

Management of Borderline Personality Disorder Crises in the Emergency Room: A Case Study

Taqialdeen Zamil, Talato Kabore, Ayman Tailakh, Khadija Hamisi

School of Nursing, California State University, Los Angeles, USA

Email: tzamil@calstatela.edu

How to cite this paper: Zamil, T., Kabore, T., Tailakh, A. and Hamisi, K. (2025) Management of Borderline Personality Disorder Crises in the Emergency Room: A Case Study. *Open Journal of Medical Psychology*, **14**, 32-40.

<https://doi.org/10.4236/ojmp.2025.141003>

Received: November 21, 2024

Accepted: January 18, 2025

Published: January 21, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

This case study describes the care provided to a female patient with borderline personality disorder (BPD) who presented to the emergency department (ED). While people with borderline personality disorder use emergency services frequently, clinicians often face difficulties when providing medical and behavioral services to these patients. It may be difficult for nurse practitioners to determine if a patient with BPD who presents to the ED in crisis should be admitted, medicated, observed, or discharged. Self-harm is frequently confused with suicide attempts, which can result in unnecessary hospitalizations. This case study seeks to examine the proper management and difficulties encountered by healthcare providers in managing crises involving individuals with BPD in ED settings. The case study underscores the significance of thorough evaluation, recognition of BPD characteristics, active engagement in treatment, the therapeutic alliance, and the emphasis on interpersonal connections and stressors alongside the utilization of psychopharmacology.

Keywords

Borderline Personality Disorder, Psychiatric Crises, Borderline Personality Crises

1. Introduction

Personality disorders are mental health disorders that impair functioning by recurring unhealthy patterns of behavior, thought, and emotion that don't match society's expectations [1]. There are 10 distinct personality disorders classified by the Diagnostic and Statistical Manual, Fifth Edition (DSM-5) [1]. Borderline personality disorder (BPD) is characterized by unstable relationships and dysfunctional mood, affect, reality, and function [1]. BPD is not diagnosed until the age

of 18 due to specific developmental differences. Due to the nature of symptoms, people with BPD use mental health services heavily and are more prone to attend crisis centers and emergency rooms [2].

Significance and Prevalence

Individuals with BPD are more prone to visit the emergency room due to a variety of characteristics including chronic suicidality, self-destructive tendencies, emotional instability, binary thinking, and impulsivity. Elison *et al.* [3] report that 1% of the population has BPD, albeit prevalence varies by locality. BPD affects 20% to 22% of mental health hospitalized patients and 10% to 12% of outpatients [1]. Dizygotic twins have a seven percent BPD prevalence, but monozygotic twins have 35%, demonstrating its genetic nature [4]. BPD accounts for 9% of mental health crises and 12% to 18% of psychiatric hospitalizations [5]. According to Shin *et al.* [6], 60% to 80% of individuals with BPD attempted suicide. While 8% - 10% of individuals with BPD completed suicide [7]. Another BPD symptom is self-harm which about 63% - 80% of patients attempt [8] [9]. Patients with BPD need more mental health services than the general U.S. population. In general, between 70% to 95% of patients receive psychosocial therapy and 79% may require inpatient care [5].

2. Case Vignette

A 24-year-old woman, with a history of trauma and BPD, presented to the Emergency Department reporting suicidal thoughts and a plan to kill herself by cutting her wrist following a breakup with her boyfriend. The patient had superficial horizontal cuts on both forearms. She had been experiencing anxiety and depression symptoms in the weeks leading up to the ED visit. She reported experiencing chronic suicidality but did not have a plan until she had the breakup on the day of ED visit. Her sister, who was present at the Emergency Department described her as “dramatic” and mentioned that she tends to have emotional breakdowns and engage in cutting during periods of stress.

She was hospitalized 4 times in the past for suicidality. She has recently stopped taking antidepressants due to side effects. She had no significant medical history nor family history. Her immunizations were up to date. The patient has a history of childhood trauma which involved witnessing domestic violence. Her parents separated when she was a teenager. She had multiple relationships in the past, in which she struggled with abusive partners.

