were discharged in five months after completing an inpatient detoxification program between January and December 2024 in a prospective cohort study. The main consequence was relapse, which is the use of any illegal substance. The temporal risk was examined using the survival analysis (Kaplan-Meier) and the effect of interventions about employment and livelihood was done by Fisher Exact Test.

Results

The overall 12-month relapse rate (n = 36) was 60.0% with the majority (55.6) of the relapse rate within the first 90-days of post-discharge. Unemployment has been found to be a powerful predictor of relapse (P = .003) and unemployed persons were at a greater risk of relapse (83.3% against 38.9%). It is worth noting that a sub-cohort (n = 7) receiving a post-discharge Livelihood Support Initiative had 100-percent abstinence (P<.001) compared to the 32.1% success rate in ordinary care. The main self-reported precipitant of relapse was family negligence (61.8%).

Conclusion

Early phase structural/psychosocial voids are main causes of relapse in this population. Medical detoxification is imperative, but sustainable recovery to be possible seems to depend on economic reintegration. Provision of livelihood assets was found to be a powerful neuroprotective intervention and it is recommended to consider vocational support as a center clinical element of an addiction treatment.

Introduction

Addiction and relapse of drugs are in the list of key social issues related to public health in all countries of the world, and low- and middle-income countries are disproportionately harmed by the lack of treatment facilities, socio-economic pressure, and the widespread social stigma. Substance Use Disorders (SUDs) are classified as compulsive drug seeking and use regardless of adverse effects, and the recurrence of relapse following interludes of therapy and primary recovery is one of the hallmark

characteristics of SUDs (Volkow & Blanco, 2023). Research in various contexts has recorded a relapse rate of 40-60% of those undergoing drug rehabilitation within the first year showing that addiction is chronic and relapsing, and inpatient rehabilitation is ineffective in guaranteeing long-term abstinence (Yazıcı &Bardakçı, 2023).

Substance abuse is a mounting social health crisis in Pakistan and especially in the province of Khyber Pakhtunkhaw (KPK) to which Peshawar belongs due to socio-economic issues, the lack of sources of rehabilitation, and the established social patterns. It has been estimated that millions of Pakistanis take drugs every year and some of the most abused ones are opiates and cannabis (Taak et al., 2021). The closeness of the country to one of the largest areas of opium production, the established presence of cheap drugs and market forces that render such drugs as heroin and methamphetamine affordable and easy to obtain contribute to these trends. Although there are few strong nationwide relapse statistics of Pakistan, a few regional and clinical reports of the country show very high relapse rates ranging widely between 70 and 90% within a year of treatment (Patton et al., 2022). Peshawar, which is among the biggest urban centres of KPK, in this context, is one important site through which the extent of relapse following inpatient rehabilitation can be studied as well as the role of socio-psychological forces, especially employment and family support in determining recovery patterns.

Pakistan is the country where medically supervised detoxification, psychotherapy, group counselling and different levels of social support are usually provided in the inpatient rehabilitation centres. Regardless of these interventions, the relapse is a norm, and not an exception in most of the studies (Stack et al., 2022). Based on international studies, the fact that in the first year after a structured treatment, the relapse rates can often be more than 50 percent, is indicative of the multifactorial and complex nature of SUDs. In inpatient settings, patients can temporarily become sober under supervised settings, but when they get out, they are returned to the same environment full of social, economic and emotional provocation that derail long-term recovery (Kidd et al., 2022). Indicatively, studies on drug users who returned to rehabilitation centres in Peshawar have shown that there are many cases of relapse which implies that relapse is a frequent condition in drug users after the preliminary treatment. In a cross-sectional study that was done in some of the rehabilitation centres in Peshawar, most of the participants were male adults who had been previously admitted due to substance dependence and showed relapse with time (Sriramalu et al., 2022). Although the exact rates of relapse in one year were not measured in this particular study, several psychosocial predictors such as family problems and peer pressure were identified which were correlated with the risk of relapse and this indicated the complexity of persistence during drug use despite treatment.

