Journal of Preventive and Population Health
https://jpphealth.com/

ORIGINAL ARTICLE

Adaptive behavioral responses in detox and rehabilitation: an observational study at ReLib center (Original article)

Mohammed Abdullah AlHejji[1*], Abubakr Elmotesim Abdulla Elamin[2], Hassan Ahmad Khubrani[3], Sameera Gamal Moubark Mohamed[4], Adam Mohamed Saber Mohamed[5], Amira Gaber Ibrahim Mostafa[6]

Full list of author information is available at the end of the article.

ABSTRACT

Background: Substance use disorders require structured detoxification and rehabilitation. Patients often adapt to treatment environments by observing and responding to staff behaviors and institutional routines through adaptive behavioral responses and institutional adaptation strategies. Understanding these patterns is important for optimizing patient–provider interactions.

Methods: A qualitative observational study was conducted at the ReLib Center, including 78 patients admitted between January and March 2025. Data from clinical notes, incident reports, multidisciplinary meetings, and staff feedback were analyzed using thematic analysis to identify recurrent behavioral patterns.

Results: Patients rapidly developed awareness of institutional routines, often within the first 72 hours, enabling anticipatory and adaptive behaviors. Common patterns included adjustment of communication styles based on staff dynamics, use of emotionally expressive strategies, and repeated boundary-testing behaviors. Behavioral complexity varied according to cognitive functioning.

Conclusion: Patients actively adapt to structured treatment environments through observable behavioral strategies. Recognizing these patterns can improve staff preparedness, promote consistent clinical responses, and strengthen therapeutic engagement. Structured training, standardized communication, and clear institutional boundaries are recommended to support effective and patient-centered care.

Keywords: Substance use disorders (SUDs), detoxification, rehabilitation, adaptive behavioral responses, institutional adaptation, patient–provider interaction, addiction treatment.

Introduction

Substance use disorders (SUDs) are chronic, complex conditions characterized by compulsive substance use despite harmful consequences, requiring integrated medical and psychosocial interventions. Detoxification addresses withdrawal and physiological stabilization, while rehabilitation focuses on long-term behavioral change, relapse prevention, and reintegration [1,2].

Within these structured settings, patients often develop adaptive behavioral responses through observing staff behaviors, institutional routines, and decision-making processes. These responses may include strategic communication, selective symptom reporting, and adjustment of therapy engagement to influence treatment interactions or obtain perceived needs [3,4]. Such behaviors are commonly understood as adaptive coping mechanisms, survival strategies within institutional contexts, or forms of behavioral influence directed toward healthcare providers [5,6].

Correspondence to: Mohammed Abdullah AlHejji
*Executive Director of Extended Care, DG. Relib Center, Riyadh, Saudi Arabia.
Email: malhejji@care.med.sa
Received: 09 March 2026 | **Revised:** 20 May 2026 | **Accepted:** 23 May 2026

The predictability of detoxification and rehabilitation programs facilitates pattern recognition and adaptation to staff responses [7,8]. These dynamics are influenced by social learning processes and repeated exposure to institutional routines [9,10]. While such behaviors may sometimes be perceived as institutional adaptation or resistance, they should be understood within the broader neurobehavioral and psychological context of addiction [11].

Patient–staff interactions play a central role in treatment engagement and outcomes. Environmental structure, staff consistency, and communication styles significantly influence patient behavior, while inconsistent responses may reinforce maladaptive strategies [12-14]. Theoretical frameworks from institutional psychology further emphasize the reciprocal relationship between patient behavior and organizational routines, authority structures, and environmental constraints [15-18]. Cultural and contextual factors, particularly within Middle Eastern settings, may additionally shape communication and disclosure patterns [19-21].

Despite recognition of these dynamics in clinical practice, limited empirical research has examined micro-level patient–staff interactions in addiction treatment settings, restricting understanding of how behavioral adaptation influences engagement, adherence, and clinical decision-making.