The physical examination revealed small wounds on both forearms but was otherwise normal with no signs of distress. The patient’s vital signs were normal: blood pressure 121/72 mm Hg, heart rate 98 beats/min, respiratory rate 24 breaths/min, oxygen saturation 99% on room air, and oral temperature 37.1 C. The diagnostic tests she received were a complete blood count, metabolic panel, pregnancy test, and urine drug screen. The results of her blood work were normal, and both the urine drug screen and pregnancy tests came back negative. She completed the

Adverse Childhood Experience Questionnaire (ACEs) and scored 7. She completed the Columbia Suicide Severity Rating Scale (C-SSRS) and scored 19. In this case, the ED clinician did not utilize the McLean Screening Tool for BPD [10] since Amy has already been diagnosed with the disorder. The ED practitioner performed a mental status examination. The patient appearance was appropriate to age, she was agitated, sobbing, which made it harder for her to communicate. She expressed suicidal ideation with a plan to cut her wrist. She was not experiencing any auditory or visual hallucinations and did not exhibit delusional or paranoid thinking. She demonstrated appropriate insight and judgment.

While some hospitals offer emergency psychiatric care in the ED, these were not offered at this facility. Emergency practitioners, including physicians, nurse practitioners, and physician associates, may have to use their clinical judgment to determine the proper course of action and avoid unnecessary treatments that might negatively affect treatment outcomes. In this case, the ED practitioner conducted an interview and took a history as the patient struggled to communicate. Her sister offered collateral history. The practitioner opted to prescribe Olanzapine 10 mg oral tablet to alleviate agitation.

The patient was observed overnight and was reassessed in the morning. She was more communicative in the morning and reported feeling better. She denied having suicidal ideations or urges to self-harm. The patient reported that the superficial cuts she inflicted were not an attempt to end her life and explained that cutting makes her feel better and less stressed. She reported receiving dialectical behavior therapy (DBT) in the past but has not had any therapy sessions in the past 2 years. She is currently off medications because they caused her side effects. The patient agreed to enroll in an intensive outpatient program that provides DBT and other clinical services. A safe discharge plan was discussed with the patient and her sister, who agreed to stay with her for the next few days. She was discharged from the emergency department later that day. The patient agreed to enroll in an intensive outpatient program that provides DBT and other clinical services. A safe discharge plan was discussed with the patient and her sister, who agreed to stay with her for the next few days. She was discharged from the emergency department later that day.

3. Pathophysiology

As there is no single cause of BPD, a variety of factors may be involved [4]. In recent years, a relationship has been made between the development of BPD and childhood trauma, such as sexual, emotional, and physical abuse. Notably, traumatic experiences in childhood alter the amygdala, prefrontal cortex, and hypothalamus-pituitary-adrenal axis, which increases the risk of developing BPD [4]. According to Saccaro *et al.* [11], depression and anxiety are illnesses that predispose individuals to BPD, therefore they also play a part in the development of BPD. For instance, sadness and anxiety raise neuroendocrine stress, which results in neurotransmitter imbalances and inflammatory reactions that ultimately cause

BPD [11]. Bøen *et al.* [12] indicated that individuals with BPD had reduced metabolic activity in the brainstem and midbrain, establishing a correlation between declined brain activity in certain regions of the brain and the disorder. According to Nia *et al.* [13], the genetic factors in the development of BPD are not fully understood, due to the limited scope of research in this area. The limited data suggests multifactor may contribute to the development of BPD including genetic and environmental [13].

4. Risk Factors

Amy has experienced a great deal of trauma throughout her childhood. BPD is complex and is influenced by several risk factors. De Aquino *et al.* [14] highlight sexual harassment and assault, childhood sexual abuse, and adult sexual abuse as potential contributions to the development of borderline personality disorder. Traumatic experiences can disrupt a person's self-image and relationships, causing instability and impulsivity of patients with BPD. Zanarini *et al.* [15] suggested that childhood abuse and neglect set the stage for emotional dysregulation and relational issues, which increase BPD risk. Psychological factors also play a significant role in the BPD risk profile. Yen *et al.* [16] emphasized the relationship between BPD and concomitant anxiety and depressive illnesses.

