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Socio-demographic variables, clinical features and the role of pre-assessment cross-sex hormones in older trans people

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Abstract

Introduction. As referrals to gender identity clinics have increased dramatically over the last few years, no studies focusing on older trans people seeking treatment are available.

Aims. The aim of this study was to investigate the socio-demographic and clinical characteristics of older trans people attending a national service and to investigate the influence of cross-sex hormones (CHT) on psychopathology.

Methods. Every individual over the age of 50 years old referred to a national gender identity clinic during a thirty months period were invited to complete a battery of questionnaires to measure psychopathology and clinical characteristics. Individuals on cross sex hormones prior to the assessment were compared with those not on treatment for different variables measuring psychopathology.

Main Outcome Measures. Socio-demographic and clinical variables and measures of depression and anxiety (Hospital Anxiety and Depression Scale), self-esteem (Rosenberg Self-Esteem Scale), victimisation (Experiences of Transphobia Scale), social support (Multidimensional Scale of Perceived Social Support), interpersonal functioning (Inventory of Interpersonal Problems), and non-suicidal self-injury (Self-Injury Questionnaire).

Results. The sex ratio of trans females aged 50 years and older compared to trans males was 23.7:1. Trans males were removed for the analysis due to their small number (n=3). Participants included 71 trans females over the age of 50, of whom the vast majority were white, employed or retired, divorced and had children. Trans females on CHT that came out as trans and transitioned at an earlier age, were significantly less anxious, reported higher levels of self-esteem and presented with

less socialization problems. When controlling for socialization problems, differences in levels of anxiety but not self-esteem, remained.

Conclusion. The use of cross-sex hormones prior to seeking treatment is widespread among older trans females and appears to be associated with psychological benefits. Existing barriers to access CHT for older trans people may need to be re-examined.

Key words. Gender Dysphoria; Transsexualism; ageing; midlife and beyond; mental health; hormone treatment; self-esteem; social support

Introduction

Trans people of all ages have been found to face a number of difficulties such as interpersonal challenges (such as disclosing their gender identity) [1]; discrimination and victimisation [2]; low self-esteem [3]; body dissatisfaction [4]; rejection from family and loved ones [5]; and self-harming behaviour [6,7]. Some of those difficulties may be more prevalent among older trans people as ageism, discrimination in employment, lack of affordable housing, and lack of social and family support often beset older trans people [8,9,10].

In contemporary Western societies, it is not unusual for trans people to present to a gender identity clinic service (GICs) at age fifty, or older. Trans older adults have been largely invisible in existing ageing and health research [11]. Generally subsumed under the broad umbrella of lesbian, gay, bisexual, and transgender (LGBT), there has been little information regarding how trans people differ from non-trans lesbian, gay, and bisexual people or how trans older adults differ from younger trans adults and cisgender (non-trans) older people [12]. The literature that does exist deals mainly with the lack of adequate and appropriate services for older gender non-conforming and trans people [13]. Barriers to health care are significant in this population due to shame, stigma, lack of educated caregivers and lack of insurance [14, 15, 16]. This may increase the difficulties accessing services forcing older trans people to self-medicate.

Studies investigating the use of cross-sex hormones treatment (CHT) prior to attending gender identity clinic services among trans people of all ages, found that they most commonly obtain hormones via the internet, which leaves these individuals without the knowledge to minimize health risks [17, 18, 19]. Trans people,

who self-prescribe cross-sex hormones tend to be predominantly trans women, and older when they present to gender identity clinic services; and generally have poor knowledge of the side effects and risks associated with cross-sex hormone treatment [17, 18, 19]. On the positive side, there is evidence that trans people of all ages who are taking cross-sex hormone treatment experience improved quality of life and less social distress, anxiety, and depression when compared to a population not on cross sex hormone treatment [20, 21, 22]. However, most of the studies exploring the benefits of CHT are rarely controlled for other factors known to be associated with an increased psychopathology, such as social support [8] and interpersonal difficulties [23].

