Sexuality & Culture (2025) 29:1882–1900
https://doi.org/10.1007/s12119-025-10352-1

ORIGINAL ARTICLE

Comparison of Psychopathological and Socio-cultural Outcomes Among Distinct Fetishism Subgroups: A Cluster Analysis Approach

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Accepted: 15 March 2025 / Published online: 2 May 2025

Abstract

There is a lack of data on the prevalence of object and body parts (foot, etc.) fetishes in non-Western societies, and on the connection between fetishism and some clinical and socio-cultural variables. This study aims to determine the prevalence of object/foot fetishes in an Iranian population and to examine their association with depression, anxiety, and religious beliefs. A qualitative questionnaire was used to gather information on sociodemographic and clinical variables. The Patient-Health Questionnaire and Generalized Anxiety Disorder were employed to assess depression and anxiety, respectively. The final sample consisted of 291 individuals, comprising 22 females, 262 males, and three non-binary individuals. Foot fetishism is relatively common among individuals in Iran, with no significant links found between the type of religious belief and the presence of the fetish. Cluster analysis found three different sub-populations (ego-dystonic, ego-syntonic fetishism, and low interest towards fetish), based on the frequency, intensity, importance, control, self-impact of fetish, and partner impact of fetish. ANCOVA analysis showed significant differences in the three sub-groups in terms of depression, which was significantly different for the ego-dystonic sub-group. Our data support the association between different types of fetishism manifestation and some psychopathological traits with a specific focus on depression, which seems to characterize prevalently people with an ego-dystonic fetishism.

Keywords Fetishism · Foot fetish · Religion · Depression · Anxiety · Cluster analysis

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Introduction

The phenomenon of fetishism has been documented since the nineteenth century, with early reports by several psychologists and psychiatrists, among which Richard Von Kraft Ebbing, Havelock Ellis, Alfred Binet, and Magnus Hirschfeld (Kafka, 2010). More recent descriptions are present in the work of Ventriglio, Bártová and Joyal (Bártová et al., 2021; Joyal & Carpentier, 2017; Joyal et al., 2014; Ventriglio & Bhugra, 2019; Ventriglio et al., 2018). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR) (American Psychiatric Association, 2013), fetishism is characterized by recurrent and intense sexual urges and fantasies involving specific objects that persist for at least six months. The object of interest is referred to as a fetish, and the individual who has a strong attraction to that object is known as a fetishist (Ventriglio et al., 2018). Notably, it is important to differentiate between pathological fetishism and non-pathological sexual interests. While the APA views fetishism as a paraphilic sexual disorder, the International Classification of Diseases (ICD-11) acknowledges that sexual fetishism can also be a harmless contributor to sexual excitement if it does not cause personal or socio-psychological distress (World Health Organization [WHO], 2019/2021). This distinction is crucial, as it recognizes that individuals may engage in sexual fantasies or behaviors involving objects like clothes, accessories, lingerie, or body parts such as feet or hair, without experiencing distress. Among the various types of fetishism, foot fetishism, or foot partialism, is one of the most prevalent unusual sexual interests. This term refers to a strong sexual desire specifically focused on feet (Hickey, 2006). It is classified as a fetishism for an object or body part that is not inherently sexual (Scorolli et al., 2007).

The exact prevalence of fetishism remains uncertain, but it appears to be more common among men (Darcangelo, 2008). A study revealed that 30% of men had experienced fetishistic fantasies, and 24.5% had actively engaged in fetishistic activities. Additionally, out of those who reported having these fantasies, 45% acknowledged that the fetish sexually aroused them (Ahlers et al., 2011). A later study discovered that 26.3% of women and 27.8% of men admitted to fantasizing about "having sex with a fetish or nonsexual object". Based on an analysis of individuals preferred fantasies, it was found that 14% of male fantasies involved fetishism, encompassing various aspects such as feet, nonsexual objects, and specific clothing. Additionally, 4.7% of male fantasies focused on a specific body part other than feet. Interestingly, no fetishistic themes were identified in any of the women preferred fantasies (Joyal et al., 2014). Another study conducted by Scorolli aimed to determine the prevalence of different preferences within the realm of fetishism. The results revealed that the most frequently reported preferences were related to body parts or features, which accounted for 33% of the responses. The most reported targets were feet and objects associated with feet (Scorolli et al., 2007).

Reading the more recent literature on the topic of paraphilic interests and behaviours, we can find some differences in the general population considering specific variables, such as culture of provenance, sexual orientation, gender identity and the belonging to a specific historical period. Interestingly, for this last aspect,

a recent study, comparing millennials and centennials, found that millennials and homo-bisexual centennials showed greater interest for exhibitionism and for some BDSM practices, while homo-bisexual millennials were more interested in foot fetishism and urophilia-related behaviors (Paramio et al., 2024). Similar results were also found in another recent study, in which more homosexuals and bisexuals were interested in participating in the study evaluating the presence of paraphilic interests than heterosexuals (Schippers et al., 2024). Considering gender identity, some authors have demonstrated that higher levels of gender identity struggles were present in people showing fetishistic behaviors (Castellini et al., 2018). However, it is also important to highlight that transgender and non-binary people are frequently exposed to the phenomenon of fetishization, that is the sexual objectification due to their gender incongruence, without experiencing pleasure for this type of sexual interest (Anzani et al., 2021).

