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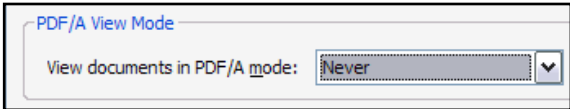
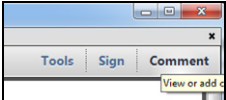
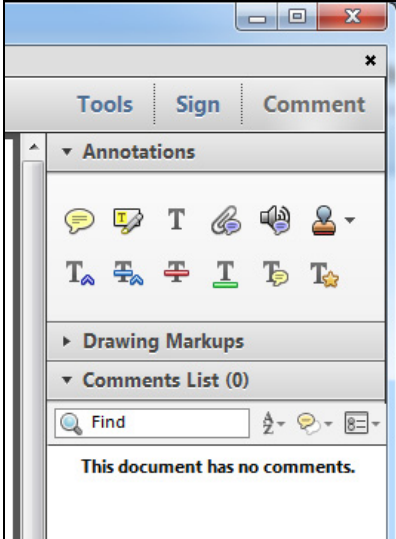
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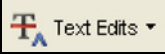


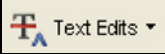

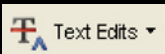





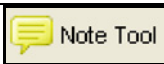

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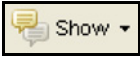
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## Sociodemographic Variables, Clinical Features, and the Role of Preassessment Cross-Sex Hormones in Older Trans People

Walter Pierre Bouman,<sup>1</sup> Laurence Claes,<sup>2,3</sup> Ellen Marshall,<sup>1,4</sup> Gill T. Pinner,<sup>5</sup> Julia Longworth,<sup>1</sup> Victoria Maddox,<sup>1</sup> Gemma Witcomb,<sup>1,4</sup> Susana Jimenez-Murcia,<sup>6,7</sup> Fernando Fernandez-Aranda,<sup>6,7</sup> and Jon Arcelus<sup>1,5</sup>

### 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 sociodemographic and clinical characteristics of older trans people attending a national service and to investigate the influence of cross-sex hormones (CHT) on psychopathology.

**Methods:** Individuals over the age of 50 years old referred to a national gender identity clinic during a 30-month 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:** Sociodemographic and clinical variables and measures of depression and anxiety (Hospital Anxiety and Depression Scale), self-esteem (Rosenberg Self-Esteem Scale), victimization (Experiences of Transphobia Scale), social support (Multidimensional Scale of Perceived Social Support), interpersonal functioning (Inventory of Interpersonal Problems), and nonsuicidal 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, and divorced and had children. Trans females on CHT who came out as trans and transitioned at an earlier age were significantly less anxious, reported higher levels of self-esteem, and presented with fewer 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.

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**Key Words:** Gender Dysphoria; Transsexualism; Aging; Midlife and Beyond; Mental Health; Hormone Treatment; Self-Esteem; Social Support

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### INTRODUCTION

Trans people of all ages have been found to face a number of difficulties, including interpersonal challenges (such as disclosing their gender identity<sup>1</sup>); discrimination and victimization<sup>2</sup>; low self-esteem<sup>3</sup>; body dissatisfaction<sup>4</sup>; rejection from family and loved ones<sup>5</sup>; and self-harming behavior.<sup>6,7</sup> 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.<sup>8–10</sup>

In contemporary Western societies, it is not unusual for trans people to present to a gender identity clinic service (GICs) at age 50 or older. Trans older adults have been largely invisible in existing aging and health research.<sup>11</sup> Generally subsumed under the broad umbrella of lesbian, gay, bisexual, and transgender

(LGBT), there has been little information regarding how trans people differ from nontrans lesbian, gay, and bisexual people or how trans older adults differ from younger trans adults and cisgender (nontrans) older people.<sup>12</sup> The literature that does exist deals mainly with the lack of adequate and appropriate services for older gender nonconforming and trans people.<sup>13</sup> Barriers to health care are significant in this population due to shame, stigma, lack of educated caregivers, and lack of insurance.<sup>14–16</sup> This may increase the difficulties accessing services, forcing older trans people to self-medicate.

