

## ORIGINAL ARTICLE

# Relative prevalence of different fetishes

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**The aim of this study was to estimate the relative frequency of Fetishes in a large sample of individuals. Using the Internet as a data source, we examined 381 discussion groups. We estimate, very conservatively, that at least 5000 individuals were targeted. The relative frequency of each preference category was estimated considering (a) the number of groups devoted to the category, (b) the number of individuals participating in the groups and (c) the number of messages exchanged. The three measures agree both parametrically (Cronbach's  $\alpha=0.91$ ) and non-parametrically (Kendall's  $W=0.94$ ,  $P<0.01$ ). Preferences for body parts or features and for objects usually associated with the body were most common (33 and 30%, respectively), followed by preferences for other people's behavior (18%), own behavior (7%), social behavior (7%) and objects unrelated to the body (5%). Feet and objects associated with feet were the most common target of preferences. These findings provide the first large database in an area, where the knowledge is particularly scarce.**

*International Journal of Impotence Research* (2007) 19, 432–437; doi:10.1038/sj.ijir.3901547; published online 15 February 2007

## Introduction

Human sexuality is an interdisciplinary area where researchers from different fields such as medicine, biology, psychology, sociology and anthropology meet and, to some extent, compete to explain phenomena.<sup>1–3</sup> In particular, the expert in sexual medicine is frequently called to deal with sexual symptoms, such as erectile dysfunction or ejaculatory disturbances, that can be directly or indirectly correlated with particular or unusual sexual interests. For many reasons (the private aspect of sexual behavior, lack of strong theoretical models, lack of funding), however, it is difficult to gather data from large samples. This is especially true for rare sexual preferences and behaviors, that are often referred as 'deviant' or 'bizarre' and whose expression may be discouraged by society (in the scientific literature: 'paraphilias', 'variant' or 'atypical' preferences). As a result, efforts to explain rare sexual preferences and behaviors have been based on data from such sources as psychiatric patients, sex offenders and

persons who have sought or have been referred to a therapist.<sup>2,4</sup> To date, there is little theoretical understanding of why an object or a body part unrelated to functional sexual activity attracts so much attention as in fetishism. Although the available data may suggest some pathogenetic mechanisms, they are not sufficient to distinguish between inherited or environmental origin of fetishism. Moreover, there is little empirical research attempting to estimate the relative frequency of atypical sexual preferences in the general population. Here, we present such a research in a large, selected population of English-speaking internet users.

## Methods

### Data source

We gathered data from public access areas of the English-language section of *Yahoo!* groups, a large collections of Internet discussion groups (<http://groups.yahoo.com>). By registering with the *Yahoo!* service, anyone is entitled to create discussion groups on any topic, provided no copyrighted material is posted and sexual or otherwise sensitive content is posted only to age-restricted sections of the site (see *Yahoo!*'s terms of service at <http://docs.yahoo.com/info/terms>). Many groups relate to sexuality. The material posted to a group is often reserved to group members (membership is usually

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Received 13 June 2006; revised 30 December 2006; accepted 5 January 2007; published online 15 February 2007

granted by the group founder after applying directly by the Web or by email), but the following information is public:

1. The group name.
2. A description of the group.
3. The number of group members.
4. A record of group activity (number of posted messages for each month since creation).

We used this information to estimate the relative frequency of sexual preferences for objects, body parts and behaviors, as detailed below. Through the search interface of *Yahoo!* groups, we obtained a list of 2938 groups whose name or description text contained the word 'fetish'. On 28 October, 2004, we downloaded the public information for these groups via a custom program (available at request). As a comparison, we quote how many groups are retrieved using some popular sports as keywords (as of November 2005): football (6383); soccer (4221); basketball (3471); hockey (2724); and volleyball (1710).

The word 'fetish' that we used to locate data on sexual preferences is utilized in everyday language with a much broader scope than its psychiatric definition,<sup>2</sup> and the two should not be confused. In everyday usage, 'fetish' refers to sexually arousing stimuli that would not meet psychiatric criteria for a diagnosis of fetishism.<sup>5</sup> In many cases, they may simply enhance sexual interest or satisfaction rather than being necessary for it. 'Fetish' may also refer to preferences for objects or activities in non-sexual contexts (see below). In this study, we used 'fetish' merely as a convenient keyword to retrieve data about sexual preferences through the search interface of *Yahoo!* groups. Our aim was to survey sexual preferences and not clinical cases of Fetishism.