This study aims to characterize adaptive behavioral responses among patients in detoxification and rehabilitation settings to better understand patient–provider interactions and improve clinical care. It focuses on identifying recurrent behavioral strategies, examining their timing and contextual determinants, and evaluating their impact on clinical decision-making, treatment engagement, and adherence. The study also assesses the influence of cognitive, psychosocial, and cultural factors—particularly within Middle Eastern contexts—and seeks to generate evidence-based recommendations for staff training, clinical practice, and institutional policies that support effective management of adaptive behavioral responses while preserving patient-centered care.

Methodology

Study design

This cross-sectional retrospective observational qualitative study was conducted between January and March 2025 and explored behavioral patterns among patients undergoing inpatient detoxification and rehabilitation. Focusing on their ability to observe and respond to staff behavior and institutional routines. A qualitative, naturalistic approach was employed to capture context-dependent behaviors without experimental manipulation.

Study setting

The study was conducted at the ReLib Center, a specialized inpatient facility providing structured detoxification and rehabilitation services for individuals with SUDs. The center's predictable daily routines—encompassing medication administration, therapy sessions, clinical assessments, and continuous multidisciplinary monitoring—provided an ideal environment for observing adaptive patient behaviors.

Participants

The study included 78 patients admitted between January and March 2025. Inclusion criteria required adults (≥18 years) diagnosed with SUD, a minimum inpatient stay of 7 days, and availability of relevant clinical documentation. Patients with severe cognitive impairment, acute delirium, psychotic symptoms, or incomplete records were excluded.

Data collection

Multiple sources were utilized to ensure a comprehensive behavioral analysis. Daily clinical progress notes, behavioral incident reports, and multidisciplinary meeting records documented patient interactions, treatment participation, and observed behaviors. Informal staff feedback from physicians, nurses, and therapists provided additional contextual insights.

Data analysis

Data were analyzed using qualitative thematic analysis. Clinical notes, behavioral incident reports, and multidisciplinary meeting records were systematically reviewed to identify recurring behavioral themes and patterns related to patient adaptation to institutional structures and staff interactions. Initial coding was performed independently by two reviewers with clinical experience in addiction and mental health settings to enhance analytical rigor and reduce interpretive bias.

Codes were generated inductively from the data and subsequently organized into broader thematic categories through iterative review and discussion. Discrepancies in coding or thematic interpretation were resolved through consensus discussions between the reviewers, and where necessary, additional review of the original documentation was conducted to ensure consistency and accuracy.

The analysis focused on identifying recurrent adaptive behavioral responses, interpersonal strategies, and boundary-testing behaviors observed across multiple clinical contexts. Data collection and thematic review continued until thematic saturation was achieved, with no substantially new behavioral themes emerging from subsequent record analysis. The final themes were reviewed collectively to ensure coherence, consistency, and relevance to the study objectives.

Results

The study sample consisted of 78 adult patients admitted for inpatient detoxification and rehabilitation

between January and March 2025. Participants ranged in age from 18 to 56 years, with a mean age of 31.8 years, and the majority were male. Substance use patterns included amphetamines, opioids, cannabis, alcohol, and polysubstance use. Several patients had documented psychiatric comorbidities, including depressive symptoms, anxiety-related disorders, trauma-related symptoms, sleep disturbances, and personality-related features. Length of admission varied according to detoxification and rehabilitation needs, ranging from 7 to 90 days.

Qualitative analysis of clinical documentation, behavioral incident reports, and multidisciplinary meeting transcripts revealed consistent behavioral patterns among patients in detoxification and rehabilitation units. Five principal themes emerged: observational sharpness, adaptive interpersonal behavior, emotionally expressive strategies, boundary-testing behaviors, and behavioral complexity linked to cognitive functioning.

Observational sharpness

Patients rapidly developed awareness of institutional routines, including medication schedules, therapy sessions, and staff interactions, often within the first few days of admission. This facilitated anticipatory behaviors and informed strategic timing of requests, allowing patients to navigate the system effectively. For example, one patient (Patient A) repeatedly approached staff shortly before consultant rounds, requesting medication adjustments after observing that treatment decisions were commonly reviewed during that period. Another patient (Patient B) consistently delayed behavioral complaints until shift changes, when responses were perceived to be less structured.