Studies investigating the use of cross-sex hormone 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.<sup>17–19</sup> 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 CHT.<sup>17–19</sup> On the positive side, there is evidence that trans people of all ages who are taking CHT experience improved quality of life and less social distress, anxiety, and depression when compared to a population not on CHT.<sup>20–22</sup> 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<sup>8</sup> and interpersonal difficulties.<sup>23</sup>

## AIMS

This study had 3 main aims. The first was to describe the sociodemographic and clinical features of trans people over the age of 50 years referred to a national gender identity clinic service during a 30-month period. The second aim was to collect and analyze the use and the source of CHT prior to referral to a gender identity clinic service and to compare trans people who were using CHT prior to referral with those who did not. Based on the literature regarding CHT and trans people, it was hypothesized that the use of CHT will be more prevalent in trans females<sup>17–19</sup> and associated with less anxiety and depression, fewer self-harming behaviors and discrimination, and increased self-esteem, social support, and interpersonal functioning.<sup>20–22</sup> As an association has been found between socialization problems and psychopathology in trans people,<sup>8,23</sup> 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 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 2 appointments with independent senior clinicians with experience in the field of transgender health. A third appointment with the 2 clinicians, the trans person, and a significant other also is organized to explore and to increase the social support of the individual. Following independent assessments and discussion within the multidisciplinary team, the person is considered for entry into the treatment program. 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 usually will start CHT if there are no physical contraindications. Genital reconstructive surgeries are generally available to trans people after being in the treatment program 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.<sup>24</sup> Once trans people have undergone their desired treatment, follow-up care can be organized at the service if they wish.<sup>16</sup>

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.<sup>25</sup>

## MAIN OUTCOME MEASURES

*The Hospital Anxiety and Depression Scale (HADS)*<sup>26</sup> is a 14-item self-report screening scale originally developed to indicate the possible presence of anxiety and depression states in the setting of a medical nonpsychiatric outpatient clinic. HADS consists of 2 subscales, HAD-Anxiety (HAD-A) and HAD-Depression (HAD-D), each with seven items, rated on a 4-point Likert scale (ranging from [0], as much as I always do; [1] not quite so much; [2] definitely not so much; to [3] not at all), indicating either symptoms of anxiety or depression during the preceding week. A score of 0 to 7 on either scale is regarded as being in the normal range (no symptoms), a score of 8 to 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,<sup>27</sup> and it has been used previously with trans individuals.<sup>20,28</sup>

*The Rosenberg Self-Esteem Scale (RSE)*<sup>29</sup> 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.<sup>30</sup>

Self-cutting and its characteristics were assessed by means of the *Self-Injury Questionnaire* (SIQ).<sup>31</sup> 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.<sup>6</sup>

The *Experiences of Transphobia Scale*<sup>2</sup> 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 (eg, 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 5 items are to be rated on a 4-point Likert scale ranging from 0 ("never") to 3 ("several times").

The *Multidimensional Scale of Perceived Social Support* (MSPSS)<sup>32</sup> 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 3 subscales to address these 3 types of support (family, friends, significant others). The mean total and subscale scores range from 1 to 7, with a higher score indicating greater perceived social support. This scale has recently been used in trans populations.<sup>8</sup>

The *Inventory of Interpersonal Problems* (IIP-32)<sup>33</sup> 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 8 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.<sup>33</sup> The IIP-32 has been used successfully in both nonclinical<sup>34</sup> and clinical samples.<sup>23</sup>

## Data Analysis

All quantitative data analyses were performed by means of SPSS.<sup>35</sup> The Kolmogorov-Smirnov Test was used to assess whether the variables were normally distributed. Given that only 6 variables were normally distributed (age of first referral, HADS-anxiety, Rosenberg Self-Esteem, MSPSS-Family, IIP-32 Nurturance and Total), non-parametric tests 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 2 groups: individuals on CHT prior to attending the gender identity clinic service and not on CHT. Both groups will be compared using the  $\chi^2$  test statistic (for nominal variables), the Mann-Whitney *U* test (for [non-] normal continuous variables, aim 2) and MANCOVAs (for normal distributed continuous variables, aim 3). The level of significance used was  $P < .05$ .

## 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 sociodemographic and clinical characteristics of the total sample.

