Sexual Desire and Gender Affirming Hormone Therapy in Transgender Individuals with Gender Dysphoria.

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Sexual Desire and Gender Affirming Hormone Therapy in Transgender Individuals with Gender Dysphoria

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Summary

Background. Sexual desire is an important and yet still poorly explored dimension of sexual health in transgender individuals. Longitudinal studies on sexual desire and gender-affirming hormone therapy (GAHT) remain relatively scarce. Here, we examine sexual desire in transgender individuals, both assigned male (AMAB) and female at birth (AFAB).

Method. A total of 126 participants were recruited before starting GAHT, 57 of them completed follow-up questionnaires after being exposed to GAHT. Longitudinal mixed models explored associations between exposure to GAHT and sexual desire, considering GAHT exposure both dichotomously (before vs after) and continuously (number of months under treatment).

Results. AMAB and AFAB individuals reported significant differences in sexual desire at baseline. After GAHT, AMAB individuals experienced a decrease of dyadic sexual desire (beta = -9.57, p = 0.044), while AFAB individuals experienced an increase across solitary, dyadic and total sexual desire (beta = 19.16, p = 0.048). Assessing sexual desire through time, no significant effects emerged for solitary sexual desire. However, dyadic and total sexual desire continued to be sustained for AFAB individuals (beta = 1.26, p = 0.020).

Conclusion. Although solitary sexual desire may increase in AFAB individuals after GAHT, this effect seems to be temporary and GAHT effects mainly seem to affect dyadic components of sexual health - at least when evaluated across a longer period of time. Future research may better elucidate the long-term temporal dynamics of sexual desire in transgender individuals after GAHT.

Keywords: Sexual desire; gender-affirming hormone therapy; transgender and gender diverse individuals; transgender health

INTRODUCTION

Sexuality is a fundamental component of health and well-being. Sexual health includes a broad range of health domains, such as sexual desire [1,2]. According to current conceptualizations, sexual desire is represented by two main dimensions: solitary (interest in solitary sexuality like masturbation or use of fantasies) and dyadic (interest in an active sexuality with a partner). These two dimensions were first described and formalized by Spector, Carey and Steinberg [3], as psychometrically assessed in the Sexual Desire Inventory (SDI). The development of SDI allows to psychometrically assess and gauge the complexity of sexual desire, which is composed of biological, psychological and relational factors.

Transgender people are individuals whose gender identity does not align with the sex assigned at birth. Sexual desire in transgender individuals represents a relatively poorly explored domain. In literature, there's plenty of studies focused on sexual health outcomes in terms of postoperative sexual function or HIV risk [4,5],

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without paying as much attention to the experience of sexual desire in terms of psychological and relational phenomenon. Recently an integrated approach to sexuality in transgender people has reached the focus of research, integrating aspects of pharmacotherapy, subjectivity and interpersonal desire [6].

A central aspect of sexual desire in transgender people is the potential access to gender-affirming therapy (GAT), with a particular focus on hormone therapy and specifically gender-affirming hormone therapy (GAHT) [7]. GAHT and sexual outcomes have long been interpreted mainly as a combination of endocrine effects [8]. However, individual responses vary widely and are influenced by psychological factors (such as a reduction in gender dysphoria), relational, and contextual factors, which make both clinical and research picture more and more complex [9]. A recent meta-analysis explained better the role of sexual desire in transgender individuals, demonstrating a significantly lower desire, specifically dyadic, compared with the general population [10]. Meta-regressions highlighted that exposure to GAHT is associated with stronger dyadic and total sexual desire in younger people, but older individuals may be less likely to reach full benefits of GAHT in relation to this sexual health domain [10]. Taken together, these findings suggested that GAHT effects in relation to sexual desire may certainly comprise direct endocrinological effects (i.e. increase in sexual desire after testosterone therapy), but - given the lack of significant differences between individuals exposed to either testosterone or estrogen therapy in solitary sexual desire - the larger effect may encompass indirect effects through psychological and interpersonal components.

