

Sex as a substitute addictive behavior: A scoping review

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Abstract

Purpose of Review: In this scoping review, we examined sex as a substitute addiction for other substance or behavioral addictions, with a particular emphasis on how it has been defined, has presented clinically, the samples and contexts studied, and the methods used. Various types of sexual behaviors were included (e.g., voyeurism, and pornography use).

Recent Findings: Overall, 18 peer-reviewed articles, published between 1954 and 2023, were included. Across studies, and pathways to recovery, the most salient lines of inquiry appear to concern sex as a substitute among substance use service users, 13th stepping/ sexual activity among recovery support group attendees, multi-addictions, pornography as a replacement for substance use (including during the COVID-19 pandemic), and hypersexual disorder in the context of bariatric surgery.

Summary: Further focused research is needed, including the use of qualitative and mixed methods studies, larger representative samples, and more robust study designs.

Keywords: sex; substitute addiction; recovery; substance use; behavioral addictions; addictive behaviors

Introduction

A substitute addiction is said to be present when one addictive behavior is discontinued and sequentially replaced by another [1]. The (un)consciously selected substitute substance or behavior may be novel, resume, or increase in frequency and/or intensity after the addiction that is being treated or targeted is addressed [2]. Motives underlying substitution are varied and may include:

- seeking to (temporarily or permanently) occupy the experiential void resulting from the terminated addictive behavior [3]
- the pursuit of similar appetitive effects as the original addiction [1]
- their availability and accessibility during forced abstinence [4], [5]
- expectations, based on earlier experience with the addictive behavior [1], [5]
- instrumental use to manage early abstinence-based recovery [6]
- curiosity and experimentation [7], time-spending or triggers [8], and harm reduction [6].

Substitutes vary in their risk and severity, potentially leading to relapse of the previously targeted addiction or the development of a new addictive behavior imposing equal or greater harm [9], [10]. Although extant literature has tended to concentrate on substance-based substances (e.g., alcohol, caffeine, and nicotine; [11]), the original addictive behavior being substituted for or its replacement may be behavioral addictions. Moreover, “any substance or behavior that is reinforcing, used to cope, or provides robust and desired changes in experience has the potential to become an addiction” [12](p. 151).

While it has long been recognized in addiction treatment settings, much remains unknown about substitute addictive behaviors overall [11], and the evidence for sex as a substitute is especially unclear. As a clinical phenomenon compulsive sexual behavior, encompassing compulsive affairs, exhibitionism, masturbation, sexual harassment, sex offending, sex work, voyeurism, and pornography use, has a long history [13]. Case study evidence demonstrates that pornography addiction has substituted for alcohol and cannabis use [5], [14]. There is a need for a systematic examination of sex as a substitute.

Therefore, this scoping review sought to map the published literature on sex as a substitute addictive behavior to highlight the current state of knowledge and future directions. We aimed to explore 1) how substitute addictions have been defined; 2) presentations of substitute addictions; 3) the samples and contexts studied and 4) the methods used. To the best of our knowledge, this is the first such scoping review.

Method

This review was conducted according to Arksey and O'Malley's [15] five-stage framework for scoping reviews and entailed: (1) developing a research question; (2) identifying relevant literature; (3) selecting literature; (4) charting the data, and (5) presenting the synthesized results. We report on the review using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist [16].

Step 1: Developing a research question

The research question guiding this review was: what is the scope of the available literature on sex as a substitute for other addictive behaviors?