Adaptive interpersonal behavior

Patients adjusted their communication style, tone, and demeanor based on the perceived expectations of individual staff members. Cooperative or motivated behavior was frequently directed toward senior clinicians, while frustration or resistance was expressed toward others, reflecting adaptive alignment with institutional authority structures. For instance, Patient C was documented as calm, cooperative, and highly engaged during physician interviews but became argumentative during nursing medication administration when requests were declined. Similarly, Patient D demonstrated markedly different interaction styles with male and female staff members depending on perceived flexibility and emotional responsiveness.

Emotionally expressive strategies

Patients occasionally employed emotionally charged narratives to elicit empathy or influence clinical decisions. While some disclosures reflected genuine distress, others appeared targeted at staff perceived as more emotionally responsive, highlighting the need for consistent staff responses to maintain professional boundaries. One patient (Patient E) repeatedly described family-related distress immediately prior to requesting additional phone privileges. Another patient (Patient F) emphasized severe insomnia and emotional suffering during discussions regarding medication increases despite limited objective signs of distress during routine observation periods.

System testing and boundary exploration

Patients engaged in behaviors aimed at probing institutional rules, including repeated requests, selective symptom reporting, and attempts to modify treatment protocols. These behaviors were particularly prominent during the early detoxification phase, often coinciding with withdrawal-related stress. Examples included one Patient requesting smoking exceptions from multiple staff members after initial refusal and another Patient providing inconsistent symptom reports to different clinicians regarding withdrawal severity and sleep duration. Additionally, another patient repeatedly attempted to negotiate visitation restrictions despite a clear explanation of unit policy.

Cognitive function and behavioral complexity

Behavioral sophistication varied with cognitive ability. Higher-functioning patients employed complex interpersonal strategies, including selective information sharing and triangulation among staff, whereas others exhibited more direct forms of boundary-testing behaviors. For example, some patients selectively disclosed personal concerns to staff members perceived as more sympathetic while withholding the same information from other clinicians. In contrast, lower-functioning patients more commonly displayed overt verbal demands, repeated questioning, or direct requests for rule exceptions.

Temporal patterns

Many behaviors emerged within the first 72 hours of admission. Consistent staff communication and clear enforcement of institutional policies mitigated adaptive and boundary-testing behaviors over time, while inconsistent responses reinforced adaptive strategies. Documentation involving several patients demonstrated a gradual reduction in repeated requests and negotiation behaviors after the multidisciplinary team implemented consistent responses and clearly reinforced unit expectations across all shifts.

Discussion

This study highlights the complex interplay between patients undergoing detoxification and the structured institutional environment of treatment settings. Patients demonstrated active behavioral strategies—including observational awareness, adaptive interpersonal behavior, emotional influence, boundary-testing behaviors, and variable behavioral complexity—indicating that they actively interpret and respond to institutional structures.

Rapid development of observational awareness was evident within the first 72 hours of admission, consistent

with observational learning principles, whereby patients quickly recognized routines, staff schedules, and communication patterns. Adaptive interpersonal behaviors, including impression management, were employed strategically, with patients modulating interactions according to perceived authority or empathy among staff. Emotional influence tactics, such as sharing distressing narratives during requests or denials, further illustrated patients' use of interpersonal strategies to navigate the clinical environment.

Boundary testing was another prominent theme, including repeated requests, protocol negotiation, and triangulation among staff members. Such behaviors likely reflect a combination of strategic social interaction and responses to withdrawal-related distress. Variation in behavioral complexity suggested that cognitive functioning and communication skills influenced the sophistication of these strategies.

Importantly, these observed behaviors should not be universally interpreted as intentional manipulation, as many may represent adaptive coping responses related to withdrawal, psychological distress, anxiety, impaired impulse control, or adjustment to the treatment environment. Consequently, these behaviors should be understood within a broader biopsychosocial and trauma-informed framework, recognizing the psychological and neurobehavioral dimensions of SUDs.

Clinically, these findings underscore the importance of consistent communication, clear boundaries, and coordinated multidisciplinary responses while maintaining compassionate, patient-centered care.

