

## Research Article

# The Manifold Dimensions of Sexuality in Transgender Men: An Explorative Assessment and a Comparison with the Female and Male General Population

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**Abstract**

**Background:** Transgender men face a wide array of challenges in the context of their sexuality.

**Aim:** The aim of this study is to provide a comprehensive analysis of key aspects of sexuality in transgender men, irrespective of the treatment trajectory.

**Methods:** An exploratory, cross-sectional, single-center study was conducted as an online-survey between April 2018 and August 2019. Fifty-five Austrian transgender men (mean age 27, range 18-47) seeking or undergoing gender-affirming treatment (GAT) at the University Hospital of Graz (Austria) participated. Twelve aspects of sexuality were assessed using the German version ("Multidimensionaler Fragebogen zur Sexualität", MFS) of the Multidimensional Sexuality Questionnaire (MSQ). Norm data for comparison was retrieved from validation studies.

**Outcomes:** Positively connotated aspects of sexuality (e.g. sexual satisfaction and sexual motivation) were experienced to a smaller extent by transgender men compared to norm values; negatively associated dimensions, especially fear and anxiety regarding the sexual parts of life, were more common in transgender men.

**Clinical Implications:** Problems with sexual health should always be considered during the treatment of transgender men.

**Strengths and Limitations:** Strength of this study is that multidimensional assessment of sexuality in transgender men, a highly necessary endeavor has not yet been accomplished in depth.

Limitations are that we used the results of the questionnaire's validation studies as a control group and that this study is limited to transgender men

**Conclusions:** Transgender men face multiple physical and psychological challenges concerning their sexual health.

**INTRODUCTION**

Gender identity describes the experienced gender of a person. Individuals who were assigned the female sex at birth but identify as male are referred to as transgender men or transmen. The experienced sex of cissexual persons corresponds to the sex recorded at [1].

Sexuality is an important part throughout a person's life and is based on various psychological subdimensions associated with

sexual relations including sexual experiences, gender identity, sexual practices and sexual orientation [2,3]. According to the WHO [2], an individual's positive approach towards sexuality and sexual relationships is essential for their sexual health. Further, sexuality encompasses positive associated aspects such as sexual motivation, sexual self-esteem and sexual satisfaction. In this context, sexual self-esteem signifies someone's ability to relate sexually with another person in a positive way [4] (see Suppl. Table 1). Previous data [4,5] have shown that men

in general exhibit stronger sexual self-esteem than women. Sexual motivation describes the desire for a sexual relationship including sexual pleasure, intimacy and pleasing the partner. Sexual satisfaction is given when a person feels highly fulfilled in his/her sexual life [4,6].

On the other hand, also negative connotated aspects are associated with an individual's sexuality. These include, among others, fear of sex and/or relationships, sexual anxiety, preoccupation with sexual aspects of life and sexual depression. There are certain crucial definitional differences between these concepts: sexual anxiety means feeling anxious about sexual aspects of life in general whereas fear of sexual relations refers to uneasiness and worry specifically in terms of a sexual engagement with another person. Sexual preoccupation describes, how absorbed in, obsessed with, and engrossed with sexual thoughts a person is, referring to an abnormally intense interest in sex [4,7].

Moreover, control and autonomy aspects are part of an individual's sexuality, including internal sexual control (a person's belief that he/she is in control about his/her sexual life) and external sexual control (the opinion that sexual aspects of life are determined by external influences, e.g. chance [4,8].

In terms of self-reflexive sexual aspects, the construct of sexual consciousness can be named, which reflects how aware a person is of their feelings/emotions/inclinations/motivation regarding sexuality. The tendency to be assertive about sexual aspects of a person's life refers to sexual assertiveness. The perception of what impression one's own sexuality makes on the public is called sexual monitoring [4,9].

