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# Recovery Blindness: The Concept of Recovery in Veterans with a Gambling Disorder – A Scoping Review*

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## Abstract

**Purpose of Review** Gambling disorder (GD) presents significant psychiatric challenges, particularly for vulnerable populations like military veterans, who often also face mental health comorbidities. Recovery is a crucial issue in the gambling field, representing a transition from illness to health. Currently, there is no consensus regarding its definition. This scoping review aimed to map the characteristics of studies on recovery in veterans with GD, explore how it is defined and measured, identify the dominate recovery approach, and the main research topics.

**Recent Findings** This review identified 13 scientific articles. Findings showed minimal explicit use of the term "recovery" by researchers. The main recovery approach is the deficit based. Most studies focused on treatment programs and their effectiveness, neglecting the unique characteristics of veterans and alternative recovery pathways.

**Summary** Future studies should explore and conceptualize recovery in veterans, and inquire into the specific recovery needs of veterans living with GD.

**Keywords** Recovery · Military veterans · Gambling disorder · Treatment · Scoping review

## Introduction

The current scoping review aimed to systematically map the scientific literature on recovery from gambling disorder (GD) (i.e., formerly pathological gambling [1] in military veterans. GD is a recognized mental health condition characterized by persistent and repeated gambling behaviors that are problematic and result in significant distress and impairment in personal, social, and occupational functioning [1]. Classified as an addictive disorder in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), GD presents symptoms such as a preoccupation with gambling, the need to gamble with increasing amounts of money, loss chasing, and unsuccessful efforts to control or stop gambling [2]. Individuals with GD often experience severe financial issues, relationship conflicts, and co-occurring mental health disorders, such as depression, anxiety and substance misuse [3–5].

In the gambling field, particular attention was devoted to studies exploring GD in vulnerable populations such as homeless people [6], individuals living in poverty [7], and individuals suffering from posttraumatic stress disorder (PTSD) [8]. Recently, an emerging body of scholars has begun to identify US military veterans as a vulnerable, at-risk group for developing GD [9]. Notably, recent reviews on military veterans with GD highlighted that this vulnerable population suffers from a combination of these conditions, pointing to the significance of exploring GD within this subgroup [9–12], specifically given the high prevalence of at-risk/problem gambling (i.e., defined as having subthreshold GD symptoms) within veterans [13]. These reviews generally focused on one or more of the following categories: prevalence, psychological profiles and psychiatric comorbidities, treatment evaluations, measurement, and genetic contributions to GD, laying the groundwork for understanding the unique challenges faced by this population [12]. Overall, studies have shown that veterans are at an increased risk of developing GD compared to the general population.

While the prevalence of GD in the general adult population stands at approximately 1.29% [11], military veterans

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represent a subgroup with higher rates of at-risk/problem gambling and GD [9, 14–16]. In a recent study examining prevalence of at-risk/problem gambling, Stefanovics et al. [13] found that in a nationally representative sample of U.S. veterans, 27.3% had engaged in recreational gambling, while 4.9% were at-risk/problem gambling. Whiting et al. [16] also reported similar findings regarding veterans from Operation Iraqi Freedom, Operation Enduring Freedom, and Operation New Dawn finding that 4.2% of veterans screened positive for at-risk/problem gambling. Studies from Australia (4.6% problem gambling, 8.8% at-risk/problem gambling) [14] and the United Kingdom [17, 18] also found that at-risk/problem gambling status was significantly more common in veterans compared to the general population (veterans: 1.4–43.1%, civilians: 0.2–6.5%).

In examining the demographic profile of veterans with GD, studies, in general, show that they are more likely to be younger and non-white males [13, 15, 16, 19]. A significant correlation has been found between GD in veterans and the co-occurrence of mental health disorders [20], including depression and substance use disorders [14–16, 21]. Moreover, veterans with GD often grapple with severe mental health challenges frequently rooted in their military service experiences, such as PTSD [10], and report higher rates of suicide attempts and suicidal ideation, demanding urgent intervention and support from mental health providers [9, 13].

Beyond mental health factors, GD has also been identified as a significant predictor of homelessness among veterans [22]. Military-specific factors, such as exposure to general harassment during employment and post-deployment readjustment difficulties, are also linked to an increased risk of developing GD in this population [16, 23]. It is also noted that veterans with GD often display a preference for non-strategic gambling activities such as purchasing lottery tickets and playing electronic gambling machines, which may serve as a coping mechanism to distance themselves from negative emotions or traumatic experiences [24]. Surprisingly, none of the systematic [9, 12] or meta-analytic reviews [11] mentioned above have explored the theme of recovery. For example, while one narrative review [10] highlighted the use of Acceptance and Commitment Therapy and Acceptance-based Therapy for military populations with PTSD and/or GD, it did not specifically address recovery per se.

Recovery within the addiction field, including gambling, is a challenging process for individuals and treatment providers [25–27]. Despite the centrality of recovery among researchers, practitioners, policymakers and individuals in recovery, there is no consensus about how it should be defined and measured [27]. Classical definitions of recovery routed in the medical paradigm define recovery as remission and amelioration of symptoms [28]. These definitions are aligned with the deficit-based approach, shaped by the medical model, considers recovery as either abstaining from addictive behaviors, having no pathology present, or experiencing a reduction in symptoms [27, 29]. However, evidence showing that abstinence is often a challenging goal to achieve for many struggling with addictions, opened the door to questioning whether abstinence is a crucial component of recovery [30, 31], an idea embedded in the harm reduction approach. The harm reduction approach advocates minimizing the adverse consequences of addictive behaviors while mitigating the necessity to maintain abstinence [32]. Specifically, in the gambling field researchers have proposed controlled gambling, within a harm reduction framework, as a viable alternative approach for treating individuals classified as pathological gamblers [33, 34].

Relying on a strengths-based approach, contemporary definitions of recovery adopt a wider perspective in defining and measuring recovery, viewing it as a process of change that is measured by improvement in bio-psychosocial domains [27, 35]. Various indicators that extend beyond mere abstinence, including resources and aspirations that enhance the individuals' quality of life, health-related actions, and interactions with others, including healthcare providers, present an alternative to the classic deficit-based approach [36].