5. Recognizing the Problem and Diagnosis

Amy has been dealing with borderline personality traits since her teenage years, and her family has always thought she was quite dramatic. Although general and emergency department practitioners may observe BPD's maladaptive behaviors, they may fail to recognize them as part of a more complex condition. Anger and mood instability are common in BPD patients during crises. Bipolar and major depressive disorder symptoms may resemble BPD. Trauma and chronic suicidality are significant risk factors of Borderline Personality Disorder [15]. In this case study, Amy scored 7 on the Adverse Childhood Experience Questionnaire (ACEs) [17] and scored 19 on the Columbia Suicide Severity Rating Scale (C-SSRS) [18]. Although the most reliable method for diagnosing BPD is a formal clinical interview based on DSM-5 criteria, emergency department providers may employ the McLean Screening Tool for BPD to assist in identifying various symptoms and guiding the treatment strategy [19]. The DSM-5 diagnostic criteria for borderline personality disorder includes nine symptoms, with the diagnosis being granted if five of the nine symptoms are present. Symptoms include frantic attempts to prevent abandonment, unstable relationships, distorted self-image, impulsivity, suicidality & self-harm, mood swings, emptiness, excessive anger, and dissociation [1].

6. Crisis Management in the Emergency Department

Similar to Amy's presentation, relationship crises, is a common reason that would cause people with BPD end up in the hospital or emergency room due to the

severity of symptoms and emotional state [20]. Crises involving self-harm, suicidality, violence, and agitation present complex challenges for healthcare professionals and ED staff [20]. Hong [2] found in his article that unnecessary hospitalizations, ineffective risk assessment, excessive pharmacotherapy use, and volatile interactions occurring with emergency staff are some of the factors that are affecting the treatment outcome of BPD crises in the emergency department. This can be mitigated and requires careful consideration of both immediate and long-term impacts on health. Restoring the individual's mental state to its pre-crisis balance while preventing lasting negative effects is the top priority in managing these crises [21].

7. Appropriate Psychiatric Management of Borderline Personality in the Emergency Department

The management of borderline personality disorder involves a continuous process in which the individual and their treating clinician collaborate to achieve specific goals. These goals are to foster a supportive environment, establish a healthy professional relationship, and employ therapeutic communication to sustain the professional relationship and prevent transference and countertransference. Gundersen and Links [22] outlined the eight elements of effective psychiatric treatment for BPD. 1) Provide psychoeducation; 2) Be proactive, not reactive; 3) Be thoughtful; 4) Establish a relationship that is both real and professional; 5) Communicate that change is anticipated; 6) Foster accountability; 7) Maintain a focus on life outside of therapy; and 8) Be flexible, pragmatic, and eclectic. While the concepts apply to the continuing management of BPD, several of them are also applicable to emergency and crisis management of BPD.

7.1. Psychoeducation

Discussing BPD diagnosis, symptoms, and treatment may assist the patient to understand the disorder's dynamics, and how it may affect their feeling and reaction to stressors. For those without a formal BPD diagnosis, it is vital to teach the patient and their loved ones about the condition and its treatment. Assure the patient that the prognosis for BPD is favorable and that the majority of people with BPD achieve remission, with some even making a full recovery [23]. In the case Vignette, Amy's grasp of the nature of mood changes, emotions, and crises in the context of BPD helped to speed up stabilization, avoid hospitalization, and motivate her to resume therapy.

7.2. Be Active, Not Reactive

BPD patients are inclined to be sensitive and reserved. It is essential to make the patient perceive the provider's presence and involvement in their treatment. Ask about their symptoms, stressors, and therapy. It is crucial to avoid overinvolvement and reactivity, which may result in unneeded treatments and suboptimal treatment outcomes [22]. The medical professionals who assisted Amy in this case

utilized active listening, conducted a thorough assessment, and made her feel valued. Amy's perception of being cared for made her more responsive to receiving medications, prevented any escalation during the visit, and inspired her to follow the recommended course of action following discharge.

7.3. The Therapeutic Relationship

Individuals with BPD are more likely to have longer and more frequent ED visits, despite the fact that ED visits might be brief. The establishment of a therapeutic relationship with BPD patients and their participation in the treatment plan may aid in the formulation of realistic expectations. Using an authentic style strengthens the therapeutic alliance and enhances the patient's perception of the provider's concern [2]. The formation of a therapeutic alliance and the discussion of realistic expectations facilitated Amy's receptiveness to available treatment options, thereby averting unnecessary inpatient service utilization and emphasizing outpatient treatment instead.