Transgender men face multiple difficulties concerning their sexuality on a physical, mental and social basis. It has been shown, that both women's and men's willingness to date transgender individuals is very low, which makes searching for a partner difficult for transgender men compared to their cisgender counterparts [10]. Findings of previous studies suggest that sexual dysfunctions are more common in transgender men than in the general population [11].

Further, gender-affirming treatment (GAT) such as hormone therapy (HT) or gender-affirming surgery (GAS), have been shown to influence transgender men's sexual behavior, feelings and experienced sexuality (e.g. change in orgasmic feelings, frequency of masturbation/sexual activity, pleasure, sexual arousal and sexual sensation [12-16]. Research so far has indicated that sexual satisfaction increases after GAT [14]. According to Nikkelen and Kreukels [17] mastectomy is possibly a key factor for the improvement of sexual self-esteem in transgender men. However, little is known about negatively connotated aspects of sexuality before and after mastectomy. Another important difference between trans- and cisgender men is the fact that they are not able to experience an autonomous erection, which might further fuel sexual anxiety and preoccupation.

The above-mentioned challenges that transgender men have to face may result in differences concerning multidimensional aspects of sexuality between transgender men and the general population. As of yet, few studies have tried to assess aspects of transgender men's sexuality in reference to male and female cisgender sexuality [17,18]. Further dimensions of sexuality such

as sexual assertiveness, sexual consciousness or control aspects of sexuality in transgender men remain unexplored [15,19].

Further, transgender men feel the need to be sexually affirmed in their masculinity [20]. Rowniak et al. [20], as well as Williams et al. [21], contend that this might be connected to sexual orientation. This could make them more prone to psychological pressure resulting from comparing themselves to their partners in homosexual relationships. Thus, it could function as an amplifier of sexual anxiety.

### Study objective

The main aim of this exploratory study was to assess sexual health and experience in transgender men by multidimensional aspects of sexuality (sexual self-esteem, sexual consciousness, sexual assertiveness, sexual motivation, sexual satisfaction, sexual preoccupation, internal and external sexual control, sexual anxiety, fear of sexual relations, sexual depression and sexual monitoring). Secondary outcome parameters were potential differences between transgender men and the general population; differences between scores for individual sexual dimensions from transgender men who had undergone mastectomy and those who had not; and potential differences in sexuality between androphile and gynephile transgender men.

## MATERIALS AND METHODS

### Procedure

This clinical cross-sectional study was conducted in transgender men who were seeking GAT or had received HT or GAS at the University Clinic of Graz (Austria). Between April 2018 and August 2019 72 transgender men (ICD-10 diagnosis confirmed by a psychological or psychiatric assessment) between the age of 18-50 years, irrespective of the treatment trajectory, were contacted for participation in this study by telephone or e-mail.

HT was administered by the Division of Endocrinology or the Department of Gynecology of the University Clinic of Graz. Mastectomy was performed by a plastic surgeon or a gynecologist, hysterectomy and colectomy were performed by gynecologists of the local department.

Exclusion criteria were insufficient command of German and refusal of participation at a later date. The participation was voluntary, and participants received no financial or other compensation. The approval of the institutional ethics committee was obtained (EK-number: 30-087 ex 17/18; IRB00002556) and informed consent was obtained from all participants.

### Survey and Questionnaires

The study was set up as an online survey on the platform limesurvey.com. Participants received a personal access key and a link via email which led them to the online questionnaire. The first page included detailed information on the study and the informed consent disclaimer.

Age, level of education, work, living situation, current and past GAT, relationship status, duration of the relationship and gender of partner were assessed by self-developed questions.

Further, participants were asked to provide information about the sociodemographic background, followed by four questionnaires, of which only the one listed below was used to analyze the current hypotheses. Non-clinical reference data from the general population were obtained from validation studies and literature.

