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Exploring Bondage - Discipline, Dominance - Submission and Sadomasochism (BDSM)

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Abstract:
Summary
BDSM encompasses consensual sexual practices categorized as bondage and discipline (B/D), dominance and submission (D/S), and sadism and masochism (S/M). Prevalence estimates of BDSM interest vary significantly, ranging from a few percent to nearly half of the population. Childhood sexual abuse may correlate with an increased interest in BDSM, especially among submissive women. Men typically develop BDSM interests earlier than women (five years on average) and are more likely to assume dominant roles. Highly educated individuals and non-heterosexuals represent substantial portions of the BDSM community. Despite these findings, practitioners face societal stigma fueled by misunderstandings.

Introduction and purpose: The aim of this publication is to discuss various aspects of BDSM (bondage and discipline, dominance and submission, and sadism and masochism) based on the latest literature.
Material and methods: The PubMed database was searched to find scientific articles in which the terms “BDSM” appear in the title, abstract, or keywords.
Conclusions
Authors highlight the need for further research to resolve discrepancies in prevalence estimates, and explore gender-based behavioral differences. Addressing these gaps could provide a more nuanced understanding of BDSM practices and their psychological underpinnings.

Keywords: BDSM, Bondage-Discipline, Dominance-Submission, Sadomasochism

Introduction

The acronym BDSM combines terms describing various consensual sexual practices: bondage and discipline (B/D), dominance and submission (D/S), and sadism and masochism (S/M) [1,2,3]. Today, BDSM is a relatively broad concept encompassing a spectrum of sexual behaviors, specific forms of interpersonal relationships, and a subculture [1,2,3].
The term BDSM first appeared in scientific literature in the latter half of the 20th century, though the practices it describes were pathologized for many years [1,4]. Articles published in the 1970s and 1980s primarily focused on non-consensual sexual sadism and its dangerous consequences, including fatalities [1,5]. These portrayals contributed to societal stigmatization and misconceptions about individuals involved in BDSM, an issue that persists today [1].
In recent years, interest in BDSM culture has grown, both socially - likely driven by the popularity of related books and films - and academically [1,2]. Over the past two decades, there has been a significant increase in scientific articles addressing the topic. However, the number of publications remains limited. Contemporary researchers take a less discriminatory approach to BDSM, emphasizing that the same sexual behavior (e.g., choking) should primarily be evaluated in terms of consensuality, as this factor appears to be critical in determining its pathological nature [6]. A research group led by Gemberling et al. [7] also highlights the existence of numerous theories explaining the origins of BDSM, framing it as sexual behavior, sexual identity, or even sexual orientation.

Objective

This article aims to compile the most recent information on BDSM (bondage and discipline, dominance and submission, and sadism and masochism) based on the latest available literature.

Methodology

The PubMed database was searched for scientific articles in which the term "BDSM" appeared in the title, abstract, or keywords. Due to the limited number of publications on this topic, the search was restricted to articles published between 2014 and 2024.

The Spectrum of BDSM Practices

According to scientific literature, BDSM encompasses numerous practices that can occur in various combinations [1,2].

A hallmark of BDSM practices is the power dynamics within relationships [1]. In a traditional BDSM framework, there is a dominant partner who, with the consent of the submissive partner (or partners), issues commands. Roles may, but do not necessarily, shift between partners [1]. Studies by Martinez [8] and Alison et al. [9] indicate that more than half of BDSM practitioners do not switch roles, with a strong preference for one role being typical for over 90% of individuals. Notably, submissive roles dominate among practitioners, accounting for nearly half of this group [8,9].

Researchers suggest that "milder" BDSM behaviors, such as restricting mobility through binding or blindfolding, occur significantly more often than "harder" activities, such as whipping [3]. Alison's research group [9] categorized BDSM behaviors into four main groups: pain play (spanking, caning, or using clothespins) humiliation (verbal degradation and gagging) physical restraint (bondage, handcuffs, or chains) and hypermasculinity (anilingus and dildo use). Studies by Chivers et al. [10] and Newmahr [11] highlight that BDSM practices can serve as the primary or exclusive form of sexual activity (for about 70% of practitioners) or as an occasional sexual activity.

BDSM Practices and ICD/DSM Classifications

DSM-5

The DSM-5 includes diagnoses for sexual masochism disorder (302.83) and sexual sadism disorder (302.84) [12].

Sexual masochism disorder has the following diagnostic criteria:

A. Over a period of at least 6 months, recurrent and intense sexual arousal from the act of being humiliated, beaten, bound, or otherwise made to suffer, as manifested by fantasies, urges, or behaviors.