In respect to the non-western societies, some authors have documented the higher presence of exhibitionism, erotophonophilia, sexual masochism and sadism, necrophilia, paedophilia, transvestic fetishism, and voyeurism in African persons (Carstens & Stevens, 2016). In another more recent study, the authors found the highest rate of prevalence of voyeurism in a cohort of undergraduates of a Nigerian University, without finding a gender-based differences in their sample (Abdullahi et al., 2015).

Despite the global prevalence and research about fetishism, it remains under-researched in a conservative society such as Iran. Iran has a conservative cultural and religious norms leading to a strict interpretation of Islamic law and limitations on the expression of and engagement in sexual behaviors (Munroe & Gauvain, 2001). The Iranian culture is placed under the aegis of sex-negative cultures, where sexual activities are overwhelmingly based on reproduction, rather than enjoyment (Munroe & Gauvain, 2001). Fetishistic interests in a culture that is sex negative can lead to feelings of extreme shame, guilt, and secrecy, which may exacerbate mental health issues, such as anxiety and depression (Bauermeister, 2000). The literature shows that cultural and social/religious aspects have a significant impact on sexual attitudes and behaviors (Ayonrinde & Bhugra, 2014). In Iran, the prevalence and expression of fetishism may be influenced by conservative norms and patriarchal structures (Safa-Isfahani, 1980).

Despite possible mental health implications, fetishism has been studied relatively little, especially in terms of its relationship with psychological pathology, such as anxiety and depression. Individuals interested in or having a fetish often report experiencing negative emotions due to social rejection and difficulty in forming intimate relationships (Kashdan & Roberts, 2007). This underscores the importance of further researching the impact of fetishism on mental health in restrictive cultures, particularly.

Hence, considering the limited availability of data, the present study aims to address these knowledge gaps by examining the prevalence of object fetish in an Iranian context, exploring how fetishism is associated with psychopathological features, such as anxiety and depression, and how religious beliefs may be associated with fetish. The final aim is to try to identify shared psychopathological characteristics to help the clinician in the assessment and in the treatment of people

showing a fetishistic interest/disorder. For this final purpose, a cluster analysis has been adopted. This method, in fact, permits us to study if heterogeneous populations may share some homogeneous aspects which may characterize them from clinical point of view.

Methods

Procedure

A total of 464 volunteers from the general Iranian population took part at the study. Among them, there were 87 women, 374 men, and 3 individuals identifying with other genders. Due to the presence of only three subjects identifying as "other genders", we decided to remove them from the final analysis. Hence, the final sample was composed by 461 individuals. These participants were recruited using a snowball technique, where advertisements were shared on popular social networks such as Instagram and YouTube channel specifically dedicated to sexual wellbeing. The web survey was designed for Iranian participants and was hosted on the Google Forms platform. Data collection took place from December 2021 to February 2023. Participants were provided with detailed information about the study's objectives, procedures, and potential risks before giving their informed consent. Confidentiality and anonymity were strictly maintained by ensuring that no personally identifiable information was collected.

The study protocol was reviewed and approved by the Ethics Committee of XXXX (blended for revision), ensuring that all procedures adhered to ethical standards for research involving human subjects. Participants were also informed that their participation was voluntary and that they could withdraw from the study at any time without any consequences.

Furthermore, considering the potential psychological impact of discussing fetishistic interests, resources for psychological support were made available to participants who might experience distress because of their participation. These measures were implemented to safeguard the well-being of the participants and to uphold the ethical standards of research integrity. After obtaining informed consent by participants, it was requested to respond to the questions about some demographic and clinical variables (age, gender, relational status, religion type, adherence to religious belief, sexual activity, presence of depressive/anxious symptoms) and about the reason they searched for specific canals dedicated to sexual wellbeing. Then, to the subjects has been presented a written definition of fetishistic interest, followed by the question about the presence of a sexual interest towards fetish. Only subjects responding affirmatively to this question have been considered for this study, and their data have been analyzed for study purposes.

Demographic and clinical variables, including gender, educational level, age, relational status, sexual orientation, employment, religious type, importance of religion, following religious rules, auto-declared anxiety and depression, and sexual activity, were collected through the Google Form response sheet. The inclusion criteria for the study were being above the age of 18, holding Iranian citizenship,

speaking Farsi, and reporting any sexual interest towards fetish. Among study subjects, 155 responses, and specifically 121 men (78%; 121/155) and 34 women (22%; 34/155), were excluded from the study due to the absence of any fetishistic interest reported by the participants. Conversely, 291 subjects were included in the final analysis due to reporting sexual interest towards fetish.

Measures

Qualitative Evaluation of the Fetishistic Interest and of Religion

The presence of the fetishistic interest has been explored through a dummy variable "Do you think that you have a sexual interest towards fetish?". Then, it has been evaluated the type of fetishistic interest (object or situation fetish), frequency, intensity, importance, control, self-impact of fetish, and partner impact of fetish (Fig. 1). Variable "Religion" has been qualitatively assessed with questions evaluating type of religion, importance of religion, and the adherence to religious rules. Specifically, the questions about religion were the following: type of religion (responses options: None; Islam (Shia); Islam (Sunni); Christianity; Judaism; Zoroastrian), presence of religious education (Responses options: Few (Only in the school); Enough (School, home); Much (School, home, myself); Very much), the importance of religion (Responses options: Not at all; Few; Enough; Much; Very much), following the religious rules (Responses options: Not at all; Few; Enough; Much; Very much).