Overall, understanding these behavioral patterns may inform staff training, boundary management, and clinical strategies that support treatment integrity and patient recovery.

Conclusion and Recommendation

Understanding these dynamics can help healthcare professionals anticipate common behavioral responses and respond with consistent, coordinated, and therapeutically appropriate strategies. Strengthening staff communication, maintaining clear institutional boundaries, and providing early patient orientation may help reduce system-related conflicts while preserving a supportive therapeutic environment.

Also, the findings highlight the importance of recognizing the interaction between patient behavior and institutional structure within addiction treatment settings. Increased awareness of these behavioral patterns can contribute to improved clinical management, more effective multidisciplinary collaboration, and ultimately better treatment outcomes for individuals undergoing detoxification and rehabilitation.

Overall, the findings of this study highlight the importance of consistent multidisciplinary communication, clear institutional boundaries, and staff awareness of adaptive patient behavioral responses during detoxification and rehabilitation. Structured staff training in therapeutic communication, boundary-setting, and trauma-informed care may improve management of challenging patient interactions while preserving patient-centered care. Standardized institutional approaches and coordinated team responses may further reduce behavioral conflicts and support treatment engagement.

Strengths and Limitations of the Study

Strengths

This study utilized multiple data sources, including clinical documentation, incident reports, and multidisciplinary records, enabling a comprehensive assessment of patient behavior across clinical contexts. The qualitative thematic approach allowed for in-depth identification of recurring behavioral patterns and provided nuanced insights into patient adaptation within structured treatment environments. Additionally, the real-world clinical setting enhances the practical relevance of the findings, particularly the early identification of behavioral adaptation within the first 72 hours of admission.

Limitations

The study relied on retrospective documentation and staff observations, which may introduce reporting and interpretation bias. The absence of direct patient input limits insight into patient perspectives. Conducted at a single center, the findings may have limited generalizability. Furthermore, the lack of formal cognitive or psychological assessments and the qualitative design precluded measurement of behavioral prevalence or statistical significance.

List of Abbreviations

IRB	Institutional Review Board
SUD(s)	Substance Use Disorder(s)

Conflict of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Funding

This research received no external funding. The study was conducted independently by the author(s) without financial support from any funding agency, commercial organization, or not-for-profit institution.

Consent to participate

Patient informed consent was not required because it involved retrospective review of anonymized clinical records and observational data collected as part of routine clinical care, with no direct patient contact or intervention. Also, All data were anonymized, and no

interventions beyond routine care were introduced, ensuring a non-invasive approach that preserved treatment integrity while enhancing understanding of patient behavioral dynamics.

Ethical approval

Ethical approval for this study was obtained prior to the commencement of the research from the Institutional Review Board of Care Medical, approval number IRB-010/220925.

Author details

Mohammed Abdullah AlHejji[1], Abubakr Elmotesim Abdulla Elamin[2], Hassan Ahmad Khubrani[3], Sameera Gamal Moubark Mohamed[4], Adam Mohamed Saber Mohamed[5], Amira Gaber Ibrahim Mostafa[6]

1. Executive Director of Extended Care, DG. Relib Center, Riyadh, Saudi Arabia
2. Specialist, Department of Internal Medicine, Relib Center, Riyadh, Saudi Arabia
3. Consultant, Psychiatric and Addiction-Relib Centre
4. General Practitioner, Sychiatric Department, ReLib Centre, Riyadh, Saudi Arabia
5. ReLib Centre, Acting Head Nurse, Senior Specialist Psychiatric Nurse, MSN in Psychiatric Nursing, Riyadh, Saudi Arabia
6. ReLib Centre, MSN in Critical Care and Emergency Nursing, Riyadh, Saudi Arabia