#### *Criteria for inclusion and sample size*

Starting from the 2938 groups initially retrieved, we selected the ones relevant for our study as follows. First, we identified groups that dealt with sexual topics. Thus, we discarded groups that used 'fetish' in a non-sexual context (e.g., fetish for a rock band) as well as groups that used 'fetish' to deny that the group was about sex, apparently to avoid undesired sexual content being posted to the group. For instance, a support group for pregnant women stated explicitly that the group did not discuss 'pregnancy fetish'. For some groups, the sexual nature of the topic could not be established with confidence (e.g., there was no description text). Applying the criterion that a group should be clearly identifiable as discussing a sexual topic, we discarded from further analysis 2161 groups.

Of the remaining groups, 372 were discarded because they discussed 'sex' or 'fetishism' generically and thus could not be categorized. A further 18 groups were excluded because the message record (one of our measures of frequency, see below) was

not available, and six groups were discarded because they had no members. The groups that passed all inclusion criteria were thus 381. The average activity in these groups totals over 4000 messages per month, with over 150 000 nominal members. Although the latter figure is certainly inflated, because people usually subscribe to more groups, it is likely that the number of individuals targeted by our survey is, at least, of many thousands. If everyone subscribed to as many as 30 groups, for instance, we would still have information from about 5000 individuals. Usually, a study of atypical sexual preferences with 100 or more participants is considered very large.<sup>2,4</sup>

#### *Data analysis*

We devised a scheme whereby a sexual preference could be assigned to one or more categories. Three macroareas were devised: body, objects and behaviors. These were further subdivided to describe, in broad terms preferences for (the examples in parentheses come from our data):

1. A part or feature of the body (e.g., feet or overweight individuals), including body modifications (e.g., tattoos).
2. An object usually experienced in association with the body (e.g., shoes or headphones).
3. An object not usually associated with the body (e.g., dirty dishes, candles).
4. An event involving only inanimate objects (we found no examples).
5. A person's own behavior (e.g., biting fingernails).
6. A behavior of other persons (e.g., smoking or fighting).
7. A behavior or situation requiring an interaction with others (e.g., domination or humiliation role play).

Each group was assigned to one or more categories based on its name, the accompanying description text and, where available, the message subjects and content. Each group was independently classified by two researchers. Disagreements were limited to about 5% of cases (usually when more categories were involved), and were resolved by discussion. We then proceeded to estimate the relative frequency of the different preference categories. We constructed three indices of frequency:

1. The number of groups assigned to the category.
2. The total number of members of groups assigned to the category.
3. The total number of messages, per month of activity, exchanged in groups assigned to the category.

The three measures were analyzed both parametrically, by the Cronbach's- $\alpha$ , and non-parametrically, using the Kendall's-*W*. Significance has been

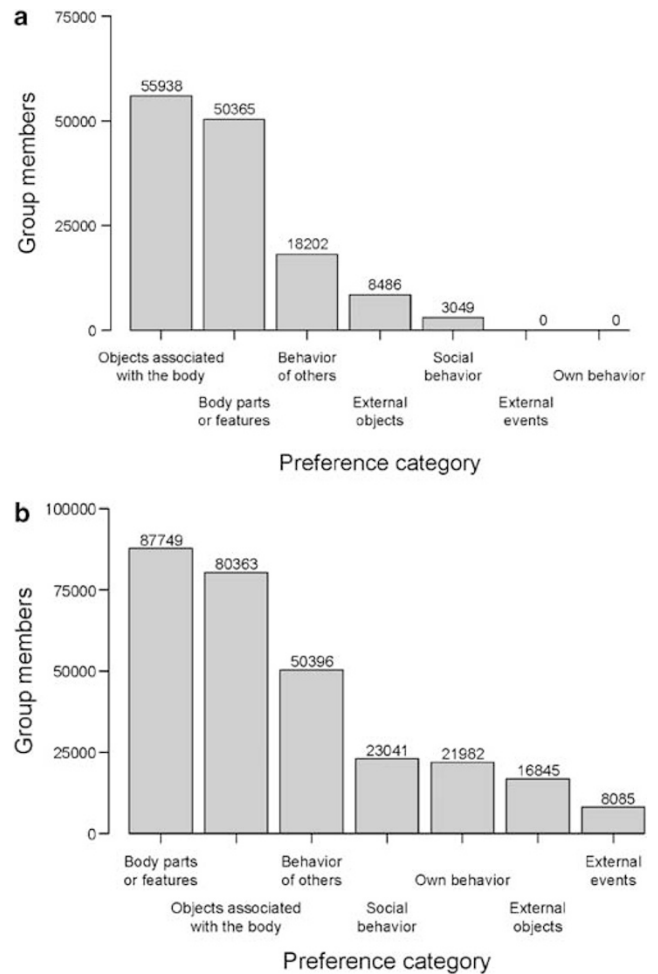
setted at  $P < 0.05$  and a computerized program has been used for data analysis.

## Results

The three indices of frequency (number of groups, members, messages) agreed well both in ranking the categories from most common to rarest (Kendall's- $W = 0.94$ ,  $P < 0.01$ ) and in estimating their relative frequency (Cronbach's- $\alpha = 0.91$ ).

