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ETIOLOGICAL ASPECTS, THERAPY REGIMES, SIDE EFFECTS AND TREATMENT SATISFACTION OF TRANSSEXUAL PATIENTS

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To my brothers,

Toni and Guille Bazarra-Castro

Contents

1. LIST OF ABBREVIATIONS

- BMI: body mass index
- BSTc: bed nucleus of the stria terminalis
- CAH: congenital adrenal hyperplasia
- DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, edition IV
- FMT: female-to-male transsexuals
- GID: Gender Identity Disorders
- HRT: hormone replacement therapy
- HT: hormone therapy
- ICD-10: International Statistical Classification of Diseases and Related Health Problems 10th Revision
- LH: luteinizing hormone
- MFT: male-to-female transsexuals

2. INTRODUCTION

2.1 Definition of transsexualism

The first definition of the term transsexualism was established in 1953 by Benjamin, an endocrinologist and sexologist who published one of the first scientific articles on the topic [1]. He defined transsexualism as the condition where biological normality coexists with the belief of belonging to the opposite sex. Transsexual people are characterized by a desire for sex reassignment. For all these reasons, their disorder appears to be the most extreme case on the spectrum of gender identity abnormalities [2].

The International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) states that transsexualism is defined by "the desire to live and be accepted as a member of the opposite sex, usually accompanied by the wish to make his or her body as congruent as possible with the preferred sex through surgery and hormone treatment" [3]. The Diagnostic and Statistical Manual of Mental Disorders, ed. IV (DSM-IV) accepts the expression of desire to be of the opposite sex, or assertion that one is of the sex opposite to the sex one was assigned at birth, as sufficient for being transsexual [4]. This manual uses the term “Gender Identity Disorders” (GID) to refer to transsexualism.

The photographer Georges Jorgensen was the first transsexual who underwent surgery for sex change. The operation was performed by a Danish team and included hormone administration and postoperative follow-up [5]. After this case the number of requests for sex reassignment increased significantly amongst transsexuals.

2.2 Epidemiology

The prevalence of transsexualism varies depending on the country and year. Not all transsexuals contact specialized services, as some are treated illegally or by independent doctors. Therefore the prevalence rates reported are most likely to be imprecise [2, 6] .

DSM-IV analysed the results from different reports and found an average prevalence of 1:30 000 men and 1:100 000 women [4]. Table 1 shows the results of the different prevalence studies.

Study	Country	MFT	FMT	Total
Walinder 1968	Sweden	1:37 000	1:103 000	1:54 000
Pauly 1968	USA	1:100 000	1:400 000	
Hoenig & Kenna 1974	England	1:34 000	1:108 000	1:53 000
Ross et al. 1981	Australia	1:24 000	1:150 000	1:42 000
O'Gorman 1982	Ireland	1:35 000	1:100 000	1:52 000
Eklund et al. 1988	The Netherlands	1:18 000	1:54 000	
Tsoi 1988	Singapore	1:2900	1:8300	
Bakker et al. 1993	The Netherlands	1:11 900	1:30 400	
Weitze & Osburg 1996	Germany	1:42 000	1:104 000	1:48 000

Table 1: Prevalence of transsexualism in different countries, in chronological order of reports. MFT: male-to-female transsexuals, FMT: female-to-male transsexuals [2].

2.3 Etiology

The etiology of transsexualism remains uncertain, but different hypotheses exist. Some studies have tried to explain the origin of these disorders from a biological point of view while others have hypothesized a psycho-social cause of the problem.

At the beginning of this century, it became clear that the process of sexual differentiation is not completed with the formation of the external genitalia, but that the brain also undergoes a differentiation into male or female [7]. The brain differentiates into a male brain during the critical period of sexual differentiation with

sufficient amounts of testosterone, and it becomes female in the absence of testosterone. Animal studies have revealed that certain brain nuclei are influenced by the presence of testosterone [8].

Biological research on transsexualism addresses three areas. The first area of research refers to abnormalities in perinatal endocrinological history. A few cases have been studied of girls that were biological females but with congenital adrenal hyperplasia (CAH), a disease that causes prenatal exposure to relatively high levels of androgens. These females were raised as girls, but developed a male gender identity [9]. It is not common for CAH girls who were assigned and raised as girls to become transsexuals [10, 11], however, in some studies some atypical gender behaviour was found. On the other hand, transsexualism was not found in men or women exposed to progestagens (which may have antiandrogenic or androgenic properties) in their prenatal phase, nor was it found after exposure to estrogenic drugs, such as diethylstilbestrol [10, 12].

The second area of research is based on the assumption that the luteinizing hormone (LH) can be used as an indicator of sexual differentiation of the brain. There have been studies showing that in male-to-female transsexuals (MFT), just like in females, the LH level rises after estrogen stimulation, as a result of prenatal exposure to imbalanced steroid levels. The opposite was expected to happen in female-to-male transsexuals (FMT) [13, 14]. Nevertheless other studies were not able to replicate these results [15, 16]

Studies on sexual dimorphic brain nuclei in transsexuals constitute the third line of research on biological causes of transsexualism. Hypothalamic nuclei such as a sexually dimorphic nucleus of the pre-optic area of the hypothalamus (SDN-POA), two cell groups in the anterior hypothalamus (INAH-2 and INAH-3), the dark staining posteromedial component of the bed nucleus of the stria terminalis (BNST-dspm), the suprachiasmatic nucleus (SCN), and the central subdivision of bed nucleus of the stria terminalis (BSTc) have all been reported to be different in males and females. It is possible that the differences between male and females in these nuclei may explain sex characteristics in gender identity, sexual orientation and other reproductive aspects [14]. It was found that the BSTc is equal in size in MFT and in females and a female brain structure was shown in biological male transsexuals [7].

Apart from the constitutional and endocrinological factors that have been studied and related to transsexualism, it is also possible that other psychological and social aspects contribute to the condition [2]. Different psychological theories exist, such as the non-conflictual hypothesis and the conflictual hypothesis [17, 18]. In the former, transsexualism appears to be the result of a non-conflictual process, where gender identity is fixed from early infancy. The conflictual hypothesis considers transsexualism as a conflictual process, where gender identity rather continues to be ambiguous throughout the patient´s life.

2.4 Diagnosis and differential diagnosis

DSM-IV stipulates five criteria that must be met before a diagnosis of GID can be given [4]: A. There must be evidence of a strong and persistent cross-gender identification. B. This cross-gender identification must not merely be a desire for any perceived cultural advantages of being the other sex. C. There must also be evidence of persistent discomfort about one's assigned sex or a sense of inappropriateness in the gender role of that sex. D. The individual must not have a concurrent physical inter-sexual condition (e.g., androgen insensitivity syndrome or congenital adrenal hyperplasia). E. There must be evidence of clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Disturbances such as chromosomal alterations (Klinefelter syndrome, Turner syndrome, hermaphroditism vero, etc), gonadal alterations (pure gonadal dysgenesia and “absent testicle syndrome”) and endocrine alterations (feminine pseudohermaphroditism by congenital adrenal hyperplasia and alterations of the development of the müllerian structures; masculine pseudohermaphroditism by anomalies in androgens synthesis, androgen action anomalies and persistent müllerian conducts syndrome) have to be excluded [4].

Apart from these diseases, mental disorders such as “cross dressing and transvestism”, psychosis, and gender identity disturbance in the frame of teenager crisis have to be excluded accordingly [19].

2.5 Therapy

The treatment for transsexual people encompasses five steps. In the first phase the diagnosis has to be confirmed by performing genetic, endocrinological and internal medicine tests and excluding a *hermaphroditismus vero* or pseudohermaphroditism. In parallel the patient undergoes psychotherapy to prepare for the subsequent sex changes. In the next phase, called “Daily-life-test”, the patients test the opposite gender role and consolidate their experience of it. Cross-sex hormone therapy (HT) is initiated before the last step, cross-sex surgery, takes place and this is followed by a regular endocrine control.