Patient Health Questionnaire—PHQ-9

The Patient Health Questionnaire (PHQ-9) consists of 9 questions and does not have any subscales. Khamse et al. (2011) translated and validated this questionnaire into Iranian language. In scoring the PHQ-9, a 4-point Likert scale is used. The original response is assigned a score of zero, "some days" is assigned a score of 1, "more than half of the days" is assigned a score of 2, and "almost every day" is assigned a score of 3. The minimum score is 0, the maximum score is 27, and scores of 12 or higher indicate a diagnosis of depression (Samimi Ardestani et al., 2018). The

Factor	Item
Frequency	How often your fetishistic drive is presented?
Intensity	How much do you consider the intensity of your fetish?
Importance	Do you think that your fetish thought is important to get aroused?
Control	Have you ever had problem controlling your fetish thoughts in social situations (park, cinema, street…)?
Self impact	Do you consider your fetish thoughts problematic for yourself?
Partner impact	Do you consider your fetish thoughts problematic for your partner?

Fig. 1 List of items chosen to operate a one-stage cluster sampling technique

questionnaire showed a Cronbach's alpha of 0.856 for the total questionnaire, indicating good internal consistency. The test–retest consistency, evaluating the stability of results over time, was found to be 0.869.

General Anxiety Disorder (GAD-7)

The GAD-7 scale has undergone several evaluations to determine its validity, reliability, and diagnostic accuracy (Spitzer et al., 1999, , 2006). GAD scale seems to have adequate validity and reliability, as well as high diagnostic accuracy. Each item on the scale is scored from 0 to 3, and the individual's total score can range from 0 to 21 (Nayinian et al., 2011). The original version of the questionnaire confirmed the construct validity of the scale through covariance analysis with the 20-question general health questionnaire (SF-20). The total Cronbach's alpha of the instrument was 0.12, indicating good internal consistency. The test–retest reliability coefficient, measured two weeks apart, was 0.93, suggesting strong stability over time.

In the Iranian version of the questionnaire, internal consistency was assessed using Cronbach's alpha, and a value of 0.95 was obtained, indicating excellent reliability (Nayinian et al., 2011). Reliability was also measured using the test–retest method, with a coefficient of 0.49 over a two-week interval. Concurrent validity was established by comparing the questionnaire with the Spielberger state anxiety scale (0.71) and the Spielberger trait anxiety scale (0.63). The factor analysis of the scale supported the presence of a main factor, further validating its structure (Nayinian et al., 2011).

Statistical Analysis

A priori power analysis was conducted using the G*Power software (version 3.1.9.6) (Faul et al., 2007). Given a medium effect size ($\eta^2 = 0.06$), with a significance criterion of $\alpha = 0.05$, power $(1 - \beta) = 0.95$, a number of groups and covariates equal to 3 and 6, respectively, the minimum sample size is N = 251 for ANCOVA (F-test). Data were condensed as means and standard deviations (SD), or as medians and 95% CI in the case of normally distributed, or non-normally distributed variables, respectively. Dichotomous variables were presented as frequencies. The differences between means, medians, and frequencies were evaluated with the T-Student test, and Mann–Whitney test for unpaired data, and with Chi-Squared test, respectively.

A K-means cluster analysis (Hartigan & Wong, 1979), a technique for grouping multivariate data, was used to examine six fetishism-related items, rated by a 5-point Likert scale, where lower scores indicate a minimum level of importance, frequency, intensity and negative consequences in personal and relational context. (Fig. 1). The k-means clustering technique guarantees that observations within a cluster are nearest to the cluster's representative observation. This representative is defined by the centroid, or the mean, of the observations that are part of the cluster. This method identifies homogeneous subgroups (or clusters) within heterogeneous samples by focusing on shared characteristics. We employed the Hartigan–Wong algorithm,

designed to reduce the Euclidean distances between points and their closest cluster centroids, by minimizing the sum of squared errors within each cluster.

To determine the optimal number of clusters, we utilized gap statistics (Tibshirani et al., 2001). This approach contrasts the total intra-cluster variation for various values of k with the anticipated values under the data's null reference distribution.

Two Analyses of Covariance (ANCOVA) were performed to assess differences among the identified clusters in terms of depression and anxiety levels, while controlling for covariates such as the type of fetish, considering odd fetishistic interest, sharing fetishistic interest with friends/partner, necessity of the fetishism to be aroused, necessity of the fetishism to reach orgasm, and type of religion. Homogeneity of variances was checked for each ANCOVA analysis to ensure the validity of the results.

An alpha error of 5% was assumed statistically significant. Data was analyzed with the Jamovi (Version 2.4) (The Jamovi project, 2023).

Results

The final sample consisted of 291 individuals, comprising 22 females, 262 males, and three non-binary individuals. For what concerns the type of fetishistic interest, 76.7% (201/262) of males and 28,2% (6/22) of females declared an interest in object fetish, while 89% of males (179/201) and 66.7% (4/6) of females declared an interest towards foot fetish.

Based on the k-means cluster analysis considering some characteristics of the fetishistic interest evaluated in this study (Fig. 1), there emerged three fundamental subgroups (Fig. 2). Centroids of the clusters data were reported in Table 1. Gap statistic method to identify optimal number of clusters confirmed the previous k-means analysis. The "ego-syntonic" cluster (ESF, N = 106), represented by the blue line, displays high mean values for the frequency, intensity, and importance of fetishistic interests. This indicates that individuals in this group frequently experience strong fetishistic thoughts and behaviors, which hold significant personal relevance to them. Despite the high levels of these interests, they exhibit moderate control over their fetishistic thoughts and do not perceive them as problematic. Both the self-impact and partner impact dimensions are low, suggesting that their fetishistic behaviors do not cause distress to themselves or negatively affect their relationships.