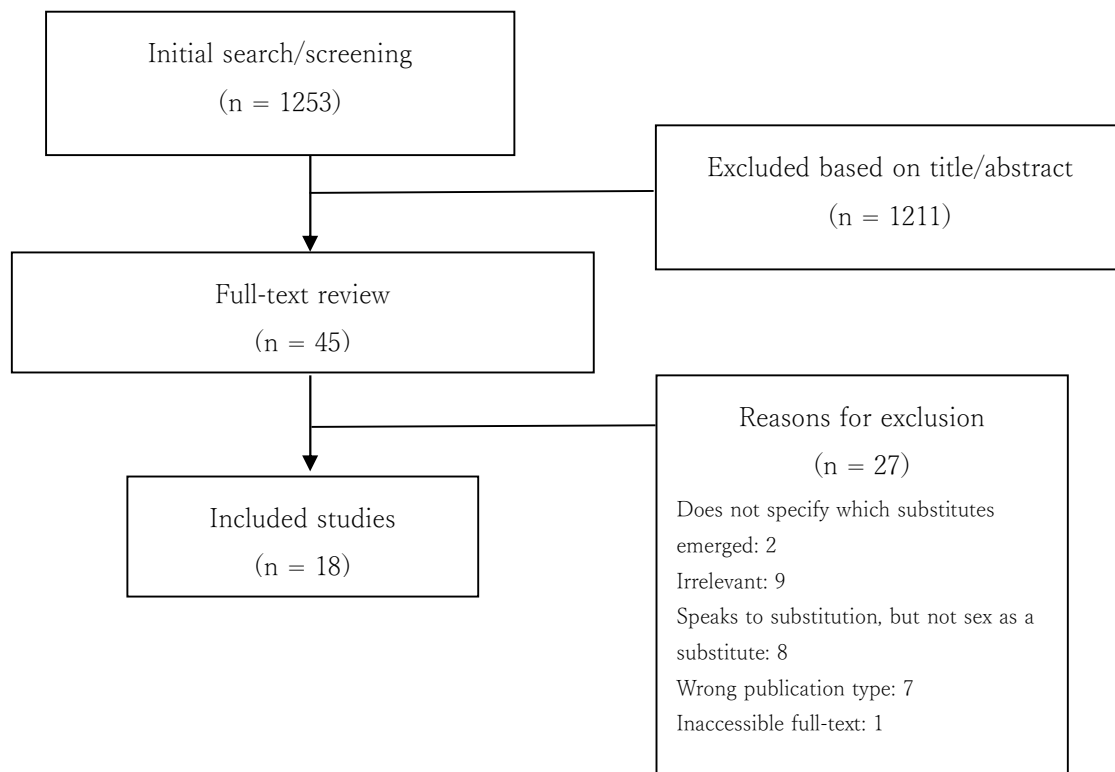
Step 2: Identifying relevant literature

We searched PubMed, Web of Science, and Scopus meta-databases from inception to October 2023 to identify English-language studies. All types of study designs were included in the search for articles that described the shift from SUD or behavioral addiction to sex-related behaviors, using three sets of search terms pertaining to *substituting addictive behaviors* (e.g. 'substitute addiction', 'cross addiction', 'addiction hopping', 'substitute behaviors', and 'switching addiction'); *substance and behavioral addictions* (e.g. 'substance use', 'behavioral addiction', 'process addiction', 'substance misuse', 'substance dependence', 'substance use disorder') and, *sexual behaviors* (e.g. 'sex addiction', 'pornography', 'compulsive sexual behavior disorder', 'cybersex', 'hypersexuality', 'sexual compulsion', 'sex and love addiction', 'relationships', 'extramarital affairs', and, 'one-night stands'). The included studies were reference mined for additional citations.

Step 3: Selecting literature

We included only scientific articles; gray literature, books, chapters, editorials, commentaries, and literature reviews were excluded. Study selection proceeded in three steps, namely, 1) title screening, 2) screening abstracts against the eligibility criteria, and 3) reviewing full texts. The initial search of titles yielded 1253 potential publications across all databases (Scopus= 856, PubMed= 54, and Web of Science= 343). After screening titles and abstracts for relevance, deduplication ($n = 4$), and adding articles identified through reference mining ($n = 7$), 45 publications were included for full-text appraisal. Both authors scrutinized the full texts for suitability. An attempt to consider a broad sweep of what could be considered within the realm of sex addiction was agreed on; there were no disagreements on article retention among the authors. 27 articles were excluded and 18 publications were retained. Figure 1 details the article review screening process.