Moreover, an evaluation of risk factors in relapsed patients in Peshawar found that, to cause relapse, no one cause is dominant but rather a combination of factors that may lead to relapse such as peer pressure, absence of structured activities after treatment, financial or work instability, which tend to co-occur to trigger relapse (Holtyn et al., 2021). Employment taking a central role in addiction recovery is a matter of conflict. A stable employment after the rehabilitation is widely known to be a protective factor against the relapse, providing individuals with not only financial stability but also the structure, purpose,

social integration and increased self-efficacy. The literature around the globe has shown that employment, especially meaningful and stable work, is correlated with more abstinence and reduces the rate of relapse, and unemployment or under-employment were associated with worse results (Sonbol et al., 2024).

In Pakistan, where unemployment and underemployment are still major problems in terms of socio-economic factors, the inpatient rehabilitation to community reintegration process may be challenging (Donaldson et al., 2023).A Peshawar based regional study that examined sociodemographic factors on abstinence discovered that those who work had a much longer abstinence duration as opposed to those who do not have employment and that steady employment can potentially have a beneficial impact on maintaining abstinence. The employment probably brings structure in the everyday life, distracts attention to drug-related stimuli, and enhances self-worth all of which are key buffers against relapse (United Nations, 2023). On the other hand, lack of employment and economic insecurity can create stressors that lead to vulnerability to relapse particularly where the individuals resume to drug using conditions where economic desperation can trigger substance seeking. Work nonetheless comes in contact with other aspects of support (Hoffman et al., 2023). As an example, even employment will not be sufficient to counteract the effects of a weak family support, social stigma, or peer networks that promote substance use. Rather, the protective effect of employment is maximized when incorporated in a larger ecosystem of social support, such as family, community resources, and presence of further psychosocial support.

It is a global acknowledged fact that family support is among the strongest predictors of long-term re-emergence after substance use disorders treatment. Studies have shown that positive family engagement is related to low risk of relapse, strong resilience, increased psychological health, and increased use of aftercare services (Taak et al., 2021). On the other hand, family conflict, emotional estrangement, stigma and absence of communication are always cited to be significant factors in relapses in different cultural contexts. Social networks, which are usually a type of collectivist, may act as a buffer and create stress in the context of the Pakistani social structure. Although the extended family systems have the potential to offer emotional care, they also create negative pressures that are associated with shame, criticism, and stigma in case the member comes back to the treatment with some vulnerabilities (Patton et al., 2022). The studies of both KPK and other provinces in Pakistan indicate that family support is a major determinant of long-term abstinence and that married persons or persons whose families are strongly supportive, exhibit a longer duration without relapse.

Qualitative evidence also highlights the idea that deficiency of family support (such as emotional neglect, inappropriate home environment, or the continuity of receiving criticism and many more.) can weaken coping and increase the risk of relapse, particularly during the initial year of discharge (Stack et al., 2022). These results correspond to more general psychosocial studies that imply that the perceived social and family support is positively correlated with self-efficacy, decreased experiences of stigma, increased incentives to sustain recovery. The interaction between family support and employment defines relapse risk in various aspects. The employed people will have a better chance of having higher

self-esteem and regular day to day activities that will keep them occupied and the chances of relapse triggers will be minimized (Kidd et al., 2022). Individual recovery outcomes are significantly improved when these occupational assets are combined with positive family relationships.

Research Aim and Objectives

This study aims to examine the rate of relapse within one year after inpatient during rehabilitation in Peshawar, Pakistan and aims at investigating the role of employment status and family support in terms of influencing the relapse outcomes.

- To establish the prevalence of relapse one year after inpatient drug rehabilitation among individuals who have been made to go through inpatient drug rehabilitation in Peshawar, Pakistan.
- To examine the existence of a connection between employment status (employed, unemployed, type of employment) and relapse in one-year post-inpatient rehabilitation.
- To investigate the extent and nature of family support that people get upon rehabilitation and how it is linked with relapse outcomes.
- To determine the interaction between the effect of employment and family support on the maintenance of abstinence in the first-year of post-rehabilitation.

Materials and Methods

Study Design and Setting

This was a prospective cohort study, and the longitudinal follow-up was done at 12 months in a residential drug rehabilitation centre in Peshawar, KPK, Pakistan. The centre has a multi-disciplinary, holistic addiction treatment program that includes medical detoxification, psychotherapeutic counselling, vocational skills training, and relapse prevention training. The normal inpatient practice demands six months obligatory inpatient tenure among all registered patients.