While discussing the notion of recovery in GD, Nower & Blaszczynski [37] claimed that recovery is a diffused concept and called to clarify it. A systematic review documenting the clinically relevant domains of recovery from GD concluded that the outcome domains represent a multidimensional conceptualization of recovery, which corresponded with "recovery-oriented" model that characterizes the contemporary approaches to addiction treatment services and policy [38]. However, studies in the field failed to define operational criteria for measuring recovery. A recent scoping review focusing on the definition and measurement of the concept of recovery in gambling studies revealed that in most quantitative studies, recovery from GD was defined or operationalized in terms of abstinence or absence of GD diagnosis/symptoms. Furthermore, only 3 out of 113 studies related to controlled gambling as an alternative goal to abstinence [39]. However, this scoping review excluded articles that concentrated on particular subgroups, including military veterans.

Given the high prevalence of at-risk/problem gambling and GD in military veterans [9, 13, 14, 16] and their unique characteristics of PTSD, suicide attempts, and suicide ideation [9, 10, 13], veterans may face unique challenges in their recovery process. Therefore, it is essential to clarify the concept of recovery from GD in veterans to understand how it is being defined in empirical and clinical studies and to solidify a recovery agenda for this vulnerable group.

### Aims of this Scoping Review

Previous reviews on veterans with GD covered a wide range of topics, including prevalence, demographics, psychological profiles, psychiatric comorbidities, and treatment evaluations [9–12]. However, these reviews did not specifically focus on the recovery process from GD in veterans, indicating a gap in the literature that needs to be addressed.

The optimal review method is a scoping review: an evidence-based approach designed to identify the range of evidence within a specific field, evaluate research gaps, and communicate findings to policymakers, mental health practitioners, and individuals receiving treatment [40]. To this end, this scoping review aims to provide a comprehensive review of the published studies on recovery in military veterans. Specifically, we asked: (1) What are the characteristics of studies of recovery in veterans? (2) Which terms were used to define recovery? (3) Which common scales were used in these studies? (4) Which recovery approach was predominantly featured (i.e., deficit-based: related to abstinence and any related reduction; strengths-based: measured improvement in various bio-psycho-social domains and indicators including resources and abilities; and harm reduction: related to aspects of controlled gambling) in these studies? (5) What are the main topics mentioned in these studies?

## Method

### Data Sources and Search Strategy

This scoping review was conducted in accordance with the guidelines outlined by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) [41]. Our search involved four academic databases: Medline, Embase, PsycINFO, and Web of Science. We used the following search terms: (military OR veteran* OR army OR navy OR "air force" OR marines) AND ("gambling disorder" OR "problem gambling" OR "gambling addiction" OR "compulsive gambling" OR "pathological gambling") AND (gambl* OR wager* OR bet) AND (recovery OR recovered OR abstinence OR reduction OR decrease OR remission OR "natural course" OR treatment OR "controlled sexual behavior" OR "asymptomatic" OR rehabilitation OR relapse OR recurrence OR "remission induction" OR "spontaneous remission" OR treatment OR therapy* OR intervention OR (recover* OR success* OR *sober) to identify potentially relevant articles. We imposed no restrictions regarding the publication date. This search produced a total of 513 results: Medline (44 results), Embase (176 results), PsycINFO (113 results), Web of Science (180 results). After deleting duplicates found across these four databases, 325 results were left for screening. All identified studies were managed and organized using Rayyan, a web-based application designed for scoping reviews. The database searches were conducted on December 13, 2023. The screening and review process was completed on April 4, 2024.

### Inclusion and Exclusion Criteria and Review Process

For inclusion in the review, articles had to be: [1] peer-reviewed journal articles; [2] primary research or secondary analyses of primary research; [3] written in English; [4] studies including at least some veterans with GD or gambling problems; and [5] studies that clearly related to recovery or to any bio-psychosocial change (e.g., improvement, reduction) in the individual lives. No animal studies were included in the present scoping review. We excluded articles if they were review articles, conference abstracts, theses, or dissertations. To select articles for inclusion, two authors (T.X., N.V.) independently reviewed each reference's title and abstract, followed by a full-text review. The full-text reviews and subsequent data extraction were conducted independently by the same two authors. Their decisions were then shared and discussed with the other authors. When a selection could not be made, the authors collectively discussed the articles to achieve a consensus on their inclusion in the scoping review.

Figure 1 illustrates the number of articles included and excluded in the current scoping review and additional reasons for exclusion. Fourteen studies met the eligibility criteria based on their titles and abstracts. However, after a full-text review, two were excluded, leaving 12 articles. Additionally, we manually searched the reference lists of the included articles and investigated other publications by the same authors. This process resulted in the inclusion of an additional article, bringing the total to 13 articles for the scoping review.

### Data Analysis

In this scoping review, the included studies first underwent initial appraisal, considering various shared attributes such as the countries and years of study, methodology, design, sample size, and sample demographics, including age, gender, race, and marital status, alongside participants' psychiatric history. We then recorded the terminology used for recovery from GD in the studies and the measures used to assess the studies' aims. We determined the recovery approach for each study based on its reported outcome variable(s) (e.g., reduction in symptoms scores represented a deficit-based approach while improvement in resources inventory scores indicated a strength-based approach). In addition, studies that used abstinence/remission and relapse as outcome variables were classified as using a deficit-based approach, while

