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Pleasure please! Sexual pleasure and influencing factors in transgender persons: An ENIGI follow-up study

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ABSTRACT

Background: While the importance of sexual pleasure for physical and mental health becomes increasingly evident, research on sexual pleasure in transgender persons is lacking. Recently, the first version of the Amsterdam Sexual Pleasure Index (ASPI Vol. 0.1) was validated in cisgender persons. This questionnaire aims to assess the tendency to experience sexual pleasure independent of gender, sexual orientation or anatomy.

Aim: The aims of this study were threefold. First, to perform exploratory scale validation analyses of the ASPI in transgender persons. Secondly, to compare transgender sexual pleasure scores to reference data in cisgender persons. Finally, to identify factors that are associated with sexual pleasure.

Methods: In a follow-up study conducted within the European Network for the Investigation of Gender Incongruence (ENIGI), online questionnaires were distributed to persons who had a first clinical contact at gender clinics in Amsterdam, Ghent or Hamburg four to six years earlier. Internal consistency of the ASPI was assessed by calculating McDonald's omega (ω_t). ASPI scores were compared to scores from the cisgender population using a one sample t-test, and linear regressions were conducted to study associations with clinical characteristics, psychological wellbeing, body satisfaction and self-reported happiness.

Results: In total, 325 persons filled out the ASPI. The ASPI showed excellent internal consistency (ω_t, all: 0.97; transfeminine: 0.97, transmasculine: 0.97). Compared to data from cisgender persons, transgender participants had significantly lower total ASPI scores (i.e., lower sexual pleasure; transgender vs. cisgender, mean(SD): 4.13(0.94) vs. 4.71(0.61)). Lower age, current happiness and genital body satisfaction were associated with a higher tendency to experience sexual pleasure.

Conclusion & discussion: The ASPI can be used to assess the tendency to experience sexual pleasure and associated factors in transgender persons. Future studies are needed to understand interplaying biopsychosocial factors that promote sexual pleasure and hence transgender sexual health and wellbeing.

KEYWORDS
Gender incongruence; gender dysphoria; sexual pleasure; sexual health; gender-affirming therapy

Introduction

Adopting a positive approach to sexuality, including the notion that sexual pleasure should be integral to sexual health care, may be effective for the promotion of human health and wellbeing (Ford et al., 2019; World Assocation for Sexual Health, 2021). As the expected reward of sexual pleasure often directs our sexual behavior, understanding pleasure may aid in the prevention of negative sexual health outcomes (Higgins & Hirsch, 2008; Hull, 2008; Philpott et al., 2006). Beyond promoting sexual health, the experience of sexual pleasure has many other positive physical and mental health benefits (Ford et al., 2019; Laan et al., 2021). Recognizing the important role of sexual pleasure for human health and

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wellbeing, the World Health Organization incorporated sexual pleasure as part of its definition of "sexual health" in 2002 (World Health Organization, 2006). Identifying barriers to sexual pleasure, and how to overcome these, is thus essential for effective health research. In 2021, the World Association for Sexual Health ratified its "Declaration on Pleasure" which emphasized the need for research into this long neglected field of study (World Assocation for Sexual Health, 2021). This is particularly the case for research on sexual pleasure in minority groups such as transgender persons (Boul et al., 2009; Bradford & Spencer, 2020).

Transgender persons may face particular obstacles in attaining sexual pleasure (Holmberg et al., 2019). Most quantitative research studies on sexuality in transgender persons have focused on the effects of gender-affirming care on sexual function and sexual health outcomes (Bradford & Spencer, 2020; Kerckhof et al., 2019). Nonetheless, several studies have also moved away from the medicalized focus on transgender sexuality, providing insight into a diverse array of factors that may influence sexual satisfaction in transgender persons (Holmberg et al., 2019; Stephenson et al., 2017). These range from social factors such as anxiety about sharing one's transgender identity or being fetishized, to psychological factors such as a negative body image to biological factors including those resulting from gender-affirming therapy (Anzani et al., 2021a; 2021b; Defreyne et al., 2020; Kerckhof et al., 2019; Lindley et al., 2020; 2021; Nikkelen & Kreukels, 2018; Wierckx et al., 2011; 2014). Sexual practices of transgender persons that do not follow traditional (e.g., heteronormative) expectations of gender roles as well as genital and non-genital anatomy during sexual activity, which have been described in recent qualitative studies, may enhance sexual satisfaction and pleasure (Anzani et al., 2021a; Hamm & Nieder, 2021). Thus, the diverse and changing character of factors that may influence sexual pleasure both in cis- and transgender persons, underlines the importance of adopting a bio-psycho-social approach in research on sexual pleasure (Elaut & Nieder, in press; Laan et al., 2021).