### Multidimensional Sexuality Questionnaire

Dimensions of sexual behavior and sexual experiences were assessed using the German-language version of the Multidimensional Sexuality Questionnaire (MSQ [4]; Multidimensionaler Fragebogen zur Sexualität, MFS [5]). This is a widely used and well-developed instrument for the analysis of sexual experience and behavior, and has already been used in a collective of transgender individuals [22]. It contains 60 items on 12 subscales representing dimensions of sexuality (supplementary Table 1). These are sexual self-esteem, sexual preoccupation, internal sexual control, sexual consciousness, sexual motivation, sexual anxiety, sexual assertiveness, sexual depression, external sexual control, sexual monitoring, fear of sex and sexual satisfaction.

Individuals rate their agreement on a five-point Likert scale ranging from “not applicable” (0) to “fully applies” (4). For each subscale a sum score is calculated ranging from 0 to 20, whereby higher values indicate a stronger expression and lower values weaker expression of the respective dimension. The focus is on the evaluation of the individual dimensions; an overall sum score is not provided. Norm values of a German population were used for comparison with female and male general populations [5]. Normal values from a representative non-clinical German-language validation study, including 261 subjects (45% men, 55% women, mean age = 29 years, range = 16 – 68 (87% of the participants were between 20 and 49 years old)) were used for comparison [5].

### Sexual Preference

An additional item was extracted from the German-language Sexual History and Sexual Behavior Questionnaire (Fragebogen zur Sexualgeschichte und zum sexuellen Verhalten; FSGSV [23]) and used to assess the sexual preference. Participants rated whether their sexual activities concentrate exclusively or mainly on men, equally on men and women or exclusively or mainly women (“With which gender are you sexually active?”).

### Data Analysis

Statistical analyses were done with SPSS Version 25 for Macintosh. Power analysis prioritizing the main calculation (comparison of MFS values between transgender men and norm data) led to a sample size of 54 (a priori, one sample *t*-test, two tails,  $\alpha = .05$ , power = .95,  $d = .5$ ). Norm population values (means and standard deviations) of the questionnaire were used for comparisons. Data was analyzed per the published manual.

To provide a clear and systematic assessment of our results, we assigned the dimensions to four general categories: (1) positively connotated aspects of sexuality, (2) negatively connotated aspects of sexuality, (3) dimensions associated with control and autonomy, (4) self-reflexive dimensions (see supplementary Table 2).

The preferred gender for sexual activities was further categorized into gynephile (mainly or exclusively attracted to women) and androphile (mainly or exclusively attracted to men). The Pearson correlation coefficient was used to identify associations. To compare data of transgender men with norm samples of MFS (continuous variables), we performed one-sample *t*-tests. Comparisons of two groups on a metric variable were performed using *t*-tests.

We used Bonferroni correction procedure to prevent an increased chance of Type I error. Statistical significance was reached by two-tailed *P*-values < .05. Missing values were deleted pairwise. To report effect sizes of found differences, we calculated Cohen’s *d* and used it as the absolute value. A small effect is indicated with a Cohen’s *d* of 0.2, effect sizes of 0.5 and 0.8 meet criteria for medium and large effects [24].

## RESULTS

### Demographic parameters

A total number of 55 agreed to participate (74% of the recruited sample) in the online study. Demographic data from individuals who did not answer the invitation did not differ from the final group of participants. Participants were at different stages of their GAT (Table 1) and were treated according to the Standards of Care of the WPATH [25]. Participants were at five different stages of the GAT. Five transgender men (9%) have not started physical GAT at the time of participation; sixteen (29%)