Aims

This study had three main aims. The first was to describe the socio-demographic and clinical features of trans people over the age of 50 years referred to a national gender identity clinic service during a 30 months period. The second aim was to collect and analyze the use and the source of cross-sex hormone treatment prior to referral to a gender identity clinic service and to compare trans people who were using cross-sex hormone treatment prior to referral with those who did not. Based on the literature regarding cross-sex hormone treatment and trans people, it was hypothesized that the use of cross-sex hormone treatment will be more prevalent in trans females [17, 18, 19] and associated with less anxiety and depression, less self-harming behaviors and discrimination, and increased self-esteem, social support and interpersonal functioning [20, 21, 22]. As an association has been found between socialization problems and psychopathology in trans

people [8, 23] the third aim of the study was to investigate whether differences in psychopathology between groups still remain when controlling for socialization problems.

Methods

Participants and Procedures

The sample consisted of all individuals over the age of 50 years old who were referred for an assessment to a national gender identity clinic service in the United Kingdom during a 30-month period, between November 2012 and June 2015.

Prior to the clinical assessment every patient was invited to complete a battery of questionnaires to aid the assessment and diagnostic procedure. The assessment at the clinic consists of two appointments with independent senior clinicians with experience in the field of transgender health. A third appointment with the two clinicians, the trans person and a significant other is also organized to explore and to increase the social support of the individual. Following independent assessments and discussion within the multi-disciplinary team the person is considered for entry into the treatment programme. Treatment, including cross-sex hormones and gender-related surgeries is free at the point of access in the National Health Service (NHS) in the United Kingdom for all citizens. Patients will usually start cross-sex hormone treatment (CST), if there are no physical contraindications. Genital reconstructive surgeries are generally available to trans people after being in the treatment programme for a minimum of 12 months. We acknowledge that not all trans people wish to take cross-sex hormones or undergo gender-related surgeries; a growing number of trans people express a wish for partial treatment [24]. Once

trans people have undergone their desired treatment, follow-up care can be organised at the service, if they wish [16].

The study received ethical approval from the Research and Development Department from the Nottinghamshire Healthcare NHS Foundation Trust on behalf of the local ethics committee in line with Health Research Authority guidance [25].

Main Outcome Measures

The **Hospital Anxiety and Depression Scale** (HADS) [26] is a 14-item self-report screening scale that was originally developed to indicate the possible presence of anxiety and depression states in the setting of a medical non-psychiatric outpatient clinic. HADS consists of two subscales, HAD-Anxiety (HAD-A) and HAD-Depression (HAD-D), each with seven items, rated on a 4-point Likert scale (ranging from, as much as I always do [0]; not quite so much [1]; definitely not so much [2]; to not at all [3]), indicating either symptoms of anxiety or depression during the preceding week. A score of 0-7 on either scale is regarded as being in the normal range (no symptoms), a score of 8-10 is suggestive of the presence of a mood disorder (possible symptoms), and a score of 11 or higher indicates the probable presence of a mood disorder (symptoms) of the respective state. Maximum subscales scores are 21 for depression and anxiety, respectively. Items referring to symptoms that may have a physical cause are not included in the scale. The HADS was found to perform well in assessing the symptom severity and caseness of anxiety disorders and depression in both somatic, psychiatric and primary care patients and in the general population [27] and it has been previously used with trans individuals [20, 28].

The **Rosenberg Self-Esteem Scale** (RSE) [29] is a self-report measure of global self-esteem. Items are rated on a 4-point rating scale ranging from 0 ('Strongly disagree') to 3 ('Strongly agree'). Its total score is calculated by summing the item scores with higher scores indicating higher self-esteem. The RSE has been empirically validated and administered previously to trans individuals [30].

Self-cutting and its characteristics were assessed by means of the **Self-Injury Questionnaire** (SIQ) [31]. Participants were asked whether they had ever deliberately cut themselves (yes/no) and if they had, how long ago they last did this (in the last week, month, several months ago, more than a year ago, or never). If they injured themselves during the last week or month, they were also asked to indicate which body parts were injured; how many days/month and times/day the cutting occurred; and how often and how much pain they felt during the cutting. This questionnaire has also been used in the trans population [6].

The **Experiences of Transphobia Scale** [2] assesses experiences of discrimination or victimization on the basis of gender identity or gender presentation. The questionnaire was based on the Transgender Violence Study and measured people's lifetime experiences of violence and harassment and experiences of any form of economic discrimination as a result of being trans (e.g., verbal abuse, physical abuse, fired from a job, problems getting a job, and problems getting health or medical services due to gender identity or presentation). All five items are to be rated on a four-point Likert scale ranging from 0 ('never') to 3 ('several times').