About 70% of groups (273 of 381) was assigned to only one category. Figure 1a shows how members of these groups are distributed among categories. The majority of sexual preferences appears to involve parts or features of the body and objects usually associated with the body. There were no cases of preferences for events that involve only inanimate objects or a person's own behavior. Figure 1b includes also groups classified into two categories ( $n = 85$ , 22%) or more ( $n = 23$ , 6%). The figure is built by letting each group contribute to all categories into which it had been classified. For instance, a group about 'balloons and smoking' (whose members declare a sexual interest for smoking girls playing with balloons) contributed its 1182 members to both the 'external object' and 'other's behavior' categories. Additionally, Table 1 displays which combinations of two categories were found. Body parts and objects associated with the body appear most frequent, but behaviors that were preferred when performed either by oneself or by others are also common. The latter explains most of the difference between Figures 1a and b.

Tables 2 and 3 present, respectively, an analysis of preferences for body parts and objects usually associated with the body. Among these, feet and toes, as well as objects associated with the feet, such as socks and shoes, received most of the preferences.



**Figure 1** Distribution of sexual preferences expressed in Yahoo! discussion groups. (a) Estimated distribution from all groups that have been classified into a single category. (b) Estimated distribution including groups that were classified into any number of categories (in which case a group contributed to all relevant categories, see Methods).

**Table 1** Relative frequency of sexual preferences relating to two preference categories

Preference category	Group members	Relative frequency (%)
Body part/feature + social behavior	14 147	26
Own behavior + other's behavior	9831	18
Object associated with body + external event	6544	12
Body part/feature + object associated with body	5252	10
Body part/feature + object not associated with body	4383	8
Social behavior + other's behavior	2774	5
Body part/feature + other's behavior	2249	4
Own behavior + object associated with body	1938	4
Body part/feature + own behavior	1734	3
Object associated with body + object not associated with body	1685	3
Other's behavior + object associated with body	1276	2
Other's behavior + object not associated with body	1199	2
Other's behavior + external event	631	1
Social behavior + object associated with body	284	<1
Social behavior + object not associated with body	30	<1
Other combinations	0	0

**Table 2** Sexual preferences for body parts or features

<i>Preferred body part or feature</i>	<i>Sexological classification (*)</i>	<i>Group members</i>	<i>Relative frequency (%)</i>
Feet, toes	Podophilia	44 722	47
Body fluids (blood, urine, etc.)	Golden/brown showers, watersport, urophilia, scatophilia, lactaphilia, menophilia, mucophilia	8376	9
Body size (obesity, tall, short, etc.)	Chubby chasers, nanophilia	8241	9
Hair	Trichophilia	6707	7
Muscles	Cratophilia (strength), sthenophilia (muscle)	5515	5
Body modifications (tattoos, piercing, etc.)	Tattooing, piercing, ringing, stigmatophilia	4102	4
Genitals	Medophilia	3336	4
Belly or navel	Alvinophilia	2861	3
Ethnicity	Allotriostasy, miscegenation, xenophilia	2681	3
Breasts	Mammaphilia, mammagynophilia, mastofact	2602	3
Legs, buttocks	Crurofact, Pygophilia	1830	2
Mouth, lips, teeth	Odontophilia	1697	2
Body hair	Hirsutophilia, gynephilus- and pubephilia (pubic hair fetish), depilation	864	<1
Nails	'Bed of Nails'	669	<1
Nose	Nasophilia, hygrophilia	316	<1
Ears	/	91	<1
Neck	/	88	<1
Body odor	Mysophilia, osmophilia	82	<1

A group could contribute to more entries; e.g. the group 'barefoot bodybuilders' contributed to both the 'feet, toes' and 'muscles' categories. The total number of members is not the same as Figure 1 because some body related groups could not be categorized as referring to a body part (e.g., the group 'young firm teen body'). (\*).<sup>12,26</sup>

**Table 3** Sexual preferences for objects associated with the body

<i>Preferred object</i>	<i>Group members</i>	<i>Relative frequency (%)</i>
Objects worn on legs and buttocks (stockings, skirts, etc.)	27 490	33
Footwear	26 739	32
Underwear	10 046	12
Whole-body wear (costumes, coats, etc.)	7424	9
Objects worn on trunk (jacket, waistcoat, etc.)	7226	9
Objects worn on head and neck (hats, necklaces, etc.)	2357	3
Stethoscopes	933	1
Wristwatches, bracelets, etc.	716	<1
Diapers	483	<1
Hearing aids	150	<1
Catheters	28	<1
Pace-makers	2	<1

A group could contribute to more entries, see Table 2. The total number of members is not the same as Figure 1 because some groups could not be categorized as referring to specific objects (e.g., the group 'leather wearing').