Quantitative research on sexual pleasure in transgender persons has been limited by a lack of validated sexual health questionnaires (Holmberg et al., 2019; Weyers et al., 2009). In 2013, the first version of the Amsterdam Sexual Pleasure Index (ASPI Vol 0.1)[1] was developed and the questionnaire has been validated in cisgender persons in recent years (Werner et al., 2021). The ASPI assesses the tendency to experience sexual pleasure across several subdomains. Among cisgender persons, the ASPI showed acceptable to excellent reliability and internal consistency and acceptable construct validity (Werner et al., 2021). Importantly, the ASPI may be appropriate for use among transgender persons because it does not refer to a specific gender, sexual orientation or genital anatomy.

Given the gap in knowledge on sexual pleasure in transgender persons and the development of the ASPI, the aim of this study was to:

1. Determine reliability and construct validity of the ASPI in transgender persons
2. Compare scores on the ASPI between transgender persons and cisgender reference data
3. Identify factors that are associated with sexual pleasure in transgender persons

Materials and methods

Study design and setting

This study was conducted within the European Network for the Investigation of Gender Incongruence (ENIGI). In 2007, ENIGI started with a fixed set of questionnaires, filled out by a large number of transgender persons at the participating gender identity clinics (Kreukels et al., 2012). A follow-up study was later initiated among all participants four to six years after their first clinical contact, regardless of whether they had pursued gender-affirming therapy. The questionnaires included in the follow-up study were described in detail by van de Grift et al. (2017). The follow-up data were collected in two rounds, depending on the years of first clinical contact (see Kerckhof et al. (2019) for further detail). Because the ASPI was added only to the second

follow-up round, this study only reports data from follow-up round two. Persons who had their first clinical contact in 2011, 2012 or 2013 and were 17 years or older at that time of initial clinical contact were invited to fill out online questionnaires between September 2017 and April 2018. If persons did not respond, they received a reminder after one month. The local ethics committees of the participating centers in Amsterdam, Ghent and Hamburg, all approved this study. All participants provided written or online informed consent.

Participants

In total, 543 persons were invited of whom 358 participated in the follow-up study round two (response rate: 65.9%)[2]. Thirty-three participants were excluded because they had not filled in the ASPI, resulting in 325 (91%) study participants. Of these, 179 had visited the clinic in Amsterdam, 89 in Ghent and 57 in Hamburg. One-hundred-and-eighty persons were seeking feminizing gender-affirming therapy and 145 sought masculinizing gender-affirming therapy (Table 1). A non-responder analysis was carried out by Kerckhof et al. (2019), which contained the sample of the current study as well as data from follow-up round one, which showed that at clinical entry, the responders were more educated, older and more satisfied with their sex lives than non-responders.

Measures

Demographic data at baseline

Baseline data including age and clinic were collected at clinical entry as part of the ENIGI initiative described by Kreukels et al. (2012). At

Table 1. Demographic and clinical characteristics.

	Transfeminine *n* (%)	Transmasculine *n* (%)	Total *n* (%)
	180 (55.4)	145 (44.6)	325 (100)
Age, median (IQR)	39 (28–53)	27 (24–36.5)	32 (25–48)
Clinic			
Amsterdam	102 (57.0)*	77 (43.0)*	179 (55.1)
Ghent	53 (59.6)*	36 (40.4)*	89 (27.4)
Hamburg	25 (43.9)*	32 (56.1)*	57 (17.5)
Education			
More	72 (40.0)	51 (35.2)	123 (37.9)
Middle	91 (50.6)	86 (59.3)	177 (54.5)
Less	17 (9.4)	8 (5.5)	25 (7.7)
Gender identity#			
Male	5 (2.8)	94 (65.3)	99 (30.8)
Transgender male		32 (22.2)	32 (9.9)
Female	118 (66.3)	2 (1.4)	120 (37.3)
Transgender female	40 (22.5)		40 (12.4)
Non-binary	15 (8.4)	16 (11.1)	31 (9.6)
Other	10 (5.6)		10 (3.1)
Received gender-affirming hormone therapy	159 (94.6)	136 (95.1)	295 (94.9)
Underwent surgery			
Breast/chest surgery	74 (44.1)	132 (93.0)	206 (66.5)
Genital/pelvic surgery	115 (68.5)	104 (73.2)	219 (70.7)
Face/throat surgery	40 (23.8)	3 (2.1)	43 (13.9)
Wish for future surgery	72 (22.2)	51 (15.7)	123 (37.9)
Socially transitioned	168 (93.3)	140 (96.6)	308 (94.8)
Relationship status			
Single	101 (59.4)	99 (73.9)	200 (65.8)
In a relationship	69 (40.6)	35 (26.1)	104 (34.2)
Psychological burden, median (IQR)▪	1.5 (1.2–2.0)	1.3 (1.1–1.7)	1.4 (1.2–1.8)
Body satisfaction, mean (SD)▪	2.8 (0.7)	2.5 (0.6)	2.7 (0.6)
Genital subscale	2.8 (1.3)	3.2 (1.1)	3.0 (1.2)
Breast/chest subscale	2.9 (1.0)	2.4 (0.9)	2.7 (1.0)
Current happiness, median (IQR)▪	7 (5–8)	7 (6–8)	7 (6–8)