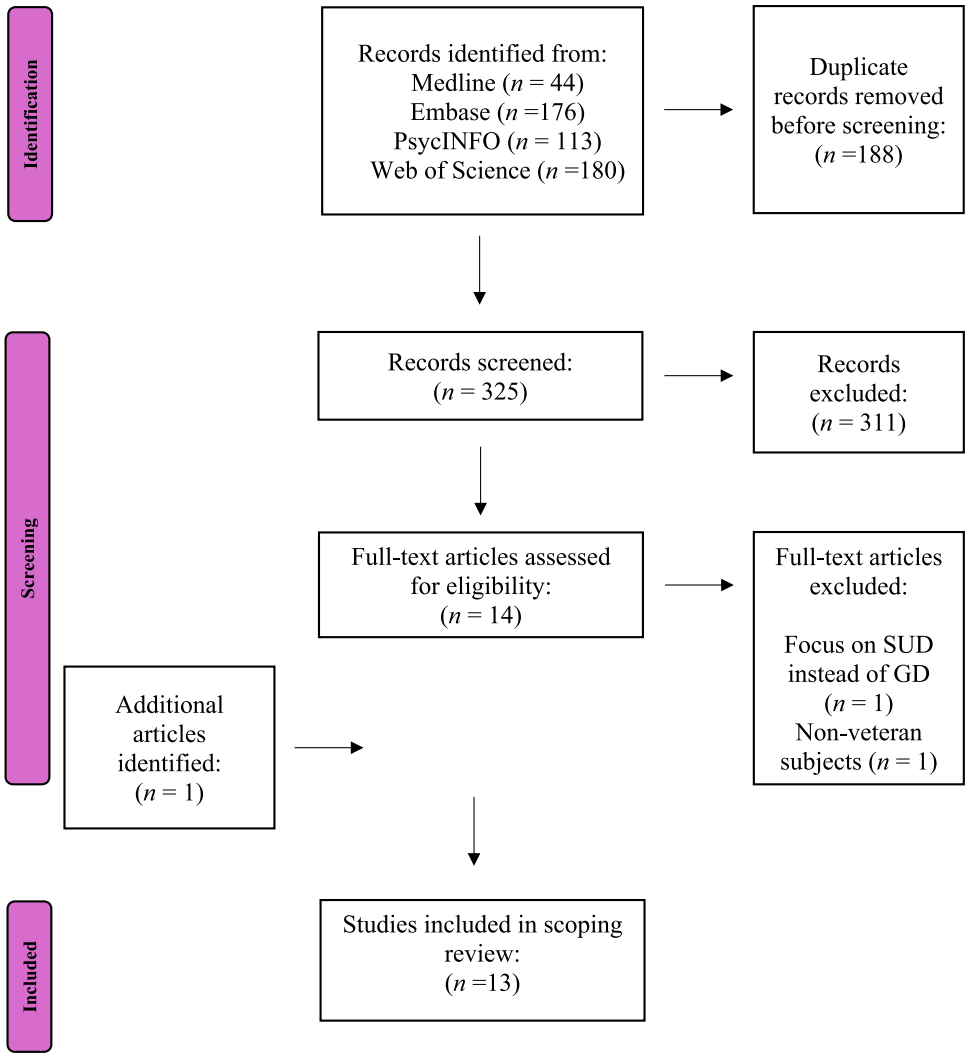


**Fig. 1** PRISMA flow diagram of the scoping review phases

studies that used the terms controlled gambling were classified as employing a harm reduction approach. For studies that assessed symptom reduction alongside improvements in resources, we classified them as using a mixed recovery approach. Finally, to discern the primary topics covered in the studies, we conducted an inductive content analysis [42] on the study's aims which were openly coded to establish the main themes. We organized codes into categories based on their similarities and differences. Ultimately, we grouped the categories under one theme: Treatment programs/approaches and effectiveness evaluation.

## Results

The characteristics of the studies included in this review are summarized in Table 1. Below is a brief summary of the columns.

## Characteristics of Included Studies

### Study Country and Year

Twelve of the thirteen studies (92.3%) were conducted in the United States from 1984 to 2022 with one study (7.7%) from Bosnia and Herzegovina [43].

### Study Method and Design

Of the thirteen studies reviewed, three (23.1%) were case studies: one case series examining three individuals using pre-post intervention evaluation (7.7%) [44] and two individual case reports (15.4%) [43, 45]. The remaining ten studies (76.9%) employed quantitative research designs with larger samples and diverse methodological approaches. These comprised four longitudinal studies (30.8%) examining periods from six months up to a year [46–49], two cross-sectional studies (15.4%) [50, 51], two pre-post intervention studies

**Table 1** Summary of the included studies

| Author(s), Year | Country | Study Design | Study Period | Pre and Post Treatment | Aims | Sample Characteristics | Count of "Recovery" Mentions | Terminology Used for Recovery | Recovery Approach | Measurement used for assessment | Findings |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Breen et al. (2001) [52] | USA | Quantitative Pre-Post Treatment Study Primary data analysis | 28 days | Yes | To evaluate the impact of a 28-day inpatient program on the gambling-related beliefs and attitudes of pathological gambling patients, with an expected decrease in the GABS scores from admission to discharge. | $N=66$ (64 men and 2 women) $M_{Age}=49.1$, $SD=8.19$ Race: 83% White, 13% African American Marital status: NR Psychiatric history: Moderate levels of depression | 0 | Cognitive **changes**, **reduction** in irrational beliefs and attitudes about gambling | Deficit-based | GABS, a 35-item questionnaire designed to assess cognitive biases, irrational beliefs, and positively valued attitudes toward gambling. Higher scores on GABS indicate more problematic perceptions and attitudes related to gambling. Problem gambling was assessed by SOGS. | The study reported a significant reduction in gambling attitudes and beliefs, with GABS scores decreasing to the level of non-gamblers. It indicates the treatment's potential to alter gambling attitudes and beliefs. Depression, along with baseline GABS scores, strongly predicted treatment outcomes. |
| Castellani et al. (1996) [50] | USA | Quantitative Cross-sectional Primary data analysis | Six months | No | To examine the association between gambling problems in veterans and negative affect and coping abilities, and to explore how these factors relate to housing and employment stability six months after substance misuse treatment. | $N=154$, 132 no PG, 22 with PG* (gender: NR) Age: NR Race: NR Marital status: NR Psychiatric history: Substance misuse in all participants. | 0 | Less coping problems and negative affect **Stable** (housing and employment) | Mixed - Deficit-based, strength-based) | Problem gambling was identified by a score of 5 or above on the SOGS, where higher scores indicate more severe gambling addiction. Negative affect was measured using the SCL-90. Coping resources was assessed using the CRI. Substance misuse – DSM-III-R. Stable housing. (sustained) Employment (full, part-time). | Post six-month discharge, veterans with PG, relative to veterans without PG, scored higher on levels of negative affect (obsessive-compulsive behavior, interpersonal sensitivity, depression, and psychoticism), but scored lower on levels of coping challenges (social, emotional, and spiritual). PG status was not significantly related to housing or employment status post-treatment discharge. |