## Discussion

This is the first large survey on the relative prevalence of unusual sexual stimuli on a very large worldwide sample of people interested on fetishism. Our data demonstrate that most sexual preferences are directly related to the human body (e.g., feet) or to objects experienced in close association with the body (e.g., pieces of clothing). A similar pattern has been reported in an informal investigation of a few Internet news groups<sup>6</sup> and in a sample of 48 psychiatric patients.<sup>7</sup> Preferences for external

objects, one's own behaviors and events that do not involve persons are instead rare.

The database of knowledge in Fetishism is scarce. Although simply observational in nature, these data allow some speculations within an area in high need of research and clarification.

The lack of epidemiological data and of a shared taxonomy for describing paraphilic behaviors is one of the primary factors that has hampered the scientific scrutiny of Fetishism as well as the search for etiological mechanisms.<sup>8</sup> Although many theories have been advanced to account for the

development of typical and atypical sexual behaviors, none has been fully convincing. By applying evolutionary biology to human sexuality, some authors aimed to demonstrate an innate mechanism(s) to explain sexual preferences.<sup>9</sup> Others consider sexual preferences, such as male homosexuality, genetic in nature.<sup>10</sup> Our results partially agree and partially contrast this theory, at least for fetishes. In fact, the highly frequent preference for artificial objects here demonstrated seems not consistent with the genetic determination of preferences. It is unlikely that a particular genetic makeup should result in a preference for specific stimuli such as, for instance, coats, balloons, eyeglasses or headphones – all of which we found in our data. On the other hand, the abundance of body-related preferences (feet, breast, etc.) may derive from a genetic predisposition that favors the acquisition of such preferences, as we discussed previously.<sup>11</sup>

It has been hypothesized that the selection of a fetish involves conditioning or learned behavior and requires a strong stimulus for it to register.<sup>12</sup> Freud attributed a major role to early events, viewing fetishism as the adult consequence of the castration complex developed during childhood, whereby the fetish functions as a penis substitute.<sup>13,14</sup> Some of our findings are in keeping with this theory. Freud noticed the frequent interest in feet<sup>15</sup> and ascribed this to the notion that feet are a penis symbol, a claim that *a posteriori* could be made of many objects. We found podophilia prominent (about half of Feticist groups subscribers) in our sample.

Many theories of sexuality are grounded on the notion that sexual preferences are acquired through interactions with others.<sup>1,2</sup> Ethologists, for instance, have shown that many bird and mammal species acquire sexual preferences through interactions with conspecifics early in life,<sup>16,17</sup> and a few studies have suggested imprinting-like processes in humans.<sup>18</sup> Based on these ideas, it has been suggested that non-functional sexual preferences may be an atypical outcome of acquisition processes that usually lead to functional preferences.<sup>1,19</sup> The pattern here empirically found suggests that it could be relatively easy to acquire a sexual preference for stimuli and behaviors that are usually experienced in association with other individuals, whereas in the absence of such association, the establishment of a sexual preference may be more difficult.

Both strengths and weaknesses of our study are concerned with the use of the Internet as a data source. The Internet is increasingly used for scientific research in sexology,<sup>20,21</sup> because it allows to gather large samples even for particular behaviors or sexual symptoms and also it encourages people to freely express themselves,<sup>22,23</sup> which in the present context may overcome some biases associated with traditional questionnaires on sexual behaviors.<sup>24</sup> The most commonly recognized shortcomings of

Internet studies are possible sampling biases and deliberately inaccurate reporting.<sup>25</sup> The latter is less relevant here because we simply observe the free expression of sexual preferences, rather than enquiring about them. Sampling biases in Internet studies are often attributed to the higher socio-economical and educational status of Internet users. These, however, are no longer an elite in many countries, and it is estimated that 60% of USA citizens are Internet users.<sup>25</sup> Although it is difficult to ascertain whether the putative 150 000 *Yahoo!* groups subscribers here surveyed represent the general population, it should be acknowledged that most of the research on atypical sexual behavior is based on data sources that are, in all likelihood, even less representative, such as psychiatric patients and sex offenders. A potential bias of our study is that data have been gathered searching for the word 'fetish'. Thus preferences and behaviors that are not commonly labeled 'fetishism' may be under-represented. However, a bias in our conclusions would follow only if such behaviors fell preferentially into one or several specific categories, something for which we have no evidence.

Our study, however large compared with others, only analyzed a tiny fraction of the Internet. It would be very rewarding to survey other portions of the Internet, for instance from non-English-speaking communities, to potentially reveal cultural variation in preferences.

## Acknowledgments

This research was partially funded by the Italian Ministry of University, Education and Research (PRIN 2003 and 2005 grants) and by an unrestricted grant from Pfizer Italy.

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