Figure 1 Flowchart describing the study selection process



[Original figure]

Step 4: Charting the data

Abstracted study-level information included country, method, study aims, sample characteristics, and key findings. Data were synthesized through textual narrative synthesis, which allows for studies to be compared by their characteristics and makes explicit differences such as study design (e.g. quantitative, qualitative) and context, and aids the identification of gaps in the literature [17].

Step 5: Presenting the synthesized results

We identified 18 articles, published between 1954 and 2023, of which 7 were surveys, 4 were case studies, 4 were theoretical studies, 2 were qualitative studies, and 1 multiple methods study (the two studies and one of the surveys form part of the included multiple methods study). The key attributes of these articles are summarized in Table 1. Table 2 offers an overview of the definitions of substitute addictions offered within the selected articles.

Table 1 Characteristics of the included studies

Authors, Year	Country	Method	Study aims	Sample characteristics	Key findings
Ali [18]	Sudan	Case studies	To emphasize the clinical observation of the metamorphosis of addictions i.e. remission from the use of a substance and migration to another substance or behavioral addiction	Two males receiving treatment for opiate addiction	One patient substituted with sex (several extramarital relationships, leading to divorce).
Bogart and Pearce [19]	United States	Survey, cross-sectional	To describe the frequency of various 13 th -stepping experiences in a sample of women involved in AA by men in AA	Fifty-five women, aged 17-72 years (mean±SE=43.13±1.59)	50% of participants had experienced 13 th -stepping behaviors. Female-only AA group attendees reported more 13 th -stepping experiences from attending co-ed groups. Two participants reported rape by men they met in AA.
Bonny-Noach and Gold [20]	Israel	Survey, cross-sectional	To examine the craving for drug use and addictive behaviors (tobacco and alcohol consumption, viewing of pornography, gambling, and shopping online) of people who recovered from SUD, before and after the outbreak of the COVID-19 pandemic	A convenience sample of 113 people who had recovered from SUD, aged 22-69, 78% men	Isolation caused an increase in respondents' addictive behaviors, especially for those who reported a history of these behaviors. 15% reported watching pornography to a great and a very great extent (compared to 4% pre-pandemic).
Dickhut, Hase, Gruner-Labitzke, Mall, Köhler, de Zwaan and Müller [21]	Germany	Survey, longitudinal	To investigate whether the remission of preoperative food addiction is associated with increases or new onset of other addictions within the first year following bariatric surgery	One hundred and twenty-five bariatric surgery patients were assessed before surgery (T1) and at 6 months (T2) and 1 year (T3) follow-ups	The addiction transfer hypothesis was not supported for alcohol use, gambling disorder, internet use disorder, buying-shopping disorder, hypersexual disorder, and exercise dependence.
Konkoly Thege, Hodgins and Wild [22]	Canada	Survey, cross-sectional	To describe the prevalence of single versus multiple addiction problems in a large representative sample and identify distinct subgroups of people experiencing substance-related and behavioral addiction problems	A random sample of 6,000 respondents (4,000 from a research panel and a population-based sample of 2,000)	29.8% reported one, 13.1% reported two, and 7.9% reported three + addiction problems in the last 12 months. Individuals reporting only one excessive behavior may have had or will have problems with substitution.
Mansky [23]	United States	Theoretical/patient records	To introduce and examine topics related to physicians' health that are salient in their clinical usefulness or their heuristic value in planning future research	New York State Physicians Health Program (recovery program)	Observed substitute addictions included gambling, eating disorders, spending, sex, excessive work, and excess exercise.
Müller, Leukefeld, Hase, Gruner-Labitzke, Mall, Köhler and de Zwaan [24]	Germany	Survey, cross-sectional	To examine if symptoms of food addiction are related to symptoms of other substance-related or nonsubstance-related addictive behaviors in preoperative bariatric surgery patients	216 bariatric surgery candidates (80.1% women) between 18 and 73 years (<i>Mdn</i> = 44.00)	A diagnosis of food addiction had no bearing on prevalence estimates of addictive behaviors. 1.9% of the total sample met the criteria for alcohol use disorder, 6.0% for nicotine use disorder, 17.3% for buying disorder, 2.3% for Internet use disorder, and 1.4% for hypersexual disorder.
Savitt [25]	United States	Case study	To contribute to the psychoanalytic literature on narcotic addiction	19-year-old male college student, addicted to marijuana and heroin	The patient achieved abstinence within nine months of psychoanalysis but as narcotic use decreased began to "act out sexually". The therapist identified the substitute addiction