	<i>M (SD)</i>	<i>Md</i>	<i>Range</i>
Age (y)	27 (7)	27	18-47
Age of coming out (y)	22 (7)	20	7-45
Age of GAT start	24 (7)	22	14-46
Highest education	<i>n</i>		
No finished school	3 (6%)		
Compulsory schooling	11 (20%)		
Vocational school	26 (47%)		
High School	10 (18%)		
University/college	5 (9%)		
Treatment status	<i>n</i>		
No treatment	5 (9%)		
HT	16 (29%)		
HT + ME	6 (11%)		
HT + ME + HE	21 (38%)		
HT + ME + HE + CE	7 (13%)		
	<i>M (SD)</i>	<i>Md</i>	<i>Range</i>
Duration of hormone therapy (m)	25 (18)	22	0-64
Time since mastectomy (m)	21 (16)	17	0-59
Time since hysterectomy (m)	17 (16)	16	0-59
Time since colpectomy (m)	9 (3)	10	4-13
Mean relationship duration (y)	3 (4)		
Relationship status	<i>n</i>		
Single	25 (46%)		

In a relationship	29 (54%)		
... with a cis-woman	23 (79%)		
... with a cis-man	2 (7%)		
... with a transwoman	2 (7%)		
... with a transman	2 (7%)		
Sexual preference	<i>n</i>		
Gynephile	38 (72%)		
Androphile	11 (21%)		
Bisexual	4 (7%)		
<b>Abbreviations:</b> CE = Colpectomy; HE = hysterectomy; HT = hormone therapy, y = years, m = months, ME = mastectomy, n = frequency.			

were under HT; six were under HT had already had mastectomy (11%); 21 (38%) were under HT and had already had both mastectomy and hysterectomy; and seven participants (13%) had undergone additional colpectomy. The mean age was 27, ranging from 18 to 47 years. On average, participants had their coming out as transgender when they were 22 years old, with a wide range from seven to 45 years. Participants started with the GAT on average at the age of 24 (range 14-46 years).

### Relationship and Sexual Preference

The majority of participants was in a relationship ( $n = 29$ , 54%), of which 23 (79%) were in a relationship with a woman and two persons were in a relationship with a man (7%), one with a transwoman (7%) and one with a transman (7%). The mean relationship duration was 3 years. Sexual activities of transgender men were only or mostly focused on women in 72% ( $n = 38$ , gynephile) and in 21% ( $n = 11$ ) on men (androphile). Four transgender men (7%) stated that they were transsexual. Their sexual activities included women and men to the same extent.

### Sexual Health and Sexual Experiences

Psychological dimensions of sexuality including positive sexual experiences and a healthy approach to sexuality were assessed using MSQ subscales. Higher scores indicate a stronger expression and lower values weaker expression of the respective dimension.

### Positively connotated Sexuality Dimensions

Scores of positively connotated sexuality dimension were consistently low in transgender men. The mean score for sexual self-esteem in our study cohort was 10.04; the mean score for sexual motivation was 10.75; and even lower for sexual satisfaction with a mean score of 8.47.

Hence, mean sexual self-esteem was significantly lower in transgender men in comparison to the female ( $M = 13.07$ ) and male general population ( $M = 14.15$ ; Table 2). Sexual satisfaction was also rated lower by transgender men than by women ( $M = 12.08$ ) and men in the norm population ( $M = 12.70$ ). Sexual motivation was significantly lower in transgender men compared to the general male population ( $M = 14.52$ ) but did not differ from female norm values ( $M = 11.67$ ; see Table 2).

### Negatively connotated Sexuality Dimensions

Further, we investigated negatively connotated dimensions indicating negative sexual experiences and/or an unhealthy approach to sexuality. The mean score on sexual anxiety in transgender men was 8.25, which is more than twice as high as in the male ( $M = 2.99$ ) and female norm population ( $M = 3.22$ ). The average score for sexual depression in transgender men ( $M = 7.91$ ) was rather similar. This resulted in a large effect size difference when compared to the corresponding male ( $M = 2.99$ ) and female norms ( $M = 3.29$ ).

Fear of sexual relations was rated significantly higher by transgender men with a mean score of 10.49, in comparison to male ( $M = 4.36$ ) and female norms ( $M = 4.95$ ). Transgender men showed significantly higher means of sexual preoccupation ( $M = 7.13$ ) than the female general population ( $M = 8.72$ ) but did not differ significantly from the male general population ( $M = 5.02$ ).