Percentages are based on all subject who responded to a particular question, thus excluding missing.
Data are presented as n (%) for categorical variables. Data for continuous variables are presented as mean (±SD) or median (IQR) in case of skewed data.
*Here, percentages are the percentage of transmasculine and transfeminine persons per center.
#The total percentage accounts for more than 100% because participants could fill in multiple options.
▪Questionnaire used to assess psychological burden is the Symptom's Checklist 90 Revised, questionnaire used to assess body satisfaction is the Body Image Scale in which lower scores represent higher body satisfaction, questionnaire used to assess current happiness is the Cantril Ladder.
IQR: interquartile range.
SD: standard deviation.

clinical entry, participants had been asked questions on one's satisfaction with their sex life and whether one masturbated in a yes/no format.

Demographic data at follow-up and clinical data on gender incongruence

The follow-up questionnaire included questions regarding one's current gender identity, education level, relationship status, social transition and gender-affirming therapy. If participants had received any gender-affirming therapy since entering the clinic, questions were asked specifying the type of gender-affirming hormone therapy and/or surgery. To reduce analytical complexity, surgical procedures were later grouped into three categories: breast/chest surgery (mastectomy or mamma augmentation), genital/pelvic surgery (hysterectomy with or without oophorectomy, vaginoplasty, phalloplasty, metoidioplasty or erection prosthesis) and face/throat surgery (facial surgery, Adam's apple reduction or vocal cord surgery). All participants were asked if they had a wish for future gender-affirming surgery and if so, which surgical procedure they had planned. All participants who expressed any wish for surgery in the future were coded as having a wish for future surgery.

Sexual behavior, satisfaction and problems

Several self-constructed questions in the follow-up study were based on the questions from the ENIGI baseline questionnaire and were expected to correlate strongly with sexual pleasure (Kreukels et al., 2012). These questions addressed one's overall satisfaction with their sexuality, the importance one attributed to sexuality as well as whether one masturbated, was able to reach orgasm and whether one involved their genitals during sexual contact. Responses were in a yes/no format. Subsequently, participants were asked to rate their satisfaction with their arousability and ability to reach orgasm during masturbation and external stimulation on self-constructed items. Scores were expressed on a five-point scale ranging from very unsatisfied to very satisfied.

Additional questions were asked regarding sexual problems that one had experienced and had suffered from in the past six months. These questions were constructed by Schönbucher et al. (2012) for a study on persons with a difference of sex development and later used in transgender persons by Kerckhof et al. (2019). Participants were first asked whether they had experienced sexual problems in the past six months, such as difficulty to initiate sexual contact, low sexual desire or pain during/after intercourse, and afterwards whether these problems caused distress. Responses were in a yes/no format. In this study we only report the number of persons who expressed to have experienced distress associated with a particular sexual problem. To reduce analytical complexity, a sum score was calculated by summing all sexual problems that caused distress in each participant, which was included as a single variable.

Sexual pleasure

The ASPI (Vol. 0.1) is a multidimensional self-report questionnaire that assesses individuals' tendency to experience sexual pleasure (Werner et al., 2021). The original version of the questionnaire contained 52 items that after validation were brought back to 44 items with a six-point Likert scale on which six refers to "strongly agree" and one to "strongly disagree." The terminology of the items is independent of gender identity, sexual orientation or genital anatomy. The ASPI items were assigned to five subdomains of sexual pleasure: partner-related pleasure, sexual self-efficacy, arousal enjoyment, sexual and body confidence and closeness and intimacy. In the introduction of the ASPI, sex is defined as "all sexual activity that could lead to arousal or pleasure with another person or alone". Total scores were calculated by averaging the mean scores of each subdomain which results in a minimum score of one and a maximum score of six.