**Table 1** (continued)

| Author(s), Year | Country | Study Design | Study Period | Pre and Post Treatment | Aims | Sample Characteristics | Count of "Recovery" Mentions | Terminology Used for Recovery | Recovery Approach | Measurement used for assessment | Findings |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Grant et al. (2017) [54] | USA | Quantitative Randomized Controlled Trial Secondary data analysis | 12 weeks | Yes | To investigate the influence of problem-gambling features on treatment outcomes for alcohol dependence and psychiatric conditions in a sample of veterans. | $N = 174$, 25.9% Problem gambling features* (171 men and 3 women) $M_{Age} = 47.3$, SD = 8.7 Race: 70.1% White Marital status: 78.5% not married. Psychiatric history: All had alcohol dependence, 67.2% had major depressive disorder, and 42% had PTSD. | 0 | **Reduced** psychiatric symptoms | Deficit-based | The MAGS was used to assess problem-gambling features. Participants with 1 or more criteria were identified with problem gambling, and those with 5 or more were considered to have pathological gambling. Psychiatric symptoms were measured using the BSI. | 25.9% of alcohol-dependent veterans had problem gambling features. Alcohol treatment success was similar between groups, but those with problem gambling features showed worse psychiatric outcomes across five domains. Disulfiram was less effective for those with problem gambling features, while naltrexone's effectiveness remained consistent. |
| Gutierrez et al. (2020) [53] | USA | Quantitative Pre-Post Treatment Study Primary data analysis | Five to six weeks | Yes | To explore the relationship between spiritual struggles and psychopathology among veterans with Gambling Disorder, focusing on the incidence of spiritual struggles and their impact on problem gambling severity. | $N = 157$ (126 men and 31 women) $M_{Age} = 53.0$, $SD = 11.6$ Race: 68.5% White, 24.8% African Americans Marital status: NR Psychiatric history: 49.0% had PTSD, 34.4% had current substance use disorders, and 22.3% had past substance use disorders. | 8 | **Reductions** in spiritual struggles, **changes** in spiritual struggles, changes in gambling-related cognitions, **decreases** in the severity of spiritual struggles | Deficit-based | The severity of problem gambling was assessed using the SOGS. Maladaptive gambling-related cognitions were measured using the GRCS. In addition, spiritual struggles were measured using the RSS. | After treatment, veterans reported decreased severity of spiritual struggles, although moral struggles remained high. The reduction in gambling-related cognitive distortions correlates with decreased spiritual struggles, supporting a psychopathology-driven model of spiritual struggles. |

**Table 1** (continued)

| Author(s), Year | Country | Study Design | Study Period | Pre and Post Treatment | Aims | Sample Characteristics | Count of "Recovery" Mentions | Terminology Used for Recovery | Recovery Approach | Measurement used for assessment | Findings |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hasanović et al. (2021) [43] | Bosnia and Herzegovina | Case Study Primary data analysis | 6 days | Yes | To explore the effectiveness of EMDR therapy in the treatment of pathological gambling. | $N=1$ (male) Age = 55 Race: NR Marital status: Married Psychiatric history: Depression, anxiety, insomnia, and suicidal intention | 0 | **Reducing** the frequency of gambling, **stabilize** the situation and establish **abstinence**, **overall improvement** – "good mood, full of empathy for, and supportive to, others, familial harmony, performing well at work | Mixed: (deficit-based, strength-based) | No specific measurement tool for behavior changes reported. | Following EMDR therapy, the individual with pathological gambling experienced improvements in psychological well-being. |
| McCormick & Taber (1988) [46] | USA | Quantitative Longitudinal Secondary data analysis | Six months | Yes | To investigate the relationship between attributional style and measures of depression in pathological gamblers undergoing treatment and to determine the predictive value of these factors on abstinence from gambling post-treatment. | $N=54$ (all male) $M_{Age}=43.61$, $SD=11.23$ Race: NR Marital status: NR Psychiatric history: NR | 1 | **Abstinence** following treatment, **relapse** at follow-up | Deficit-based | The TFB procedure was used to assess gambling behavior for one month pre-treatment and six months post-treatment. Daily gambling severity was rated, providing a monthly average score for comparison. | Depression was positively correlated with negative event scores. Hierarchical regression analysis revealed that the severity of gambling before treatment and the individual's attributional style were significant predictors of gambling severity at a six-month follow-up, whereas measures of depression did not predict future gambling severity. |

**Table 1** (continued)

| Author(s), Year | Country | Study Design | Study Period | Pre and Post Treatment | Aims | Sample Characteristics | Count of "Recovery" Mentions | Terminology Used for Recovery | Recovery Approach | Measurement used for assessment | Findings |
|---|---|---|---|---|---|---|---|---|---|---|---|
| McCormick & Taber (1991) [47] | USA | Quantitative Longitudinal Secondary data analysis | 12 months | Yes | This research tracked pathological gamblers after completing a 28-day treatment, with follow-up assessments at 6 and 12 months. It sought to determine abstinence rates from gambling and explore factors linked to relapse or sustained abstinence. | $N=45$ (all male) $M_{Age}=43$ Race: NR Marital status: NR Psychiatric history: NR | 1 | **Abstinence** from gambling, **relapse** at 6 month follow-up | Deficit-based | The study measured gambling behavior using the TFB assessment and the GBS. Wechsler Adult Intelligence Scale was to assess intelligence. | Following treatment, 55% of participants achieved a full year of gambling abstinence. Key predictors of this abstinence were the initial severity of gambling and scores on the intellectual and cognitive functioning tests. |
| Russo et al. (1984) [48] | USA | Quantitative Longitudinal Primary data analysis | One year | No | Evaluating the effectiveness of the U.S.'s first inpatient pathological gambling treatment program, focusing on achieving gambling abstinence, reducing gambling urges, and restoring social functioning. | $N=60$ (all male) $M_{Age}=42$, $SD=10$ Race: 95% White, 5% African American Marital status: NR Psychiatric history: 45% had major alcohol problems | 1 | **Abstinence** from gambling, **decrease** in gambling behavior, **reduction** of the urge to gamble, **restoration** of a maximum level of social functioning, **less** psychological co-morbidities, **improved** functioning | Mixed: (deficit-based and strength-based) | Abstinence from gambling was the primary indicator of recovery. Participants self-reported their gambling behavior and overall functioning on a 20-question survey after one year. | 55% achieved one-year gambling abstinence; 91.5% reported reduced gambling. Abstinence was linked to better financial well-being, lower levels of depression, and improved interpersonal relationships. Regular participation in Gamblers Anonymous and follow-up care was associated with continued abstinence. |