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 CHT 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 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.<sup>14</sup> Social gender role transition is the social portion of a transition, in which a trans person makes others 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



**Table 1.** Sociodemographic 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)	
	n	(%)	n	(%)	n	(%)
<b>Ethnic origin</b>						
White	70	(98.6)	3	(100)	73	(98.6)
Other	1	(1.4)	0	(0)	1	(1.4)
<b>Employment status</b>						
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)
<b>Civil status</b>						
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)
<b>Children</b>						
No	26	(36.6)	1	(33.3)	27	(36.5)
Yes	45	(63.4)	2	(66.7)	47	(63.5)
<b>Medical history</b>						
No	6	(8.5)	1	(33.3)	7	(9.5)
Yes	65	(91.5)	2	(66.7)	67	(90.5)
<b>Psychiatric history</b>						
No	32	(45.1)	1	(33.3)	33	(44.6)
Yes	39	(54.9)	2	(66.7)	41	(55.4)
<b>Self-harm</b>						
No	68	(95.8)	3	(100)	71	(95.9)
Yes	3	(4.2)	0	(0)	3	(4.1)

the service on CHT 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 (Table 2).

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 CHT 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 CHT. The levels of self-harm or nonsuicidal self-injury (NSSI) were small, with 16.9% of the trans females reporting a lifetime NSSI. The main sociodemographic and clinical variables of the trans female sample with and without cross-sex hormones treatment are displayed in Table 3.

Of the 38 trans females on CHT, 21 (55%) had obtained these via the Internet. The CHT used was estrogen, either in tablet form or as patches. Eleven out of 21 (52%) trans females also used at least 1 additional drug that blocked testosterone, including cyproterone acetate, spironolactone, and finasteride. Thirteen people (34%) had obtained CHT via a private physician; and 4 people (11%) received their hormone treatment from physicians working in the NHS (3 via their primary care physician and 1 via a local endocrinologist).

### Cross-sex Hormone Treatment vs No Treatment

When analyzing the 2 groups of trans females, the study found significant differences between trans females with and without CHT on the HADS scale scores. Trans females on CHT were significantly less anxious (HADS-A) compared to trans females not on CHT. Interestingly, no significant difference in the level of HADS-D between the 2 groups was found. Additionally, trans females on CHT report a significantly higher level of self-esteem compared to trans females not on CHT.

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

Regarding interpersonal problems, trans females on CHT were found to present with significantly less problems with socialization and in general interpersonal functioning than trans females who do not use CHT. Finally, with respect to transphobic experiences, no significant differences were found between trans females with and without cross-sex hormone use (Table 4).

A multivariate analysis (MANCOVA) was performed to determine whether there were any independent effects (Table 5).

**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 Hormone Treatment (CHT)

	Not on CHT		On CHT		Total		Mann-Whitney U
	M	(SD)	M	(SD)	M	(SD)	
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*

\* $P < .05$ .

† $P < .01$ .

**Table 3.** Sociodemographic and Clinical Characteristics of Trans Females Over 50 Years, With and Without Cross-Sex Hormone Treatment (CHT) (n = 71)

	Not on CHT		On CHT		Total		$\chi^2$
	n	(%)	n	(%)	n	(%)	
<b>Ethnic origin</b>							
White	33	(100)	37	(97.4)	70	(98.6)	0.88
Other	0	(0)	1	(2.6)	1	(1.4)	
<b>Employment status</b>							
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)	
<b>Civil status</b>							
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)	
<b>Children</b>							
No	12	(36.4)	14	(36.8)	26	(36.6)	0.002
Yes	21	(63.6)	24	(63.2)	45	(63.4)	
<b>Medical history</b>							
No	2	(6.1)	4	(10.5)	6	(8.5)	0.46
Yes	31	(93.9)	34	(89.5)	65	(91.5)	
<b>Psychiatric history</b>							
No	15	(45.5)	17	(44.7)	32	(45.1)	0.004
Yes	18	(54.5)	21	(55.3)	39	(54.9)	
<b>Self-harm</b>							
No	27	(81.8)	32	(84.2)	59	(83.1)	0.07
Yes	6	(18.2)	6	(15.8)	12	(16.9)	

As patients were found to differ with respect to IPP-32 socialization based on whether or not they had taken CHT, we controlled for both variables while comparing patients with and without CHT on the HADS scales and the Rosenberg Self-Esteem scale. Overall, we did not find significant differences between trans females with and without CHT 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 2 groups remained and trans females on CHT were found to be significantly less anxious (HADS-A) compared to trans females not on CHT. Additionally, anxiety/depression was significantly positive related to socialization problems ( $P < .05$ ).

Trans females with and without CHT did not differ on self-esteem while controlling for socialization problems. Additionally, higher self-esteem was negatively related to problems with socialization ( $P < .01$ ).