2.5.1 Psychotherapy

Gender identity disorders create a stress that often leads to anxiety and depression. Hence, psychotherapy plays an important role by supporting the patients and giving them the opportunity to express their anxieties and fears [19].

The type of psychotherapy or gender of the therapist is not crucial, as long as the contact is of good quality.

Finally, to emphasize the role of the psychotherapy, it is interesting to point out that a review of the literature has identified psychotherapeutic help as one of seven factors that lead to a favourable overcome in the treatment of transsexuals [20].

2.5.2 Hormone therapy

Cross-sex HT is an important part of the medical treatment for transsexual patients. It provides a relief for these patients because it helps them to obtain some of the corporal characteristics of their desired gender and prepares the body for the final changes that will be achieved by the surgical interventions.

There are few studies on hormonal treatment outcomes in transsexuals and therefore management remains for the moment complex and guided by practical experience. It is also a fact that cross-sex HT has health risks, nevertheless these

risks have to be balanced with the psychopathological gender identity request of these patients.

2.5.2.1 Endocrine treatment regimes

(a) Masculinizing endocrine treatment regimens of FMT

Testosterone is the hormone that will give FMT the secondary sexual characteristics of the masculine gender.

Usually injectable testosterone is used alone, both before and after oophorectomy. Oral testosterone undecanoate, available outside of the United States, has been associated with more consistent but lower serum testosterone levels, but it may not suppress menstruation without the addition of a progestin. GH-releasing hormone agonists have been used in adolescent transsexual people to delay puberty, in order to postpone cross-sex HT until adulthood with less psychological stress to the individual. Transdermal applications reach physiological testosterone better than the other methods of treatment.

The dose of testosterone to be given varies from one patient to another, but blood levels should be close to the normal male value of 500 µg/dl.

For FMT different regimens of HT are practised in different institutions. In the Endocrine Outpatient Clinic of the Max Planck Institute (Munich, Germany), the practice is to administer testosterone esters, 250 mg intramuscular every 2 weeks, then reduce the dosage in 9–12 months after desired effects to every 2–4 weeks. Optionally progesterone is used, 500 mg intramuscular, two doses 3–4 days apart between testosterone doses [21, 22].

(b) Feminizing endocrine treatment regimens of MFT

The treatment regimens for MFT include various forms of estrogens, progestins, and/or anti-androgens depending on the experience of the treating clinic [23].

Estrogen (such as 17β-Estradiol) is the basis for the treatment of MFT. The recommended dose is two to three times as high as for hormone replacement therapy (HRT) in postmenopausal women. Oral application is used by most clinics but transdermal and intramuscular formulations also exist. Transdermal estrogens are given in some clinics in patients older than 40 years of age, because of the association with thromboembolic events [24, 25]. Higher doses of estrogens or intramuscular formulations are used in some circumstances for short periods of time. In these cases, indications include an inability to lower serum testosterone to 50 µg/dl. Estrogen doses are lowered in patients with cardiac or other comorbidities or when adverse effects appear. High doses are avoided to minimize adverse effects. After gonadectomy, all clinics maintain estrogen therapy in order to preserve female features and bone mineral density.

The concurrent administration of antiandrogens and progestins may enhance the effects of estrogens.

In principle, antiandrogens lower serum levels of testosterone or block its binding to the androgen receptor, thereby decreasing masculine secondary sexual characteristics. Several studies reported lowering of testosterone with cyproterone acetate 100 µg/d [26]. A synergistic effect with estrogen on the physical and emotional changes was also reported with spironolactone [27]. This is helpful in patients with comorbidities in whom high levels of estrogens should be avoided. GH-releasing hormone agonists have also been considered by some to increase estrogen effects when risk factors limit the dose of estrogen [28].

The use of progesterone in addition to estrogens in the treatment of MFT is advocated by some because it was observed to enhance breast growth and decrease irritability and breast sensitivity. However, the clinical effect of progestins was not evident in small observational studies [29]. Nevertheless, treatment with progestins has to be done carefully, as reported by the Women's Health Initiative study [30]. Combined estrogen and progestin therapy increase the risk of coronary heart disease, strokes, pulmonary embolism, and invasive breast cancers in postmenopausal women on HRT. The use of a progestin for long periods should be avoided to prevent similar adverse effects in transsexual people.

Different hormonal regimens are practised in the treatment of pre-surgical transsexual people, depending on the clinic. In the Endocrine Outpatient Clinic of the Max Planck Institute (Munich, Germany) the regimen consists of 17ß-estradiol 2–8 mg/d and cyproterone acetate 100 mg/d for 6–12 months until testosterone is lowered [21, 22].

2.5.2.2 Effects of the hormonal therapy

(a) Effects of masculinizing treatments in FMT

The negative effects and risks of the administration of androgens in transsexual people have not been well assessed due to the relatively small number of patients. Retrospective data in some studies report no change in mortality, but the population may not be large enough to detect differences [24].

Polycythemia is a complication of treatment with testosterone already known from biological males. The combination of increased weight, decreased insulin sensitivity, poor lipid profile and an increase in hematocrit has been described in FMT, and this predisposes theoretically to cardiac and thromboembolytic events. In fact, case reports of cerebral vascular accidents have been reported for individuals with supra-physiological levels of testosterone [31].

Polycystic ovaries are reported in many FMT before being treated with androgens [31, 32], and this disease is a risk factor for endometrial cancer. Also endometrial hyperplasia has been observed after hysterectomies in patients treated with exogenously administered testosterone [33]. A case report of two transsexual people with ovarian cancer raised the question of an association with the hormonal treatment [34]. In order to avoid these negative effects, some clinicians advocate a hysterectomy after two years of therapy, followed by an important reduction in testosterone [2].

The reported positive and negative effects of hormonal treatment in FMT are summarized in Table 2.

Positive effects of masculinizing treatments in FMT	Negative effects of masculinizing treatments in FMT
- Deepened voice - Cessation of menses - Hirsutism - Clitoral growth - Laryngeal prominence - Increased libido - Breast atrophy (histological) - Redistribution of fat - Testosterone to male levels - Increased muscle mass	- Acne - Weight increase > 10% - Elevated liver enzymes - Increased hematocrit - Endometrial hyperplasia - Sleep apnea - Aggression, hypersexuality - Poor lipid profile - Decreased insulin sensitivity - Increased insulin-like growth factor (IGF) - Decreased bone density - Ovarian cancer

Table 2: Effects and side effects of hormonal treatment regimes in FMT with intramuscular, oral or transdermal testosterone [23].

(b) Effects of feminizing treatments in MFT

The side effects of sex hormonal therapy cannot be underestimated. The most frequent side effect is a greatly increased risk (by 20 times) of venous thrombosis [24]. Another frequent phenomenon is an increase in prolactin levels [24, 35]. This increase in prolactin is associated with accelerated growth of prolactinomas in these patients [2, 36]. Measurement of prolactin levels as well as the status of the visual fields is recommended to detect this risk. Depression is also more frequent in comparison with the general population [25].

A correlation exists between the dose of estrogens given to women for contraception and the risks of suffering from side effects like venous thromboembolytic disease, pulmonary embolism, myocardial infarction, stroke and adverse liver effects [37, 38, 39, 40]. It is possible that similar risks apply to transsexual people. Nevertheless no studies have yet clarified this issue well. Additionally, a higher risk of side effects in MFT under hormonal treatment can be assumed if they smoke, are over 35 years of age, or have other risk factors for

cardiovascular disease, just as has been observed in women who take oral contraceptives [41]. Therefore it is important to try to minimize the dose of estrogens, not only in older patients and those with comorbidities, but also in healthy and younger people. Smoking cessation, weight reduction, exercise, and appropriate diet are also recommended.