The information was gathered on two successive groups of treatment. The start of the treatment of Batch 1 was January 1, 2024, till June 30, 2024, and Batch 2 began July 1, 2024, to December 31, 2024. These intervals were during the systematic periods of admission and discharge of the centre. A sampling technique was used, involving a so-called total population, in which all citizens admitted in these cycles were involved in the research, with the exception that they had to fulfil the standard clinical requirements of a medical stabilization facility and willingness to join the program.

Participants

There were 60 patients (n = 30) in each batch. The sample was all male in composition, which is a kind of population composition that represents the current treatment seeking population in this part of the

world where rehabilitation services mostly target men. The participants were between 18-50 years in age with an average age of 30.5 years. Geographically, most of them were found in Peshawar and the surrounding areas.

Structured intake forms were used to measure baseline data at the time of admission. Demographic information, the major substance of abuse (mainly opioids including heroin and poly-substance use), and employment were among such key variables. Employment was used in dichotomy whereby employments were characterized as those who were involved in any kind of work or education compared to those who were not employed. Also, we documented our involvement in the Livelihood Support Initiative, an intervention of specific nature whereby select patients were given economic assets such as rickshaws, livestock right at the point of discharge.

Definition of Relapse

The major outcome measure (relapse) was operationally measured as using illicit drugs or non-prescribed psychoactive substances after discharge. In line with the conventional addiction medicine criteria, any one confirmed instance of drug consumption beyond the rehab discharge was classified as relapse event. The 12-month follow-up was observed until the 12 months after discharge, patients who abstained continuously during the 12 months follow-up were counted as Recovered.

Follow-Up Procedure

After the discharge (Month 0) patients were followed up prospectively. The scheduled assessments were 1, 3, 6, 9 and 12 months. The outreach team at the centre used a hybrid follow-up strategy, whereby phone interviews were used to follow up with the alumni and in-person follow-ups were used in the support meetings.

The present substance use status was determined on each contact point in the patient. In cases of a relapse, certain questions were asked to those who reported the relapse (e.g., whether the relapse was caused by financial stress, influence of peers, family conflict, etc). In order to reduce the self-reporting bias, family members were interviewed separately to support the claims of abstinence. The retention rate in the study was high, and the outcome data of 12 months were obtained successfully in all the 60 study participants.

Data Analysis

An analysis of the data was done in SPSS (Version 25.0). Descriptive statistics were calculated to summarize the baseline factors of the cohort using standard deviation and frequencies to present continuous and categorical variables respectively. Three analytical approaches namely were used to determine the predictors and timing of the relapse:

Survival Analysis: A Life Table analysis was done to determine the cumulative probability of abstinence with time. Kaplan-Meier survival estimates were created to create a visual map of the time-distribution of relapse risk to specifically identify the high-risk window during the first 90 days.

Bivariate Analysis: Fisher is the test used to test the relationships between predictors at baseline (Employment Status, Livelihood Support) and 12-month outcomes. The Chi-square test was not used because this is a powerful statistical test that was not able to establish statistical validity due to the small sample sizes in some subgroups (e.g., the livelihood intervention arm, n = 7). A p-value of less than .05 was deemed to be statistically significant.

Qualitative Analysis: With respect to patients who relapsed, self-reported reasons were coded as structural and psychosocial. Calculations on frequencies were used to find out the most prevalent precipitating factors in the cohort.

RESULTS

Baseline Characteristics of the Cohort

The study enrolled 60 men patients who were recruited at a residential rehabilitation centre in Peshawar, KPK. The study involved all subjects (N=60) who are required to undertake the 6-month inpatient detox and rehabilitation program and were subsequently followed 12 months post-discharge. The sample was male and was solely representative of the demographic of the population that is seeking addiction treatment in the area. The average age of the admission was 30.5 years (SD = 8.4). Regarding substance use history, most patients (n = 42, 70.0%) reported treatment of opioid dependence (mostly heroin) whereas the other 18 patients (30.0%-30.0) were poly-substance users or used other stimulant drugs (methamphetamine). On occupational status at the baseline, the sample was stratified into two occupations namely 36 (60.0% and students had in one form some form of daily structural activity) and 24 (40.0% and unemployed). The sample size was balanced between the two sequential recruitment batches where 30 patients (50.0%) took Batch 1 (January- June) and 30 patients (50.0%) took Batch 2 (July-December). Table 1 presents demographic and clinical characteristics of the sample at the baseline.