7.4. Focus on Relationships and Stressors

Relationship instability is the leading cause of mental health crises among those with BPD. Understanding the circumstances preceding the crisis may assist the patient in regulating and organizing their emotions [2] [22]. Amy's crisis originated from relationship difficulties that intensified following her breakup with her boyfriend. Facilitating the discussion and comprehending the impact of BPD on relationships may assist Amy in rectifying unhealthy relational patterns from her past, while participation in outpatient psychotherapy could alleviate relational difficulties and help in establishing healthy relationships.

8. Psychopharmacotherapy

While there are no FDA-approved treatments for BPD, numerous psychotropic medications have demonstrated efficacy in the treatment of this condition. Antidepressants, mood stabilizers, second-generation antipsychotics, are often prescribed in the treatment of BPD. Before prescribing, the treating practitioner should weigh the potential benefits and risks of employing any psychotropic medications [24].

8.1. Psychopharmacology Treatment in the Emergency Setting

Amy received Olanzapine 10 mg, which is a sedative antipsychotic medication that may help deescalate high levels of agitation and anxiety. Second generation antipsychotics are frequently prescribed to individuals with BPD who present with agitation and/or extreme anxiety to mitigate the risks associated with agitation and severe anxiety [24]. Antihistamines and other short-term sedatives are the initial treatment for a BPD crisis if the individual's presentation is not associated with agitation. This approach has fewer adverse effects, a low potential for abuse, no overdose hazards, and a minimal likelihood of addiction [25].

8.2. Maintenance Psychopharmacology Treatment

Treatment for BPD can include selective serotonin reuptake inhibitors (SSRIs) which are often used because they are seen as a safe alternative with few potential adverse effects [26]. Other drugs with a low risk of abuse, overdose, or dependency can be used. Serotonin norepinephrine reuptake inhibitors (SNRIs) and atypical antidepressants are regarded as safe maintenance treatment options for BPD. Mood stabilizers, a class of FDA-approved drugs for the treatment of Bipolar Disorder, can be used to address BPD's mood instability and impulsivity on off label basis [24]. The use of Low dose Quetiapine has shown effectiveness in treating BPD symptoms [27].

8.3. Contraindicated Medications

Despite conflicting data regarding the pharmacological management of Borderline Personality Disorder (BPD), a recent extensive comparative study determined that benzodiazepines were linked to the greatest risk of attempted or completed suicide compared to other medication classes used in individuals with BPD [28].

9. Discussion

Borderline Personality Disorder (BPD) is a complex mental health condition influenced by various risk factors. Key risk factors include sexual harassment and assault, childhood traits, parental psychopathology, relationship dynamics, co-occurrence with other mental disorders, and coping mechanisms. Understanding and assessing the risk factors is crucial for accurate assessment, early intervention, and effective treatment of individuals at risk of developing BPD.

Crisis management for individuals with BPD in emergency departments is crucial and the top priority should remain restoring mental state to pre-crisis balance. Effective psychiatric treatment involves developing a healthy professional relationship between the individual and the treating clinician, using psychoeducation, being proactive, being thoughtful, maintaining a real and professional relationship, communicating expectations, fostering accountability, maintaining focus on life outside therapy, and being flexible, pragmatic, and eclectic.

Conflicts of Interest

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

References

- [1] American Psychiatric Association (2013) Diagnostic and Statistical Manual of Mental Disorders. Fifth Edition, American Psychiatric Association.
<https://doi.org/10.1176/appi.books.9780890425596>
- [2] Hong, V. (2016) Borderline Personality Disorder in the Emergency Department: Good Psychiatric Management. *Harvard Review of Psychiatry*, **24**, 357-366.
<https://doi.org/10.1097/hrp.0000000000000112>
- [3] Ellison, W.D., Rosenstein, L.K., Morgan, T.A. and Zimmerman, M. (2018) Community