					but regarded it as “a more suitable way of seeking gratification”.
Sinclair, Sussman, Vantomme, Florence, Savahl, and Vanderplasschen [26]	South Africa	Focus group discussions	To explore substance use service providers' perceptions of substitute behaviors during and after residential treatment in the Western Cape, South Africa	22 service providers (social workers, occupational therapists, a nurse, a psychiatric nurse, a chaplain, and recovery assistants) across five residential substance use treatment facilities	Identified substances (e.g. cigarettes and caffeine) and behaviors (e.g. gambling, eating, love, sex, shopping, exercise, and gaming) as potential substitutes. Substitute motives included managing cravings; self-medication; filling the experiential void of the primary substance, and time-spending. Service providers did not routinely screen for co-occurring behavioral addictions; a key mechanism for substituting, they said.
Sinclair, Sussman, Savahl, Florence and Vanderplasschen [27]	South Africa	Individual in-depth interviews	To explore Narcotics Anonymous attendees' perceptions of and experiences with substitution in the Western Cape, South Africa	A convenience sample of 23 (n = 14 males and n = 9 females) Narcotics Anonymous attendees, age range 22—55 years (M = 39.3, SD = 9.35)	Pornography viewing, sexual activity, and relationships (n = 5) were reported substitutes. Distraction emerged as a substitute motive. One participant described his substance use, sexual activity with sex workers, and overwork as interacting addictions.
Sinclair, Sussman, Savahl, Florence and Vanderplasschen [28]	South Africa	Multiple-methods study	To explore the nature and dynamics of substitute addictions in the Western Cape, South Africa	(1) a scoping review (63 studies); (2) a case study (n=1); (3) a quantitative longitudinal cohort design (n=137, 66% follow-up rate); (4) in-depth interviews (n=23); (5) focus groups (n=22)	Sex and pornography viewing were substitutes across all sub-studies.
Sinclair, Vanderplasschen, Savahl, Florence, Best and Sussman [5]	South Africa	Case study	Using an illustrative case, discuss COVID-19-related pornography use through the lens of relapse and substitute addictions	A 50-year-old man in recovery from an alcohol use disorder and a member of Alcoholics Anonymous (AA) for 25 years	There may be increased susceptibility to substitute addictions due to individual (e.g. stress; coping skills; cognitive and affective responses), environmental (e.g. recovery support; access to substances and behaviors), and addiction behavior-related factors (e.g. history and pattern of appetitive effects).
Sinclair, Sussman, De Schryver, Samyn, Adams, Florence, Savahl and Vanderplasschen [8]	South Africa	Survey, longitudinal cohort design	To determine the prevalence, correlates, and motives of substitute behaviors after initial treatment among individuals with SUDs	Baseline study sample (n = 207) of consecutively admitted persons with SUDs receiving residential treatment in five facilities; follow-up sample (n=137, 66% follow-up rate)	At follow-up, 36% of service users had substituted their primary substance(s) with another substance or behavior; 23% had relapsed and 40% had maintained abstinence. Sex (e.g., sexual activity, pornography use, voyeurism, online) was reported as a substitute by only 2 respondents.
Sussman and Black [3]	United States	Theoretical	To examine the range and possible reward functions of substitute addictions	Not applicable	Substance- and behavior-based addictions may serve as substitute addictions. Behavioral substitutes include video gaming, gambling, internet use, sex, work, exercise, compulsive spending, religion and “13 th Stepping”.
Sussman [29]	United States	Theoretical	To discuss the co-occurrence of cigarette smoking and sexual behavior among teens	Not applicable	There is limited research literature on cigarette smoking and sexual behavior as substitute addictions. Smoking and sexual behavior are substitute addictions for each other or other drugs, possibly serving similar functions (e.g. relaxation or escape).