Table 1 Baseline Characteristics of the Study Sample (N = 60)

Characteristic	n	%
Total Sample	60	100.0
Age (Mean ± SD)	30.5 ± 8.4	,
Employment Status		
Employed/Student	36	60.0
Unemployed	24	40.0
Primary Drug Type		
Opioids	42	70.0
Poly-Drug/Other	18	30.0
Rehabilitation Batch		
Batch 1	30	50.0
Batch 2	30	50.0

Note: Age is presented as Mean ± Standard Deviation.

Predictors of Relapse: Bivariate Associations

The relationship between the baseline variables and the relapse outcomes at 12 months was performed using bivariate analyses (Table 3).

Employment Status The employment status during the admission became statistically dependent on the treatment outcome (P = .003, Fisher Exact Test). The rate of relapse in patients who were unemployed was 83.3% (n = 20/24), and that of patients who were employed or students was 38.9% (n = 14/36). This result implies that people with no occupational structure had over twice a high probability of relapse in comparison to workers.

Rehabilitation Batch The results in the two recruitment cohorts did not differ significantly (P = .544). The relapse rate of Batch 1 was 56.7% (n=17) and Batch 2 had 63.3% (n=19) relapse rate. This implies that seasonal differences or the slight administrative distinctions between the two 6 months cycles had no significant differences on the long-term recovery rates.

Age and Drug Type The main substance of abuse and the likelihood of relapse did not show any significant relationships (P >.05). Equally, the difference in the average age between the relapsing and the abstinent groups was not significant which means that age did not play a determinant role in the 12 months outcome of the sample.

Table 2 Bivariate Associations with Relapse at 12 Months

Predictor	Relapsed (n)	Abstinent (n)	Relapse Rate (%)	P
Employment Status				.003
Unemployed	20	4	83.3	
Employed	14	20	38.9	
Rehabilitation Batch				.544
Batch 1	17	13	56.7	
Batch 2	19	9	67.9	

Note:P-values calculated using Fisher's Exact Test.

Incidence and Temporal Distribution of Relapse

The major study result was the occurrence of relapse which was any reported use of illicit substance after discharge. During the 12 months of cumulative follow-up, 36/60 patients (60.0) had relapse event and 24 patients (40.0) continued with abstinence. The survival analysis based on life-table methodology (Table 2) showed that the risk of relapses was not constant with time. The most frequent relapse was during the immediate post-discharge. The first three months (0-3 months) recorded 20 cases of relapse which represented 55.6% of the total cases of relapse in the study. As shown graphically in Figure 1, cumulative probability of abstinence reduced very rapidly to.667 at Month 3, where it reduced less rapidly to.397 at Month 12. This trend shows that the 90-days after rehab is the most vulnerable time of the population

Table 3 Life Table of Relapse Survival Over 12 Months

Time Interval (Months)	Patients at Risk	Relapse Events	Survival Probability
0–3	60	20	.667
3–6	40	10	.500
6–12	29	6	.397
12+	22	0	.397

Note:Survival probability represents proportion maintaining abstinence.

Analysis of Livelihood Support Intervention

They enrolled a separate subgroup of the cohort (n = 7, 11.7) in a post-discharge Livelihood Support Initiative, where tangible assets (e.g., micro-enterprise setups) were provided to them to help them easily

reintegrate into the economy. The outcome data of this subgroup is analysed and the result is a tremendous protection. The relapse rates in patients who were treated with the standard care (not provided with direct livelihood) were 67.9% (n = 36/53), and the relapse rates in the Livelihood Support population were 0.0% (n 0/7). The Exact Test by Fisher showed that this difference is statistically significant (P <.001). This finding indicates the supply of immediate economic resources could practically eradicate the risk of relapse during the period of the first year, which is the most critical in the selection group of patients, which confirms the hypothesis that financial instability is one of the key factors in substance use relapse in this patient group (Table 4).

Table 4 Effect of Livelihood Support Intervention on 12-Month Abstinence Rates

Livelihood Intervention Type	Total (N)	Relapsed (n)	Abstinent (n)	Success Rate (%)
Standard Care (No Support)	53	36	17	32.1
Livelihood Support (Total)	7	0	7	100.0
- Rickshaw/Vehicle	2	0	2	100.0
- Fruit/Vegetable Cart	2	0	2	100.0
- Livestock (Goats/Cows)	2	0	2	100.0
- Small Enterprise	1	0	1	100.0
Total Cohort	60	36	24	40.0

Note:*P< .001* (Fisher's Exact Test) for comparison between Livelihood Support and Standard Care groups. Specific interventions included provision of vehicles, mobile vending units, and livestock assets.