Reported positive and negative effects of the hormonal treatment in MFT are summarized in Table 3.

Positive effects of feminizing treatments in MFT	Negative effects of feminizing treatments in MFT
- Gynecomastia - Enlarged areolae and nipples - Softened skin - Reduced testicular volume - Decreased spontaneous erections - Decreased libido - Redistribution of fat - Calming effect - Testosterone to female levels - Decreased hair growth	- Venous thrombosis - Cholelitiasis - Hyperprolactinemia - Elevated liver enzymes - Depression - Decrease in hemoglobin - Prolactinoma - Breast cancer - Prostatic carcinoma - Decreased insulin sensitivity - Decreased IGF

Table 3: Effects and side effects of hormonal treatment regimes in MFT with oral, transdermal or intramuscular estrogens and hormonal modulators (antiandrogens, progestins) [23].

2.5.3 Surgery

Surgical treatment is the final therapy which is undergone only after psychotherapy and at least 12 months of hormonal treatment.

2.5.3.1 Genital surgery in FMT

The genital surgery for the sex reassignment in FMT includes a hysterectomy, a double adnexectomy of the ovaries and Fallopian tubes and the phalloplasty [42]. The function of the hysterectomy and adnexectomy is to eliminate the secretion of estrogens and to avoid future alterations in the uterus and ovaries due to the treatment with androgens [43, 44]. The objective of the phalloplasty is to create external genitals with a masculine aspect that allow a normal mictional function and an erogenous stimulation.

The possible complications of the phalloplasty are due to the complexity of the technique. The usual ones are related to the urinary tract and the penis prothesis. Ischemy and dehiscences of the uretheral anasthomosis are frequent causes of fistules and uretheral stenosis [42].

2.5.3.2 Genital surgery in MFT

For MFT patients, the surgical procedures in the genital organs include: the ablation of both of the testicles, the complete resection of the cavernose bodies, the shortening of the urethra, the conversion of the gland into a clitoris with preservation of the nerves and vessels, the construction of a vaginal hole in the space recto-prostato-vesical and the construction of the vulvar lips from the scrotal skin [19].

Apart from the usual postoperative risks, in these cases there can also appear complications like damage of the urinary conducts and intestines or shrinkage of the vagina due to infection of the wound or allergy to the materials used [45].

2.5.4 Other additional therapies and surgeries

Another important surgical treatment is breast surgery. In MFT, it consists of the construction of a female breast with either expansors and silicone implants or with microfat transplants. For FMT, a subcutaneous mastectomy is required in most cases.

Also MFT patients may have logopedic treatment and eventually surgery in their laryngeal cartilages. A possible hirsutism is treated with laser or electroepilation.

3. AIM OF THE PROJECT

We aimed at investigating:

- Underlying etiological factors in the clinical history of transsexual patients (such as intake of medications or diseases during the mother's pregnancy, and abnormalities during birth, childhood or puberty) and possible genetic or hereditary predispositions in the family of the patient.

- Quantity and quality of side effects and comorbidities under hormonal treatment of transsexual patients. This will be done descriptively in the patient group alone and in comparison with an age- and gender-matched control group from the epidemiological DETECT cohort. Since gender is reassigned, our patient sample will be analysed against both, a female and a male age-matched control sample.

- Satisfaction of transsexual patients with treatment modalities and treatment achievements or success. The level of somatic and psychologically perceived health will be evaluated for the different medical procedures and compared between FMT and MFT and during the course of the therapeutic procedures.

4. MATERIALS AND METHODS

4.1 Type of study

This study is a cross-sectional diagnostic study. The study lasted one year and took place between October 2007 and September 2008 (including the planning phase, recruitment of patients, acquisition of the data, the analysis and writing of the results).

Patients who participated in the study received a token payment of 10 euros.

4.2 Patients

4.2.1 Patient sample

Around 440 patients with the diagnosis “transsexualism” (F64.0, ICD-10) were treated at the Endocrine Outpatient Clinic of the Max Planck Institute for Psychiatry in Munich in the period between January 1996 and December 2007. They would visit the clinic every 6–12 months. Through the electronic database of the Institute, we identified the patients and invited them to participate in this study. Additionally, the clinicians and psychotherapists participating in the *Qualitätzirkel* (Quality Committee) that evaluated our questionnaire assisted us to contact some of their patients.

Questionnaires were sent to almost all of these patients. Our study finally involved a sample of n = 95 patients with the diagnosis of transsexualism, of whom 37 were FMT (average age 32 ± 9 years, average age at diagnosis 25 ± 8 years) and 58 were MFT (average age 48 ± 11 years, average age at diagnosis 39 ± 12 years).

4.2.2 Inclusion and exclusion criteria

The inclusion criteria for this study were: patients over 18 years of age with the diagnosis of transsexualism in the Endocrine Outpatient Clinic of the Max Planck Institute for Psychiatry in Munich. Additional patients treated by clinicians of the

Qualitätzirkel were included. The patients had to be undergoing psychotherapy and/or HT and they may have undergone surgery. Additionally they had to sign a consent to allow use of their data in an anonymous way.

The exclusion criteria were: patients under 18 years of age or unwilling to participate.

4.2.3 Comparison group

In order to estimate the magnitude of the side effects and problems of the hormonal treatment in our transsexual patients, we used an age-matched control group of males and females sampled from the DETECT study (Diabetes Cardiovascular Risk-Evaluation: Targets and Essential Data for Commitment of Treatment).

DETECT is an epidemiological study of the Institute for Clinical Psychology and Psychotherapy of the Technical University Dresden, in cooperation with the Max Planck Institute for Psychiatry (Munich) and the university hospitals of Frankfurt, Magdeburg, Graz and Hamburg-Eppendorf (www.detect-studie.de). This study was designed to address critical issues on cardiovascular risk factors and it took place in primary care patients. In the study, 55,518 unselected patients completed a questionnaire on their demographic data, their complaints, their illness history, their knowledge about selected diseases and their attitude towards the diseases. A subsample of 7519 patients additionally attended a standardized laboratory screening programme, which was focused on blood constituents connected with cardiovascular diseases and diabetes. These patients were assessed a second time one year later. The study provides descriptive epidemiological information on frequency, characteristics, risks and treatment of cardiovascular diseases, as well as information in the changes in laboratory parameters and diagnoses after one year of follow-up.

4.3 Questionnaire

4.3.1 Design and validation of the questionnaire

A review of the literature was performed in order to identify relevant information about etiological aspects, treatment protocols and side effects in transsexual patients.

The first draft of the questionnaire was distributed to a small group of patients during the *Selbsthilfegruppentag* in June 2007. Afterwards, feedback was collected and a new revised version was developed and evaluated by the *Qualitätzirkel Transsexualität* in Munich (including psychiatrists, endocrinologists, surgeons, psychotherapists and logopedians).

The final questionnaire was designed to have three parts (see attached document in the appendix): A. The first part contains socio-economic questions (age, occupation and other socio-demographic aspects). B. The second part has the structure of a clinical anamnesis and captures possible characteristics and causes of transsexualism. It includes questions about pregnancy of the mother, development in childhood, sexual orientation and previous or actual diseases of the patients and their families. C. In the last part, we included questions about the different regimes of treatment that the patient had undergone, to evaluate their efficiency and possible problems. We measured with a numerical scale the subjective level of satisfaction of the patients with all the medical procedures. A set of standardized questionnaires was included in our questionnaire measuring sleep alterations, such as the Pittsburgh Sleep Quality Index (PSQI), the Epworth Sleepiness Scale (ESS), a questionnaire for the evaluation of Restless Legs Syndrome, a questionnaire for the evaluation of respiratory problems related to sleep, parasomnia screening Munich and SCL 90-R.