Tadpatrikar and Sharma [14]	India	Case study	To highlight the psychosocial factors underlying substitute addiction	A 23-year-old male patient receiving care from a service for the healthy use of technology	The case subject abstained from cannabis use and substituted with pornography viewing and technology use.
Young [30]	United States	Theoretical	To explore the possible existence of childhood sexual abuse issues as a predisposing factor for relapse	Not applicable	Other addictions often hide sex and love addiction until they are abstained from. If left undetected and untreated, sex and love add remain a high-risk factor for relapse and must be addressed in relapse prevention.
Zarate, Ball, Montag, Prokofieva and Stavropoulos [31]	USA, UK, Australia, and New Zealand	Survey, cross-sectional	To expand the understanding surrounding comorbidities between addictions, as well as the transition/replacement of one addiction form to/with another	An online community sample of 968 adults (33.6% women, 66.4% men)	There were positive network connections across addictive behaviors, with tendencies towards gambling showing the highest centrality, sequentially followed by internet use, internet gaming, alcohol use, shopping, social media use, substance use, sex, smoking, and exercise.

[Original Table]

Table 2 Definitions of substitute addictions and terminology used in the included studies

Authors, Year	Definition	Terminology
Ali [18]	"...the apparent remission from use of a substance and migration to another substance or a behavioral addiction" (p. 710)	'substitute addiction' 'cross addiction'
Bogart and Pearce [19]	"'13th-stepping' is a euphemistic term used among members of Alcoholics Anonymous (AA) to refer to people (typically men) who try to "pick up" more vulnerable members (typically women) for dates or sex in AA meetings" (p. 42)	'thirteenth-stepping'
Bonny-Noach and Gold [20]	"replacing one addiction with another" (p. 262)	'substitute'
Dickhut, Hase, Gruner-Labitzke, Mall, Köhler, de Zwaan and Müller [21]	"... replace addiction-like eating by another addictive behaviour postoperatively when they are no longer able to overeat..." (p. 925) "...postoperative increase or new onset of alcohol use disorder, gambling disorder or other excessive behaviours that may be addictive..." (p. 930)	'addiction transfer' 'cross addiction'
Konkoly Thege, Hodgins and Wild [22]	"... individuals reporting only one excessive behavior ... have had or will have problems in other areas but successively instead of simultaneously" (p. 619)	'addiction substitution' 'cross-addiction' 'switching addiction'
Müller, Leukefeld, Hase, Gruner-Labitzke, Mall, Köhler and de Zwaan [24]	"...the replacement of one substance or habit by another..." (p. 586) "...patients may seek alternative rewarding behaviours when they are unable to overeat..." (p. 592)	'cross-addiction' 'addiction transfer'
Sinclair, Sussman, Vantomme, Florence, Savahl, and Vanderplasschen [26]	"...behaviours and/or substances that replace the functions of the terminated SUD" (p. 2)	'substitute behaviours' 'substitute addictions'
Sinclair, Sussman, Savahl, Florence and Vanderplasschen [27]	"... the newly acquired or resumed use of substances and engagement in behaviors that (partially or fully) functionally replace a terminated SUD" (p. 2)	'substitute behaviours' 'substitute addictions'
Sinclair, Sussman, Savahl, Florence and Vanderplasschen [28]	"Substitute addictions – addictions that replace terminated substance use disorders (SUDs) – involving addictive behaviours such as a new substance, food/eating, gambling, shopping, or sex..." (p. 421)	'substitute addictions' 'substitute behaviours'
Sinclair, Vanderplasschen, Savahl, Florence, Best and Sussman [5]	"...the replacement of one addictive behavior by another" (p. 1099)	'substitute addictions'
Sinclair, Sussman, De Schryver, Samyn, Adams, Florence, Savahl and Vanderplasschen [8]	"substitute addictions ... the 'immediate or gradual functional replacement of an addiction or set of addictions that have been terminated', underscores that substitute behaviors may become addictions and display key characteristics of addictive behaviors ... substitute behaviors are part of a continuum where behaviors have the potential to progress to addictive levels over time and which vary in severity. When these behaviors are a purposeful component of treatment (e.g., nicotine replacement therapy; methadone maintenance treatment) these should not be regarded as substitute addictions..." (p. 1)	'substitute addictions' 'substitute behaviors'
Sussman and Black [3]	"...any addictive behavior that serves at least one key function previously achieved by another addictive behavior (e.g., relaxation, escape, excitement, pleasure, reduction of negative affect, social lubrication" (p. 167)	'substitute addiction'
Sussman [29]	"...substitute behaviors that serve similar pleasurable functions as did their drug of choice ... sometimes these behaviors are referred to as 'substitute addictions'" (p. 190)	'substitute addictions'
Tadpatrikar and Sharma [14]	"... using one substance instead of another" (p. 173) "...substitute addictions may be gambling, eating disorders, spending, sex, excessive work, and even excess exercise" (p. 173)	'substitute addictions' 'substance substitution'
Young [30]	"... abstinence from one addictive behavior often leads to the substitution of a different addictive behavior" (p. 250) "... when addictions surface other than the identified addiction..." (p. 256)	'substitution'
Zarate, Ball, Montag, Prokofieva and Stavropoulos [31]	"...substituting one form of addictive behavior with another, while trying to abstain from the first" (p. 2)	'addiction substitution behaviors' 'addiction substitution' 'replacement' 'substitution behaviors'