**Table 1** (continued)

| Author(s), Year | Country | Study Design | Study Period | Pre and Post Treatment | Aims | Sample Characteristics | Count of "Recovery" Mentions | Terminology Used for Recovery | Recovery Approach | Measurement used for assessment | Findings |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sartor et al. (2007) [55] | USA | Quantitative Retrospective Secondary data analysis | Two to four weeks | No | To assess the reliability of the LGH measure and to examine the course of pathological gambling symptoms across the lifetime in a sample of Vietnam veterans. | $N = 1{,}343$ (all male)<br>$M_{Age} = 53$<br>Race: 90% White, 6% African American, and 4% other ethnicities.<br>Marital status: 75% married.<br>Psychiatric history: NR | 2 | **Symptom-free** gambling phases, **abstinent** phases, seeking gambling treatment, **changes** in PG symptoms, **changes** in gambling behaviors, **decreases** in symptoms over time | Deficit-based | PG was assessed through the LGH, a structured interview that evaluates an individual's gambling behavior. PG is identified by five or more symptoms, while 3–4 indicate problem gambling, and 1–2 suggest at-risk gambling. | Gambling behaviors and symptoms appear to fluctuate rather than remain constant. Among participants, 36.6% reported worsening symptoms, while 37.7% improved, and 23.0% experienced fluctuations. |
| Selzer (1992) [45] | USA | Case Study Primary data analysis | NR | Yes | To explore the role of borderline omnipotence in PG and its impact on treatment and recovery. | $N = 1$ (male)<br>Age = 49<br>Race: NR<br>Marital status: NR<br>Psychiatric history: Narcissistic personality disorder | 5 | **Recovery** of the pathological gambler, **change** of behavioral patterns (lying, stealing and cheating) | Deficit-based | Assessment of the participant's gambling behavior was conducted through the SOGS and an investigation of their gambling preferences history. | Omnipotence serves as a defense mechanism that complicates the treatment of pathological gamblers by interfering with their ability to differentiate between reality and fantasy, thereby affecting their treatment and recovery process. |

**Table 1** (continued)

| Author(s), Year | Country | Study Design | Study Period | Pre and Post Treatment | Aims | Sample Characteristics | Count of "Recovery" Mentions | Terminology Used for Recovery | Recovery Approach | Measurement used for assessment | Findings |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shirk et al. (2022) [44] | USA | Case series<br>Pre-Post intervention assessments<br>Primary data analysis | NR | Yes | To evaluate the effectiveness of a MBRP protocol for treating Gambling Disorder in U.S. military veterans. | $N=3$ (all male)<br>$M_{Age}=51.7$<br>Race: One African American, one Hispanic, and one White<br>Marital status: Two were single and one was divorced.<br>Psychiatric history: Varied comorbidities across participants, such as PTSD, suicidal ideation bipolar disorder, and substance use issues. | 7 | **Relapse** prevention, **increases** in cognitive and physical functioning, **reduced** frequency in cravings, **reducing** gambling frequency, **improvement** in cognitive and physical functioning, **decrease** in symptoms, **abstinence** from gambling | Mixed; (deficit-based and strength-based) | Recovery was evaluated through multiple dimensions including reductions in gambling behavior, cravings, improvements in self-efficacy for managing gambling urges, increases in mindfulness, decreases in impulsivity, and better emotion regulation. | Significant improvements in gambling behavior, self-efficacy, mindfulness, impulsivity, and emotion regulation were reported by the veterans, highlighting MBRP as a promising treatment for Gambling Disorder. |
| Taber et al. (1987) [49] | USA | Quantitative<br>Longitudinal<br>Secondary data analysis | 6 months | Yes | To assess pathological gamblers before and after completing a treatment program. It sought to evaluate the program's effectiveness in achieving total abstinence and significant improvement across various measures. | $N=66$ (all male)<br>$M_{Age}=43$<br>Race: NR<br>Marital status: 50% married, 29% divorced/separated, 21% single<br>Psychiatric history: 29% had substance abuse, 33% had major depression, 20% had personality disorder, and 3% had psychosis | 1 | **Abstinence** from gambling, **decrease** in gambling behavior, general behavioral **Improvement** In work and family life | Mixed (deficit-based and strength-based) | The GBS and TFB method was used to assess changes in gambling behavior.<br>The PSS was used to assess changes in psychiatric functioning. | 56% of the patients remained abstinent for 6 months post-treatment, with improved gambling behaviors and psychiatric conditions. Also, attendance in Gamblers Anonymous was higher among abstinent patients, indicating its role in maintaining abstinence. |