The questionnaire was evaluated by the department of epidemiological psychology of the Max Planck Institute of Psychiatry and sent to the patients in March 2008. The response rate was 35 %.

In the frame of this retrospective analysis, a database was created with Microsoft Access (Windows 2000), where we registered all this socio-demographic, clinical and treatment information.

4.4 Statistical analysis

In the frame of the formulated hypothesis of the etiology and effects of the hormonal treatment, percentages of problems during the development of the patients were calculated, as well as frequencies of the effects under hormonal treatment. Finally, we measured with a numerical scale the subjective level of satisfaction of the patients with all the medical procedures and we calculated means and standard deviations.

As statistical tests for the comparison between 2-groups (MFT and FMT, biological men and MFT, biological men and FMT, biological women and MFT, biological women and FMT), we estimated the mean and frequencies by the Wilcoxon Rank Sum test or Chi-square. For the comparison between more than two groups, we additionally used the Kruskal-Wallis test.

5. RESULTS

5.1 Description of the patient group

In this study, a total number of 95 patients participated. The patients were classified into two major groups; MFT or FMT. More than half of the participants were MFT (60.4%, n = 58), 37 patients of the total number of participants were FMT (38.5%).

The average age of the MFT at the time of the study was 48 ± 11 years and FMT patients had an average age of 32 ± 9 years ($p<0.001$). Average body mass index (BMI) value for MFT was 25.1 ± 4.8 kg/m^2 and 24.8 ± 4.5 kg/m^2 for FMT ($p=0.872$) (Table 4).

In relation to the levels of education, we observed that almost the same percentage of FMT (13.5 %) and MFT (13.8 %) had a university degree. In FMT, the largest group of patients (35.1 %) had a *Berufsfachschulabschluss*, 16.2 % were in education, 10.8 % had no professional education, 8.1 % had a *Facharbeiter-Abschluss* and 2.7 % had a *Fachhochschulabschluss*. In MFT, 27.6 % had a *Facharbeiter-Abschluss*, 20.7 % a *Berufsfachschulabschluss* and 24.1 % a *Fachhochschulabschluss* ($p = 0.004$) (Table 4).

	FMT (n = 37)		MFT (n = 58)		p
	Mean	SD	Mean	SD	
Age	31.7	8.9	48.0	11.5	<0.001
BMI	24.8	4.5	25.1	4.8	0.872
School years	11.2	1.5	11.1	2.4	0.564
Professional education	n	%	n	%	
- none	4	10.8	4	6.9	0.004
- in education	6	16.2	3	5.2	0.004
- *Facharbeiter*	3	8.1	16	27.6	0.004
- *Berufsfachschule*	13	35.1	12	20.7	0.004
- *Fachhochschule*	1	2.7	14	24.1	0.004
- *Hochschule*	5	13.5	8	13.8	0.004

Table 4: Basic socio-demographic characteristics of patient sample.

The average number of years of school education in the FMT sample was 11.2 ± 1.5 and 11.1 ± 2.4 for the MFT (p=0.564). In our group of patients, 40.5 % FMT vs. 19.0 % MFT had a school graduation of *Mittlere Reife* in the German educational system; 32.4 % FMT vs. 29.3 % MFT had *Abitur* graduation; 16.2 % FMT vs. 31.0 % MFT had *Hauptschuleabschluss*; 5.4 % FMT vs. 13.8 % MFT had *Fachoberschuleabschluss* and 2.7 % FMT vs. 5.2 % MFT had no school graduation (p = 0.102) (Figure 1).

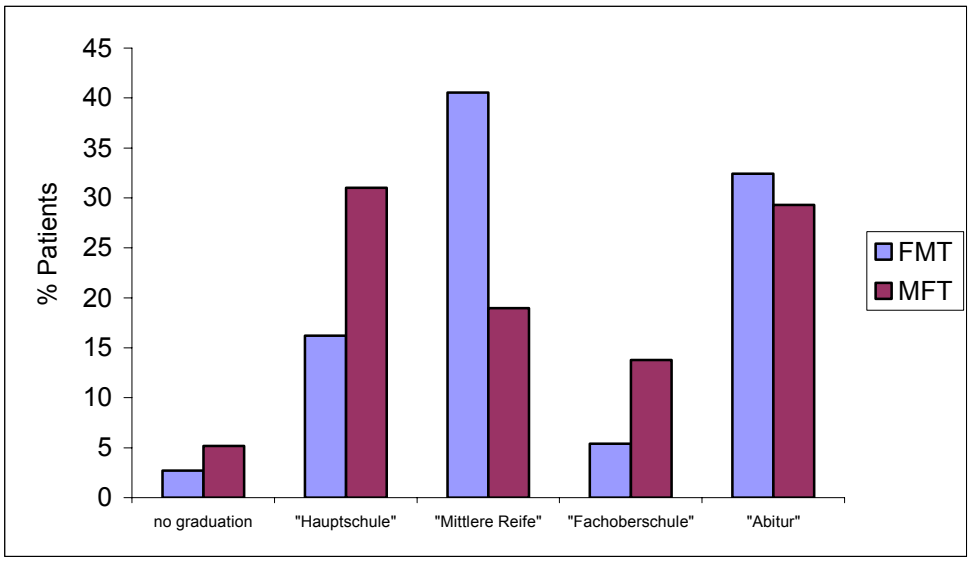

Figure 1: Levels of school education of patients (by percentage)

5.2 Early clinical history

More than half of the patients did not report an intake of hormones or other medication during their mother's pregnancy (67.6% FMT vs. 51.7% MFT). A high percentage of patients could not confirm this information (24.3 % FMT vs. 46.5 % MFT) (p = 0.047).

Only 13.5 % of FMT and 8.6 % of MFT reported peculiarities during their mother's pregnancy. A large proportion, 27 % FMT vs. 46.5 % MFT did not report information related to this point (p = 0.159).

In 51.3% of FMT and 44.8% of MFT there were no reported peculiarities during their birth. Nevertheless 37.8% of FMT and 22.4% of MFT respectively

reported some problems, though not different ones from the normal population (p = 0.037).

In relation to childhood and puberty, 54.0% and 56.7% of FMT reported that there were no peculiarities in their childhood and puberty, respectively. In MFT, the percentages were 51.7% and 56.9% respectively. In the group of FMT, 21.6% and 27.0% answered that there were alterations in their childhood and puberty. The percentages were 32.7% and 24.1% respectively for childhood and puberty in MFT. The rest of the patients reported that they do not know (p = 0.380 for childhood and p= 0.918 for puberty).

A summary of the findings about patients' early history is given in Table 5.

		FMT (n = 37)		MFT (n = 58)		p
		n	%	N	%	
Intake of medications						
	yes	3	8.1	1	1.7	0.047
	no	25	67.6	30	51.7	0.047
	not known	9	24.3	27	46.5	0.047
Alterations in pregnancy						
	yes	5	13.5	5	8.6	0.159
	no	22	59.4	26	44.8	0.159
	not known	10	27.0	27	46.5	0.159
Alterations in birth						
	yes	14	37.8	13	22.4	0.037
	no	19	51.3	26	44.8	0.037
	not known	4	10.8	19	32.7	0.037
Alterations in childhood						
	yes	8	21.6	19	32.7	0.380
	no	20	54.0	30	51.7	0.380
	not known	9	24.3	9	15.5	0.380
Alterations in puberty						
	yes	10	27.0	14	24.1	0.918
	no	21	56.7	33	56.9	0.918
	not known	6	16.2	11	19.0	0.918

Table 5: Alterations and peculiarities during prenatal, prepubertal and pubertal development.

Average age of menarche in FMT was 12.8 ± 1.5 years and 29.7 % had abnormal menstruation subsequently.