Body satisfaction

The Body Image Scale (BIS) assesses satisfaction with thirty body parts using a five-point scale on which one represents "very satisfied" and five "very dissatisfied" (Lindgren & Pauly, 1975). Hence, lower scores on the BIS correspond to higher body satisfaction. Total scores are calculated by computing the mean of all completed

items. The BIS can be divided into subscales including a genital and breast/chest satisfaction subscale (van de Grift et al., 2016).

Psychological burden

The Symptom Checklist 90 Revised (SCL-90-R) is a 90-item questionnaire that assesses a range of self-reported psychological symptoms experienced in the past week on a five-point Likert scale where one is "no symptoms" and five is "severe symptoms"(Derogatis, 1992). Calculating the average of all completed items yields The Global Severity Index (GSI), which represents overall experienced psychological symptoms that range from one "no psychological distress" to five "severe psychological distress."

Current happiness

Self-reported current happiness was assessed using the modified Cantril ladder (CL) (Cantril, 1965). This is a one-item visual analogue scale that requires participants to rate how happy they feel at the present moment, with scores ranging from 0 "bad" to 10 "very good."

Statistical analyses

All analyses were carried out using Stata 14 (Stata Corp., College Station, TX). Internal consistency was calculated by computing McDonald's omega (ω_t). This was conducted for the entire study population and for transmasculine and transfeminine persons separately, as well as for the total ASPI score and its subdomains. Following Crutzen and Peters (2017), values greater than or equal to 0.9 were considered to represent excellent internal consistency, 0.8 as good, 0.7 as acceptable, 0.6 as questionable and 0.5 or lower as poor. Next, exploratory construct validity of the ASPI was assessed by computing Pearson correlation coefficients between the ASPI and the BIS, SCL-90-R GSI, CL and questions regarding sexual activities, experiences and satisfaction with arousability and orgasm during masturbation and external stimulation. A correlation coefficient equal to or more than 0.5 was considered strong, 0.3 as medium and 0.1 as weak (Cohen, 1988).

Mean ASPI total and subdomain scores were compared between transfeminine and transmasculine persons with an independent samples t-test. Mean values of transgender persons in the present study were compared with the cisgender participants of the ASPI validation study using one sample t-tests (Werner et al., 2021). Effect size of the difference in the total score in transgender and cisgender persons was estimated by calculating Cohen's delta.

To identify factors that are associated with sexual pleasure, univariable and multivariable linear regressions were carried out using the total ASPI score as the dependent variable and using age, gender, having received hormones, having undergone breast/chest or genital surgery, having a wish for future surgery, psychological burden (SCL-90-R GSI score), current happiness (CL), genital satisfaction (BIS genital subscore) and breast/chest satisfaction (BIS breast/chest subscore) and the sum score of sexual problems as independent variables. Predictor variables were included one by one for multivariable regression when univariable analysis showed a p-value equal to or smaller than 0.1. Because gender identity was considered a clinically important factor, this was also included in the multivariable analysis. Variables were excluded when they showed collinearity.

Results

Demographic and clinical data

At follow-up, the majority of participants reported a binary gender identity that was in line with baseline data, that is, male or transgender male for transmasculine applicants and female or transgender female for transfeminine applicants. Some persons identified as non-binary (9.6%) or as "other" (3.1%), which included among others genderqueer and gender fluid identities. There were seven participants who indicated to identify as their sex assigned at birth. Five assigned males who had been referred for feminizing gender-affirming therapy had not made a social transition nor pursued any hormone therapy or surgery. This was also the case for one of the two assigned females who had been referred for masculinizing gender-affirming therapy. One person currently identifying as female had gone through social transition, had received

masculinizing gender-affirming hormone therapy and had undergone surgery but was currently living in the female gender role. The majority of the study participants had received gender-affirming hormone therapy before or since entering the clinic (94.9%). Most transmasculine participants had undergone a mastectomy (93.0%) and a majority of participants (70.7%) in both groups had undergone a genital or pelvic operation. The relationship status of the majority of the participants was single (65.8%). These and additional characteristics of the total study sample are outlined in Table 1.