In contrast, the "low fetishism" cluster (LF, N = 98), represented by the green line, shows low mean values across the dimensions of frequency, intensity, and importance. This implies that individuals in this group have infrequent and mild fetishistic interests, which are not central to their lives. They report high control over these thoughts, meaning they can easily manage or suppress them. Additionally, both the self-impact and partner impact dimensions are minimal, indicating that their fetishistic interests are not distressing or problematic for themselves or their partners.

The "ego-dystonic" cluster (EDF, N = 87), represented by the yellow line, also exhibits high frequency and intensity of fetishistic interests, similar to the ego-syntonic cluster. However, individuals in this group find these interests highly

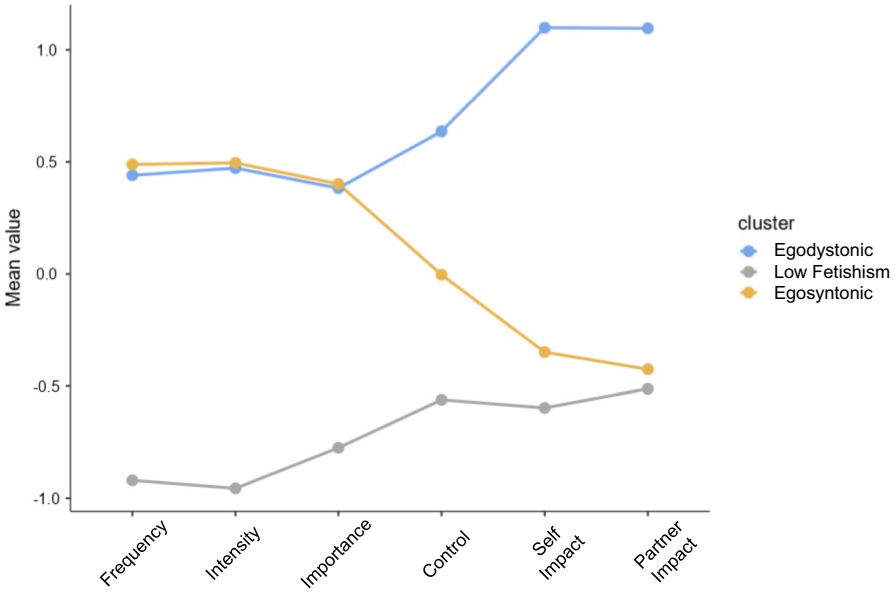

Fig. 2 K-means cluster analysis identified three homogenous subgroups according to responses to fetishism items

Table 1 Centroids of clusters according to Fetishism items

	Cluster No	Frequency	Intensity	Importance	Control	Self impact	Partner impact
1	Egodystonic Fetishism	0.441	0.473	0.383	0.636	1.099	1.096
2	Low Fetishism	−0.920	−0.956	−0.775	−0.561	−0.597	−0.512
3	Egosyntonic Fetishism	0.489	0.496	0.402	−0.003	−0.350	−0.426

problematic. The importance of their fetishistic interests is high, and they experience significant difficulty in controlling these thoughts. The self-impact dimension is high, reflecting personal distress and discomfort with their fetishistic interests. Similarly, the partner impact is considerable, suggesting that these behaviors negatively affect their relationships.

Overall, the cluster analysis reveals three distinct subgroups with varying experiences of fetishistic interest. The ego-syntonic cluster feels comfortable with their fetishistic interests and experiences no significant negative impact. The low fetishism cluster has mild and infrequent interests that are well-controlled and non-problematic. Meanwhile, the ego-dystonic cluster faces significant distress and relationship issues due to their strong fetishistic interests.

All the demographics and clinical characteristics are presented in Table 2. Significant differences among the study groups were found for: age ($p = 0.021$), type

of religion ($p = 0.028$), type of fetish ($p = 0.001$), self-judgment of fetish thoughts ($p < 0.0001$) and sharing fetishistic thoughts with friends and/or partner ($p = 0.043$).

ANCOVA analysis was then performed to evaluate if there were differences among the three groups in terms of depression and of anxiety levels. The covariates for the ANCOVA analyses were selected based on significant differences identified in Table 2, ensuring that the analysis accounts for key variables such as type of fetish, considering odd fetishistic interest, sharing fetishistic interest with friends/partner, necessity of the fetishism to be aroused, necessity of the fetishism to reach the orgasm and type of religion, which could influence the dependent variable and provide a more accurate understanding of the group differences. In the first ANCOVA analysis (Table 3 and Fig. 3), there emerged significant differences in the three groups in terms of depression($p = 0.001$). EDF subjects reported significantly higher PHQ scores in comparison to both LF subjects ($t = -4.14, p_{tukey} =< 0.001, d = -0.695$), and to ESF subjects ($t = -2.71, p_{tukey} =< 0.019, d = -0.417$). The ANCOVA effect size of this differences was moderate ($\eta_p^2 = 0.058$) and Levene's test of Homogenieity of Variances is not significant ($p = 0.498$). Another covariate retained in the model was "sharing the fetishistic interest with friends/partner($p = 0.004$).