A high percentage of the patients (67.7 %) knew their chromosomal sex, which means that they had undergone a chromosomal analysis test. Out of the 37 FMT, 12 (32.4 %) did not know their chromosomal sex, and the other 25 (67.6%) were biological females (46 XX in chromosomal analysis). Nineteen of the 58 MFT (32.7%) did not know their chromosomal sex, 38 (65.5%) were biological males (46 XY). None of the patients of our sample reported belonging to the group of patients with Klinefelter syndrome (47, XXY) or Turner syndrome (45, X0).

5.3 History of transsexualism

In FMT, the average age when they realized their gender disorder was 8.5 ± 5.0 years. In MFT this fact happened later (12.6 ± 9.3 years) ($p = 0.007$). In both cases, the different ages correspond to the beginning of puberty.

Interestingly, in FMT patients the diagnosis of transsexualism was at 24.7 ± 7.8 years, whereas the average age of diagnosis in MFT was later (38.6 ± 11.7 years) ($p < 0.001$).

FMT started living in the opposite gender role at an average age of 23.4 ± 10.5. MFT patients reported having started living in the opposite sex role later, with an average age of 38.0 ± 12.9 ($p < 0.001$) (Figure 2).

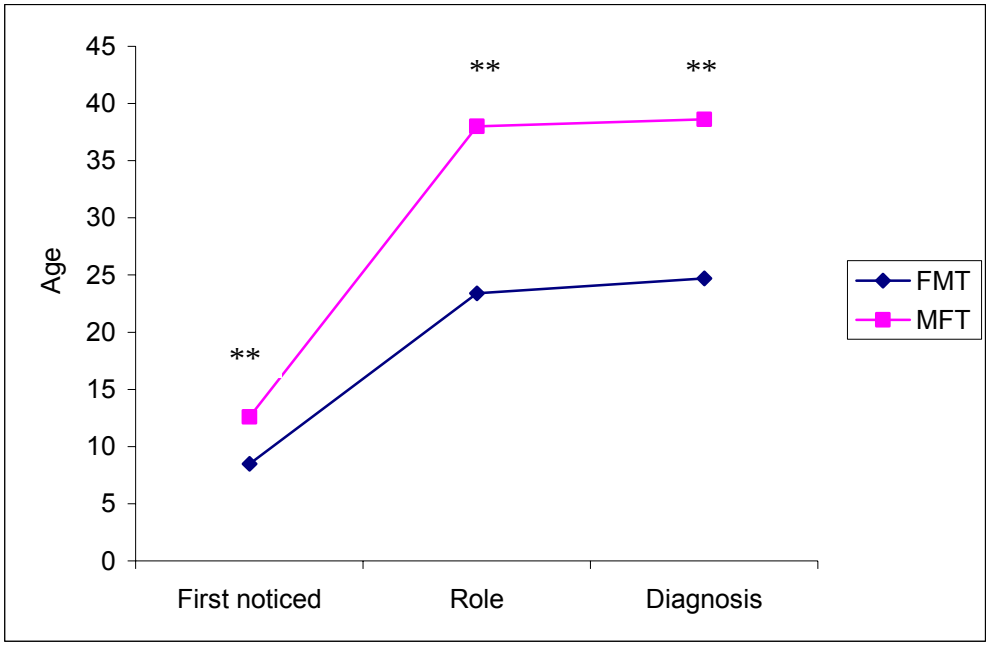

Figure 2: Average age when the patients first noticed their condition ("First noticed"), when they started living in the opposite sex role ("Role") and the diagnosis was made ("Diagnosis").

For the majority of FMT, parents and friends realized their condition first: in 43.2 % the mother, in 27.0 % the father, in 37.8 % friends and in 10.8 % other members of the family (not parents). In a small percentage of patients, it was others who first noticed their condition; a partner (5.4 %), at school (5.4 %), at work (5.4 %) and other known people (5.4 %) (Table 6).

In comparison with FMT, MFT showed a different pattern: 18.9 % of MFT related that it was their mother who first realized their condition, 10.3 % the father, 18.9 % friends and 13.8 % other family members. Interestingly, 27.6 % reported that no one realized (Table 6).

Amongst the reasons why FMT patients or people around them noticed their gender dysphoria were abnormal behaviour and the wish to wear masculine clothes. Other reasons mentioned were a negative feeling about their own body, the belief that they were not in the correct gender role in society and a wish to change, the perception of belonging to the opposite sex, having masculine interests and feeling like a man, and even in some cases experiencing psychological problems and feelings of fear.

In comparison with FMT, MFT also reported having feminine behaviour and the wish of wearing women clothes, but in MFT the latter was more remarkable. In

general, MFT reported a greater variety of reasons why they noticed their condition. Amongst them were described the feeling of being in a false body or the negative to their own body, feminine interests and the wish to have a feminine role in society.

	FMT (n = 37)		MFT (n = 58)	
	n	%	n	%
Mother	16	43.2	11	19.0
Friends	14	37.8	11	19.0
Father	10	27.0	6	10.3
Family (others)	4	10.8	8	13.8
Everybody	3	8.1	0	0
Nobody	3	8.1	16	27.6
Partner	2	5.4	5	8.6
Work	2	5.4	1	1.7
School	2	5.4	2	3.4
Other known people	2	5.4	1	1.7
Not known	2	5.4	1	1.7
Not answer	2	5.4	9	15.5

Table 6: Percentage and absolute number of transsexuals in terms of people who first realized their transsexual condition.

We found that a high number of the FMT (83.8 %) reported having changed their names, while the percentage of the MFT was lower (72.4 %) (p=0.199).

On the other hand, a lower percentage of both the FMT (59.4 %) and MFT (48.3%) had changed their personal stand at the time of the study (p=0.371).

Finally, 81.8% of FMT and 91.4% of MFT reported being right-handed (p=0.298).

5.4 Relationships

In FMT, 70.3 % of our patients were sexually oriented to women, 18.9 % to men, 5.4% to both sexes and 5.4 % were undecided. Interestingly, 34.5 % of MFT were also sexually oriented to women, 24.1 % to men, 22.4 % to both and 13.8 % were undecided (p=0.008) (Table 7).

A woman is the chosen partner for 89.5 % of FMT who had a long-term partner. Surprisingly, 72.0 % of MFT chose a woman and 24.0 % a man (p=0.242) (Table 7). In FMT, 71.4 % of the participants reported that their partner was sexually oriented to men, 14.3 % to women and 14.3 % to both sexes. In MFT, 53.3 % reported that their partner was sexually oriented to men (p=0.189), 36.7 % to women (p=0.145) and 10.0 % to both sexes (p=0.566) (Table 7).

Finally, 78.4 % of FMT and 37.9 % of MFT reported being single. A lower percentage of FMT (10.8 %) and MFT (22.4 %) were married to a woman. In the group of FMT, 8.1% were divorced or separated and 2.7 % had a civil partnership. No MFT had a civil partnership and 39.6 % were divorced or separated (p<0.001) (Table 7).

One of the FMT had given birth and 53.4 % of MFT were biological fathers (average number of children for MFT is 1.9).

		FMT (n = 37)		MFT (n = 58)		P
		n	%	n	%	
SO						
	- to men	7	18.9	14	24.1	0.008
	- to women	26	70.3	20	34.5	0.008
	- to both	2	5.4	13	22.4	0.008
	- undecided	2	5.4	8	13.8	0.008
Partnership						
	- no partnership	18	48.6	33	56.9	0.432
	- with man	1	2.7	6	10.3	0.242
	- with woman	17	45.9	18	31.0	0.242
	- with MFT	1	2.7	1	1.7	0.242
	- with FMT	0	0	0	0	0.242
Partner's SO						
	- no answer	16	43.2	28	48.3	0.631
	- to men	15	40.5	16	27.6	0.189
	- to women	3	8.1	11	19.0	0.145
	- to both	3	8.1	3	5.2	0.566
CS						
	- single	29	78.4	22	37.9	0.000
	- married to man	0	0	0	0	0.000
	- married to woman	4	10.8	13	22.4	0.000
	- divorced/separated	3	8.1	23	39.6	0.000
	- civil partnership	1	2.7	0	0	0.000
	- widow	0	0	0	0	0.000

Table 7: Percentage and absolute number of patients classified in terms of sexual orientation (SO), partnership, partner's sexual orientation (Partner's SO) and civil status (CS).