References

1. Mclellan AT, Lewis DC, O'Brien CP, Kleber HD. Drug dependence, a chronic medical illness: implications for treatment, insurance, and outcomes evaluation. JAMA. 2000;284(13):1689–95. https://doi.org/10.1001/jama.284.13.1689
2. Marlatt GA, Donovan DM. Relapse prevention: maintenance strategies in the treatment of addictive behaviors. 2nd ed. New York, NY: Guilford Press; 2005.
3. Bandura A. Social learning theory. Englewood Cliffs, NJ: Prentice-Hall; 1977.
4. Paul GL, Lentz RJ. Behavior patterns within a psychiatric hospital ward. Behav Res Ther. 1979;17(4):317–2. https://doi.org/10.1016/0005-7967(79)90004-4
5. Weinstein RM. Mental patients' attitudes toward hospital staff. A review of quantitative research. Arch Gen Psychiatry. 1981;38(4):483–9. https://doi.org/10.1001/archpsyc.1981.01780290117013
6. Nijman HLI, Á Campo JMLG, Ravelli DP, Merckelbach HLGJ. A tentative model of aggression on inpatient psychiatric wards. Psychiatr Serv. 1999;50(6):832–4. https://doi.org/10.1176/ps.50.6.832
7. Wood RL, Alderman N. Applications of behavioural management techniques in clinical settings. Neuropsychol Rehabil. 2017;27(8):1179–200.
8. Goffman E. Asylums: essays on the social situation of mental patients and other inmates. New York, NY: Anchor Books; 1961.
9. Koob GF, Volkow ND. Neurobiology of addiction: a neurocircuitry analysis. Lancet Psychiatry. 2016;3(8):760–3. https://doi.org/10.1016/S2215-0366(16)00104-8
10. Khantzian EJ. The self-medication hypothesis of addictive disorders: focus on heroin and cocaine dependence. Am J Psychiatry. 1985;142(11):1259–64. https://doi.org/10.1176/ajp.142.11.1259
11. Miller WR, Rollnick S. Motivational interviewing: helping people change. 3rd ed. New York, NY: Guilford Press; 2013.
12. Nilsen SL, Stone WL, Burleson SL. Identifying medical-surgical nursing staff perceptions of the drug-abusing patient. J Addict Nurs. 2013;24(3):168–72. https://doi.org/10.1097/JAN.0b013e3182a4cb9c
13. Petersén E, Thurang A, Berman AH. Staff experiences of encountering and treating outpatients with substance use disorder in the psychiatric context. Addict Sci Clin Pract. 2021;16(1):29. https://doi.org/10.1186/s13722-021-00240-6
14. Glantz A, Örmon K, Sandström B. How do nurses spend their working time in psychiatric inpatient care? BMC Nurs. 2019;18:67. https://doi.org/10.1186/s12912-019-0386-5
15. Välimäki M, Lantta T, Lam YTJ, Cheung T, Cheng PYI, Ng T, et al. Perceptions of patient aggression among staff in psychiatric hospitals. BMC Psychiatry. 2022;22:344. https://doi.org/10.1186/s12888-022-03976-9
16. Sharma M, Lamba W, Cauderella A, Guimond TH, Bayoumi AM. Harm reduction in hospitals: a systematic review of interventions. Harm Reduct J. 2017;14:32. https://doi.org/10.1186/s12954-017-0163-4
17. Riskin A, Erez A, Foulk TA, Riskin-Geuz KS, Ziv A. The impact of rudeness on medical team performance: a randomized trial. Pediatrics. 2017;139(2):e20162305. https://doi.org/10.1542/peds.2016-2305
18. Wood RL, Alderman N. Applications of behavioural management techniques in clinical settings. Neuropsychol Rehabil. 2017;27(8):1179–200. https://doi.org/10.1080/09602011.2015.1117496
19. Peng L, Titus H, Roellich P, Englander H. Adapting contingency management for hospitalized patients with stimulant use disorder. J Addict Med. 2023;17(6):e339-45. https://doi.org/10.1097/ADM.0000000000001188
20. Reen GK, Bailey J, Maughan DL, Vincent C. Interventions to improve constant observation on psychiatric wards: a systematic review. Int J Ment Health Nurs. 2020;29(5):751–67. https://doi.org/10.1111/inm.12750
21. Alomary N, Hasan A. Attitudes of mental health nurses toward substance use patients and their treatment in Saudi Arabia. Health Sci J. 2021;15(3):1–7.