Sexual behavior, experiences and problems

Most participants had been sexually active with themselves or with a partner in the past six months (78.7%). The majority masturbated (77.8%), involved their genitals during sexual contact (77.2%) and could sometimes or always reach an orgasm (87.4%). Participants considered sexuality important for themselves (50.6%) or somewhat important (49.4%), whereas no one considered sexuality as unimportant. Slightly less than half of the study population indicated to be satisfied with their sex lives (48.8%). Having suffered from any sexual problem in the past six months was common. The most prevalent sexual problems were difficulty initiating or seeking sexual contact (19.7%), difficulty reaching orgasm (19.7%) and low sexual desire (17.2%) (Table 2).

Internal consistency and (exploratory) construct validity of the ASPI

Internal consistency of the ASPI was excellent for the entire study population and for transfeminine and transmasculine participants separately (ω_t total 0.97). All subdomains had either excellent, acceptable or good internal consistency (ω_t 0.75–0.95).

The ASPI showed medium and weak negative correlation with the BIS and the SCL-90-R GSI respectively, and medium positive correlation with the CL. There was a strong correlation between the involvement of genitals during sexual contact and the ASPI. There were medium positive correlations between the ASPI and sexual activity in the past six months, considering sexuality important, masturbating, being satisfied with arousability during external stimulation and satisfaction with the ability to orgasm during masturbation and external stimulation. Being satisfied with one's sex life correlated weakly positively with the ASPI (see Appendix 1 for coefficients).

Sexual pleasure scores

ASPI total scores and subdomain scores are displayed in Table 3. Mean ASPI total and subdomain scores did not differ between transfeminine and transmasculine participants. Overall, transgender persons had a significantly lower total mean ASPI scores (mean 4.13, SD 0.94) compared to the cisgender reference population (mean 4.71, SD 0.61) (Cohen's delta: 0.62). Transgender persons also reported lower scores compared to the cisgender reference population on all five ASPI subdomains.

Determinants of sexual pleasure in transgender persons

Judging from the multivariable regression, persons who were younger, who were currently feeling happier and who had a higher genital satisfaction score reported more sexual pleasure (i.e., higher ASPI scores) while controlling for having received gender-affirming hormone therapy, genital surgery, psychological burden, breast/chest satisfaction and sexual problems (Table 4).

Discussion

In this study, we describe sexual pleasure and factors that may influence pleasure in persons four to six years after their first clinical contact for gender-affirming therapy. The first version of the sexual pleasure questionnaire "The Amsterdam Sexual Pleasure Index" (ASPI Vol 0.1) showed excellent internal consistency and acceptable construct validity in this study population, suggesting that this questionnaire is suitable for future studies that include transgender persons. Compared to the reference data from cisgender persons, transgender persons reported a significantly lower

Table 2. Current sexual behavior, perceptions of sexuality and suffering of sexual problems.

	Transfeminine *n* (%)	Transmasculine *n* (%)	Total *n* (%)
	180 (55.4)	145 (44.6)	325 (100)
Sexually active with self or partner in past 6 months°	126 (70.4)	129 (89.0)	255 (78.7)
Number of sexual partners since clinical entry			
>10	16 (8.9)	6 (4.1)	22 (6.8)
6–10	11 (6.2)	12 (8.3)	23 (7.1)
1–5	103 (57.5)	92 (63.5)	195 (60.2)
None	49 (27.4)	35 (24.1)	84 (25.9)
Masturbated at time of first clinical appointment▪	133 (80.1)	80 (58.4)	213 (70.3)
Masturbates currently°	118 (65.9)	134 (92.4)	252 (77.8)
Ability to reach orgasm			
Always	59 (33.0)	89 (61.4)	148 (45.7)
Sometimes	85 (47.5)	50 (34.5)	135 (41.7)
Never	35 (19.6)	6 (4.1)	41 (12.7)
Involvement of genitals during sexual contact°	131 (73.2)	119 (82.1)	250 (77.2)
Importance of sexuality			
Important	76 (42.5)	88 (60.7)	164 (50.6)
Not that important	103 (57.5)	57 (39.3)	160 (49.4)
Unimportant	0	0	0
Satisfaction with sex life at time of first clinical appointment▪	64 (39.0)	56 (41.8)	120 (40.3)
Satisfaction with sex life currently°	84 (46.9)	74 (51.0)	158 (48.8)
Having suffered from (past or present)*:			
Difficulty initiating or seeking sexual contact	32 (17.8)	32 (22.1)	64 (19.7)
Difficulty reaching orgasm	43 (23.9)	21 (14.5)	64 (19.7)
Fear of sexual contacts	31 (17.2)	25 (17.2)	56 (17.2)
Low sexual desire	36 (20.0)	11 (7.6)	47 (14.5)
Pain during/after intercourse	30 (16.7)	14 (9.7)	44 (13.5)
Difficulties to get sexually aroused	29 (16.1)	11 (7.6)	40 (12.3)
An aversion to sexual activity	19 (10.6)	15 (10.3)	34 (10.5)
Fear of injury during sexual intercourse	23 (12.8)	10 (6.9)	33 (10.2)
Too strong sexual desire	9 (5.0)	17 (11.7)	26 (8.0)
Vaginal cramp	10 (5.6)	6 (4.1)	16 (4.9)
Absent ejaculation	10 (5.6)	5 (3.4)	15 (4.6)
Bleeding during/after sexual intercourse	10 (5.6)	3 (2.1)	13 (4.0)
Unwanted ejaculation	5 (2.8)	0	5 (1.5)