The second ANCOVA analysis (Table 4 and Fig. 4), evaluating the differences among the study groups in terms of anxiety levels, showed significant differences among the three groups ($p = 0.003$). In this case, ESF subjects reported significantly higher scores on GAD compared only with LF subjects ($t = -3.39, p_{tukey} = 0.002, d = -0.569$). On the contrary, no differences in the post hoc analysis were found comparing the GAD scores of the EDF and ESF groups. The effect size of this differences was moderate ($\eta_p^2 = 0.040$) and Levene's test of Homogenieity of Variances is not significant ($p = 0.060$). Also, in this second ANCOVA analysis the covariate retained in the model was "sharing the fetishistic interest with friends/partner" ($p = 0.043$).

Discussion

Fetishism is currently seen as a more widespread phenomenon. Although there is limited scientific evidence demonstrating its frequent occurrence in the general population (Castellini et al., 2018; Scorolli et al., 2007), fetishism appears to be one of the most common sexual fantasies among humans. The interest in foot fetish, among other object fetishes, has received significant attention throughout history, with varied investigative approaches (Fragola, 1994). However, there appear to be several biases in the literature data. Firstly, the data primarily comes from participants belonging to Western societies (Rowland & Jannini, 2020). Secondly, there is often a focus on the link between pharmacological treatment and the development of fetishism (Hodges et al., 2020; Masiran, 2018). Therefore, there has been a lack of alternative perspectives in understanding this phenomenon in terms of socio-cultural differences. Our study represents the initial attempt to address this gap. For the first

Table 2 Sociodemographic variables and comparison among study groups

	Egodystonic Fetishism (N = 87)	Low Fetishism (N = 98)	Egosyntonic Fetishism (N = 106)	Total (N = 291)	p value
Gender					0.571[1]
Female	4 (4.6%)	10.0 (10.2%)	8.0 (7.5%)	22.0 (7.6%)	
Male	79 (90.8%)	87.0 (88.8%)	96.0 (90.6%)	262.0 (90.0%)	
Non-binary	4 (4.6%)	1 (1.0%)	2 (1.9%)	3.0 (1.0%)	
Sexual orientation					0.874[1]
Exclusively heterosexual	59.0 (67.8%)	70.0 (71.4%)	66.0 (62.3%)	195.0 (67.0%)	
Mostly heterosexual	17.0 (19.5%)	18.0 (18.4%)	26.0 (24.5%)	61.0 (21.0%)	
Often heterosexual	4.0 (4.6%)	2.0 (2.0%)	4.0 (3.8%)	10.0 (3.4%)	
Bisexual	4.0 (4.6%)	5.0 (5.1%)	6.0 (5.7%)	15.0 (5.2%)	
Exclusively Homosexual	0.0 (0.0%)	1.0 (1.0%)	0.0 (0.0%)	1.0 (0.3%)	
Asexual	3.0 (3.4%)	2.0 (2.0%)	4.0 (3.8%)	9.0 (3.1%)	
Age					**0.021**[2]
Mean (SD)	25.8 (8.0)	29.0 (8.9)	26.5 (7.5)	27.1 (8.2)	
Range	14.0–52.0	16.0–50.0	14.0–48.0	14.0–52.0	
Relational status					0.452[1]
Single	62.0 (71.3%)	58.0 (59.2%)	74.0 (69.8%)	194.0 (66.7%)	
Cohabitant/married	23.0 (26.4%)	33.0 (33.7%)	24.0 (22.6%)	80.0 (27.5%)	
Divorced	0.0 (0.0%)	1.0 (1.0%)	1.0 (0.9%)	2.0 (0.7%)	
Widow	0.0 (0.0%)	0.0 (0.0%)	1.0 (0.9%)	1.0 (0.3%)	
Not in a stable relationship	2.0 (2.3%)	6.0 (6.1%)	6.0 (5.7%)	14.0 (4.8%)	
Education					0.573[3]
Elementary School	1.0 (1.1%)	0.0 (0.0%)	1.0 (0.9%)	2.0 (0.7%)	
Middle School	3.0 (3.4%)	4.0 (4.1%)	3.0 (2.8%)	10.0 (3.4%)	

Table 2 (continued)

	Egodystonic Fetishism (N = 87)	Low Fetishism (N = 98)	Egosyntonic Fetishism (N = 106)	Total (N = 291)	p value
High School	33.0 (37.9%)	30.0 (30.6%)	36.0 (34.0%)	99.0 (34.0%)	
Bachelor Degree	33.0 (37.9%)	43.0 (43.9%)	50.0 (47.2%)	126.0 (43.3%)	
Master Degree and higher	17.0 (19.5%)	21.0 (21.4%)	16.0 (15.1%)	54.0 (18.6%)	
Religion					**0.028**[1]
None	16.0 (18.4%)	27.0 (27.6%)	35.0 (33.0%)	78.0 (26.8%)	
Islam (Shia)	63.0 (72.4%)	69.0 (70.4%)	66.0 (62.3%)	198.0 (68.0%)	
Islam (Sunna)	5.0 (5.7%)	2.0 (2.0%)	3.0 (2.8%)	10.0 (3.4%)	
Christianity	3.0 (3.4%)	0.0 (0.0%)	0.0 (0.0%)	3.0 (1.0%)	
Judaism	0.0 (0.0%)	0.0 (0.0%)	2.0 (1.9%)	2.0 (0.7%)	
Employment					0.286[1]
Student	27.0 (31.0%)	18.0 (18.4%)	18.0 (17.0%)	63.0 (21.6%)	
Unemployed	14.0 (16.1%)	14.0 (14.3%)	17.0 (16.0%)	45.0 (15.5%)	
Employee	16.0 (18.4%)	19.0 (19.4%)	25.0 (23.6%)	60.0 (20.6%)	
Self-employement	30.0 (34.5%)	47.0 (48.0%)	45.0 (42.5%)	122.0 (41.9%)	
Retired	0.0 (0.0%)	0.0 (0.0%)	1.0 (0.9%)	1.0 (0.3%)	
Sexually active					0.354[1]
Yes	42.0 (48.3%)	57.0 (58.2%)	60.0 (56.6%)	159.0 (54.6%)	
No	45.0 (51.7%)	41.0 (41.8%)	46.0 (43.4%)	132.0 (45.4%)	
Type of fetish					**0.001**[1]
Object fetish	4.0 (4.6%)	19.0 (19.4%)	7.0 (6.6%)	30.0 (10.3%)	
Situation fetish	83.0 (95.4%)	79.0 (80.6%)	99.0 (93.4%)	261.0 (89.7%)	
Self-judgement of fetish thoughts					**< 0.001**[1]
Odd	42.0 (48.3%)	11.0 (11.2%)	20.0 (18.9%)	73.0 (25.1%)	