[Original Table]

Definitions

Sixteen of the 18 publications (variably) defined substitute addictions (Table 2). Ali [18], Sussman [29], Sinclair, Sussman, Savahl, Florence, & Vanderplasschen [28], and Sinclair, Sussman, Vantomme, Florence, Savahl, & Vanderplasschen [26] specify that substance use may be replaced with substances or behaviors (including sex) as potential substitutes. Similarly, Bogart & Pearce [19] discuss replacing alcohol with sex (substance-to-behavior substitution). In contrast, the vast majority of definitions pertained to substitution as the replacement of addictive behaviors by another addictive behavior (e.g. pathological gambling replaced by sex addiction; [3], [5], [8], [14], [20], [24], [27], [30], [31]. One study discusses substance or process addictions such as sex as replacements for addictive-like eating [21] while another discusses co-occurring substance-related and behavioral addiction problems [22]. Five studies offered more than one term to refer to substitution [18], [21], [22], [24], [31]. ‘Substitute addiction’ was the most widely used terminology, appearing in 9 studies [3], [5], [8], [14], [18], [26]–[29], followed by ‘cross addiction’ appearing in four studies [18], [21], [22], [24]. ‘Addiction transfer’ appeared in two publications [21], [24]. Various studies also specifically refer to substitute behaviors [8], [26]–[28], [28], and another to ‘addiction substitution behaviors’ and ‘substitution behaviors’ [31].

Sample

Most studies emanated from the United States [3], [19], [23], [25], [29] and South Africa [5], [8], [26]–[28]. Two studies originated in Germany [21], [24], while single studies emerged from Sudan [18], Israel [20], Canada [22] and India [14]. One study was based on data from the United States, the UK, Australia, and New Zealand [31]. Four studies were theoretical (not empirical, sample-based). Of the 14 studies based on unique samples, participants were either recovery support group attendees [5], [19], [27], current [14], [18], [24], [25] or recent treatment attendees [8], [21], [23], or community samples [20], [22], [31]. Only one study’s participants were treatment providers [26].

Method

Of the 6 surveys conducted, 5 used a cross-sectional design, one of which formed part of a multiple methods study. The one longitudinal study [8] recruited residential substance use treatment service users (n=137, 66% follow-up rate). Participants completed the questionnaire, which comprised an adaptation of the Addiction Matrix Self-Report Measure [32], the Brief Assessment of Recovery Capital [33], and the Overall Life Satisfaction scale [34], during and following treatment. The 36% that had substituted their primary substance(s) at follow-up primarily reported behavior-based substitutes: love; eating; exercise; social media; religious practices; work; binge-watching; sex (e.g. sexual activity, pornography use); self-harm; internet use; gaming and shopping. Substance-based substitutes included caffeine (e.g., coffee, or energy drinks), cigarettes, alcohol, and cannabis. The presence of substitute addictions was linked to mid-range levels of recovery capital and the prospect of (rather than guaranteed post-treatment) employment.