Percentages are based on all people who responded, excluding those with missing data.
▪ Information taken from the baseline questionnaire.
° The number and proportion of participants who answered 'yes' are shown.
*Percentages of the total number of participants.

Table 3. ASPI total scores and subdomain scores and their internal consistency.

	Arousal enjoyment	Partner related pleasure	Sexual self-efficacy	Sexual and body confidence	Intimacy and connection	Total
Transgender mean (SD)						
Transfeminine	4.15 (1.11)*	4.28 (1.21)*	3.68 (1.1)*	3.74 (1.01)*	4.60 (1.21)*	4.09 (0.98)*
Transmasculine	4.38 (1.05)*	4.39 (1.06)*	3.87 (1.06)*	3.71 (1.01)*	4.60 (1.04)*	4.19 (0.89)*
Transgender total	4.25 (1.09)*	4.33 (1.14)*	3.76 (1.09)*	3.73 (1.01)*	4.60 (1.14)*	4.13 (0.94)*
Cisgender mean (SD)#						
Cisgender female	4.82 (0.66)	4.86 (0.7)	4.29 (0.82)	4.25 (0.81)	5.14 (0.67)	4.67 (0.61)
Cisgender male	4.91 (0.66)	5 (0.66)	4.6 (0.69)	4.53 (0.78)	5.04 (0.69)	4.83 (0.58)
Cisgender total	4.84 (0.67)	4.89 (0.7)	4.38 (0.8)	4.33 (0.82)	5.11 (0.69)	4.71 (0.61)

Internal consistency (McDonalds omega).
ASPI total: total 0.97, transfeminine 0.97, transmasculine 0.97.
Arousal enjoyment: total 0.92, transfeminine 0.91, transmasculine 0.93.
Partner-related pleasure: total 0.95, transfeminine 0.95, transmasculine 0.95.
Sexual self-efficacy: total 0.89, transfeminine 0.90, transmasculine 0.90.
Sexual and body confidence: total 0.75, transfeminine 0.75, transmasculine 0.80.
Intimacy and connection: total 0.86, transfeminine 0.88, transmasculine 0.83.
#Scores compared to cisgender data matched on gender identity (Werner et al., 2021).
*Significantly different from cisgender persons in a one sample *t*-test ($p < 0.001$).
SD: standard deviations.

tendency to experience sexual pleasure on all subdomains (Werner et al., 2021). We found that lower age, more self-reported current happiness and a better genital body image predicted the tendency to experience to sexual pleasure in transgender persons.

This study supports persistent calls for a more positive approach to sexuality in research, particularly in transgender persons (Bauer & Hammond, 2015; Bradford & Spencer, 2020; Elaut & Nieder, in press; Ford et al., 2019; World Association for Sexual Health, 2021). As it often is the primary

Table 4. Univariable and multivariable linear regression for ASPI total scores.

	Univ. β	95% CI	*p*-value	Multiv. β*	95% CI	*p*-value
Age	−0.01	−0.02; 0.00	0.037	−0.01	−0.02; 0.00	0.030
Being transmasculine	0.10	−0.10; 0.31	0.322	0.06	−0.18; 0.29	0.634
Having received gender-affirming hormone therapy	0.33	−0.14; 0.80	0.168			
Having undergone breast/chest surgery	0.08	−0.14; 0.30	0.471			
Having undergone genital surgery	0.24	0.01; 0.46	0.043	−0.16	−0.39; 0.07	0.180
Having a wish for future surgery	−0.08	−0.30; 0.13	0.434			
Psychological burden▪	−0.30	−0.46; −0.14	0.000	0.03	−0.18; 0.24	0.767
Current happiness▪	0.14	0.09; 0.19	0.000	0.12	0.06; 0.19	0.000
Genital satisfaction	−0.33	−0.40; −0.25	0.000	−0.32	−0.41;−0.23	0.000
Breast/chest satisfaction	−0.18	−0.29; −0.07	0.002	−0.07	−0.18; 0.05	0.239
Sum score of sexual problems*	−0.05	−0.10; 0.00	0.062	0.01	−0.05; 0.07	0.714