**Table 1** (continued)

| Author(s), Year | Country | Study Design | Study Period | Pre and Post Treatment | Aims | Sample Characteristics | Count of "Recovery" Mentions | Terminology Used for Recovery | Recovery Approach | Measurement used for assessment | Findings |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Westermeyer et al. (2006) [51] | USA | Quantitative Cross-sectional Primary data analysis | NR | No | To investigate one-year remission rates from pathological gambling among American Indian and Hispanic American veterans, focusing on identifying factors contributing to remission. | $N=132$ (118 men and 14 women)<br>Age:<br>Remitters: $M_{Age}=49.1$, $SD=10.3$<br>Non-remitters: $M_{Age}=50.0$, $SD=10.2$<br>Race: 65.9% American Indian, 34.1% Hispanics<br>Marital status:<br>Remitters: 26% single, 28% married, 45% other.<br>Non-remitters: 26% single, 38% married, 36% other.<br>Psychiatric history: Lower Antisocial Personality Disorder rates; High lifetime Axis 1 disorders in both groups, with current disorders more frequent in non-remission. | 4 | **Remission** from PG | Deficit-based | Remission" was characterized per the DSM-III-R criteria as having a lifetime diagnosis of PG but exhibiting no symptoms of PG in the past year. The PCL was used to measure PTSD. | Remission from PG among American Indian and Hispanic veterans was not significantly influenced by demographic factors. The absence of current psychiatric comorbidity, particularly PTSD, was a key factor associated with remission. |

*BSI*: Brief Symptom Inventory; *CRI*: Coping Resource Inventory; *EMDR*: Eye Movement Desensitization and Reprocessing; *GABS*: Gambling Attitude and Beliefs Survey; *GBS*: Gambling Behavior Survey; *GRCS*: Gambling Related Cognitions Scale; *LGH*: Lifetime Gambling History; *MAGS*: Massachusetts Gambling Screen; *MBRP*: Mindfulness-Based Relapse Prevention; *NR*: Not reported; *PCL*: Post-traumatic Stress Checklist; *PG*: Pathological Gambling; *PSS*: Psychiatric Status Schedule; *PTSD*: Post-Traumatic Stress Disorder; *RSS*: Religious/Spiritual Struggles Scale; *SCL-90*: Symptom Checklist-90; *SOGS*: South Oaks Gambling Screen; *TFB*: Timeline Follow Back

examining several-week periods (15.4%) [52, 53], one randomized controlled trial (7.7%) [54], and one retrospective study (7.7%) [55].

### Sample Size, Age, Gender, Race, Marital Status, and Psychiatric History

Sample sizes in these studies exhibited a wide range, from a minimum of one individual to a maximum of 1,343 and a median of 66. The included studies focused on middle-aged adults, with average ages primarily in the 40s [45–49, 52, 54] and 50s [43, 44, 53, 55]. The participants' gender distribution in these studies was predominantly male. Eight studies (61.5%) focused exclusively on male veterans [43–49, 55], while four studies (30.8%) included a small proportion of female participants [51–54]. White participants were the most represented racial group, forming the majority in five studies (38.5%) [48, 52–55]; however, in these studies, Black participants were also included but represented a minority across the research samples. Six studies (46.2%) did not disclose racial demographics [43, 45–47, 49, 50].

Seven studies (53.8%) did not report marital status [45–48, 50, 52, 53]. Among those who reported marital status, we found a mixture of married/partnered and unmarried. One study, Westermeyer et al. [51] provided a breakdown of marital statuses among gambling remitters and non-remitters, where single, married, and other categories showed varied distributions.

Of the 13 studies reviewed, ten (76.9%) reported on the psychiatric history of the participants, addressing several comorbidities in some cases [43–45, 48–54]. Nearly half the studies described participants struggling with substance use disorders (SUDs), including alcohol use disorder (AUD), cocaine use disorder, and substance misuse histories [44, 48–50, 53]. Over one third of the studies reported participants suffering from depression, bipolar disorder, anxiety disorder, and insomnia [43, 44, 49, 52, 54]. A smaller but sizable number of studies noted participants experiencing PTSD [44, 53, 54] or suicidal ideation [43, 44] or exhibited relatively low levels of suicide-self-mutilation [49].

## Terminology Used for Recovery from GD

We found that the term "recovery" was mentioned in nine of the thirteen studies (69.2%) [44–49, 51, 53, 55]. However, it was not explicitly defined in any of the studies, and was mentioned in relation to the studies' aims or in the aims of the treatment programs but only in three studies (20.1%): one earlier case study conducted by a nurse [45], and in two recent studies [44, 53].

The most common terms used for recovery were words related to reduction/ reduce/ decrease that appeared in nine studies (69.2%) [43, 44, 48–50, 52–55]. It was also noted regarding the reduction of irrational beliefs and attitudes about gambling, psychiatric symptoms, spiritual struggles, gambling frequency, and gambling cravings, as well as decreases in gambling behavior and symptoms over time. Seven studies (53.8%) also mentioned abstinence in relation to recovery [43, 44, 46–49, 55]. Five of these studies (71.4%) overlapped in addressing both abstinence and reduction as indicators of recovery [43, 44, 48, 49, 55].

Improvement in various aspects, such as general psychiatric functioning, cognitive and physical functioning, overall well-being (including improved mood, empathy, familial harmony, and work performance), and gambling behaviors compared to baseline measures at the beginning of the programs was reported in four studies (30.8%) [43, 44, 48, 49]. Interestingly, these four studies considered recovery through the combination of the terms used such as reduction, abstinence, and improvement. Although the word improvement was used in Grant et al., 2017 [54], it is, however, related to poor improvement.

## Recovery Approach

The deficit-based approach governed in eight articles (61.5%) [45–47, 51–55] representing a decrease or reduction in gambling related symptoms and other psychopathology variables, and abstinence from gambling. Five out of the thirteen studies (38.5%) [43, 44, 48–50] utilized a mixed approach, incorporating both deficit and strengths-based measures to provide a comprehensive assessment of recovery. Notably, none of the reviewed studies adopted a strengths based approach as its own or the harm reduction approach.

## Measures Used to Assess Reduction, Abstinence, and Improvement Related to GD

The reviewed studies implemented a variety of tools to assess reduction in problem gambling severity, gambling attitudes and beliefs, psychological aspects, psychiatric symptoms, spiritual aspects, and physical elements. They also measured abstinence from gambling and improvement in general psychiatric functioning, cognitive and physical functioning, overall well-being, and behavioral changes. Notably, the two earliest studies (15.4%) [48, 49] assessed reduction, abstinence, and improvement within the same paper using the same tool for their assessment - a 20-question self-report Gambling Behavior Survey to evaluate gambling behavior and overall functioning after treatment.