However, despite these recent advances, significant gaps remain in our understanding. A high methodological heterogeneity limits the ability to draw definitive conclusions [10], especially for what concerns sexual desire after GAHT evaluated through longitudinal study designs. For this reason, focusing solely on transgender individuals, and transgender individuals with binary gender identity specifically, may yield better focus on this research question. Moreover, a longitudinal study design may better account for confounding variables, first of all, individual differences at baseline.

Aims

Given the increasing interest on this topic, the present study seeks to fill a critical gap in the literature by offering a broader view of different elements that may influence transgender individuals' sexual desire. More specifically, our objectives are examining the associations between sexual desire in AMAB and AFAB transgender individuals before and after being engaged in HT, while accounting for concurrent psychological and physiological processes, which previous literature have identified as potential confounding factors: (1) body uneasiness [13]; (2) mental pain [14]; (3) general psychopathological symptoms; (4) internalized transphobia; (5) age; (6) and sex assigned at birth [6,10,12].

To assess the potential relationship between sexual desire and exposure to GAHT, determinants of sexual desire were explored by longitudinal mixed models, either using exposure to GAHT as a dichotomous or continuous variable (number of months of exposure).

MATERIALS & METHODS

Sample and participants

This is a longitudinal cohort study, conducted according to current standards (STROBE guidelines), in order to ensure completeness of reported information, and to increase the potential to replicate findings in future studies [15]. A total of 126 individuals were enrolled from the clinical population from March 2024 to May 2026. Of these 126 individuals, 54 were AMAB and 72 AFAB transgender people, all of them without being exposed to HT at the time of enrollment. Among the total number of participants, 57 had also completed the questionnaires after being exposed to GAHT: those were 30 AMAB and 27 AFAB transgender people. All individuals who completed the questionnaires after being exposed, reported full adherence to prescribed HT. For online questionnaires, authors used REDCap electronic data capture tools, previously informing participants about the procedures [16].

Inclusion criteria in the study for participants were: being in a range between 18 and 35 years old, having been previously (after GAHT) or currently (before GAHT) diagnosed with gender dysphoria in accordance with DSM-5 criteria [17], having signed an informed consent form, being binary, and have not started GAHT. Participants were excluded according to the following criteria: being in the active phase of a psychotic disorder or bipolar disorder, inability to subscribe to an informed consent form, intellectual disability, minor age (under 18), over 35 years old, and being non-binary. Inclusion and exclusion criteria were assessed through a clinical evaluation conducted by medical personnel. All participants were evaluated by a senior psychiatrist (G.C.) after giving their informed consent to participate in the study. Sex assigned at birth was assessed through medical records.

Ethics approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional committee (University Hospital of Florence), with the Declaration of Helsinki of 1964 and its later amendments. Ethical approval of the study was acquired from the local institutional committee (reference number: CEAVC_22346, latest amendments approved in November 2025). Written informed consent was obtained from all individual participants involved in the study.

Instruments

Self-administered, validated, questionnaires were proposed to all participants:

- The Sexual Desire Inventory (SDI) [18] was adopted to assess sexual desire in its forms (dyadic, solitary and total). Sexual desire is here understood to mean interest in

sexual activities. The SDI is a 14 items scale composed of a 8-point Likert scale. Cronbach's α coefficients ranged between 0.81 and 0.91 for the dyadic subscale, and between 0.84 and 0.96 for the solitary subscale.