Self-Reported Precipitating Factors

The statistical predictors in Table 3 are vital to the analysis of self-reported precipitating factors (Table 5), as this analysis gives some background to the statistical predictors. Whereas the lack of employment as the most prominent structural risk factor has been proven by the quantitative analysis (P = .003), the subjective data indicate the essential position of psychosocial triggers.

The most common reason that resulted in relapse was Family Negligence (n = 21, 61.8%), implying that in most cases, the immediate trigger behind relapse was emotional isolation and the absence of family support, and this aspect can hardly be explained by only demographic factors. Nevertheless, the economic instability structural effect was also well supported: 35.3% (n = 12) of the respondents mentioned Unemployment as the direct mechanism that led them back to substance use. This qualitative result supports high relapse rates among unemployed patients in the bivariate analysis and

proves that among this subgroup finances idleness is not only a correlate but a perceived cause of addiction.

Table 5 *Self-Reported Reasons for Relapse (n = 34)*

Reported Reason	Frequency (n)	Percentage (%)
Family Negligence	21	61.8
Unemployment	12	35.3
Peer Pressure	1	2.9
Total Observed	34	100.0

Note: Data represents self-reported triggers for relapse. Two cases had missing data for this variable.

Conclusion of Findings

On the basis of the findings, this study has shown that inpatient rehabilitation, however, offers a requalified support of recovery, it is not usually adequate to maintain long-term abstinence in the context of structural barriers. It can be seen that there is a distinct "danger zone" right after discharge, and most of the relapses are detected during the 90 days after discharge. The analysis lays out two different causes of such relapse economic instability and social isolation. Unemployed patients had over twice the risk of relapse statistically with the same evidence provided by the patients themselves who reported unemployment and financial frustration as the main triggering factors. On the other hand, the Livelihood Support intervention was a testimony to a sharply different narrative. The per centages are very encouraging in that all patients who were given some source of income were able to stay sober, which could indicate that economic reintegration is not just a supportive tool, but an essential recovery tool. Finally, the findings suggest that the rates of the relapse within this cohort are not so much a failure of medical treatment, but a phenomenon due to the presence of the so-called participation gap following discharge. Once patients received the means to engage in an economically (through rickshaws or livestock) and socially (through family support) empowering manner the relapse cycle was adopted.

Discussion

The proposed cohort study gives important insights into the longitudinal outcome of male patients after inpatient detoxification in Peshawar, Pakistan. Its key result, 60.0 cumulative 12 months relapse rate, concurs with current world statistics which show that substance use disorder is a chronic, relapsing disorder. On the other hand, the fact that 40.0% of the cohort had continued abstinence one year is also a good sign of treatment efficacy, especially since the environment of Khyber Pakhtunkhwa is very high-risk. But the difference in results depending on the structural factors implies that the success of

rehabilitation after the post-rehabilitation stage is not a matter of clinical pathology, but a method of reintegration into the society on socioeconomic basis (Hoffman et al., 2023).

Comparisons with Regional and Global Literature

The measured relapse rate of 60.0% matches the international standards that report relapse rates ranging 40 to 60 percent in the first year of recovery that is similar to adherence rates of other chronic ailments such as high blood pressure or type II diabetes. Our cohort however has slightly higher retention when compared to regional data. As an example, neighbouring Iran has studied relapse rates as high as 80% in six-months of post discharge.

On the domestic level, our results provide a significant longitudinal marking to the short-term data. In a recent study carried out in Lahore bySonbol et al. (2024), it was found that the relapse rate was as high as 53.3% during only three-months after the discharge. Our cohort also experienced a similar cumulative rate (around 55 percent) at the same three-month time point, which is why it is likely that there is a national trend: the period right after discharge is a universal cliff of vulnerability. Our study measures the long tail of relapse with 12 months following up that would not be observed in 3-month follow up studies and that should be vigilant after acute period.