The **Multidimensional Scale of Perceived Social Support** (MSPSS) [32] is a 12-item, self-report scale designed to tap social support from family, friends, and significant others. Items are rated on a 7-point Likert scale ranging from 1 ('very strongly agree') to 7 ('very strongly disagree'). The instrument includes three

subscales to address these three types of support (family, friends, significant others). The mean total and subscale scores range from 1 to 7, and a higher score indicates greater perceived social support. This scale has recently been used in trans populations [8].

The **Inventory of Interpersonal Problems (IIP-32)** [33] measures interpersonal difficulties. It consists of 32 items to be rated on a 5-point Likert scale ranging from 0 ('Not at all') to 4 ('Extremely'). There are eight subscales of interpersonal problems: *Hard to be Assertive*, *Hard to be Sociable*, *Hard to be Supportive*, *Hard to be Involved*, *Too Dependent*, *Too Caring*, *Too Aggressive*, and *Too Open*. A total mean score provides a global measure of interpersonal distress. Higher subscale scores indicate greater interpersonal difficulties. The IIP-32 is a shortened version of the original IIP, yet the psychometric properties are retained; a confirmatory factor analysis demonstrated high reliability with alpha coefficients of 0.70 to 0.88 [33]. The IIP-32 has been used successfully in both non-clinical [34] and clinical samples [23].

Data Analysis

All quantitative data analyses were performed by means of SPSS 22 [35]. The Kolmogorov-Smirnov Test was used to assess whether the variables were normally distributed. Given that only six variables were normally distributed (age of first referral, HADS-anxiety, Rosenberg Self-Esteem, MSPSS-Family, IIP-32 Nurturance and Total), non-parametric test were applied. For the first aim, descriptive statistics were applied. A quantitative analysis was performed for the second and third aim. The overall population will be divided into two groups: individuals on cross-sex hormone treatment prior to attending the gender identity clinic service and not on

cross-sex hormone treatment. Both groups will be compared using the Chi square test statistic (for nominal variables), the Mann-Whitney U test [for (non-)normal continuous variables, aim 2] and (M)AN(C)OVAs (for normal distributed continuous variables, aim 3). The level of significance used was $p < 0.05$.

Results

Sociodemographic and Clinical Characteristics

During the recruitment period of 30 months 689 individuals were referred to the clinic, of whom 77 (11.2%) were aged 50 years and older. Three people did not attend their appointment. Hence, the total sample consisted of 71 (96.2%) trans females and 3 (3.8%) trans males. Table 1 describes the socio-demographic and clinical characteristics of the total sample.

[Insert Table 1 here]

The sex ratio of older trans females compared with trans males was 23.7:1. The mean age at the time of the assessment of the participants was 58.9 years ($SD = 6.5$). In view of the small number of older trans males attending the clinical service, consequent analysis was only performed for the 71 trans females.

Out of the 71 trans females, 33 (46.5%) were not taking cross-sex hormone treatment prior to their first clinic appointment and 38 (53.5%) were. The mean age of the trans female group at the time of the assessment and first contact with gender services was 59.32 years ($SD = 6.67$). The mean age of coming out was 47.39 years ($SD = 13.80$) and the mean age of social gender role transition was 56.02 years ($SD = 9.65$). Two people had not come out as trans and 21 people had not transitioned

prior to their first appointment. Coming out concerns the process of becoming open about your experienced gender with yourself, other people close to you and/or publicly. Transition refers to a period of time when individuals change from the gender role associated with their sex assigned at birth to a different gender role. For many people, this involves learning how to live socially in another gender role; for others this means finding a gender role and expression that are most comfortable for them. Transition may or may not include feminization or masculinization of the body through cross-sex hormones or other medical procedures. The nature and duration of transition are variable and individualized [14]. Social gender role transition is the social portion of a transition, in which a trans person makes aware of their gender identity. Some parts of social transition can include telling people about one's gender identity, whether or not they are aware of assigned gender at birth and/or trans status; changing name used within social interactions; asking others to use different pronouns, titles and other gendered language; and changing gender expression.

Table 2 summaries the differences in rates of individuals taking up CHT prior to referral. Individuals who presented to the service on cross-sex hormone treatment were statistically significantly younger at the time of the assessment. This group also came out and transitioned significantly earlier than those trans females not on treatment (See Table 2).