- The Brief Symptom Inventory (BSI) [19] was adopted to assess the general psychopathological symptoms. The BSI is a self-report questionnaire composed of 53 items evaluated in a 4-point Likert scale. It is a general psychopathology screening that assesses symptoms over the past week, using 9 dimensions: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. It also provides the Global Symptom Index (GSI), among its most robust measures. Its Cronbach's α coefficients ranged < 0.95.
- The Body Uneasiness Test (BUT) [20] was adopted to measure body discomfort. The BUT is a self-report questionnaire made of 71 items, which are evaluated on a 5-point Likert scale. It is composed of BUT-A (the one that this study is interested in) that measures weight phobia, body image, self-monitoring, avoidance and depersonalization, also composing a single Global Symptom Index (GSI). All subscales of BUT-A have Cronbach's α coefficients ranging > 0.79.
- The Orbach and Mikulincer Mental Pain scale (OMMP) [21] was used for the assessment of the transdiagnostic construct of mental pain. OMMP is a self-administered questionnaire which is made up of 44 items, each of which is evaluated on a 5-point Likert scale. In OMMP, higher scores reflect higher levels of mental pain. Internal consistency, in previous validation studies, was reported to be adequate, since Cronbach's α coefficients ranged between 0.78 and 0.95 for each domain. Here, only the total score was adopted.
- The Attitudes Toward Transgendered Individuals Scale (ATTI) [22], was adopted to measure stigmatization towards ones' transgender identity. The ATTI is a self-report questionnaire with 20 items that use a 5-point Likert-type response format. Higher scores suggest a more positive evaluation of transgender people, while lower scores represent higher transphobia. It has Cronbach's α coefficients ranging < 0.95.

Statistical methods

First, descriptive statistics were conducted. ANCOVAs (age adjusted) were computed to assess group differences between AMAB and AFAB individuals. Longitudinal mixed models were computed to assess the effect of exposure to gender affirming hormonal therapy, adjusting for the potential confounding effect of body uneasiness, general psychological distress, and internalized transphobia. The dependent variable was SDI (dyadic, solitary or total) and the independent variable was the exposure to GAHT. Covariates included body uneasiness, general psychological distress, and internalized transphobia. Random intercepts were included for each participant. Longitudinal mixed models were computed either using exposure to GAHT as a dichotomous or as a continuous variable (number of months of exposure). For all analyses, statistical significance was set at $p < 0.05$.

RESULTS

Sample descriptives

The sample of this study included 126 people: 54 AMAB and

TABLE I. Sample descriptives and group differences.

	AMAB M ± SD	AFAB M ± SD	Effect size (Cohen's d)	p
N	54	72	/	/
Available follow-up after GAHT	30	27	/	/
Mean number of months of GAHT exposure at follow-up	15.56 ± 27.37	8.92 ± 12.29	/	/
Age	23.45 ± 3.53	22.95 ± 4.01	0.131	0.593§
Solitary SDI	9.35 ± 6.33	10.52 ± 6.53	-0.182	0.402
Dyadic SDI	31.69 ± 17.08	33.07 ± 16.69	-0.082	0.688
Total SDI	47.21 ± 25.30	50.52 ± 25.47	-0.130	0.533
BSI GSI	0.95 ± 0.70	1.13 ± 0.79	-0.239	0.343
BUTA GSI	2.33 ± 0.96	2.45 ± 1.02	-0.121	0.625
OMMP Total Score	2.02 ± 0.83	2.11 ± 0.84	-0.108	0.733
ATTI	88.52 ± 4.07	85.74 ± 13.06	0.272	0.267

Note: Descriptives for psychometric evaluation at baseline. P-values by age-adjusted ANCOVA unless otherwise reported. § = ANOVA. SDI = sexual desire inventory; BSI = brief symptoms inventory; BUTA = body uneasiness test - a; OMMP = Orbach and Mikulincer Mental Pain scale; ATTI = attitudes towards trangender individuals (lower, higher internalized transphobia).
**p < . 05, **p < . 01, ***p < . 001*

72 AFAB transgender individuals. Of these, 57 also completed a follow-up evaluation after exposure to GAHT. All individuals who completed follow-up evaluations reported full adherence to prescribed GAHT. All participants were between 18 and 35 years old and reported a binary gender identity. No significant difference was found between AMAB and AFAB transgender individuals at baseline. No significant difference was found between individuals who completed and did not complete follow-up evaluations (age ANOVA p-value: 0.827; SDI solitary desire ANCOVA age-adjusted p-value: 0.154; SDI dyadic desire: 0.182; SDI total score: 0.122; BSI GSI: 0.436; BUTA GSI: 0.429; OMMP: 0.233; ATTI: 0.822). Further descriptive Statistics were reported in Table I.