Table 2 (continued)

	Egodystonic Fetishism (N = 87)	Low Fetishism (N = 98)	Egosyntonic Fetishism (N = 106)	Total (N = 291)	p value
Normal	45.0 (51.7%)	87.0 (88.8%)	86.0 (81.1%)	218.0 (74.9%)	
Sharing fetish thoughts					**0.043**[1]
Yes	28.0 (32.2%)	43.0 (43.9%)	53.0 (50.0%)	124.0 (42.6%)	
No	59.0 (67.8%)	55.0 (56.1%)	53.0 (50.0%)	167.0 (57.4%)	

1. Pearson's Chi-squared test; 2. Linear Model ANOVA; 3. Trend test for ordinal variables

Table 3 Welch's analysis of covariance (ANCOVA) with depression (PHQ-9) scores as dependent variable

	Square Sum	df	Square Mean	F	*p*	η^2	η^2p
Modello globale	1076.454	8	134.557	3.9567	< .001		
Group	**669.405**	**2**	**334.702**	**8.6356**	**< .001**	**0.056**	**0.058**
Type of Fetish	6.545	1	6.545	0.1689	0.681	0.001	0.001
Self-judgement of fetish thoughts	0.795	1	0.795	0.0205	0.886	0.000	0.000
Sharing fetish thoughts	**324.198**	**1**	**324.198**	**8.3646**	**0.004**	**0.027**	**0.029**
Religion	1.288	1	1.288	0.0332	0.856	0.000	0.000
Get aroused with fetish fantasies	58.337	1	58.337	1.5051	0.221	0.005	0.005
Reach orgasm with fetish fantasies	15.887	1	15.887	0.4099	0.523	0.001	0.001
Residuals	10,929.844	282	38.758				

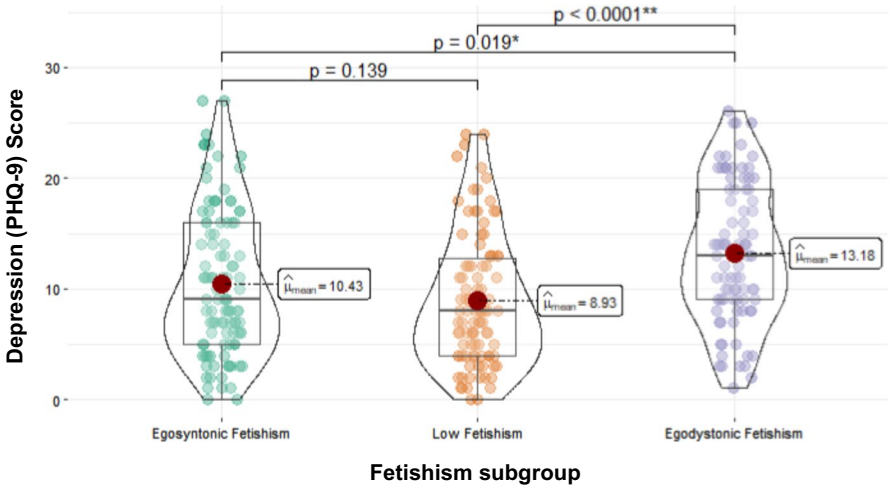

Fig. 3 Comparison of estimated marginal means of depression (PHQ-9) scores in the study groups. Statistical analysis was corrected with Holm post-hoc test. *$p < 0.05$, **$p < 0.01$, ***$p < 0.0001$

Table 4 Welch's analysis of covariance (ANCOVA) with anxiety (GAD-7) scores as dependent variable

	Square Sum	df	Square Mean	F	*p*	η^2	η^2p
Modello globale	707.98	8	88.50	2.986	0.003		
Group	**362.79**	**2**	**181.40**	**5.810**	**0.003**	**0.038**	**0.040**
Type of Fetish	67.70	1	67.70	2.168	0.142	0.007	0.008
Self-judgement of fetish thoughts	3.36	**1**	3.36	0.108	0.743	0.000	0.000
Sharing fetish thoughts	**129.16**	1	**129.16**	**4.137**	**0.043**	**0.014**	**0.014**
Religion	26.15	1	26.15	0.838	0.361	0.003	0.003
Get aroused with fetish fantasies	103.83	1	103.83	3.325	0.069	0.011	0.012
Reach orgasm with fetish fantasies	14.99	1	14.99	0.480	0.489	0.002	0.002
Residuals	8804.83	282	31.22				