B. The fantasies, sexual urges, or behaviors cause clinically significant distress or impairment in social, occupational, or other important areas of functioning [12].

Sexual sadism disorder has the following diagnostic criteria:

A. Over a period of at least 6 months, recurrent and intense sexual arousal from the physical or psychological suffering of another person, as manifested by fantasies, urges, or behaviors.

B. The individual has acted on these sexual urges with a nonconsenting person, or the sexual urges or fantasies cause clinically significant distress or impairment in social, occupational, or other important areas of functioning [12].

The DSM-5 includes a note that masochistic preferences should not be diagnosed as a disorder if they do not cause *distress, anxiety, obsessions, guilt, or shame about these paraphilic impulses, and do not interfere with the pursuit of personal goals*. In such cases, the individual's behavior is viewed as a sexual interest in masochistic activities rather than a disorder [12].

Regarding sexual sadism disorder, diagnostic criterion B specifies that sexually sadistic behaviors, which do not have a negative impact on the individual engaging in them and occur with the explicit consent of the other party, do not warrant a diagnosis of this disorder [12].

ICD-10

The ICD-10 classification includes the diagnosis of sadomasochism (F65.5), described as:

A preference for sexual activity which involves the infliction of pain or humiliation, or bondage.

If the subject prefers to be the recipient of such stimulation this is called masochism; if the provider, sadism. Often an individual obtains sexual excitement from both sadistic and masochistic activities. [13]
For this classification, no information appears that makes the diagnosis of the disorder dependent on the feelings and consent of those involved in sexual activity [13].

ICD-11
No diagnosis directly corresponding to sadomasochism from ICD-10 appears in the ICD-11 classification [14]. Present, however, is coercive sexual sadism disorder (6D33), which is characterized as:
Coercive sexual sadism disorder is characterised by a sustained, focused and intense pattern of sexual arousal - as manifested by persistent sexual thoughts, fantasies, urges or behaviours - that involves the infliction of physical or psychological suffering on a non-consenting person. In addition, in order for Coercive Sexual Sadism Disorder to be diagnosed, the individual must have acted on these thoughts, fantasies or urges or be markedly distressed by them. Coercive Sexual Sadism Disorder specifically excludes consensual sexual sadism and masochism. [14]
Analyzing the description of the aforementioned disorder, it becomes evident that the key criterion for its diagnosis is the absence of consent for such sexual activities. This represents a significant shift compared to the ICD-10 [13,14]. This change responds to longstanding calls from researchers advocating for the removal of sadomasochism, as understood in ICD-10, from the category of paraphilias. They argued that consensual sadomasochistic behaviors do not meet the criteria for pathology [15].
In summary, sexual practices associated with BDSM inherently occur with the explicit consent of participants [1,2], which precludes categorizing them as pathological under the frameworks of DSM-5 and ICD-11.

Prevalence of BDSM Practices
Estimating the prevalence of BDSM practices is challenging due to the limited number of studies on this subject and their methodological limitations, such as the small representativeness of most studied groups [1,2]. Some studies indicate that BDSM practices affect a maximum of a few percent of the population [16,17,18,19,20,21], while others suggest that this percentage may reach several tens of percent, even up to half the population [3,22,23,24,25]. Data on BDSM-related fantasies are more limited, but they are generally more consistent, suggesting that around one-third of the population engages in such fantasies [3,24,26].
Almost all of the studies referenced [3,18,19,20,21,22,23,24,25,26] involved groups ranging from several hundred to a few thousand participants, with Richters et al. [16,17] surveying over 19,000 individuals, making their data relatively reliable (2% of men and 1.4% of women practice BDSM). However, these studies were conducted relatively long ago (2003 and 2008).
The significant differences in the results of these studies can be explained, in part, by the subjective perception of BDSM practices by respondents. Studies that did not define what behaviors constitute BDSM [1,16,17] resulted in lower prevalence rates compared to those that clearly defined these behaviors [3,22,23].

Additionally, the studies varied methodologically, with some using electronic questionnaires [3,23,24], while others relied on telephone interviews [16,17]. The timeframe regarding when BDSM practices were inquired about also varied, ranging from the past month, to the past six months, to the entire lifetime [1].