Longitudinal assessment of sexual desire before and after GAHT

As previously mentioned, AMAB and AFAB individuals did not differ for sexual desire at baseline (Tab. I). Yet, significant differences emerged after GAHT exposure. Multivariable linear regression showed significant negative associations between sexual desire and GAHT effect in AMAB individuals, in particular in the dyadic dimension. By contrast, positive as-

TABLE III. Longitudinal Mixed Models, sexual desire.

	Solitary SDI	Dyadic SDI	Total SDI
Sex (AFAB)	5.35 (p = 0.022*)	-2.23 (p = 0.752)	5.65 (p = 0.528)
GAHT months	-0.09 (p = 0.490)	-0.98 (p = 0.023*)	-1.16 (p = 0.033*)
Interaction (Sex * GAHT)	0.003 (p = 0.986)	1.26 (p = 0.020*)	1.33 (p = 0.049*)

*Note: In each cell, beta coefficients are reported. Dependent variable by column. Independent variables by row. AMAB as reference. All analyses corrected for age. SDI = sexual desire inventory; * p < . 05, ** p < . 01, *** p < . 001*

TABLE II. Longitudinal Mixed Models, sexual desire.

	Solitary SDI	Dyadic SDI	Total SDI
Sex (AFAB)	0.44 (p = 0.739)	-1.13 (p = 0.759)	-0.44 (p = 0.934)
GAHT effect	-2.15 (p = 0.251)	-9.57 (p = 0.044*)	-12.66 (p = 0.058)
Interaction (Sex * GAHT)	4.35 (p = 0.046*)	12.54 (p = 0.042*)	19.16 (p = 0.048*)

*Note: In each cell, beta coefficients are reported. Dependent variable by column. Independent variables by row. Random effect by participant id. AMAB as reference. All regressions corrected for age, body uneasiness (BUTA GSI), generalized distress (BSI GSI), attitudes towards trangender individuals (ATTI), mental pain (OMMP). SDI = sexual desire inventory; * p < . 05, ** p < . 01, *** p < . 001*