- and Clinical Epidemiology of Borderline Personality Disorder. *Psychiatric Clinics of North America*, **41**, 561-573. <https://doi.org/10.1016/j.psc.2018.07.008>
- [4] Anderson, G. (2020) Pathoetiology and Pathophysiology of Borderline Personality: Role of Prenatal Factors, Gut Microbiome, Mu- And Kappa-Opioid Receptors in Amygdala-PFC Interactions. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, **98**, Article ID: 109782. <https://doi.org/10.1016/j.pnpbp.2019.109782>
- [5] Doering, S. (2019) Borderline Personality Disorder in Patients with Medical Illness: A Review of Assessment, Prevalence, and Treatment Options. *Psychosomatic Medicine*, **81**, 584-594. <https://doi.org/10.1097/psy.0000000000000724>
- [6] Shin, H., Lee, H.S., Lee, B.C., Park, G., Uranbileg, K., Park, Y., et al. (2023) The Prevalence and Clinical Characteristics of Borderline Personality Disorder in South Korea Using National Health Insurance Service Customized Database. *Yonsei Medical Journal*, **64**, 566-572. <https://doi.org/10.3349/ymj.2023.0071>
- [7] Penfold, S., Denis, E.S. and Mazhar, M.N. (2016) The Association between Borderline Personality Disorder, Fibromyalgia and Chronic Fatigue Syndrome: Systematic Review. *BJPsych Open*, **2**, 275-279. <https://doi.org/10.1192/bjpo.bp.115.002808>
- [8] Ruocco, A.C., Rodrigo, A.H., McMain, S.F., Page-Gould, E., Ayaz, H. and Links, P.S. (2016) Predicting Treatment Outcomes from Prefrontal Cortex Activation for Self-Harming Patients with Borderline Personality Disorder: A Preliminary Study. *Frontiers in Human Neuroscience*, **10**, Article 220. <https://doi.org/10.3389/fnhum.2016.00220>
- [9] Stoffers-Winterling, J.M., Storebø, O.J., Kongerslev, M.T., Faltinsen, E., Todorovac, A., Sedoc Jørgensen, M., et al. (2022) Psychotherapies for Borderline Personality Disorder: A Focused Systematic Review and Meta-analysis. *The British Journal of Psychiatry*, **221**, 538-552. <https://doi.org/10.1192/bjp.2021.204>
- [10] Zanarini, M.C., Vujanovic, A.A., Parachini, E.A., Boulanger, J.L., Frankenburg, F.R. and Hennen, J. (2003) A Screening Measure for BPD: The Mclean Screening Instrument for Borderline Personality Disorder (MSI-BPD). *Journal of Personality Disorders*, **17**, 568-573. <https://doi.org/10.1521/pedi.17.6.568.25355>
- [11] Saccaro, L.F., Schilliger, Z., Dayer, A., Perroud, N. and Piguët, C. (2021) Inflammation, Anxiety, and Stress in Bipolar Disorder and Borderline Personality Disorder: A Narrative Review. *Neuroscience & Biobehavioral Reviews*, **127**, 184-192. <https://doi.org/10.1016/j.neubiorev.2021.04.017>
- [12] Bøen, E., Hjørnevik, T., Hummelen, B., Elvsåshagen, T., Moberget, T., Holtedahl, J.E., et al. (2019) Patterns of Altered Regional Brain Glucose Metabolism in Borderline Personality Disorder and Bipolar II Disorder. *Acta Psychiatrica Scandinavica*, **139**, 256-268. <https://doi.org/10.1111/acps.12997>
- [13] Bassir Nia, A., Eveleth, M.C., Gabbay, J.M., Hassan, Y.J., Zhang, B. and Perez-Rodriguez, M.M. (2018) Past, Present, and Future of Genetic Research in Borderline Personality Disorder. *Current Opinion in Psychology*, **21**, 60-68. <https://doi.org/10.1016/j.copsy.2017.09.002>
- [14] de Aquino Ferreira, L.F., Queiroz Pereira, F.H., Neri Benevides, A.M.L. and Aguiar Melo, M.C. (2018) Borderline Personality Disorder and Sexual Abuse: A Systematic Review. *Psychiatry Research*, **262**, 70-77. <https://doi.org/10.1016/j.psychres.2018.01.043>
- [15] Zanarini, M.C., Temes, C.M., Magni, L.R., Aguirre, B.A., Hein, K.E. and Goodman, M. (2020) Risk Factors for Borderline Personality Disorder in Adolescents. *Journal of Personality Disorders*, **34**, 17-24. <https://doi.org/10.1521/pedi.2019.33.425>
- [16] Yen, S., Peters, J.R., Nishar, S., Grilo, C.M., Sanislow, C.A., Shea, M.T., et al. (2021)