Key Differences Between BDSM Practices and Abusive Relationships

The difficulties in distinguishing BDSM practices from abusive relationships contribute to the negative perception of BDSM within both society and among therapists [2]. As previously mentioned, the key distinguishing feature of BDSM practices, setting them apart from abusive relationships, is mutual consent [1,2]. According to many researchers, individuals who practice BDSM are characterized by open communication with their partners, which facilitates a clear understanding of each other's boundaries and enhances the fulfillment of mutual desires [27,28]. Another typical element of BDSM practices is the establishment of a "safe word," which, when spoken, interrupts the activity or ends the entire BDSM session [29]. An interesting aspect of BDSM is "aftercare," where the dominant partner is responsible for ensuring the submissive's comfort and well-being both during and after the session, particularly if pain is involved [30]. A succinct summary of these principles is captured in the motto of the BDSM community: "Safe, Sane, and Consensual" [31].

Potential Factors Predisposing to BDSM Interest and Role Choice

1. Personality Traits and Disorders

There are only a few studies in the literature exploring the connection between specific personality traits or disorders and interest in BDSM practices [1]. A study by Wismeijer et al. [32], involving approximately 434 non-BDSM participants and 902 BDSM practitioners, found that individuals practicing BDSM were less neurotic, more extroverted, more open to new experiences, more conscientious, less agreeable, less sensitive to rejection, and more confident in their relationships. Two other studies [33,34], with smaller sample sizes, suggested a link between BDSM interest and borderline and narcissistic personality disorders, indicating a potential association with personality disorders in cluster B.

2. Childhood Sexual Abuse

Some studies suggest that experiencing sexual abuse in childhood may lead to a heightened interest in BDSM, particularly among women in the submissive role [35,36,37]. While the link between childhood sexual abuse and compulsive sexual behaviors in adulthood has been established [38], a clear, definitive connection between this factor and BDSM interest has not yet been formulated, as the existing data is limited and the available studies have significant methodological constraints [37]. The potential link between childhood sexual abuse and BDSM interest can be explained from a psychological perspective [37]. An adult may reenact their childhood trauma in a controlled manner within BDSM, which allows them to process the trauma through this controlled experience.

3. Gender and Age

According to many researchers [32,39,40,41,42,43,44], men tend to develop an interest in BDSM about five years earlier than women, and they predominantly assume dominant roles, while women mainly take submissive roles. This pattern is often explained through evolutionary factors [45], where "dominant" traits in men are associated with reproductive success, making these traits more desirable to women. The gender imbalance may also stem from prevailing cultural gender stereotypes, where women are expected to be submissive to men [1,45,46].

Studies by Holvoet et al. [3] found that older individuals tend to prefer dominant roles, while younger individuals are more likely to adopt submissive roles. The reasons for this difference remain unclear, though cultural factors are suspected to play a role.

4. Education

Many researchers agree that individuals with higher education levels are more likely to engage in BDSM, with such individuals comprising anywhere from half to three-quarters of the studied populations [1,8,32,47]. Research by Coppens et al. [48] suggests that individuals with higher education not only practice BDSM more frequently but also do so more openly (e.g., participating in public BDSM events) compared to those with lower education. However, this relationship requires further investigation.

5. Sexual Orientation

BDSM practices seem to be of particular interest to non-heterosexual individuals, with many studies suggesting that at least one-third of this group is involved in BDSM [3,49,50,51]. A study by Tomassilli et al. [51] found that bisexual individuals are significantly more likely to engage with BDSM than homosexual individuals.

6. Infectious Factors

Flegr [52] conducted an intriguing study attempting to link *Toxoplasma gondii* infection with an interest in BDSM. This parasite is known to alter the sexual arousal pathways of its host [53,54]. Flegr [52] observed that individuals with latent *Toxoplasma gondii* infections showed greater interest in sexual behaviors associated with BDSM, though this did not necessarily translate into actual engagement in BDSM practices.

Biological Aspects of BDSM Practices

1. Brain Activity and Pain Threshold

Several studies have shown that individuals with masochistic behaviors [55,56], including women practicing BDSM in a submissive role [57], exhibit *pain hyposensitivity*. Additionally, research by Luo et al. [57] found that submissive individuals perceive pain as less threatening, which results in fewer negative emotions associated with it. Studies by Pollok et al. [55] and Defrin et al. [56] also revealed that pain only elicited pleasure in masochists in sexual situations, while in everyday life, they responded to pain similarly to individuals without such preferences, showing negative reactions.

Neuroimaging studies conducted on individuals with masochistic preferences showed that the functional connectivity of the parietal operculum to the left and right insulae, the central operculum, and the supramarginal gyrus is altered [58,59]. These areas typically activate in individuals who do not practice BDSM when viewing sexual content. In contrast, among those with masochistic behaviors, these brain areas likely participate in linking painful stimuli to positive experiences [1].

2. Hormonal Changes

A study by Sagarin et al. [60], involving 58 women and men who played various roles in BDSM practices, found that only women in submissive roles showed an increase in blood testosterone levels after a BDSM session. The researchers suggested [60] that this increase in testosterone might improve the mood of these women, although this finding was not corroborated by other studies [61].