5.5 Comorbidities

The prevalence of present and past diseases in FMT was distributed as follows: psychiatric 24.3 %, gastrointestinal 21.6 %, endocrine 18.9 %, cardiovascular 13.5 %, respiratory 13.5 %, immune mediated 8.1 %, musculoskeletal 8.1 %, sexual 5.4 %, urinary 5.4 %, tumoral 5.4 %, neurological 2.7 % and haematological 2.7 % (Figure 3).

In MFT, 19.0% had a history of respiratory diseases (p = 0.489), 19.0 % of endocrine diseases (p = 0.995), 19.0 % psychiatric (p = 0.532), 17.2 %

gastroenterological (p = 0.595), 15.5 % cardiovascular (p = 0.788), 15.5 % neurological (0.047), 15.5 % musculoskeletal (p = 0.289), 10.3 % haematological (p = 0.164), 8.6 % immune mediated (p = 0.930), 8.6 % sexual (p = 0.559), 6.9 % urinary (p = 0.771) and 3.4 % tumoral diseases (p = 0.643) (Figure 3).

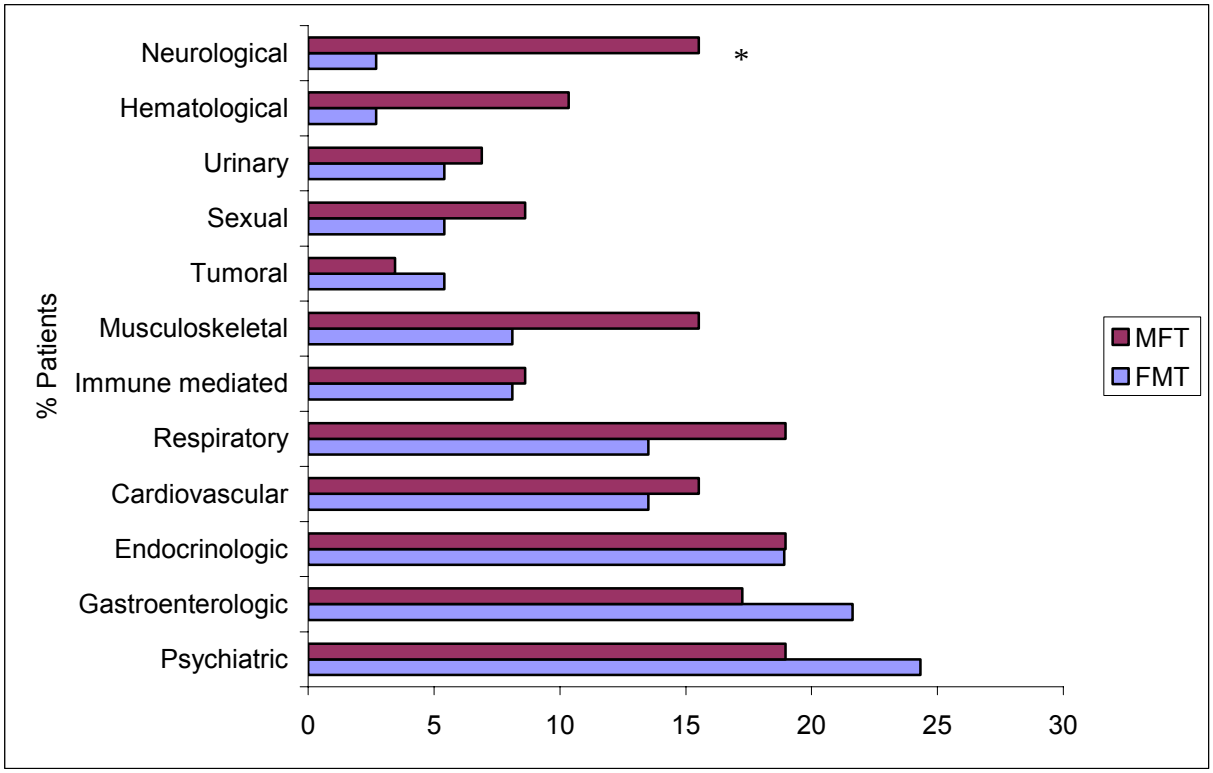

Figure 3: Percentage of FMT in comparison with MFT that presented lifelong comorbidities at the time of the study. The comorbidities are categorized by general type of disease.

It is interesting to point out that two patients reported the same congenital disease, adrenogenital syndrome. This condition may have caused the ambiguity of sexual development and led to the actual sexual identity disorder. One patient in our study was born with abnormalities in development of the sexual organs and another one excluded from our study because her hermaphrodite condition.

We compared the lifetime comorbidities in our patient sample with an age-matched cohort (1:3) from the DETECT study.

Comparing lifetime comorbidities of FMT with an age-matched group of females, we found 17.2 % FMT to 12.5 % females of the same average age for cardiovascular diseases (p = 0.531). For respiratory diseases, 17.2 % FMT to 9.7 %

females (p = 0.857). For neurological diseases, 3.5 % FMT to 13.9 % females (p = 0.001). For hormonal and metabolic diseases, 17.2 % FMT to 47.2 % females (p = 0.369). For gastroenterological diseases, 24.1 % FMT to 12.5 % females (p = 0.298). For urinary diseases, 6.9 % FMT to 6.9 % females (p = 0.001). For tumoral diseases, 6.9 % FMT to 11.1 % females (p = 0.504). For psychiatric disorders, 34.5 % FMT to 38.9 % females (p = 0.656). For immune mediated diseases, 6.9 % FMT to 6.9 % females (p < 0.001). In relation with smoking status, we found 24.1 % of FMT smoked to 31.8 % of female smokers (p = 0.023). Regarding alcohol consumption, we found 13.8 % FMT to 74.6 % females (p < 0.001). BMI was 25.4 ± 4.8 in FMT vs. 24.9 ± 5.2 in females (p = 0.302). Number of education years was 11.3 ± 1.6 in FMT vs. 11.5 ± 1.7 in females (p = 0.850) (Table 8a).

For FMT compared with an age-matched group of males, we found 25.0 % FMT to 20.5 % males of the same average age for cardiovascular diseases (p = 0.282). For respiratory diseases, 15.0 % FMT to 11.4 % males (p = 0.403). For hormonal and metabolic diseases, 10.0 % FMT to 38.6 % males (p = 0.784). For gastroenterological diseases, 25.0 % FMT to 9.1 % males (p = 0.826). For urinary diseases, 5.0 % FMT to 11.4 % males (p = 0.001). For tumoral diseases, 5.0 % FMT to 2.3 % males (p < 0.001). For psychiatric disorders, 35.0 % FMT to 40.9 % males (p = 0.924). For immune mediated diseases, 5.0 % FMT to 4.6 % males (p = 0.005). In relation to smoking, we found 28.6 % of FMT smoked to 18.4 % male smokers (p = 0.077). Regarding alcohol consumption, we found 19.1 % FMT to 59.1 % males (p = 0.107). BMI was 25.2 ± 4.8 in FMT vs. 27.5 ± 4.6 in males (p = 0.410). Number of education years was 11.4 ± 1.6 in FMT vs. 11.2 ± 1.6 in males (p = 0.828) (Table 8a).