Except for one study [43], twelve of the thirteen studies (92.3%) measured gambling symptom severity and/or gambling behavior. For assessing gambling symptom severity, the South Oaks Gambling Screen [56] was the most commonly utilized measure, employed in four studies (30.8%) at

baseline [45, 50, 52, 53]. For measuring gambling behavior specifically, the Timeline Follow Back Month method [57] was the most frequently used tool, implemented in three studies (23.1%) [46, 47, 49]. The remaining studies each employed different assessment tools for measuring these outcomes.

Eight studies (61.5%) measured psychiatric symptoms and negative affect, with six studies (46.2%) specifically targeting depression [43, 44, 46, 50, 52, 54], using various tools such as the Beck Depression Inventory [58], and the Minnesota Multiphasic Personality Inventory [59]. Four studies (30.8%) assessed general cognitive dimensions and cognitive biases related to gambling [44, 47, 52, 53], each using a different tool, for example, the Gambling Related Cognitions Scale [60]. Surprisingly, only four studies (30.8%) measured coping resources [44, 48–50], such as emotion regulation, stable housing and employment, work status, and financial status.

### Main Research Topics

The last aim of this scoping review was to identify the main research topics manifested in the studies' aims that preoccupied the researchers among veterans. An inductive content analysis [42] revealed that the main questions preoccupied researchers focused on treatment programs and approaches and their effectiveness evaluation (appears in ten out of 13 studies [43–50, 52, 54]. In addition, three studies (23.1%) had different research questions related to psychological and spiritual factors as well as methodology assessment, and remission patterns [51, 53, 55].

#### Treatment Programs/Approaches and Effectiveness Evaluation

The first program that was identified was an inpatient treatment program at the U.S. Veterans Affairs that offered comprehensive inpatient treatment for pathological gambling, including treatment techniques such as group psychotherapy, education on addiction, participation in Gamblers Anonymous groups, and restitution payments operated from 1980 to 1981 [48] and became the focus of four studies included in this review (30.8%) [46–49]. This program treated individuals with gambling problems in the same setting as individuals with substance addiction, conducting separate and mutual activities for both groups of patients, and even recommended combining the treatment programs.

In the subsequent years, other treatment approaches were explicitly suggested for individuals with GD such as self-education and individualized treatment [45], group and individual cognitive behavioral therapy, didactic module, and discussion groups related to attitudes, beliefs and the meaning of gambling [52], eye movement desensitization and reprocessing [43], mindfulness-based relapse prevention [44]. Two programs (15.4%) formed an exception. These programs were primarily designed for participants who had alcohol dependence and co-occurring psychiatric disorders in one case [54] and for those with substance misuse in the other [50], rather than specifically targeting individuals with gambling disorders with some participants who also grappled with problem gambling or GD. Castellani et al. [50] described a treatment program that included 30 days period of inpatient detoxification in addition to at least 120 days in a domiciliary care program for the veterans. Grant et al. [54] portrayed a pharmacological treatment program for their alcohol dependence and co-occurring psychiatric disorders.

Overall, the researchers were preoccupied with evaluating the treatments and assessing the factors that might facilitate treatment outcomes. Surprisingly, most studies but two [43, 44] did not relate to veterans' characteristics in the literature review nor deal directly with the unique veterans' characteristics and how these programs may be suited for them.

## Discussion

Previous studies pointed out and stressed that military veterans are a vulnerable sub-group with high levels of gambling problems [9, 13–16]. Hence, this study systematically mapped the concept of recovery in studies related to this sub-group to bring existing knowledge to the forefront and identify gaps in the literature. The findings revealed several insights related to the blindness of researchers and treatment providers to the concept of recovery, to the unique characteristics of military veterans with GD, and to the wider paths and contexts in which recovery occurs.

In his influential posthumously philosophical text, Wittgenstein [61] argued that misunderstandings and confusion arise when the use of language is unclear or ambiguous. Specifically, when words lack precise definitions or are open to multiple interpretations, individuals may struggle to grasp the intended meaning or to communicate effectively. This ambiguity can lead to what Wittgenstein described as a form of "aspect-blindness" (ibid., p. 213), resulting in a limited or mixed understanding of concepts or ideas. Notably, this scoping review could possibly illuminate the "aspect-blindness" regarding recovery in military veterans with GD.

As noted in our review, the meaning of recovery was manifested by various terms reflecting changes related to the individual's problem and/or disorder, such as reduction, abstinence, or improvement. This finding aligns with previous research on the concept of recovery in alcohol use disorder [62], gaming disorder [63], and gambling disorder [39]. In our review, we found that each term reflects a different recovery approach. For example, the terms abstinence, decrease and reduction in relation to gambling

behaviors, GD, and other mental illness symptoms represents a deficit-based approach toward recovery [27]. On the other hand, the term improvement reflects the strength-based recovery approach in the studies [36]. Notably, as shown in Table 1, five studies integrated terms from different recovery approaches simultaneously, indicating one of two things: the absence of consensus in the literature regarding the conceptualization of recovery from GD [39], or the blindness and lack of awareness among researchers and treatment providers around these terms and their underlying meanings.

The blindness to the unique characteristics of military veterans in recovery is also conspicuous. For example, although the word recovery is not mentioned explicitly in the studies' aims and/or in the aims of the treatment programs for veterans – most researchers did try to find a solution for the gambling problems and disorders through empirical evaluation of various treatment programs. However, these treatment programs were evaluated on how well they addressed the gambling problems of military veterans without specifically relating to their unique characteristics exhibited, such as higher rates of suicide attempts and suicidal ideation [9], and higher levels of PTSD [10] well documented in military veterans [13]. Moreover, it appears that in the field of gambling studies, presently, treatment outcomes are still relatively nascent, with few tailored interventions available for veterans [9]. In general, we found that most studies focused on symptom reduction, as this aligns with the primary targets of existing treatments, rather than adopting more holistic definitions of recovery. This finding, however, is not unique to GD treatment, as symptom reduction (abstinence, relapse prevention) approaches are well established as the primary treatment outcomes for patients experiencing substance use disorders [64].