Related substitute motives included time-spending, expected appetitive effects, enjoyment, and (re)connecting with others. 40% of participants reported maintaining abstinence, while 23% had relapsed, post-treatment. Case studies, utilized in four of the included studies [5], [14], [18], [25] have also been used as a way to document occurrences of substitution. All four theoretical contributions originated in the United States [3], [23], [29], [30]. Only two qualitative studies met our inclusion criteria, and both formed part of the only multiple methods study focused on substitution [26]–[28]. Except for a large online sample drawn from a pre-existing research panel (n=6000) and another online community sample of 968 adults, quantitative samples were generally small. The articles included in this scoping review reported on sex-related substitution within different settings, circumstances, and groups (highlighting different pathways to recovery). Topic themes are summarized next.

Hypersexual disorder in the context of bariatric surgery (3 studies)

Two studies discussed the emergence of hypersexual disorder amidst bariatric surgery, for which the evidence was mixed. In Müller and colleagues' study [24], 1.4% of the primarily female 216 bariatric surgery candidates met the criteria for hypersexual disorder. The presence or absence of food addiction (as a concurrent addiction) had no bearing on the prevalence estimates of addictive behaviors, namely buying, dependence on exercise, gambling, Internet use, and hypersexual disorders. A more recent longitudinal study [21] with 125 bariatric surgery patients explored, but found no evidence for, substituting food with alcohol, buying/shopping, exercise, gambling, internet use, or hypersexual disorder. That is, no new onset behaviors or increases were reported.

Substitution with pornography during the COVID-19 pandemic (2 studies)

Two studies described pornography as a substitute for substance use disorders during the COVID-19 pandemic [5], [20]. While drawing on different methods (a survey and a case study), both studies considered how life in recovery was being impacted by the restrictions imposed to limit transmission of the virus. The studies highlight that pornography viewing, a behavior engaged in in the past, had increased. The environment in which the addictive behaviors played out and the history with the behavior was suggested to have increased susceptibility to substitution.

Pornography as a replacement for substance use (3 studies)

Relatedly, three studies of variable designs focused on pornography as a replacement for a substance-based addiction. A case study of a 23-year-old male patient demonstrates the substitution of cannabis with pornography viewing and technology use, the goal for treatment is healthy technology use [14]. In the only included multiple-methods study, underpinned by a scoping review (n=63 studies), a case study (n=1); a quantitative longitudinal cohort design (n=137); in-depth interviews (n=23) and focus group discussions (n=22) sex and pornography viewing were substituted across all data sources [28]. Finally, in a recovery

program for physicians, sex was among a range of behavioral substitutes (excessive exercise, excess work, gambling, eating disorders, and spending)[23].

13th stepping/ sexual activity among recovery support group attendees (3 studies)

Three studies discussed sexual activity among Narcotics Anonymous and Alcoholics Anonymous members specifically. Sussman and Black [3] articulate that 13th stepping – where sexual compulsion is the replacement – is a form of substance-to-behavior substitution. In Bogart and Pearce's [19] cross-sectional survey, half of the 55 women surveyed had experienced 13th-stepping behaviors, operationalized as feeling intimidated, being made a pass at, hearing comments related to sex, receiving hugs they didn't want, being flirted with, feeling seduced, being asked for their phone number, receiving unwanted calls, seeing men flirt with others, seeing other women being seduced, witnessing men who seemed most interested in dating, witnessing other women being pressured into sex, and themselves feeling pressured into sex. Two respondents reported being raped by men from AA. Relationships, sex, and pornography viewing were reported by five of the 23 Narcotics Anonymous members in a qualitative South African study. One case depicted the interaction between substance use, sex, and overwork, the purposeful use of sex and relationships for distraction, and vigilance concerning relapse risk for substance use [27].