- Association of Borderline Personality Disorder Criteria with Suicide Attempts: Findings from the Collaborative Longitudinal Study of Personality Disorders Over 10 Years of Follow-Up. *JAMA Psychiatry*, **78**, 187-194.
<https://doi.org/10.1001/jamapsychiatry.2020.3598>
- [17] Felitti, V.J., Anda, R.F., Nordenberg, D., *et al.* (2014) Adverse Childhood Experiences Study Questionnaire. APA PsycTests. <https://doi.org/10.1037/t26957-000>
- [18] Posner, K. (2016) Columbia-Suicide Severity Rating Scale. APA PsycTests. <https://doi.org/10.1037/t52667-000>
- [19] Wang, F., Zang, C., Goodman, M., *et al.* (2022) Development of a Screening Algorithm for Borderline Personality Disorder Using Electronic Health Records. <https://doi.org/10.21203/rs.3.rs-1350791/v1>
- [20] Shaikh, U., Qamar, I., Jafry, F., Hassan, M., Shagufta, S., Odhejo, Y.I., *et al.* (2017) Patients with Borderline Personality Disorder in Emergency Departments. *Frontiers in Psychiatry*, **8**, Article 136. <https://doi.org/10.3389/fpsy.2017.00136>
- [21] Warrender, D., Bain, H., Murray, I. and Kennedy, C. (2020) Perspectives of Crisis Intervention for People Diagnosed with “Borderline Personality Disorder”: An Integrative Review. *Journal of Psychiatric and Mental Health Nursing*, **28**, 208-236. <https://doi.org/10.1111/jpm.12637>
- [22] Gunderson, J.G. and Links, P.S. (2014) Handbook of Good Psychiatric Management for Borderline Personality Disorder. American Psychiatric Publication. <https://doi.org/10.1176/appi.books.9781615378432>
- [23] Zanarini, M.C., Frankenburg, F.R., Reich, D.B. and Fitzmaurice, G. (2012) Attainment and Stability of Sustained Symptomatic Remission and Recovery among Patients with Borderline Personality Disorder and Axis II Comparison Subjects: A 16-Year Prospective Follow-Up Study. *American Journal of Psychiatry*, **169**, 476-483. <https://doi.org/10.1176/appi.ajp.2011.11101550>
- [24] Del Casale, A., Bonanni, L., Bargagna, P., Novelli, F., Fiaschè, F., Paolini, M., *et al.* (2021) Current Clinical Psychopharmacology in Borderline Personality Disorder. *Current Neuropharmacology*, **19**, 1760-1779. <https://doi.org/10.2174/1570159x19666210610092958>
- [25] Besch, V., Debbané, M., Greiner, C., Magnin, C., De Nèris, M., Ambrosetti, J., *et al.* (2020) Emergency Psychiatric Management of Borderline Personality Disorder: Towards an Articulation of Modalities for Personalised Integrative Care. *L'Encéphale*, **46**, 463-470. <https://doi.org/10.1016/j.encep.2020.04.013>
- [26] Starcevic, V. and Janca, A. (2018) Pharmacotherapy of Borderline Personality Disorder: Replacing Confusion with Prudent Pragmatism. *Current Opinion in Psychiatry*, **31**, 69-73. <https://doi.org/10.1097/yco.0000000000000373>
- [27] Black, D.W., Zanarini, M.C., Romine, A., Shaw, M., Allen, J. and Schulz, S.C. (2014) Comparison of Low and Moderate Dosages of Extended-Release Quetiapine in Borderline Personality Disorder: A Randomized, Double-Blind, Placebo-Controlled Trial. *American Journal of Psychiatry*, **171**, 1174-1182. <https://doi.org/10.1176/appi.ajp.2014.13101348>
- [28] Lieslehto, J., Tiihonen, J., Lähteenvuo, M., Mittendorfer-Rutz, E., Tanskanen, A. and Taipale, H. (2023) Comparative Effectiveness of Pharmacotherapies for the Risk of Attempted or Completed Suicide among Persons with Borderline Personality Disorder. *JAMA Network Open*, **6**, e2317130. <https://doi.org/10.1001/jamanetworkopen.2023.17130>