[Insert Table 2 here]

The vast majority of the trans females in the present study were white, employed or retired; divorced, single or widowed, and had children, irrespective of the use of cross sex hormone treatment prior to their first appointment at the gender clinic service. Additionally, the majority of trans females report a medical history, with

just over half reporting previous mental health problems, with no significant differences between trans females who use and do not use cross-sex hormone treatment. The levels of self-harm or non-suicidal self-injury (NSSI) were small with 16.9% of the trans females reporting a life time NSSI. The main socio-demographic and clinical variables of the trans female sample with and without cross-sex hormones treatment are displayed in Table 3.

[Insert Table 3 here]

Of the 38 trans females on cross-sex hormone treatment (CST) 21 (55%) had obtained these via the Internet. The CST used was oestrogens, either in tablet form or as patches. Eleven out of 21 (52%) trans females also used at least one additional drug which blocked testosterone, including cyproterone acetate, spironolactone and finasteride. Thirteen people (34%) had obtained CST via a private physician; and 4 people (11%) received their hormone treatment from physicians working in the NHS (three via their primary care physician and one via a local endocrinologist).

Cross-sex hormone treatment versus no treatment

When analyzing the two groups of trans females, the study found significant differences between trans females with and without CST on the HADS scale scores, trans females on CST were significantly less anxious (HADS-A) compared to trans females not on CST. Interestingly, no significant difference in the level of HADS-D between the two groups were found. Additionally, trans females on CST report a significantly higher level of self-esteem compared to trans females not on CST.

The study found no significant overall differences between trans females with and without CST on the different MSPSS scale scores.

Regarding interpersonal problems, trans females on CST were found to present with significantly less problems with socialization and in general interpersonal functioning than trans females who do not use CST. Finally, with respect to transphobic experiences no significant differences were found between trans females with(out) cross-sex hormone use (See Table 4).

[Insert Table 4 here]

A multi-variant analysis (MANCOVA) was performed to determine whether there were any independent effects (See Table 5). As patients were found to differ with respect to IPP-32 socialisation having taken CST or not, we controlled for both variables while comparing patients with(out) CST on the HADS scales and the Rosenberg Self-Esteem scale. Overall, we did not find significant differences between trans females with and without CST on the HADS scale scores while controlling for socialization problems [Wilks' Lambda = 0.91, $F(2,61) = 2.97$, *ns*]. On the univariate level, the difference in the HADS-A between the two groups remained and trans females on CST were found to be significantly less anxious (HADS-A) compared to trans females not on CST. Additionally, anxiety/depression were significantly positive related to socialization problems ($p < 0.05$).

Trans females with and without CST did not differ on self-esteem while controlling for socialization problems. Additionally, higher self-esteem was negatively related to problems with socialization ($p < 0.01$).

[Insert Table 5 here]

Discussion

There has not been any systematic information investigating socio-demographic and clinical characteristics of older trans people. There is no systematic collection of such data in this group other than case reports [36, 37], case series [38, 39] and population samples obtained via the Internet [40] or postal questionnaires [12, 41]. Similarly, there has been no research investigating the role of cross-sex hormone treatment in older trans people. This is the first study to exclusively focus on trans people aged 50 years and beyond who seek treatment at a gender identity clinic service. This is an important area as older trans people remain invisible in research studies and often experience double discrimination; being trans as well as being older. Moreover, they are at a higher risk of developing adverse effects from cross-sex hormone treatment [42, 43], as they are more prone to co-morbidities as well as using CHT without medical advice and supervision.

The study found that overwhelming majority of older people presenting at gender identity clinic services over the age of 50 years old are trans females, with a sex ratio of 23.7:1 over trans males. To our knowledge, this has not been documented formally in the empirical literature and is distinctly different from the sex ratio of trans adolescents and trans adults, which points towards near parity for adolescents and adults [18, 19, 44, 45].