Klement et al. [62,63] observed that individuals with masochistic or sadistic behaviors exhibited elevated cortisol levels in their blood, which were inversely correlated with subjective stress levels and negative affect [64]. The researchers [62,63,64] proposed that this could be related to the high pain tolerance observed in the participants and the modulating effects of BDSM practices on the body's stress response.

Safety in BDSM Practices

Due to the nature of BDSM practices, there is a potential for various injuries among participants (e.g., bruises, burns). However, in most cases, these injuries are not serious, and participants are relatively well-informed about the possible risks [65]. A review of studies conducted by Schori et al. [65] revealed that fatalities associated with BDSM practices are extremely rare. A literature review from 1986 to 2020 identified 17 such cases, with nearly 90% of these deaths resulting from asphyxiation.

Some past studies [49,66,67,68] suggested that BDSM practices could be linked to an increased risk of suicidal thoughts and behaviors, although findings from other research contradict these claims [69,70,71]. Additionally, there are occasional reports of more severe injuries, such as esophageal rupture [72] and severe acute kidney injury [73], associated with BDSM activities.

Perception of BDSM in Society

As mentioned earlier, individuals who practice BDSM face certain stigmatization in society, primarily due to misunderstandings of these practices [1,74]. Many people associate BDSM with violence and non-consensual sexual activities [1]. According to a few studies in this area, this stigmatization affects women more significantly - with at least one-third of them being excluded from certain aspects of life (e.g., social or religious groups) because of their involvement in BDSM practices [75,76].

It is also noteworthy that individuals who practice BDSM and seek medical attention for injuries sustained during these activities are less likely (about one-third of individuals) to disclose these injuries to healthcare providers, fearing stigmatization [77,78]. This fear of stigma also leads some individuals to avoid seeking medical help altogether [77,78].

Moreover, BDSM practices can involve intense emotional experiences, which may require psychological or therapeutic support [1,2].

Around one-third of individuals who seek therapy do not disclose their involvement in BDSM, again due to the fear of being stigmatized [79]. Some studies indicate that these concerns are justified, as many therapists tend to view BDSM interests and practices as pathological [2,80].

Summary

BDSM is an acronym encompassing various consensual sexual practices, including bondage and discipline (B/D), dominance and submission (D/S), and sadism and masochism (S/M). Researchers have categorized BDSM activities into four main behavioral groups: pain play, humiliation, physical restraint, and expressions of hypermasculinity.

The prevalence of BDSM varies widely in studies, ranging from a few percent of the population to nearly half. A study involving 434 non-BDSM practitioners and 902 BDSM practitioners found that individuals practicing BDSM were generally less neurotic, more extroverted, more open to new experiences, more conscientious, less agreeable, less sensitive to rejection, and more confident in their relationships.

Studies suggest a potential link between childhood sexual abuse and a heightened interest in BDSM, particularly among women who take on submissive roles. Men, on the other hand, are often drawn to BDSM earlier (on average five years before women) and predominantly assume dominant roles. Furthermore, non-heterosexual individuals make up at least one-third of those interested in BDSM. Despite these insights, societal stigma and widespread misconceptions about BDSM practices continue to have a negative impact on those who engage in them.

Authors emphasize the necessity of further research on BDSM practices due to the limited and sometimes contradictory findings, particularly regarding the prevalence of BDSM interest and hormonal changes resulting from these practices. Additionally, there is a need to explore the role of infectious factors in influencing BDSM interest and to investigate gender differences in sadomasochistic behaviors to substantiate or refute existing theories.

Understanding these aspects could provide deeper insights into the diversity and origins of BDSM practices, helping to dispel myths and reduce societal stigma.\

Author's contribution:

Conceptualization: K.W., A.Ma.; methodology: K.W., A.Ma.; software: K.W., A.Ma., J.W., A.W.; formal analysis: K.W., A.Ma., J.W., A.W.; investigation: K.W., A.Ma., J.W., A.W., W.C., A.Mu.; resources: K.W., A.Ma., J.W., A.W., J.R.; data curation: K.W., A.Ma., J.W., A.W., E.G.; writing - rough preparation: K.W., A.Ma., J.W., A.W., W.C., A.Mu., J.R., E.G.; writing - review and editing: K.W., A.Ma., J.W., A.W., W.C., A.Mu., J.R., E.G.; visualization: K.W., A.Ma., A.W.; supervision: K.W., A.Ma.; project administration: K.W., A.Ma.

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Conflicts of interest:
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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