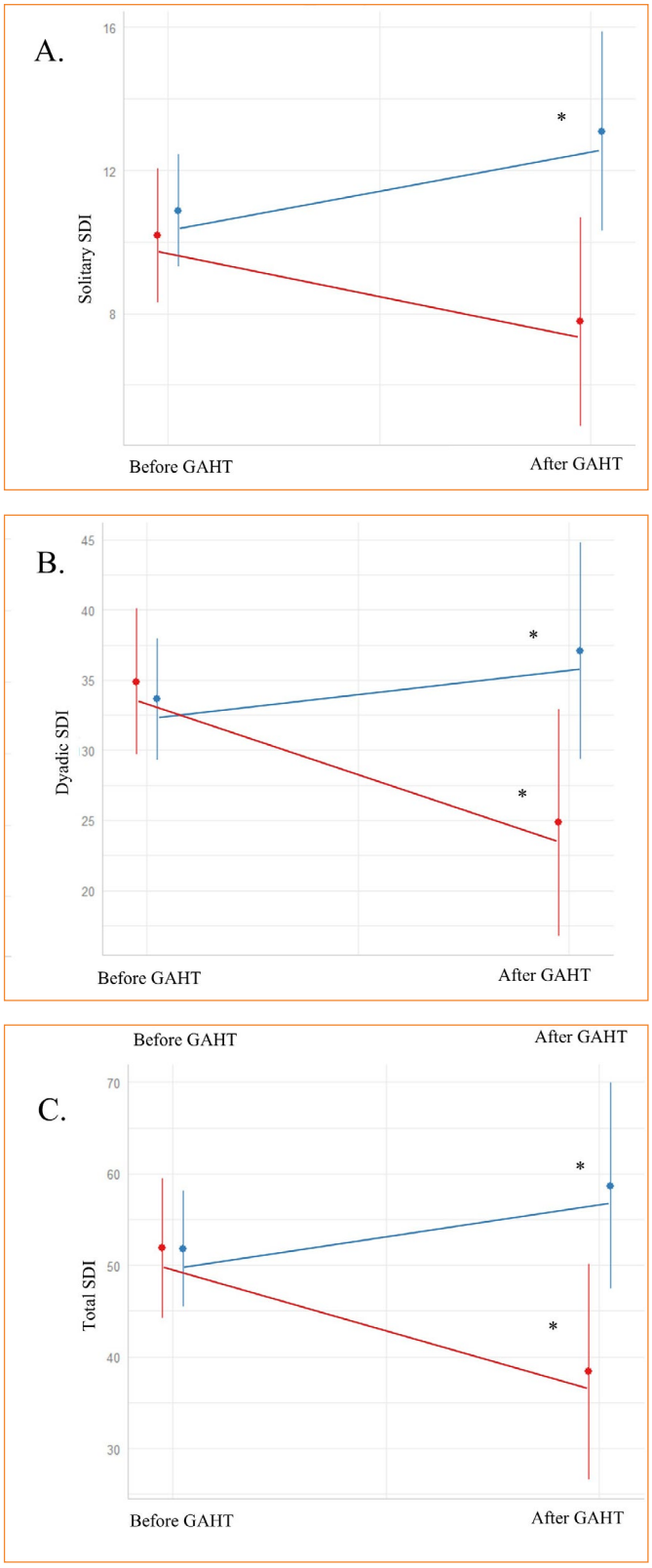

FIGURE 1. Longitudinal trajectories in sexual desire within transgender individuals. Analyses showed significant increases within transgender individuals assigned female at birth (in blue), while stable solitary sexual desire and lower dyadic/total sexual desire in transgender individuals assigned male at birth (in red). Statistical significance provided for longitudinal contrasts. SDI = sexual desire inventory; GAHT = gender affirming hormonal therapy; * = p < 0.05

sociations were observed for GAHT effects in AFAB individuals, with increases after GAHT exposure in all three dimensions of sexual desire (Tab. II). Marginal means before and after GAHT exposure were graphically illustrated in Figure 1. Significant, yet diverging, differences also emerged when accounting for GAHT exposure through time. GAHT exposure was not associated with differences in solitary sexual desire through time, both for AMAB and AFAB individuals. Yet, dyadic and total sexual desire did show continuous changes through time - AMAB individuals showed lower dyadic and total sexual desire through time, while AFAB individuals showed higher dyadic and total sexual desire through time (Tab. III).

DISCUSSION

Present findings suggest the importance of better assessing sexual desire in transgender individuals. The present study aimed to reduce the gap that is still present in literature about longitudinal studies on GAHT effect. In present results, sexual desire, in particular dyadic sexual desire, differed in transgender individuals exposed to GAHT based on sex assigned at birth. While these results suggest a fundamental role of both sex assigned at birth, and therefore, the type of hormone's exposure after GAHT, sexual desire may still be profoundly shaped by a variety of psychological and environmental influences, which were here not addressed, as well as some secondary effects of GAHT that may influence social aspects linked to gendered expectations [22]. Future studies may then be interested in better assessing these potential sources of influence on sexual desire before, after and during GAHT in transgender individuals, in a gender-affirming care perspective which aims to maximize health across all its dimensions, sexual health included [25, 26].

In present results, AMAB transgender individuals experienced decreasing dyadic sexual desire after GAHT exposure, while AFAB individuals experienced an increase of all sexual desire's dimensions. Notably, estimates for increases in AFAB individuals exceeded in size in comparison to estimates of decreases in AMAB individuals - suggesting masculinizing GAHT to have a stronger effect on sexual desire compared to demasculinizing/feminizing GAHT.

Even when assessed through time, results suggested sustained increases in AFAB transgender individuals, while AMAB individuals exhibited both decreased dyadic and total sexual desire. Interestingly, however, solitary sexual desire did not seem to significantly change through time, while showing temporary increases in AFAB transgender individuals. Taken together, these results suggest that - at least partly - GAHT effects on sexual desire may not be encompassing a biological dimension alone. Indeed, solitary sexual desire, commonly conceptualized as more influenced by biological influences in comparison to dyadic sexual desire [2,3], was here shown to be the least influenced domain after GAHT (in both AMAB and AFAB individuals). This result also suggests that - at least part - of the observed effect of GAHT on sexual desire may be indirect, and influenced by environmental factors. Previous literature showed decreased general psychopathology, social isolation and body uneasiness after GAHT [13,23], all factors that - albeit here partly included as covariates - may still underlie these posited indirect effects. Still adopting a gender-affirming care perspective which aims to maximize health across all its dimensions, sexual health included, future studies may aim to better assess psychological, social and environmental factors in relation to sexual desire during and after GAHT in transgender individuals.