Sex as a substitute among substance use service users (4 studies)

The theme of sex as a substitute came to the fore strongly in studies with treatment service user populations. One patient receiving treatment for opioid use substituted with sex in the form of several extramarital relationships, leading to divorce [18]. In another treatment case study documenting nine months of psychoanalysis, the patient achieved abstinence from narcotics but began to "act out sexually" as use decreased. The therapist regarded sex as "a more suitable way of seeking gratification" [25]. Another two studies offered complementary views on substitution – from service user and service provider perspectives. While 36% of the follow-up sample of 137 service users had substituted their primary substance(s) with another substance or behavior, sex (e.g., sexual activity, pornography use, voyeurism, online) was only reported as a substitute by 2 respondents. Service providers from the same facilities recognized potential substitutes to be substances (e.g. caffeine and cigarettes) and behaviors (e.g. exercise, gambling, gaming, eating, love, sex, and shopping). Explanations for substitution included craving management, self-medication, time-spending, and filling the void previously occupied by the primary substance. Concurrent behaviors and addictions at treatment entry were said to lead to substitution when the primary addiction was abstained from [8], [26]. Relatedly, the theme of multi-addictions was foregrounded as a mechanism for substituting in three studies.

Multi-addictions (3 studies)

Two network analysis studies suggested that there are positive network connections across different addictive behaviors and that these increase the likelihood of developing cross-addictive behaviors [22], [31]. Young [30] highlights that relapse prevention efforts must address sex and love – often hidden until the primary addiction is abstained from – as other addictions frequently hide these.

Discussion

This literature review has identified and analyzed 18 studies on sex as a substitute published between 1954 - 2023. Rather wide inclusion criteria were used. For example, it is unclear whether or not various maladaptive sexual behaviors (e.g., hypersexual behavior) should be considered to be an addiction, impulse control disorder, or stand on its own [35]. A key takeaway message is that there is a strong need for more focused research on the topic. The most salient lines of inquiry appear to concern sex as a substitute among substance use service users, 13th stepping/ sexual activity among recovery support group attendees, multi-addictions, pornography as a replacement for substance use (including during the COVID-19 pandemic), and hypersexual disorder in the context of bariatric surgery.

Although virtually all studies defined substitute addictions, definitions varied. Definitions specified that substance use may be replaced with substances or behaviors (substance-to-substance and substance-to-behavior substitution). Most definitions refer to substitution as the replacement of addictive behaviors by another addictive behavior. Still other definitions discuss substance or behavioral addictions as replacements for addictive-like eating. The need for a universal definition should be balanced with the different presentations of substitution (e.g. among bariatric surgery patients). That five studies offered more than one term to refer to substitution [18], [21], [22], [24], [31], is likely a function of the lack of consensus around terminology [11]. ‘Substitute addiction’ and ‘cross addiction’ were the most widely used terms. Importantly, specific terms may be preferred to discuss specific forms of substitution (e.g. addiction transfer for studies on substitution following bariatric surgery). Work is also needed to more clearly define and delineate sex addiction.

Most studies were conducted in the United States and recruited recovery support group attendees, recent treatment attendees, or community samples; only one study sampled treatment providers. Few qualitative and mixed methods studies were uncovered. Findings largely align with an earlier review on substitution in this respect: studies are concentrated in the United States, treatment attendees in early recovery are over-represented, and there is a lack of mixed methods and qualitative studies. With relatively small sample sizes and the use of case studies and cross-sectional designs, this review reveals a notable absence of high-level evidence and high-quality studies. There is thus a compelling need for more robust evidence of substitution.

Limitations of this review

This review is subject to some limitations. By limiting its scope to scientific studies published in English, the results are potentially biased. Overall, however, this is the first scoping review on sex as a substitute and is likely to contribute to the related debate on the concept and delineating its parameters.

Conclusions

Collectively, these studies demonstrate that sex as a substitute has been relatively overlooked in scholarly literature and thus remains understudied and underdeveloped as a discrete research interest. To advance the field, further investigation is necessary into the dynamics, underlying mechanisms and varied forms of this substitute. It also remains critical to renew and *sustain* scholarly interest.

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Papers of particular interest, published recently, have been highlighted as: • Of importance •• Of major importance

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