### Control and Autonomy Aspects of Sexuality

Further parts of sexuality are control and autonomy aspects indicating self-determined behavior in sexual matters. The mean score of internal sexual control was 13.21 and 6.77 for external sexual control. The average score of sexual monitoring was 5.70.

In comparison to the general population, mean internal sexual control was lower in transgender men than in the female ( $M = 14.79$ ) and male general population ( $M = 14.49$ ) indicating transgender men feel less self-determined in their sexual lives than the norm population. The average external sexual control score did not significantly differ between transgender men and norm values of both sexes.

### Self-reflexive Aspects of Sexuality

Self-reflection in sexual matters was assessed using the MFS subscales sexual monitoring, sexual consciousness, and sexual assertiveness. Transgender men showed a relatively high expression of sexual monitoring with a mean score of 5.70 which accounts for a medium effect size difference in comparison to female norms ( $M = 3.17$ ). Transgender men also showed higher expression of sexual monitoring than male norms ( $M = 3.77$ ), indicating a difference with a small effect size.

Participants' mean score of sexual consciousness was 14.06; the average rating in the dimension of sexual assertiveness was 11.19. Sexual consciousness was significantly lower in transgender men compared to the general male population ( $M = 15.62$ ). There was no significant difference between transgender men and the female population in sexual consciousness ( $M = 15.26$ ). Sexual assertiveness did not differ between transgender men and the male and female general population (Table 2).

### Differences in Sexuality between Transgender Men with and without Mastectomy

Furthermore, we wanted to detect potential differences in sexuality between transmen who had undergone a mastectomy and those who had not. Among the dimensions analyzed, we detected a significant difference in the dimension of sexual anxiety in transgender men with mastectomy ( $M = 6.98$ ) compared to those without mastectomy ( $M = 10.95$ ; see Table 3).

**Table 2:** Differences of the MFS subscales for transgender men and the female and male general population.

	Transgender men n = 54	Male norms n = 117	Transgender men vs. Male norms			Female norms n = 144	Transgender men vs. Female norms		
	<i>M (SD)</i>	<i>M (SD)</i>	<i>T</i>	<i>p-value</i>	<i>Cohen's d</i>	<i>M (SD)</i>	<i>T</i>	<i>p-value</i>	<i>Cohen's d</i>
Sexual self-esteem	10.04 (5.28)	14.15 (3.70)	-5.14	< .001	-0.90	13.07 (3.72)	-3.78	< .001	-0.66
Sexual satisfaction	8.47 (4.67)	12.70 (3.51)	-6.59	< .001	-1.02	12.08 (3.99)	-5.62	< .001	-0.83
Sexual motivation	10.75 (5.59)	14.52 (3.64)	-4.90	< .001	-0.80	11.67 (4.40)	-1.19	.717	-
Sexual anxiety	8.25 (5.80)	2.99 (3.56)	6.60	< .001	1.09	3.22 (3.58)	6.31	< .001	1.04
Fear of sexual relations	10.49 (4.62)	4.36 (3.89)	9.66	< .001	1.44	4.95 (3.83)	8.73	< .001	1.31
Sexual preoccupation	7.13 (4.84)	8.72 (4.71)	-2.39	.189	-	5.02 (4.25)	3.17	.003	0.46
Sexual depression	7.91 (6.04)	2.99 (3.60)	5.93	< .001	0.99	3.29 (3.56)	5.57	< .001	0.93
Internal sexual control	13.21 (3.01)	14.49 (3.24)	-2.91	.015	-0.41	14.70 (3.32)	-3.39	.003	-0.47
External sexual control	6.77 (4.61)	5.74 (4.61)	1.63	.068	-	5.24 (4.59)	2.42	.057	-
Sexual monitoring	5.70 (4.55)	3.77 (4.09)	3.09	.003	0.45	3.17 (3.96)	4.45	< .001	0.59
Sexual consciousness	14.06 (3.74)	15.62 (3.38)	-3.04	< .001	-0.44	15.26 (3.14)	-2.34	.717	-
Sexual assertiveness	11.19 (5.77)	13.13 (4.54)	-2.45	.168	-	11.68 (4.69)	-0.62	> .999	-

Note: all *P*-values are Bonferroni-adjusted. ns = not significant. Scores ranged from 0 to 20, with higher scores indicating higher expression with each dimension.