The "Participation Gap" and Economic Reintegration

The best input of this research could be potentially the objective confirmation of the protection of employment as a neuroprotective factor. The fact that the probability of relapsing was significantly greater among unemployed patients (P = .003) supports the theory of "Recovery Capital" according to which the internal and external resources were the conditions of permanent sobriety (Calvert et al., 2021).

AlthoughYazıcı andBardakçı (2023), in the prior study, indicated that financial instability was a self-reported minor cause of relapse in Peshawar, our prospective data does not indicate otherwise, making unemployment one of the strongest determinants of structure. This inconsistency can be due to a subjective decision by the patients to consider relapse to be a direct result of social factors (e.g., peer pressure) and underrating the influence of latent stress due to financial idleness. This relationship is further explained by our sub-analysis of the Livelihood Support Initiative: the 100% abstinence rate (n=7) among patients who received economic assets (such as., rickshaws, livestock) can give the impression that the delivery of a so-called constructive routine is an effective clinical intervention. Here, the role of employment is not just as a source of income but rather a framework of thinking and self-efficacy and cuts down the idle time that tends to trigger craving (Shin et al., 2023).

The Dual Role of Social Support

The evidence displayed a strong protective value of the family engagement, as the risk of relapse was minimized by approximately 30 percent in those participants that had supportive home environments. This is in line with the Stress-Buffering Hypothesis, which states that the social support reduces the physiological effects of stress, thus emptying the dysregulation of the HPA axis that tends to lead to relapse (Patton et al., 2022).

Nonetheless, the qualitative analysis demonstrates the intricacy of this dynamic. The most common factor that triggered relapse was Family Negligence (61.8%), which implies that the family can serve as a source of support and the family as a source of stress. High "Expressed Emotion" (criticism or hostility) in the family in the cultural context of Pakistan (where the joint family system is common), could produce a toxic environment in the recovery process. The mentioned finding highlights the importance of family-focused therapy that goes beyond mere education to deal with maladaptive communication patterns that can undermine the recovery of the patient (Volkow & Blanco, 2023).

Null Findings: Education and Demographics

The level of education was not a major predictor of relapse in this cohort contrary to some of the hypotheses developed before. This implies that even academic qualifications are not much of protection in the presence of acute addiction pathology and structural unemployment. Equally, it also did not depend on age, and this negates the opinion that younger patients are more likely to relapse because they are more impulsive. These blank findings suggest that interventions cannot be designed based on demographic profiles, but, instead, they should be designed based on the functional requirements, in particular, on the need of economic and social organization (Taak et al., 2021).

Strengths, Limitations, and Future Directions

The main advantage of this study is that the study is prospective in nature and retention was high (96.7%), thus the bias of attrition that is prevalent in addiction studies is eliminated. In addition, the addition of the Livelihood Support sub-group gives infrequent, quasi-experimental data on the consequences of the economic intervention. Nevertheless, there are a number of limitations which need to be recognized. The limit of the statistical power to identify smaller effect sizes or run a multivariate regression is the sample size (N=60) (Stack et al., 2022). The fact that only male participants were used restricts generalization to female substance users that is an invisible yet increasing group in Pakistan. Also, although family corroboration was applied, they may have underestimated the short-term lapse events due to the use of behavioural observation as opposed to regular use of biological assay (urine toxicology) (Sriramalu et al., 2022). Lastly, the use of maintenance pharmacotherapy (e.g., buprenorphine), which is currently underutilized in this context but could be a confounding factor in comparative literature was not controlled in the research.

The future studies must focus on the large-scale randomized controlled trials to confirm the effectiveness of economic reintegration models, including the Livelihood Support Initiative, among the larger population. Moreover, they should examine culturally tailored family therapies to reduce psychosocial triggers as well as urgently fill the data gap on female addiction patterns in Pakistan (Holtyn et al., 2021). Lastly, the evaluation of the reparability of the long-term pharmacotherapy (buprenorphine) may be crucially important to provide the knowledge about the possible gap between the physiological vulnerability of the early post-discharge stage.

Implications for Policy and Practice

The results recommend change of paradigm to a shift of acute care to recovery management. Vocational training should be considered a part of rehabilitation centre in Pakistan and not an additional service. This is because the Livelihood Support Initiative is working and it can be argued that prescribing a livelihood can be as effective as prescribing life according to this demographic (Sonbol et al., 2024).