## DISCUSSION

There has not been any systematic information investigating sociodemographic and clinical characteristics of older trans people. There is no systematic collection of such data in this group other than case reports,<sup>36,37</sup> case series,<sup>38,39</sup> and population samples obtained via the Internet<sup>40</sup> or postal questionnaires.<sup>12,41</sup> Similarly, there has been no research investigating the role of CHT 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 CHT<sup>42,43</sup> as they are more prone to comorbidities as well as using CHT without medical advice and supervision.

The study found that the 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 ratios of trans adolescents and trans adults, which point toward near parity.<sup>18,19,44,45</sup>

Whether trans people who transition later in life constitute a different group compared to their younger counterparts has been vociferously debated.<sup>46,47</sup> Trans people who transition later in life may have different psychosocial characteristics, but the exact etiology remains unclear. It remains to be seen how clinically relevant further classification in this context is; ethically there is general agreement in medicine that like cases should be treated alike.<sup>48</sup> The mainstay physical treatment options remain the same and include CHT and gender-related surgeries.<sup>14,16</sup> There is a higher risk associated with these treatments for older people, which should be discussed with patients on an informed consent model basis.<sup>42,43,48,49</sup> 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<sup>17</sup> 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, and lack of funding<sup>8-10</sup> may why older trans people obtain treatment without medical assistance or support.<sup>9,17</sup> Moreover, it could be argued that overly prescriptive pathways to access hormone treatment in Standards of Care<sup>14,16</sup> further increase barriers to treatment.

The finding that trans females who presented to the clinical service on CHT were significantly younger than their counterparts, who were not on CHT may be a reflection of the higher accessibility to the Internet associated with a younger age. Older

**Table 4.** Means (with standard deviations) of the MSPSS, IPP-32, and Experiences of Transphobia Scale for Trans Females Over 50 Years With and Without Cross-Sex Hormone Treatment (CHT)

	Not on treatment		Taking cross-sex hormones		Total		Mann-Whitney <i>U</i>
	M	(SD)	M	(SD)	M	(SD)	
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

HADS = Hospital Anxiety and Depression Scale; RSE = Rosenberg Self-Esteem Scale; IIP-32 = Inventory of Interpersonal Problems; MSPSS = Multi-dimensional Scale of Perceived Social Support.

\* $P < .05$ .

† $P < .01$ .

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 that 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 CHT 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 nonsuicidal self-injury (NSSI; ie, 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%),<sup>6</sup> but significantly higher than the lifetime prevalence of NSSI in an adult community sample (5.9%).<sup>50</sup> As most injurers report that NSSI functions to alleviate negative emotions, further research should focus on underlying etiology and preventative measures.

Older trans females who use cross-sex hormones were found to be significantly less anxious and reported 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 fewer 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 CHT for trans people.<sup>20-22</sup> However, due to the cross-sectional nature of this study, cause and effect could not be concluded. It also must 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 CHT and bearing in mind the risks associated with CHT that 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

**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 Hormone Treatment (CHT)

	Not on CHT		On CHT		Total		F
	M	(SD)	M	(SD)	M	(SD)	
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

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

\* $P < .05$ .

why people obtain and use CHT 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 also may be that those with better self-esteem, less psychopathology and fewer problems with socialization feel more confident to commence treatment without medical advice. They may use the support and advice of their friends who also may be taking CHT. 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 doing so in a country in which 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 different healthcare systems. 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. CHT 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.<sup>23</sup>

## 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 CHT. Clinicians need to provide education regarding CHT and advice regular monitoring to reduce risks associated with CHT.