Limitations

For future research or potential replication of these results, it is important to take into account the limitations of this study. First, the population was deliberately composed of young people, considering the previous influence of age effect in transgender individuals exposed to GAHT [10]. Future studies on how to best promote sexual desire in older transgender individuals may be warranted. Second, there was a selection for binary gender identities. Our study was composed only of people with binary gender identities, not considering the non binary population. It will be interesting to conduct a similar investigation in this specific population, given the growing interest on how to best support non binary populations. The present dataset accrues a relatively high attrition rate. Future studies may be interested in better assessing potential selection biases between individuals who complete and do not complete follow-up procedures in similar study designs. It would also be interesting to investigate longer term follow-up in relation to sexual desire after GAHT, given that some of the effects may only be temporary and stabilize thereafter [25]. There is also a lack of GAHT's specifications such as formulation, dosage, concentrations and hormone regime due to the unavailability of information. Additionally, the present study did not correct results for statistical inflation due to multiple comparisons, given the dependence between observed p-values here computed. Nonetheless, the convergence of results reported when assessing GAHT effects - either as dichotomous or continuous in nature - was interpreted as further information in favor of the alternative hypotheses here tested.

Finally, in the future, it would be interesting to investigate other indirect factors here not evaluated, such as partner support, relationship status, potential experiences in relation to microaggressions, global functioning and the potential impact of mental pain to understand their possible contribution in shaping sexual desire in transgender indi viduals. Moreover, contextual demands, including life factors [26], or broader societal change, as the COVID19 pandemic has taught [27–29], may also contribute to complex interplays between psychological and physiological factors, such as sexual desire. Future studies may therefore better assess which environmental factors are most associated with sexual desire in this population after GAHT.

CONCLUSIONS

The present results suggest a significant difference of sexual desire in transgender people exposed to GAHT, based on their sex assigned at birth. In AMAB transgender individuals, dyadic sexual desire decreased after being exposed to GAHT. By contrast, AFAB transgender individuals showed increased sexual desire across all its dimensions (solitary, dyadic, total score) after GAHT exposure. GAHT effects on solitary sexual desire, often conceptualized as mostly "biologically" driven, were actually observed as mostly temporary in nature, and only related to GAHT exposure in AFAB individuals (masculinizing therapy). By contrast, sustained increases in dyadic sexual desire, and sustained decreases in dyadic sexual desire, were observed in AFAB and AMAB individuals respectively. Present results suggest there is a high need to better understand and study sexual desire in transgender individuals, possibly investigating both direct and indirect effects, through different dimensions such as psychological, relational and interpersonal dynamics.

Ethical consideration

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional committee (University Hospital of Florence), with the Declaration of Helsinki of 1964 and its later amendments. Ethical approval of the study was acquired from the local institutional committee (reference number: CEAVC_22346, latest amendments approved in November 2025). Written informed consent was obtained from all individual participants involved in the study.

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Conflict of interest statement

The authors declare no potential conflict of interest.

Authors' contributions

Elena Mattesini = Conceptualization, Methodology, Formal analysis, Investigation, Data Curation, Writing - Original Draft, Writing - Review & Editing.
Livio Tarchi = Conceptualization, Methodology, Validation, Investigation, Data Curation, Writing - Original Draft, Writing - Review & Editing, Visualization, Supervision.
Cristiano Dani = Investigation, Data Curation, Writing - Review & Editing.
Chiara Ranieri = Investigation, Data Curation, Writing - Review & Editing.
Emanuele Cassioli = Investigation, Data Curation, Writing - Review & Editing.
Valdo Ricca = Conceptualization, Investigation, Writing - Review & Editing, Supervision, Project administration.
Giovanni Castellini = Conceptualization, Investigation, Writing - Review & Editing, Supervision, Project administration.

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