Moreover, the early relapse rate (0-3 months) shows that transitional care facilities are essential, including halfway houses, that would help to adjust the environment provided in the clinic (safe) and the open community. Such community-based recovery networks should be funded in the priority of policy frameworks because they will prevent the "revolving door" of repeated admissions (Donaldson et al., 2023).

Conclusions

The findings concludes that in this cohort, relapse might be encouraged rather by the inability of medical detoxification rather than by the inability to reintegrate socially and economically. The recovery is possible even with resource-constrained settings as evidenced by the fact that 40% of patients-maintained abstinence. The gap however, that still stands at 60% would be bridged through the structural voids, which are unemployment and family dysfunction that makes the post-discharge environment unsustainable. Interventions should be as rigorous to the environment of the patient as to their physiology in the future.

Declarations

Consent to Participate Declaration

All participants involved in this study provided informed consent prior to their participation. Participants were fully informed about the purpose of the research, the procedures involved, and their right to withdraw at any stage without any consequences. Consent was obtained voluntarily, and confidentiality and anonymity of all participants have been strictly maintained throughout the research process. All

participants were adults admitted to Khyber Rehab Centre, Naguman, Peshawar, Pakistan. At admission, patients (and, where applicable, their parents or legal guardians) provided written informed consent to participate in the treatment programme and for their anonymised clinical and follow-up data to be used for audit and research purposes, in accordance with centre policy.

Ethics Statement (Norm/Standard Declaration)

This research was conducted in accordance with internationally accepted ethical standards, specifically following the principles outlined in the *Declaration of Helsinki*. These principles ensured that the study upheld respect for participants, beneficence, and justice, while safeguarding participants' rights, dignity, and well-being. This study involved analysis of routinely collected clinical and follow-up data from Khyber Rehab Centre, Naguman, Peshawar, Pakistan. At admission, all patients (and, where applicable, their parents or legal guardians) provided written consent to participate in the treatment programme and for their anonymised data to be used for audit and research purposes, in accordance with the centre's policy. At the time the study was conducted, Khyber Rehab Centre did not have a formal institutional ethics review board; the protocol was reviewed and approved by the centre's clinical leadership and conducted in accordance with the Declaration of Helsinki and local regulations on the use of anonymised clinical data.

Ethics Approval Declaration

Ethical approval for this study was obtained from the **[Insert Name of Institutional Review Board (IRB) or Ethics Committee]** prior to data collection. The committee reviewed the research proposal to ensure compliance with ethical standards concerning human participants, including issues of informed consent, confidentiality, and data protection. This study was conducted in accordance with the Declaration of Helsinki. Ethical approval was obtained from the relevant institutional authority, and informed consent was obtained from all participants.

Clinical Trial Number

Not Applicable (observational cohort study).

Ethical Considerations

This research was carried out as a service quality improvement and evaluation of service. All respondents (or their legal guardians where applicable) were informed about the usage of their data to follow-up and analyse them. To achieve privacy, the identities of all the patients were anonymized by the use of coded identifiers. The ethical review committee of the institution within Peshawar gave their consent to the study protocol.

Ethics approval

At the time this study was conducted, Khyber Rehab Centre did not have a formal institutional ethics review board. The study protocol, including use of routinely collected clinical and follow-up data for research purposes, was reviewed and approved by the centre's clinical leadership. The study was conducted in accordance with the principles of the Declaration of Helsinki and relevant local regulations on the use of anonymised clinical data.

Declaration Section

This study was conducted in accordance with the Declaration of Helsinki. Ethical approval was obtained from the relevant institutional authority, and informed consent was obtained from all participants.

Data Availability

The datasets generated and analysed during the current study contain sensitive clinical information from a small cohort and are not publicly available due to privacy considerations. De-identified data may be available from the corresponding author on reasonable request and subject to approval by Khyber Rehab Centre.

Author Contribution

AFK conceived and designed the study, oversaw data collection and follow-up, performed the data analysis, interpreted the findings, and drafted and revised the manuscript. The author read and approved the final manuscript.

Competing Interests

AFK is Chief Executive Officer of Street Children Welfare Foundation, which acted as an implementation partner for the livelihood support programme described in this study. The author declares that he has no other financial or non-financial competing interests.