	FMT-Female match					FMT-Male match				
	Transsexuals		*DETECT*			*Transsexuals*		*DETECT*		
Diseases	n	%	n	%	p	n	%	n	%	p
Cardiovascular	5	17.2	9	12.5	0.531	5	25.0	9	20.5	0.282
Respiratory	5	17.2	7	9.7	0.857	3	15.0	5	11.4	0.403
Neurological	1	3.5	10	13.9	0.001	0	0.0	4	9.1	NA
Metabolic	5	17.2	34	47.2	0.369	2	10.0	17	38.6	0.784
Gastroenterological	7	24.1	9	12.5	0.298	5	25.0	4	9.1	0.826
Urinary	2	6.9	5	6.9	0.001	1	5.0	5	11.4	0.001
Tumoral	2	6.9	8	11.1	0.504	1	5.0	1	2.3	0.000
Psychiatric	10	34.5	28	38.9	0.656	7	35.0	18	40.9	0.924
Immune mediated	2	6.9	5	6.9	0.000	1	5.0	2	4.6	0.005
BMI (mean/SD)	25.4	4.8	24.9	5.2	0.302	25.2	4.8	27.5	4.6	0.410

Table 8a: Comorbidities in our patient sample in comparison with an age- and gender-matched control group from DETECT. FMT-female match and FMT-male match. NA: not applicable

For MFT compared with an age-matched group of males, we found 15.1 % MFT to 45.6 % males for cardiovascular diseases (p = 0.478). For respiratory diseases, 18.9 % MFT to 7.4 % males (p = 0.947). For neurological diseases, 18.9 % MFT to 14.1 % males (p = 0.704). For hormonal and metabolic diseases, 7.6 % MFT to 54.4 % males (p = 0.410). For gastroenterological diseases, 18.9 % MFT to 22.2% males (p = 0.199). For urinary diseases, 9.4 % MFT to 9.4 % males (p = 0.688). For tumoral diseases 1.9 % MFT to 3.4 % males (p < 0.001). For psychiatric disorders, 18.9 % MFT to 46.3 % males (p = 0.622). For immune mediated diseases, 11.3 % MFT to 4.0 % males (p = 0.094). In relation to smoking, we found 28.3 % of MFT smoked to 27.4 % male smokers (p = 0.839). Regarding alcohol consumption, we found 23.1 % MFT to 66.2 % males (p = 0.971). BMI was 27.8 ± 4.4 in MFT vs. 27.4 ± 4.6 in males (p = 0.004). Number of education years was 11.1 ± 2.5 in MFT vs. 10.8 ± 2.3 in males (p = 0.145) (Table 8b).

Finally, for MFT compared with an age-matched group of females, we found 14.3 % MFT to 35.0 % females for cardiovascular diseases (p = 0.899). For respiratory diseases, 17.9 % MFT to 6.9 % females (p = 0.331). For neurological diseases, 21.4 % MFT to 8.1 % females (p = 0.539). For hormonal and metabolic diseases, 7.1 % MFT to 48.1 % females (p = 0.930). For gastroenterological diseases, 17.9 % MFT to 18.1 % females (p = 0.332). For urinary diseases, 10.7 % MFT to 13.1 % females (p = 0.765). For tumoral diseases, 1.8 % MFT to 8.8 %

females (p < 0.001). For psychiatric disorders, 19.6 % MFT to 40.6 % females (p = 0.133). For immune mediated diseases, 10.7 % MFT to 3.8 % females (p = 0.657). In relation to smoking, we found 26.8 % of MFT smoked to 21.4 % female smokers (p = 0.237). Regarding alcohol consumption, we found 21.8 % MFT to 60.3 % females (p = 0.248). BMI was 25.2 ± 4.7 in MFT vs. 27.0 ± 6.1 in females (p = 0.728). Number of education years was 11.0 ± 2.4 in MFT vs. 10.4 ± 1.7 in females (p = 0.029) (Table 8b).

	MFT-Male match					**MFT-Female match**				
	Transsexuals		*DETECT*			*Transsexuals*		*DETECT*		
Diseases	n	%	n	%	p	n	%	n	%	p
Cardiovascular	8	15.1	68	45.6	0.478	8	14.3	56	35.0	0.899
Respiratory	10	18.9	11	7.4	0.947	10	17.9	11	6.9	0.331
Neurological	10	18.9	21	14.1	0.704	12	21.4	13	8.1	0.539
Hormonal-metabolic	4	7.6	81	54.4	0.410	4	7.1	77	48.1	0.930
Gastroenterological	10	18.9	33	22.2	0.199	10	17.9	29	18.1	0.332
Urinary	5	9.4	14	9.4	0.688	6	10.7	21	13.1	0.765
Tumoral	1	1.9	5	3.4	0.000	1	1.8	14	8.8	0.000
Psychiatric	10	18.9	69	46.3	0.622	11	19.6	65	40.6	0.133
Immune mediated	6	11.3	6	4.0	0.094	6	10.7	6	3.8	0.657
BMI (mean/SD)	27.8	4.4	27.4	4.6	0.004	25.2	4.7	27.0	6.1	0.728

Table 8b: Comorbidities in our patient sample in comparison with an age- and gender-matched control group from DETECT. MFT-male match and MFT-female match.

5.6 Family history

In order to find out genetic and hereditary aspects of gender disorders, we included questions that addressed the family history for incidence of transsexuality and homosexuality.

Almost all patients (100% of FMT and 93.1 % of MFT) reported that there was nobody in their family with the same condition as them. Homosexuality in the family members of our patient sample had higher prevalence than transsexualism: 16.2% of FMT and 6.9% of MFT reported one or more members in their families being homosexual (p = 0.073).

Regarding sibling numbers and birth order, we found that 78.4% of FMT and 75.9% of MFT reported that they had brother/s and/or sister/s from the same parents;

35.1% and 48.3% of FMT and MFT respectively had brother/s; 54.0% and 50.0% respectively had sister/s. Approximately one-quarter, 27 % of FMT and 24.1% of MFT, were first born in relation to the rest of the siblings. Of the FMT, 16.2% had older brother/s, 32.4% had older sister/s, 21.6% had younger brother/s and 27.0% had younger sister/s. Of the MFT, 31 % had older brother/s, 25.9% had older sister/s, 15.5% had younger brother/s and 22.4% had younger sister/s.

5.7 Hormonal treatment: duration, regimes, effects and side effects

From the 95 patients in our patient sample, all the FMT received psychotherapy, 96.5 % of MFT also received psychotherapy. In FMT, 91.9 % patients and 96.5 % of MFT patients received HT. In FMT, 67.6 % patients and 70.7 % of MFT patients underwent a surgery for sex reassignment at the study time point.

The FMT of our patient sample were under hormonal treatment an average number of 4.9 ± 4.6 years. The MFT who took hormones at the time of our study took them for a similar period of years (6.5 ± 7.9) (p=0.483).

It is common for MFT as well as FMT to receive different regimes of treatment and to change the preparation or combination of drugs during the treatment. Tables 9 and 10 show the percentage of patients in our sample who at some point of their treatment received the corresponding drug regimen. They are classified by way of application and commercial names are also given.

FMT Treatment	%
▪ Transdermal testosterone	
- Testogel ®	23.5
- Testim ®	5.9
- Other	2.9
▪ Intramuscular testosterone	
- Testoviron ®	61.8
- Nebido ®	41.2
- Other	20.6

Table 9: Hormonal treatment regimes in FMT and percentage of patients who received each type of treatment (at some point during the therapy).