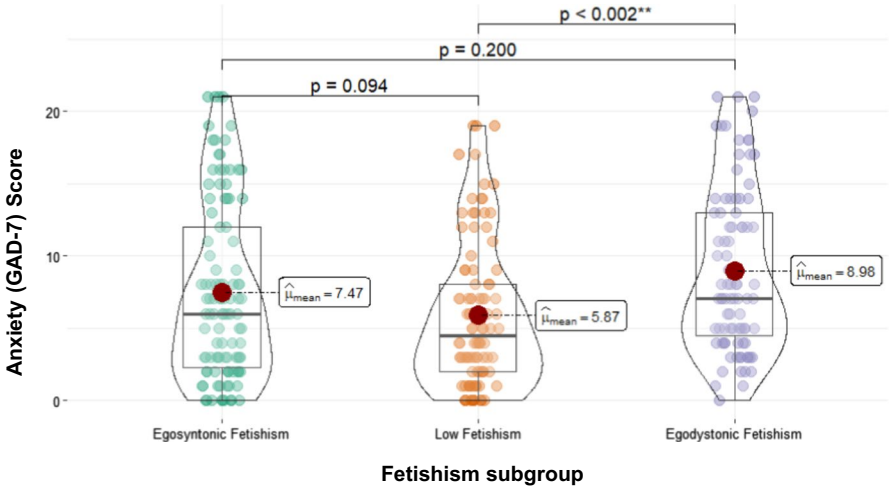

Fig. 4 Comparison of estimated marginal means of anxiety (GAD-7) scores in the study groups. Statistical analysis was corrected with Holm post-hoc test. *$p < 0.05$, **$p < 0.01$, ***$p < 0.0001$

time, this study demonstrates the high prevalence of object and foot fetishism in the general Iranian population.

The interest in fetish is particularly prominent, indicating a significant fascination among individuals. Notably, when considering gender differences, literature shows, and our study confirms, that fetishistic interest is also present among females (Chan & Myers, 2023). Also in our sample, we found a not negligible presence of fetishism in Iranian women.

However, in general, sexual arousal related to fetishism appears to be more pronounced in men than in women (Dawson et al., 2016).

Since scientific evidence highlights the importance of sub-typing subjects based on the presence of a paraphilic interest or of a disorder, our intent was to try to differentiate people in our selected sample. Based on cluster analysis, we individuated three sub-populations of subjects, showing different degrees of interest towards fetish. This type of analysis permitted to differentiate among subjects showing an ego-dystonic fetishism (EDF), subjects with an ego-syntonic fetishism (ESF) and subjects with a low interest towards fetishism (LF). Additionally, with the intent to evaluate if there were some differences among the three sub-groups of subjects in terms of psychopathological traits (anxiety and depression), the ANCOVA analysis has been made. Not surprisingly, EDS subjects showed significantly higher levels in depression in comparison to the two other sub-groups. The covariate that seemed to explain this difference was "sharing the fetishistic interest with friends/partner ". On the contrary, in terms of anxiety there emerged significant differences only between EDF and LF subjects. Another time the covariate explaining this difference was "sharing the fetishistic interest with friends/partner". So, based on these data, it is possible to suppose that sharing personal sexual attitudes, when these attitudes are strong and probably exclusive, may become a distressing element. As suggested by relevant researchers in the field of paraphilias (Moser & Kleinplatz, 2020), distress

is one of the most important criteria for differentiating paraphilic interest from a paraphilic disorder. This type of "external distress" could improve the internal motivation to search for a psychotherapy in the attempt to reduce distress.

Various hypotheses have been proposed to explain the development of paraphilic interests (Brown et al., 2020). Cross and Matheson (2006) put forth four distinct etiological perspectives: psychopathological, radical feminist, escape-from-self, and psychoanalytic ones. An alternative interpretation of the presence of fetish can be considered from a socio-cultural standpoint. The high prevalence of fetishism, particularly foot fetishism, may be linked to the significance Muslim individuals place on this body part. It is well-known that the Quran instructs individuals to wash their feet, along with their face, hands, and head, before prayer. Consequently, in line with the imprinting theory, we believe that exposure to foot care and hygiene from childhood may serve as the initial catalyst for future fetishes. Notably, religious beliefs do not seem to be associated with the presence of fetish in our study. However, an interesting pattern emerged when analyzing the EDF and ESF subgroups. Specifically, individuals without religious affiliation were proportionally more represented in the ESF group and less represented in the EDF group. This suggests that while religion may not directly influence the development of fetishistic interests, it could contribute to how individuals experience and integrate these interests into their self-concept.

As suggested by Bunuel's writings, discussed in the manuscript by Fragola (1994), both the Church and parents play pivotal roles in conditioning a child, especially in societies characterized by strict upbringings, increasing the likelihood of developing paraphilic interests. In these societies, individuals may turn to fetish objects for sexual gratification, diverting their attention from typical sexual targets (genitals). On the other side, these individuals, due to strong religious backgrounds, may internalize greater moral or cultural conflict regarding atypical sexuality, such as fetishism, leading to increased distress and ego-dystonic experiences.