Whether trans people who transition later in life constitute a different group compared to their younger counterparts has been vociferously debated [46, 47]. Trans people who transition later in life may have different psychosocial characteristics, but the exact aetiology remains unclear. It remains to be seen how

clinically relevant further classification in this context is; ethically there is general agreement in medicine that in ethical matters like cases should be treated alike [48]. The mainstay physical treatment options remain the same and include cross-sex hormone treatment and gender-related surgeries [14, 16]. There is a higher risk associated with these treatments for older people, which should be discussed with patients on an informed consent model basis [42, 43, 48, 49]. Cross-sex hormone use was present in 54% of gender clinic referrals, of whom more than 50% sourced the hormones via the Internet. It is concerning that 28% of older trans people who presented at the clinical service had obtained hormone treatment via the Internet without medical advice. This is significantly higher than previously reported [17] and it may be a reflection of the significant barriers to treatment for older trans people. Ageism, discrimination in employment, and lack of social and family support plus lack of gender identity clinic services, long waiting lists, lack of funding [8, 9, 10] may be reasons as to why older trans people obtain treatment without medical assistance or support [9, 17]. Moreover, it could be argued that overly prescriptive pathways to access hormone treatment in Standards of Care [14, 16] further increase barriers to treatment.

The finding that trans females who presented to the clinical service on cross-sex hormone treatment were significantly younger than their counterparts, who were not on CST may be a reflection of the higher accessibility to the Internet associated with a younger age. Older people may be less skilled in using computer technology, which makes obtaining hormones via the Internet more difficult. An alternative explanation may be that older people are less willing to initiate hormone treatment, which is not prescribed and monitored by a physician. The study also showed that those on CHT came out and transitioned significantly earlier than those trans

females not on treatment. As we do not know how long people were taking cross-sex hormone treatment the direction of the association between starting hormone treatment, coming out as trans and time of transition remains unknown. Interestingly, independent of hormone treatment the time between coming out as trans and age of transition remains around a decade. This is a considerable amount of time and may well be related to family and work responsibilities, although future research may want to investigate the specific underlying reasons for this.

The life-time prevalence of non-suicidal self-injury (NSSI, i.e., cutting) was 16.9% in our sample of older trans females, which is much lower than the prevalence of NSSI in younger trans females (26.2%) [6], but significantly higher than the life-time prevalence of NSSI in an adult community sample (5.9%) [50]. As most injurers report that NSSI functions to alleviate negative emotions further research should focus on underlying aetiology and preventative measures.

Older trans females who use cross-sex hormones were found to be significantly less anxious and reported a significantly higher self-esteem compared to older trans females who do not use hormones. The association disappeared for self-esteem when controlled for problems with socialization. As older trans females who use cross-sex hormones experienced less problems with socialization than older trans females who did not use hormones, controlling for this variable known to predict psychopathology was important. This is one of the few studies that have controlled for predictive variables when studying the role of treatment in trans people. The study shows that when controlling interpersonal difficulties the levels of anxiety in trans females on CHT is consistent with other research of younger trans people who use cross-sex hormones and highlights the psychological and social benefits that may be associated with cross-sex hormone treatment for trans people

[20, 21, 22]. However, due to the cross sectional nature of this study cause and effect could not be concluded. It must also be acknowledged that these trans females as autonomous agents have sought access to hormone treatment without assistance or support from gender identity clinic services. Given the benefits patients may derive from cross-sex hormone treatment and bearing in mind the risks associated with CST which is not adequately monitored, particularly in older people, a re-evaluation of the function and purpose of gender identity clinic services is timely.

A limitation of the study is the cross-sectional nature of the data. Future research could investigate underlying motives as to why people obtain and use cross-sex hormone treatment without medical advice, what the associated risks are, if any, and why people transition later in life. From the current data, it is not possible to determine whether the psychological benefits associated with the use of hormone treatment predate or are a consequence of disclosure of experienced gender and/or social gender role transition. It may also be that those with a better self-esteem, less psychopathology and less problems with socialization feel more confident to commence treatment without medical advice. They may use the support and advice of their friends who may also be taking CST. Longitudinal data would provide the ideal avenue to explore this. The study is also limited by selecting a specific population of treatment seeking individuals and in a country where the waiting list for a first appointment at a gender identity clinic service is long. Hence, the results may not be generalizable to other older trans females who do not access clinical services or to other countries with a different healthcare system. The research makes use of self-reported questionnaires, and although most are adequately validated and have been used in trans populations, future research could use structured clinical interviews to differentiate the clinical group from those with and without anxiety. A

final note on the generalizability of these findings is that there are particularities with regards to medical treatment and legislation for trans person people in the UK. For example, some aspects of gender reassignment treatment (e.g., cross-sex hormone treatment and/or genital reconstructive surgeries) are available through the NHS free at the point of access, and the Gender Recognition Act 2004 provides legal recognition of a trans individual's experienced gender. In addition, the Sex Discrimination (Gender Reassignment) Regulations Act 1999, and its amendment in 2008, deemed it unlawful to discriminate on the basis of gender reassignment within employment and vocational training, as well as within the provision of goods, facilities, and services. Consequently, the experience of living as trans in the United Kingdom may be different from living as trans in other countries. A cross-cultural validation of the findings would be expedient because differences in legislation and health service provision are likely to affect the experience of being trans [23].