## Differences in Sexuality between androphile and gynephile Transgender Men

An analysis of differences between androphile and gynephile transgender men in the MFS revealed stronger fear of sexual relations in androphile oriented transgender men ( $M = 13.45$ ) compared to gynephile transgender men ( $M = 9.42$ ). Gynephile and androphile participants did not differ in any of the other sexual dimensions explored (see Table 3).

## Association of sexuality and age and hormone therapy

Correlations indicated no association of age or duration of HT with any of the sexuality subscales.

## DISCUSSION

The present study aimed to evaluate differences in sexual health and sexual experiences by the use of multiple dimensions of sexuality between transgender men and the female and male general population. The results of our study indicate differences in a number of sexuality aspects between transgender men and the general population, with transgender men rating below average with regards to positively connotated aspects of sexuality and above average when it comes to negatively associated sexuality dimensions.

## MAIN FINDINGS

### Positively connotated Sexuality Dimensions

In general, men show stronger sexual self-esteem than women [4,5] in contrast to our subjects' tendency to positively evaluate their capacity to relate sexuality with another person. Interestingly transgender men differed to a greater extent

from cissexual men than from cissexual women suggesting that comparative data of men are unlikely to be representative for transgender men in the context of sexual self-esteem. This is in line with a previous study [17], which showed that transgender men whose treatment desire was fulfilled showed higher sexual self-esteem than those whose treatment desire remained unfulfilled. Mastectomy has been shown to be essential in the development of sexual self-esteem during the process of GAT [17] however, we could not confirm this assumption. Results of our study indicate that transgender men with mastectomy experience positive aspects of sexuality to the same extent as transgender men without mastectomy. Finally, sexual motivation rounds off the list of positive connotated aspects of sexuality. In previous studies transgender men reported a strong increase in sexual desire once they started HT [26,27], which is a desired step by many patients [25]. Our results suggest that transgender men's desire to be involved in a sexual relationship was comparable to that of women, however, they were less motivated about sexual encounters than the average male population and considerably less satisfied with their sex life than the female and male general population. Sexual desire has been reported to be correlated with HT [28,29] but we could not confirm these findings. However, we might have not been able to detect this effect due to various treatment trajectories in our study.

### Negatively connotated Sexuality Dimensions

Transgender men felt more tension, discomfort and anxiety about sexual aspects of life than women and men of the general population. Furthermore, the fear of sexual relations was higher, and they were more likely to be depressive about sexual aspects of life compared to norm values of both sexes. A possible reason

**Table 3** Differences of the MFS subscales for transgender men with/without mastectomy and transgender men with gynephile/androphile sexual preference.