Freudian theory also provides an interesting perspective on the adoption of paraphilic sexuality because of the dominance of the death drive (Freud, 1905). According to this viewpoint, the pleasure principle is closely intertwined with the death drive, and pleasure is linked to pain. Consequently, the accidental association of an object with a sexual response during childhood may evolve into a compulsion to repeat, which represents a metaphorical death (Ciocca et al., 2018). The death drive can potentially underpin all behavioral dependencies (Kirsch et al., 2022). Our findings regarding the high prevalence of depression and anxiety among the participants in this study further support this hypothesis, rather than the psychosocial one (Thibaut et al., 2020). Interestingly, we found the only correlation between clinical depression and the presence of ego-dystonic fetish. This finding may suggest that trauma, which seems to be the key point for the adult psychopathology, is also linked to ego-dystonic unconventional sexual behaviors through the mediating role of depression (Fontanesi et al., 2021).

Apart from this etiological explanation, we can also discuss cognitive-behavioral etiology, which is completely in line with our findings. In fact, following the theory of the process of conditioning, when nonsexual objects (here feet or objects) are frequently and repeatedly associated with a pleasurable sexual activity, then the

object becomes sexually arousing. In this case a positive reinforcement happens. On the contrary, when a negative reinforcement is present, paraphilic behavior becomes the result, or coping, of unpleasant normal sexual activity associated with negative emotions, such as aversion, shame, guilt. This sexual imprinting can be reinforced by a reward system, which sensitizes dopamine, oxytocin, and vasopressin responsible for attention, arousal, and bonding, leading to cortical activation that creates awareness of attraction and desire (Quintana et al., 2022).

Although this study represents the first attempt to fill the literature gap about the prevalence of specific unconventional sexual behaviors in non-western societies, this work presents some limits. Firstly, the online modality of recruitment of the sample did not guarantee control over the subjects' information about demographic and clinical variables. Due to the snowball technique adopted for the subjects' enrollment, and due to the unbalance about subjects' gender, this population has also to not be considered representative of the general Iranian population. In addition, the generalizability of the data is not completely possible, due to the selection bias generated by the fact that only subjects really interested in a topic are motivated to fulfill the questionnaires of the research. It is true that vis-a-vis modality may promote major control on the referred information. However, it is also known that online interviews and research, especially for intimate arguments as sexual habits, may induce in the subjects a more open attitude and an easier sharing of the information (Andrade, 2020). Also, the observational nature of the study does not give the possibility to make some causal explanations of the link between the presence of paraphilic interests and mental wellbeing. This data should be considered as the result of sociocultural biases bearing on the interest to search for specific information about sexual habits by women, rather than by men. We well know that a direct comparison based on gender was not possible. However, we decided to report all the information to broaden the male-based perspective on paraphilic interests. Finally, a real evaluation of the impact different types of religions may have on paraphilic interest was not possible, due the higher prevalence of only one type of religion. Maybe future research would focus on the socio-cultural investigation of multicultural multi-religious societies. More specifically, we aim in the future to investigate in depth the complex inter-relationships between religious beliefs, self-perception of fetishistic interests, and psychological distress.

Conclusion

This study is the first to examine the prevalence and characteristics of fetishism in Iran. Based on our findings, it is possible to conclude that fetishistic interest could be intended as a phenomenon having different shades and different levels of intensity. Ego-dystonic fetishistic interest seems to be the one associated with higher depression levels. Interestingly, religion seems to impact on the distress persons may live due to the fetishistic interest, rather than on the development of this interest. These data can have important repercussions both from clinical and socio-cultural point of view, demonstrating on one hand the importance of assessing depressive levels in subjects

declaring sexual interest related to fetish, and on the other hand, highlighting how restrictive religious rules may worsen the way people live with their sexual interests.

Global Impacts on Sexuality and Culture

Fetishism, as a global phenomenon, is influenced by cultural, social, and religious factors. In Western societies, fetishism is more often analyzed in the context of diverse sexual orientations and individualism, while in societies with more conservative cultures, this phenomenon may be associated with shame, repression, or even greater psychological harm. This study shows that in societies such as Iran, the role of religious teachings and cultural traditions in the understanding and development of fetishism is important. For example, the link between the religious importance of foot hygiene in Islam and the high prevalence of foot fetishism in this study indicates the possible influence of these cultural factors on the development of fetishism. Our findings also support the view that social repression and cultural restrictions may lead to a shift in the direction of sexual desires from traditional relationships to unconventional behaviours. This phenomenon can take different forms in different societies, but globally, it can be analyzed in the context of the reciprocal effects of culture and gender on the expression of sexual desires. Therefore, it can be useful for mental health professionals to pay attention to cultural differences in therapeutic and counselling approaches related to fetishism.

Author contribution EL, RS; Formal analysis: EL, DM; Investigation: RS; Methodology: EL, DM, GC; Software: EL, DM; Supervision: EAJ, DD.; Writing-original draft: EL, DM, RS; Writing-review and editing: EL, DM, GC, DD, EAJ.

Funding Open access funding provided by Università degli Studi di Roma La Sapienza within the CRUI-CARE Agreement. Professor Emanuele Angelo Jannini is partially supported by the PRIN 2017S9KTNE_002 grant and by the #NEXTGENERATIONEU (NGEU) grant funded by the Ministry of University and Research (MUR), National recovery and Resilience Plan (NRRP), project MNESYS (PE000006)-A multiscale integrated approach to the study of the nervous system in health and disease (D.N. 1553 11.10.2022).

Declarations

Conflict of interest E.L., R.S., D.M., G.C. and D.D. declare to not have any conflict of interest. E.A.J.is a speaker and consultant of Bayer, Ibsa, Menarini, Pfizer, Shionogi, and Viatris.

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