Conclusion

The majority of older people presenting at gender identity clinic services over the age of 50 years old are trans females. After coming out as trans older people take on average about a decade to fully transition, which may be related to employment or family responsibilities. More than a quarter of this older trans population had obtained hormone treatment via the Internet without medical advice. Older trans females who use cross-sex hormones were found to be significantly less anxious compared to older trans females who do not use hormones, even when controlled for interpersonal difficulties. Older female trans people clearly derive benefits from cross-sex hormone treatment. Clinicians need to provide education regarding cross-sex hormone treatment and advice regular monitoring to reduce risks associated with cross-sex hormone treatment.

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Table 1. Socio-demographic and clinical characteristics of the total sample of Trans females and Trans males, over 50 years (n= 74)

	Trans Females (n=71)		Trans Males (n=3)		Total (n=74)	
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)
Ethnic origin						
White	70	(98.6)	3	(100)	73	(98.6)
Other	1	(1.4)	0	(0)	1	(1.4)
Employment status						
Employed	24	(33.8)	1	(33.3)	25	(33.8)
Retired	14	(19.7)	0	(0)	14	(18.9)
Disabled	7	(9.9)	1	(33.3)	8	(10.8)
Unemployed	6	(8.5)	1	(33.3)	7	(9.5)
Volunteer	1	(1.4)	0	(0)	1	(1.4)
Housewife	1	(1.4)	0	(0)	1	(1.4)
Civil Status						
Single	11	(15.5)	1	(33.3)	12	(16.2)
Married	18	(25.4)	1	(33.3)	19	(25.7)
Civil Partner	1	(1.4)	1	(33.3)	2	(2.7)
Divorced	34	(47.9)	0	(0)	34	(45.9)
Widowed	5	(7)	0	(0)	5	(6.8)
In a relation	1	(1.4)	0	(0)	1	(1.4)
Children						
No	26	(36.6)	1	(33.3)	27	(36.5)
Yes	45	(63.4)	2	(66.7)	47	(63.5)
Medical history						
Medical, No	6	(8.5)	1	(33.3)	7	(9.5)
Medical, Yes	65	(91.5)	2	(66.7)	67	(90.5)
Psychiatric history						
Psychiatric, No	32	(45.1)	1	(33.3)	33	(44.6)
Psychiatric, Yes	39	(54.9)	2	(66.7)	41	(55.4)
Self-harm						
No	68	(95.8)	3	(100)	71	(95.9)
Yes	3	(4.2)	0	(0)	3	(4.1)

Table 2. Means (with standard deviations) of the age, age at assessment, referral, coming out and transition of trans females over 50 years with and without cross-sex hormones treatment (CHT)

	Not on CHT		On CHT		Total		<i>Mann-Whitney U</i>
	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>	
Age at assessment (n = 71)	60.82	(7.28)	58.03	(5.87)	59.32	(6.67)	492
Age of first referral (n=71)	60.45	(7.34)	56.79	(6.59)	58.49	(7.14)	455.5*
Age of coming out (n=69)	51.55	(14.04)	43.58	(12.61)	47.39	(13.80)	373.5**
Age of transition (n=49)	59.35	(10.65)	53.72	(8.32)	56.02	(9.65)	189.5*

* $p < 0.05$, ** $p < 0.01$

Table 3. Socio-demographic and clinical characteristics of trans females over 50 years, with and without cross-sex hormones treatment (CHT) (n=71)