▪Questionnaire used to assess psychological burden is Global Severity Index of the Symptom's Checklist 90 Revised, questionnaire used to assess current happiness is the Cantril Ladder, questionnaire used to assess genital satisfaction is the genital subscale of the Body Image Scale in which lower scores represent higher genital satisfaction.

*Multivariable regression including age, gender identity, having undergone genital surgery, psychological burden, current happiness, genital satisfaction, breast/chest satisfaction and the sum score of sexual problems.

Univ: Univariable linear regression.

Multiv: Multivariable linear regression.

CI: confidence interval.

motivator for sexual activity, understanding sexual pleasure is key to the promotion of sexual health (Ford et al., 2019; Gruskin et al., 2019; Hull, 2008; Philpott et al., 2006). Among the participants of this study, no one considered sexuality unimportant. Experiencing sexual pleasure has far-reaching benefits for wellbeing and health and contributes to quality of life (Anderson, 2013; Boul et al., 2009; Ford et al., 2019; Skevington et al., 2004). The terminology used in several questionnaires on sexuality does not accommodate for the diversity of gender identity and genital anatomy in transgender persons. The ASPI uses language that does not refer to gender identity, sexual orientation or genital anatomy, and showed good psychometric validity in the exploratory scale validation in transgender persons. Our findings suggest that future research on sexual pleasure using the ASPI could include both cisgender and transgender persons, which allows for a more comprehensive understanding of sexuality.

Compared to cisgender reference data, we found that transgender persons reported significantly lower ASPI scores, which suggests that they may face specific barriers to attaining sexual pleasure. Understanding sexual pleasure as an experience that arises from reward-seeking learning processes about one's body, wishes and boundaries, our findings may result from difference in these learning experiences. Participants in our study who involved their genitals during sexual contact as well as participants who at the time of their first clinical contact had experience with masturbation reported a higher tendency to experience sexual pleasure. This finding is in line with data from previous studies both clinical and quantitative as well as non-clinical and qualitative studies (Cerwenka et al., 2014; Hamm & Nieder, 2021). The experience of gender incongruence may influence early sexual learning and one's sexual repertoire (Bungener et al., 2017; Cerwenka et al., 2014). A study by Bungener et al. (2017) found that transgender adolescents reached certain sexual milestones such as falling in love or kissing at a later age compared to cisgender peers. Although in our study we could not confirm an association between the age of onset of gender incongruence and sexual pleasure, other studies found that some transgender persons may avoid involving their genitals during sexual activity, especially when feelings of gender incongruence arose at an early age (Anzani et al., 2021b; Cerwenka et al., 2014). This may be a coping mechanism to aversion from one's genitals, genital body dissatisfaction or from insecurity toward a partner not to be seen as their true gender (Anzani et al., 2021a; Iantaffi & Bockting, 2011). Differences in early sexual learning processes and differences in sexual repertoire may therefore, in part, explain the lower tendency to experience sexual pleasure found in our study.

Precarious social conditions may negatively impact sexual pleasure among transgender persons as well. In our cohort, a large proportion

of participants expressed to have suffered from a fear of sexual contacts (17.2%) or difficulty seeking sexual contacts (19.7%). These feelings may result from fear of sexual fetishization, where persons are sexualized merely because of their body or transgender identity, feelings of lack of self-worth as well as the threat of transphobic violence (Anzani et al., 2021b; Bauer & Hammond, 2015; Cense et al., 2017). In our study difficulty seeking sexual contact was not associated with a lower tendency to experience sexual pleasure, which may be explained by the fact that the ASPI includes sexual pleasure experienced with oneself as well.

Having an unfulfilled wish for future gender-affirming therapy was found to negatively impact sexual satisfaction compared to transgender persons who had no treatment desire or who had a fulfilled treatment desire (Nikkelen & Kreukels, 2018). In the present study we did not replicate this with an association between having a wish for future surgery and total ASPI score, which may result from differences in study population and time since the start of transition, where the majority of participants had undergone a breast/chest, genital or pelvic operation. Possibly, the most pressing issues causing body dissatisfaction had been alleviated by these surgeries while some participants still wanted to undergo other surgeries in the future.