We also found that the studies mapped in this scoping review were blinded to the diverse paths to recovery, mainly focusing on treatment approaches. At the broader level, recovery is a process of change rather than an outcome [27], encompassing multiple biopsychosocial dimensions [65]. These include various elements, such as internal resources like self-efficacy, hope, and coping skills, as well as support from family, friends, and community networks [26, 66]. Furthermore, recovery is influenced by different contextual factors, for example, socio-cultural contexts and gender [67]. Hence, it is important to highlight that while treatment programs were the focus of the studies explored in this scoping review, they represented, however, only one pathway to achieving recovery. Perhaps these studies on military veterans in recovery or treatment were conducted due to the accessibility of this group to researchers, mainly since they were in treatment centers where recruitment is relatively straightforward.

Moreover, research indicates that most individuals successfully navigate recovery from GD without formal assistance from the healthcare system [67–69]. Only two epidemiological studies explored in this scoping review related to natural recoverees [51, 55]. Consequently, the current knowledge on natural recovery in military veterans remains limited. Not only were there two studies on natural recovery, but only three studies out of the remaining elven explored social elements relevant to recovery, such as stable housing and employment, work status, and interpersonal relationships [48–50]. Only one study addressed the cultural aspects of recovery, namely, religious/spiritual struggles [53], thus highlighting the researchers' notable blindness regarding culture in relation to recovery for veterans.

Furthermore, while the studies addressed social elements related to gambling problems, the socio-demographic characteristics of the samples predominantly consisted of White males aged 40–50. These findings align with previous reviews in both the gambling field [70] and military veterans' studies [71], potentially leading to insufficient representation of female military veterans and their unique needs in supporting their recovery from GD. This bias in the studies explored is likely influenced by several factors: demographic data indicates a higher proportion of male veterans than female veterans in the United States [72], with most studies conducted in the USA ($n = 12$). In relation to gambling, more men than women struggle with GD, and women tend to seek treatment less frequently than men [73]. However, these findings underscore the blindness in scientific knowledge about recovery from GD in military veterans regarding the crucial role of gender in recovery.

## Future Directions, Clinical Implications, and Limitations

Future studies should include female veterans and recruit more culturally diverse populations and varied age groups when examining recovery from GD in military veterans. Additionally, given that eleven of the thirteen studies reviewed employed quantitative methods, we strongly advocate for incorporating qualitative approaches for elucidating veterans' lived experience with recovery. Qualitative methods may allow researchers the opportunity to capture participants' authentic voices and gain deeper insight into their lived experiences. Moving forward, studies in this field should delve into the associations between multivariate dimensions of recovery, recovery paths, resources, barriers to recovery, and the unique characteristics of military veterans. From a clinical standpoint, a holistic approach to fully understand recovery is warranted, prioritizing a strengths-based paradigm to enhance veterans' functioning, bolster their resilience, and help them fully integrate into the community [74]. Researchers should also explore the journeys to recovery of those who recovered naturally as a means to identify factors that support recovery outside

of the treatment setting. As studies become available, future research is needed to systematically evaluate treatment effectiveness of GD interventions for veterans, particularly focused on treatments that foster strengths-based approaches developed to sustain long-term recovery from GD in veterans.

This study has several limitations. The sample of studies explored is rather small ($n=13$) and was published over a 38 year period (1984–2022). The articles included in this review primarily relate to male veterans' recovery from GD in treatment programs in the United States, thus hindering generalizability in relation to socially and culturally diverse veteran populations recovering from GD. Moreover, most studies employed quantitative analysis methods, which may impede a nuanced understanding of recovery from gambling in military veterans. Additionally, since only empirical and clinical studies in English were included, excluding gray literature, the breadth of the study's findings is somewhat limited.

A final limitation of the study is that we included studies in which at least some of the veterans had GD (formerly pathological gambling) or problem gambling. Specifically, two programs (15.4%) formed an exception. These programs were primarily designed for participants who had alcohol dependence and co-occurring psychiatric disorders in one case [54] and for those with substance misuse in the other [50], rather than specifically targeting individuals with gambling disorders with some participants who also grappled with problem gambling or GD.

## Conclusion

Recovery remains at the forefront when treating individuals for addictions. Specifically, researchers seek to develop and implement treatment practices that foster recovery from addictions, particularly when seeing recovery through a holistic lens [75]. Recently, attention has been placed on defining recovery for those with GD [39]; although its application has not yet been applied directly to veterans. In the present study, we mapped 13 empirical and clinical studies on recovery and found that in general, researchers mostly focused on assessing treatment programs and their effectiveness, while remaining blind to alternative recovery pathways for veterans. Therefore, future research is needed to employ quantitative and qualitative approaches to accurately conceptualize recovery for veterans with GD.

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This recent scoping review provides a comprehensive analysis of how recovery from gambling disorder is defined and assessed in gambling studies.

** Stefanovics EA, Potenza MN, Tsai J, Pietrzak RH. Prevalence and clinical characteristics of recreational and at-risk/problematic gambling in a national sample of US Military veterans. Journal of gambling studies. 2023;39 [3]:1077–97.

It offers recent data on the prevalence and characteristics of gambling problems among US veterans, providing essential context for understanding the scope of the issue.

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**Author Contributions** BGF was one of the principal architects of the project. She formulated the research questions, aims, and inclusion and exclusion criteria, supervised the data extraction, analysis, and synthesis, and wrote the introduction and discussion. NV reviewed the articles, conducted the data extraction and synthesis, and wrote the findings section. NV was involved in writing the introduction and discussion. TX reviewed the articles, conducted the data extraction and synthesis, and wrote the findings and methods sections. TX was involved in writing the introduction. SWK was one of the principal architects of the project. He supervised the data extraction and synthesis, reviewed and commented on drafts of the manuscript, and wrote the implications. All authors approved the final version.

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## Declarations

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