	Not on CHT		On CHT		Total		χ^2
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	
Ethnic origin							
White	33	(100)	37	(97.4)	70	(98.6)	.88
Other	0	(0)	1	(2.6)	1	(1.4)	
Employment status							
Employed	8	(33.3)	16	(55.2)	24	(45.3)	9.37
Retired	9	(37.5)	5	(17.2)	14	(26.4)	
Disabled	5	(20.8)	2	(6.9)	7	(13.2)	
Unemployed	1	(4.2)	5	(17.2)	6	(11.3)	
Volunteer	0	(0.0)	1	(3.4)	1	(1.9)	
Housewife	1	(4.2)	0	(0)	1	(1.9)	
Civil Status							
Single	7	(21.9)	4	(10.5)	11	(15.7)	8.80
Married	12	(37.5)	6	(15.8)	18	(25.7)	
Civil Partner	0	(0)	1	(2.6)	1	(1.4)	
Divorced	11	(34.4)	23	(60.5)	34	(48.6)	
Widowed	2	(6.3)	3	(7.9)	5	(7.1)	
In a relation	0	(0)	1	(2.6)	1	(1.4)	
Children							
No	12	(36.4)	14	(36.8)	26	(36.6)	0.002
Yes	21	(63.6)	24	(63.2)	45	(63.4)	
Medical history							
Medical, No	2	(6.1)	4	(10.5)	6	(8.5)	.46
Medical, Yes	31	(93.9)	34	(89.5)	65	(91.5)	
Psychiatric history							
Psychiatric, No	15	(45.5)	17	(44.7)	32	(45.1)	0.004
Psychiatric, Yes	18	(54.5)	21	(55.3)	39	(54.9)	
Self-harm							
No	27	(81.8)	32	(84.2)	59	(83.1)	0.07
Yes	6	(18.2)	6	(15.8)	12	(16.9)	

Table 4. Means (with standard deviations) of the MSPSS, IPP-32, and Transphobia Scale for trans females over 50 years with and without cross-sex hormones treatment (CHT)

	Not on treatment		Taking cross-sex hormones		Total		<i>Mann- Withney U</i>
	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>	<i>M</i>	<i>(SD)</i>	
HADS (n=68)							
Anxiety	7.84	(3.90)	5.03	(3.44)	6.30	(3.89)	341**
Depression	6.68	(4.85)	4.62	(4.03)	5.56	(4.51)	432
RSE (n=69)							
Total	19.59	(6.34)	23.05	(5.32)	21.45	(6.03)	420.5*
MSPSS (n=68)							
Significant others	19.57	(8.89)	20.32	(7.69)	19.99	(8.19)	600
Family	15.53	(8.74)	16.24	(6.87)	15.93	(7.70)	553
Friends	16.10	(8.25)	19.87	(5.70)	18.21	(7.14)	464.5
Total	51.20	(21.69)	56.42	(14.09)	54.12	(17.89)	516
IIP-32: Problems							
Competition	1.03	(1.13)	0.81	(1.10)	0.92	(1.11)	516
Socialization	-0.91	(1.09)	-1.46	(1.16)	-1.20	(1.15)	375*
Nurturance	-0.42	(1.22)	-0.59	(0.88)	-0.51	(1.05)	532
Independence	0.55	(1.02)	0.42	(0.96)	0.48	(0.98)	586.5
Total	1.31	(0.58)	0.94	(0.59)	1.11	(0.61)	335.5**
Transphobia (n=70)							
Total	1.81	(2.08)	2.05	(1.79)	1.94	(1.91)	528

* $p < 0.05$, ** $p < 0.01$

HADS: Hospital Anxiety and Depression Scale; RSE: Rosenberg Self-Esteem Scale; IIP-32: Inventory of Interpersonal Problems; MSPSS: Multidimensional Scale of Perceived Social Support

Table 5. Means (with standard deviations) of the HADS and the Rosenberg Self-esteem Scale controlled for IPP-32 Socialization for trans females over the age of 50 years with and without cross-sex hormones treatment (CHT)

	Not on CHT		On CHT		Total		<i>F</i>
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	
HADS (n=68)							
Anxiety	7.80	(3.96)	5.14	(3.42)	6.35	(3.88)	5.82*
Depression	6.83	(4.86)	4.75	(4.02)	5.70	(4.51)	1.08
RSE (n=69)							
Total	19.10	(6.34)	22.86	(5.27)	21.18	(6.02)	3.33

* $p < 0.05$

HADS: Hospital Anxiety and Depression Scale; RSE: Rosenberg Self-Esteem Scale