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## REFERENCES

1. Bockting WO, Coleman E. Developmental stages of the transgender coming-out process. In: Ettner R, Monstrey S,

- Eyler A, eds. Principles of transgender medicine and surgery. New York, NY: Haworth; 2007. p. 185-208.
2. Lombardi EL, Wilchins RA, Priesing D, et al. Gender Violence. *J Homosex* 2001; 42:89-101.
  3. Erich S, Tittsworth J, Kerstein AS. An examination and comparison of transsexuals of color and their white counterparts regarding personal well-being and support networks. *J GLBT Family Studies* 2010; 6:25-39.
  4. Witcomb GL, Bouman WP, Brewin B, et al. Body image and eating disorders psychopathology in trans individuals: A matched control study of trans individuals, eating disorders clinical cases and a control group. *Eur Eat Disord Rev* 2015; 23:287-293.
  5. Koken J, Bimbi DS, Parsons JT. Experiences of familial acceptance-rejection among trans women of color. *J Family Psychol* 2009; 23:853-860. <http://dx.doi.org/10.1037/a0017198>.
  6. Claes L, Bouman WP, Witcomb G, et al. Non-suicidal self injury in transsexualism: associations with psychological symptoms, victimization, interpersonal functioning and perceived social support. *J Sex Med* 2015; 12:168-179.
  7. Marshall E, Claes L, Bouman WP, et al. Non-suicidal self-injury and suicidality in trans people: a systematic review of the literature. *Internat Rev Psychiatry* (in press).
  8. Davey A, Bouman WP, Arcelus J, et al. Social support and psychological wellbeing: A comparison of patients with gender dysphoria and matched controls. *J Sex Med* 2014; 11:2976-2985.
  9. McNeil J, Bailey L, Ellis S, et al. Trans mental health and emotional wellbeing study. Edinburgh: Scottish Transgender Alliance; 2012.
  10. Orel NA. Investigating the needs and concerns of lesbian, gay, bisexual, and transgender older adults: the use of qualitative and quantitative methodology. *J Homosex* 2014; 61:53-78. <http://dx.doi.org/10.1080/00918369.2013.835236>.
  11. Bouman WP. Sexuality in later life. Chapter 54. In: Dening T, Thomas A, eds. The Oxford Textbook of Old Age Psychiatry. Second Revised Edition. Oxford: Oxford University Press; 2013:703-723.
  12. Fredriksen-Goldsen KI, Cook-Daniels L, Kim H, et al. Physical and mental health of transgender older adults: an at-risk and underserved population. *The Gerontologist* 2013; 54:488-500.
  13. Witten TM, Eyler AE. Lesbian, gay, bisexual, and transgender aging: Challenges in research, practice, and policy. Baltimore, MD: Johns Hopkins University Press; 2012.
  14. Coleman E, Bockting W, Botzer M, et al. Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7. *Int J Transgenderism* 2012; 13:165-232.
  15. Shires DA, Jaffee K. Factors associated with health care discrimination experiences among a national sample of female-to-male transgender individuals. *Health Soc Work* 2015; 40:134-141.
  16. Wylie KR, Barrett J, Besser M, et al. Good practice guidelines for the assessment and treatment of adults with gender dysphoria. *Sex Relatsh Ther* 2014; 29:154-214.
  17. Mepham NJ, Bouman WP, Arcelus J, et al. People with gender dysphoria who self prescribe cross sex hormones: prevalence, sources and side effects knowledge. *J Sex Med* 2014; 11:2995-3001.
  18. Kreukels BP, Haraldsen IR, DeCuypere G, et al. A European network for the investigation of gender incongruence: The ENIGI initiative. *Eur Psychiatry* 2012; 27:445-450.
  19. Simonsen R, Hald GM, Giraldi A, et al. Sociodemographic study of Danish individuals diagnosed with transsexualism. *Sex Med* 2015; 3:109-117.
  20. Gomez-Gil E, Zubiaurre-Elorza L, Esteva I, et al. Hormone-treated transsexuals report less social distress, anxiety, and depression. *Psychoneuroendocrinology* 2012; 37:662-670.
  21. Gorin-Lazard A, Baumstarck K, Boyer L, et al. Is hormonal therapy associated with better quality of life in transsexuals? A cross-sectional study. *J Sex Med* 2012; 9:531-541.
  22. Keo-Meier C, Herman L, Reisner SL, et al. Testosterone treatment and MMPI-2 improvement in transgender men: A prospective controlled study. *J Consult Clin Psychol* 2015; 83:143-156.
  23. Davey A, Bouman WP, Arcelus J, et al. Interpersonal functioning among individuals with gender dysphoria. *J Clin Psychol* 2015; 71:1173-1185.
  24. Beek T, Kreukels BPC, Cohen-Kettenis PT. Partial gender request and underlying motives of applicants for gender affirming interventions. *J Sex Med* 2015; 12:2201-2205.
  25. Health Research Authority (HRA). Guidance for NHS Research Studies. London: Health Research Authority; 2013.
  26. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand* 1983; 67:361-370.
  27. Bjelland I, Dahl AA, Neckelmann TT. The validity of the Hospital Anxiety and Depression Scale. An updated literature review. *J Psychosom Res* 2002; 52:69-77.
  28. Hepp U, Kraemer B, Schnyder U, et al. Psychiatric comorbidity in gender identity disorder. *J Psychosom Res* 2005; 58:259-261.
  29. Rosenberg M. Society and the adolescent self-image. Princeton, NJ: Princeton University Press; 1965.
  30. Vocks S, Stahn C, Loenser K, et al. Eating and body image disturbances in male-to-female and female-to-male transsexuals. *Arch Sex Behav* 2009; 38:364-377.
  31. Claes L, Vandereycken W. The Self-Injury Questionnaire-Treatment Related (SIQ-TR): Construction, reliability, and validity in a sample of female eating disorder patients. In: Goldfarb PM, ed. Psychological Tests and Testing Research Trends. New York: Nova Science Publishers; 2007. p. 111-139.
  32. Zimet GD, Powels SS, Farley GK, et al. Psychometric characteristics of the multidimensional scale of perceived social support. *J Pers Assess* 1990; 55:610-617.
  33. Barkham M, Hardy GE, Startup M. The IIP-32: a short version of the Inventory of Interpersonal Problems. *Br J Clin Psychol* 1996; 35:21-35.
  34. Berry K, Wearden A, Barrowclough C, et al. Attachment styles, interpersonal relationships and psychotic phenomena in a non-clinical student sample. *Pers Individ Differences* 2006; 41:707-718.