	Transgender men n = 54	Mastectomy n = 33	No Mastectomy n = 20				Gynephile n = 38	Androphile n = 11			
	M (SD)	M (SD)	M (SD)	T	p-value	Cohen's d	M (SD)	M (SD)	T	p-value	Cohen's d
Sexual self-esteem	10.04 (5.28)	10.09 (6.14)	9.95 (5.42)	0.09	.933	-	10.63 (5.64)	8.09 (6.41)	1.28	.208	-
Sexual satisfaction	8.47 (4.67)	8.55 (4.88)	8.35(4.42)	0.05	.884	-	9.18 (4.95)	6.73 (3.69)	1.52	.134	-
Sexual motivation	10.75 (5.59)	11.09 (5.16)	10.20 (6.36)	0.56	.579	-	11.63 (5.21)	9.55 (5.97)	1.13	.263	-
Sexual anxiety	8.25 (5.80)	6.98 (5.50)	10.35 (5.81)	2.13	.038	0.60	7.34 (4.98)	9.73 (6.81)	-1.28	.205	-
Fear of sexual relations	10.49 (4.62)	10.21 (4.53)	10.95 (4.84)	-0.56	.578	-	9.42 (4.49)	13.45 (3.53)	2.74	.009	1.0
Sexual preoccupation	7.13 (4.84)	7.39 (4.67)	6.70 (5.21)	0.50	.618	-	8.16 (5.02)	5.00 (2.72)	1.99	.052	-
Sexual depression	7.91 (6.04)	7.36 (6.42)	8.80 (5.38)	-0.84	.406	-	7.21 (6.07)	10.36 (6.25)	-1.51	.138	-
Internal sexual control	13.21 (3.01)	13.12 (3.03)	13.35 (3.56)	-0.25	.804	-	12.76 (2.94)	13.73 (3.20)	-0.94	.352	-
External sexual control	6.77 (4.61)	6.85 (4.67)	6.65 (4.64)	0.15	.881	-	6.66 (4.11)	7.09 (5.15)	-0.29	.773	-
Sexual monitoring	5.70 (4.55)	6.15 (4.94)	4.95 (3.80)	0.93	.356	-	5.66 (4.17)	5.55 (5.37)	0.07	.942	-
Sexual consciousness	14.06 (3.74)	14.70 (3.05)	13.00 (4.55)	1.63	.110	-	14.42 (3.12)	13.27 (5.00)	0.93	.356	-
Sexual assertiveness	11.19 (5.77)	12.24 (5.53)	9.45 (5.88)	1.74	.088	-	11.21 (5.03)	10.27 (7.19)	0.49	.624	-

Note: all P-values are Bonferroni-adjusted. ns = not significant. Scores ranged from 0 to 20, with higher scores indicating higher expression with each dimension.

for transgender men being prone to both anxiety and fear in the context of sexuality could be the distressful experience of having difficulty experiencing sexual desire, arousal or orgasm [11]. Taking into account that sexual dysfunction is very common in transgender men, it is reasonable to assume that distress plays a commanding role in all aspects of life related to sexuality [11].

An additional factor which likely plays a crucial role in how transgender men approach sex and sexuality is that they represent a comparatively unpopular group on the dating market [10]. Results of a study [10] indicate that very few people (especially cisgender men and women) would consider a relationship with a transman. Also, almost every second transman has difficulty seeking/ initiating sexual contacts and more than one third of transgender men fear sexual contacts [11] similar to our results. Interestingly, androphile transgender men experienced more fear of engaging in sexual relations than gynephile individuals possibly because due to higher pressure to fulfill expectations associated with their experienced gender likely a consequence of a constant comparison to their male partner's physique. Distress might i.e. occur because of the intact sexual function of the sex partner - ability which many transgender men individuals wish for but may not be able to achieve for their satisfaction. This is also supported by the fact that in our study, transgender men who had not yet undergone a mastectomy were more sexually anxious than those who had undergone the procedure.

Interestingly, transgender men's sexual preoccupation, meaning their obsession with sexual aspects of life, is similar to cissexual men's, but differs significantly from control women. One reason for an increased preoccupation/obsession with sex in transgender men could be strong sexual desire, which is further fueled by changes in their endocrinological makeup following the start of HT [26,27]. In 3.6% of transgender men, this increased level of sexual desire even results in personal distress and at times negatively affects their relationships [30].

We expected that the continuous gender confirmation due to HT might further fuel a likely preexistent preoccupation with one's own body in transgender men. However, we could not find an association between sexual preoccupation and duration of HT.