Although gender-affirming hormone therapy and surgery generally seem to benefit sexual satisfaction, it may also give rise to new sexual problems such as low sexual desire in transgender women initiating hormone therapy, lubrication issues and pain (De Cuypere et al., 2005; Defreyne et al., 2020; Holmberg et al., 2019; Lindley et al., 2020; Mattawanon et al., 2021; Rosenberg et al., 2019; Vedovo et al., 2021; Weyers et al., 2009). Although research is limited, the prevalence of sexual dysfunctions may not differ from cisgender counterparts, as a previous study found that the prevalence of Hypoactive Sexual Desire Disorder was similar in a group of transgender women compared to the general population of cisgender women (Elaut et al., 2008).

The final objective of this study was to identify factors that might benefit sexual pleasure in transgender persons. Our study highlights the importance of a good body image for the experience of sexual pleasure, specifically of genital body satisfaction. Several studies have demonstrated the relationship between body satisfaction and sexual satisfaction (Lindley et al., 2021; Martin & Coolhart, 2019; Nikkelen & Kreukels, 2018; Ristori et al., 2020). Our results suggest that the effect of genital surgery is mediated by genital body dissatisfaction, which is in line with previous findings showing that an unfulfilled wish for future hormone therapy or surgery, negatively affects body satisfaction (Staples et al., 2020). When discussing issues regarding sexual pleasure, clinicians are therefore recommended to body image with their transgender clients.

Another important factor that predicted the tendency to experience sexual pleasure was current self-reported happiness. This highlights commonality between transgender and cisgender sexual pleasure and confirms findings of a review by Anderson (2013), which observed an association between sexual pleasure and general life satisfaction.

Strengths

This study has several strengths. This study contributes to knowledge on this important but long neglected field of study in transgender care. The study population was large in size and included participants from several countries. Additionally, the study included a multiplicity of questionnaires which allowed us to focus on biological, psychological and social determinants of sexual pleasure. The questionnaire used to assess the tendency to experience sexual pleasure did not refer to a specific gender, sexual orientation or genital anatomy, and can be used to assess sexual pleasure at different stages of gender-affirming therapy.

Limitations

Regarding the comparison of ASPI scores with the cisgender reference population, it is important to note the different recruitment strategies where the cisgender reference population was recruited online whereas the current study population included persons who were referred for gender-affirming therapy. Moreover, further specification of the questions addressing

satisfaction during sexual activities, particularly if they were partnered or solo activities, would have provided us with more in-depth insight. Finally, the relatively low response rate and differences between responders and non-responders, where the non-responders were less educated, may have introduced bias that should be addressed in the design of future studies (Kerckhof et al., 2019).

Conclusion

Research on sexual pleasure may expand the field of transgender sexual health care by adopting a positive approach to sexuality. The ASPI (Vol 0.1) is a questionnaire that can be used to assess the tendency to experience sexual pleasure in transgender persons independent of gender, sexual orientation and genital anatomy. Future studies can shed light onto specific aspects of sexual pleasure and its relationship to biopsychosocial factors.

Notes

1. In the remainder of this article, we refer to the ASPI Vol 0.1 as the ASPI unless this specification is needed for clarification.
2. In this study, we will refer to persons who were referred for gender-affirming therapy as transgender persons. When considering subgroups that differ regarding their sex assigned at birth, we refer to those who have a male sex assigned at birth as transfeminine and those who have a female sex assigned at birth as transmasculine. It is important to note that this binary terminology does not do justice to the diversity of the study sample.

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Appendix

Appendix 1. Correlation coefficients between the ASPI score and other questions related to sexual pleasure.

	Correlation with ASPI	*n*
Body image scale	−0.32	316
SCL-90-R GSI	−0.20	317
Cantril ladder	0.30	312
Having been sexually active in the past 6 months	0.46	324
Considering sexuality important	0.49	324
Being satisfied with sex life	0.28	324
Masturbating	0.38	324
Using genitals during sexual contact	0.50	324
Ability to orgasm sometimes or always	0.44	324
Being very or fairly satisfied with arousability during external stimulation	0.49	268
Being very or fairly satisfied with ability to reach an orgasm during masturbation	0.41	225
Being very or fairly satisfied with ability to reach an orgasm during external stimulation	0.41	269

SCL-90-R GSI: Symptom's Checklist 90 Revised Global Severity Index