35. IBM Corporation. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corporation; 2013.
36. Docter RF. Transsexual surgery at 74: a case report. *Arch Sex Behav* 1985; 14:271-277.
37. Seifert D, Windgassen K. Transsexual development of a patient with Klinefelter's syndrome. *Psychopathology* 1995; 28:312-316.
38. Lothstein L. The aging gender dysphoria (transsexual) patient. *Arch Sex Behav* 1979; 8:431-444.
39. Ettner R, Wylie K. Psychological and social adjustment in older transsexual people. *Maturitas* 2015; 74:226-229.
40. Witten TM. Elder transgender lesbians: exploring the intersection of age, lesbian sexual identity, and transgender identity. *J Lesbian Studies* 2015; 19:73-89. <http://dx.doi.org/10.1080/10894160.2015.959876>.
41. Fredriksen-Goldsen KI, Kim H, Shiu C, et al. Successful aging among LGBT older adults: physical and mental health-related quality of life by age group. *The Gerontologist* 2015; 55:154-168.
42. Asscheman H, Giltay EJ, Megens J, et al. A long term follow-up study of mortality in transsexuals receiving treatment with cross-sex hormones. *Eur J Endocrinology* 2011; 164:635-642. <http://dx.doi.org/10.1530/EJE-10-1038>.
43. Wierckx K, Mueller S, Weyers S, et al. Long-term evaluation of cross-sex hormone treatment in transsexual persons. *J Sex Med* 2012; 9:2641-2651.
44. Aitken M, Steensma TD, Blanchard R, et al. Evidence for an altered sex ratio in clinic-referred adolescents with gender dysphoria. *J Sex Med* 2015; 12:756-763. <http://dx.doi.org/10.1111/jsm.12817>.
45. Dhejne C, Öberg K, Arver S, et al. An analysis of all applications for sex reassignment surgery in Sweden, 1960-2010: prevalence, incidence, and regrets. *Arch Sex Behav* 2014; 43:1535-1545.
46. Lev AI. *Transgender emergence: Therapeutic guidelines for working with gender-variant people and their families*. New York: Routledge; 2004.
47. Namaste V. *Invisible lives: the erasure of transsexual and transgendered people*. London: University of Chicago Press; 2000.
48. Bouman WP, Richards C, Addinall RM, et al. Yes and yes again: are standards of care which require two referrals for genital reconstructive surgery ethical? *Sex Relatsh Ther* 2014; 29:377-389. <http://dx.doi.org/10.1080/14681994.2014.954993>.
49. Buncamper ME, Honselaar JS, Bouman MB, et al. Aesthetic and functional outcomes of neovaginoplasty using penile skin in male-to-female transsexuals. *J Sex Med* 2015; 12:1626-1634. <http://dx.doi.org/10.1111/jsm.12914>.
50. Klonsky ED. Non-suicidal self-injury in United States adults: prevalence, sociodemographics, topography and functions. *Psychol Med* 2011; 41:1981-1986.