Laube et al. [22], used the same questionnaire (MFS) of the German version in transgender women and found a significantly lower evaluation of positive sexual experiences and stronger evaluation of negative sexual experiences and behavior in transgender women which is in line with our results. These results indicate similar problems concerning sexual health in transgender women and men.

### Control and Autonomy Aspects of Sexuality

External sexual control in transgender men did not differ from general norm values. It seems that transgender men and the general population believe to the same extent that sexuality

is influenced by external factors (e.g. chance). Accordingly, the share of fate on someone's sexual life was similarly assessed by all of them. In contrast, compared to the general population transgender men believed to a lower extent that the sexual aspects of life are determined by their own control.

### Self-reflexive Aspects of Sexuality

According to our results, transgender men were less conscious about their sexual inclinations, feelings, motivation and emotions than the male general population but were similar to cissexual women, indicating that transgender men reflected their sexuality similar to females.

Based on our findings, transgender men were highly aware of the public impression their sexuality makes on others compared to the female and male general population. This might occur because of transgender men's seemingly strong wish to fit into what they perceive as the masculine role and, thus, be fully accepted as a "man" which, in turn, places an additional burden on them [21]. Another reason could be that they are acutely aware of being a marginalized group which is frequently subject to stigmatization. Furthermore, transgender men felt equally assertive in sexual matters compared to the normal population.

### Strengths and limitations

Strength of this study is that multidimensional assessment of sexuality in transgender men, a highly necessary endeavor has not yet been accomplished in depth. Our study was designed prospectively, and validated questionnaires were used. Further, the response rate of those contacted willing to participate in the study was rather high with 74%, similar to a Dutch study [17].

A limitation of our study is that we used the results of the questionnaire's validation studies as a control group, possibly leading to bias. A more informative comparison could be possible if transgender and cisgender subjects would participate in the same survey and under identical conditions. However, a major difficulty in such a scenario would be to find representative cisgender controls fitting demographic composition of our study group. We are aware that this study is limited to transgender men, and its results cannot be extrapolated to transgender women. Another limitation was the heterogeneity of our study population involving subjects across the lengthy process of sexual reassignment. However, due to the limited number of potential probands at our institution, it was not feasible to assemble similar-sized groups. Our study did not include transgender persons who did not seek medical care in a clinic also possibly leading to data bias.

### CONCLUSIONS

In conclusion, our study demonstrates that transgender men experience positive aspects of sexuality to a lesser degree than the general population. In comparison to the general population transgender men report less sexual self-esteem, less sexual satisfaction and less sexual motivation. Furthermore, negatively connotated aspects of sexuality appear to be more present in their lives; they feel more sexually depressed and anxious about sexual aspects than the general population and experience more fear of sexual relations and preoccupation about sexual aspects of

life. Moreover, transgender men report more sexual monitoring and less control of their sexual life than the general population.

Furthermore, we found the two notable differences within the group of transgender men: Firstly, transgender men with mastectomy feel less anxious about sexual aspects of life than those without. Secondly, androphile transgender men experience more fear about sexual relations than gynephile.

Based on the results of our survey we conclude that transgender men are overall less sexually healthy than the female and male cissexual population.

### Declarations

**Ethical approval:** Data was obtained retrospectively and processed anonymously. Institutional ethics committee approval was obtained (Medical University of Graz, EK-number: 30-087 ex 17/18, IRB00002556).

**Disclosures:** We wish to disclose that some of the patients in the present series went on to have colpectomy and urethral lengthening. We have prepared and submitted a paper to a different journal on voiding dysfunction in these patients without data on sexuality.

**Conflict of interest:** Professor Karl Tamussino has served as a speaker for Medtronic, with honoraria going to the institution.

**Consent to participate:** Written informed consent was obtained from all participants.

**Consent for publication:** All authors and patient are aware of this publication and agree to it.

**Availability of data and material:** The data are not publicly available.

**Code availability:** Not applicable

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