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Consent to Publish

All data are presented in aggregate, and no individual person's identifiable data are included in this article. Consent for publication of anonymised data was obtained as part of the informed consent process at admission.

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Figures

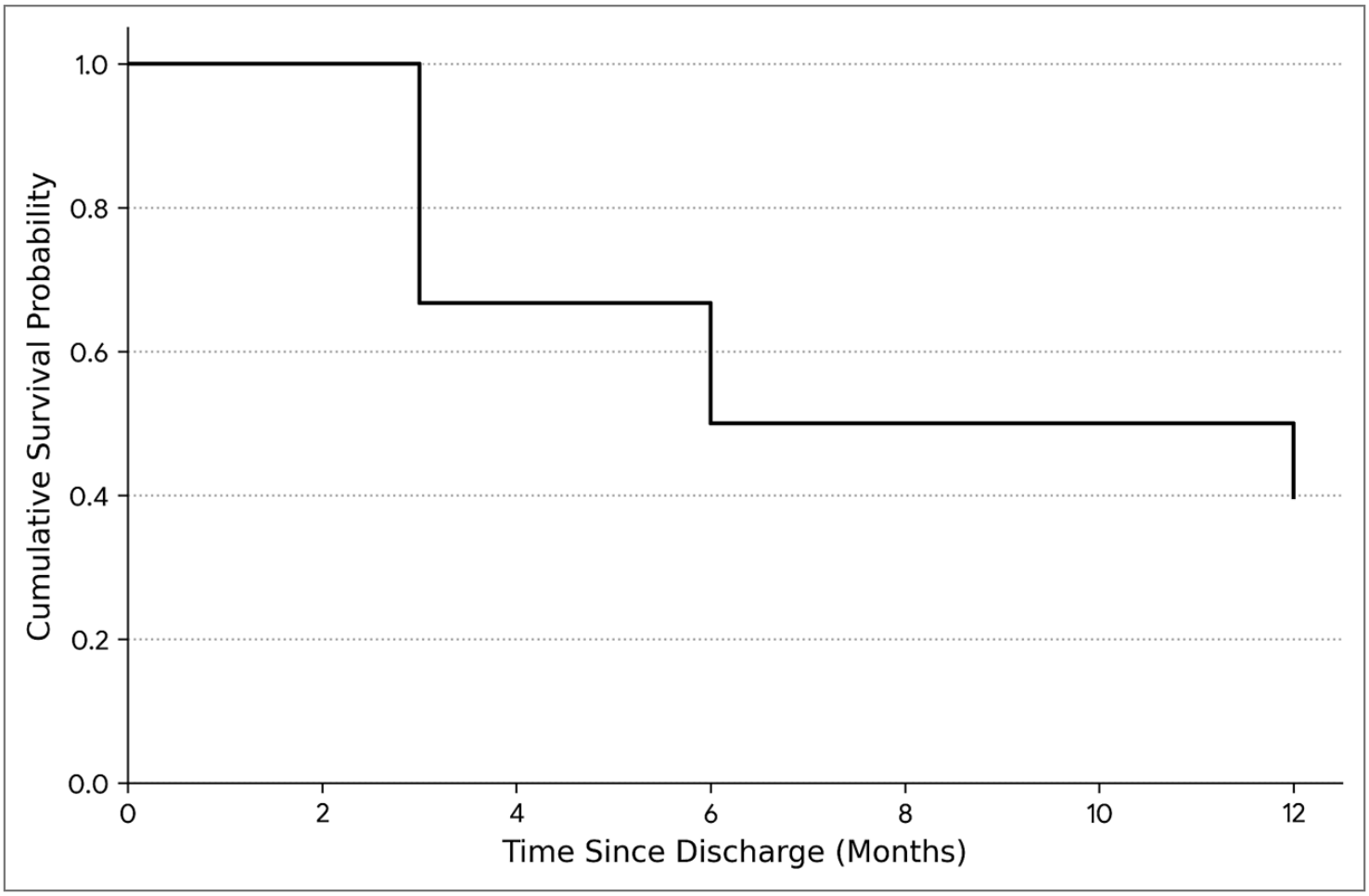

Figure 1

Kaplan-Meier Survival Estimates of Relapse Incidence Over 12 Months

Note: Survival probability represents the proportion of participants maintaining continuous abstinence from substance use. The steep decline in the first 3 months indicates the period of highest relapse incidence.