MFT Treatment	%
Estrogens alone	
▪ Transdermal estrogens	
- Gynokadin ®	37.5
- Other	14.3
▪ Oral estrogens	
- Estrifam ®	23.2
- Other	14.3
▪ Intramuscular estrogens	%
- Estradurin ®	12.5
- Progynon ®	8.9
- Other	3.6
Cyproterone acetate (Androcur ®) + Estrogens	
▪ Androcur ® + transdermal estrogens	
- Androcur ® + Gynokadin ®	32.1
▪ Androcur ® + oral estrogens	%
- Androcur ® + Estrifam ®	5.3
- Androcur ® + other oral estrogen	1.8
▪ Androcur ® + intramuscular estrogens	%
- Androcur ® + Estradurin ®	8.9
- Androcur ® + other intramuscular estrogen	3.6

Table 10: Hormonal treatment regimes in MFT and percentage of patients who received each type of treatment (at some point during the therapy).

Both FMT and MFT reported having experienced effects and side effects from the hormonal treatment.

Regarding positive effects for the FMT sample, 97.0 % reported changes in the voice (deeper voice), 94.1 % in fat distribution (masculine), 91.2 % in muscular mass (increased), 88.2 % in hair growth (increased hair growth, masculine hair distribution), 85.3 % in clitoris (increased size), 82.3 % in libido (increased), 76.5 % in menstruation (cessation), 38.2 % in breasts (reduction), 35.3 % in larynx (enlarged), 26.5 % in fear status (decreased fears). Amongst the negative effects were; changes in weight in 85.3 % of the FMT, changes in mood in 67.6 % (variations, aggression), alopecia in 17.6 % and edema in 11.8 %. Other changes experienced by this group of patients were: 47.0 % in skin (rough, dry skin), 44.1 % in hair structure (dry, fine), 32.3 % in sexual behaviour, 23.5 % in sexual practices, 8.8 % in bone, 5.9 % in nipples (Figure 4). In relation to the appearance of new diseases, we found that 67.7 % of FMT reported acne during the treatment, 2.9 % reported cancer and 2.9 % a heart infarct. No FMT reported a stroke, diabetes mellitus, thromboembolism, galactorrhea or prolactinome under hormonal therapy (Table 11).

Regarding positive effects in the group of MFT, 89.3 % experienced changes in breasts (enlarged), 85.7 % in fat distribution (feminine), 80.3 % in skin (softer, finer, more sensitive), 64.3 % in nipples (enlarged), 58.9 % in hair growth (decreased, less alopecia, feminine corporal hair distribution), 51.8 % in testicles (decreased size), 39.3 % in hair structure (finer, softer), 33.9 % in erections (decreased), 19.6 % in the voice (feminine) (Figure 4). Amongst the negative effects reported were; in 67.8 % of patients changes in mood (depression, instability), in 66.1 % changes in libido (decreased), in 66.1 % changes in weight, in 62.5 % changes in muscular mass (decreased), in 33.9 % changes in fear status (increased), 14.2 % of the MFT patients reported galactorrhea and 5.3 % edema. Other changes reported were: 37.5 % in sexual behaviour, 17.8 % in sexual practices, 10.7 % in larynx, 3.6 % in bones. In relation to the appearance of new diseases under the hormonal treatment, we observed that 7.1 % reported acne, 1.8 % a thromboembolic event, 1.8 % a prostatic hyperplasia and 1.8 % a heart infarct. No patient presented a stroke event, prolactinome or other cancer during therapy with sexual hormones (Table 11).

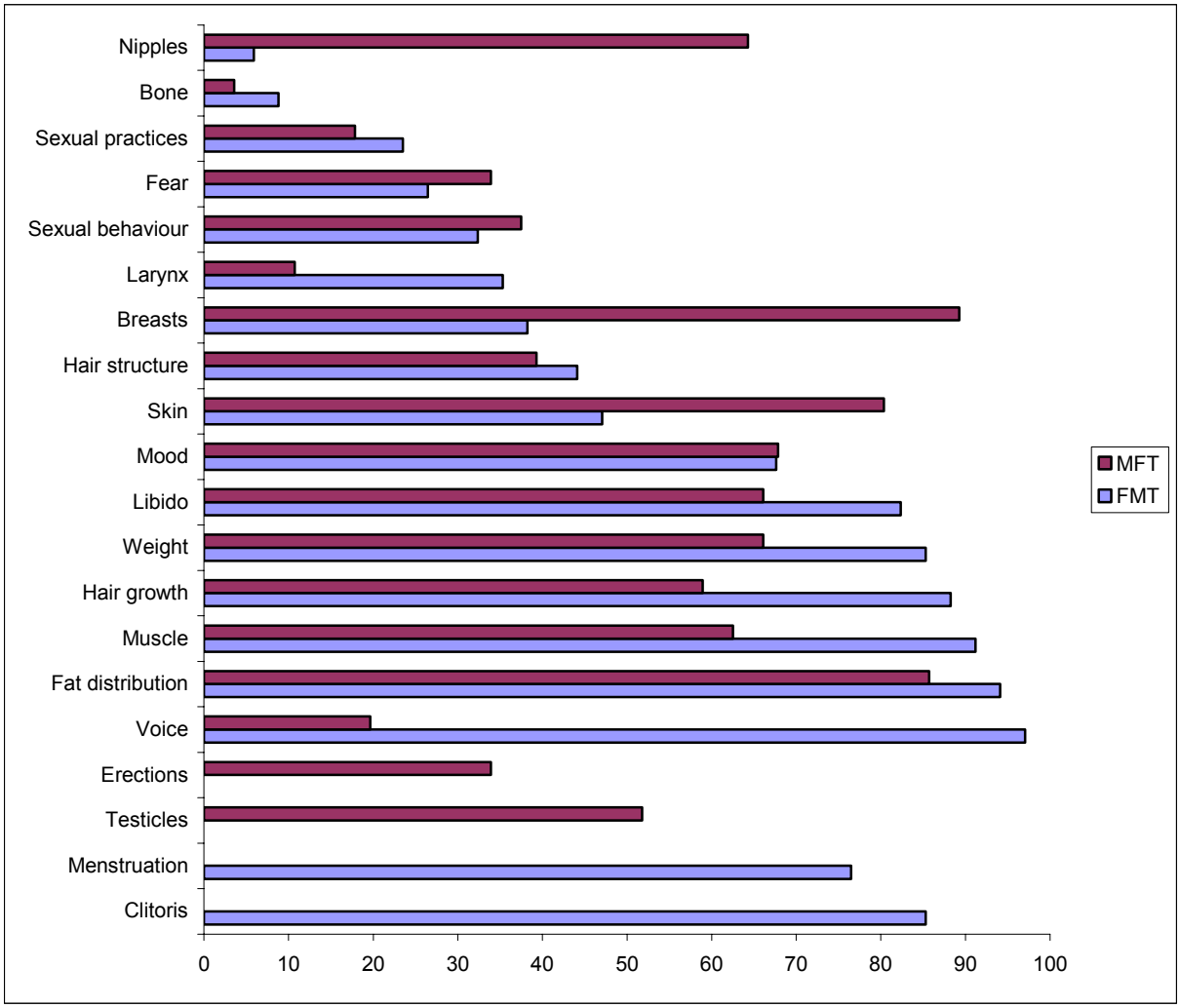

Figure 4: Corporal and psychological changes in FMT and MFT under HT.

	FMT (n = 34)		MFT (n = 56)	
Diseases	n	%	n	%
Acne	23	67.6	4	7.1
Edema	4	11.8	3	5.3
Galactorrhea	0	0	8	14.3
Infarct	1	2.9	1	1.8
Cancer	1	2.9	0	0
Thromboembolism	0	0	1	1.8
Diabetes mellitus	0	0	1	1.8
Prostatic hyperplasia	NA	NA	1	1.8
Prolactinome	0	0	0	0
Stroke	0	0	0	0

Table 11: Incidence of diseases under HT. Percentage and absolute number of FMT and MFT that reported each type of disease under cross-sex HT. NA: Not applicable.

In the group of FMT, 82.8 % presented an average weight increase and 20.7 % reported a weight decrease at some point of the treatment. The mean increase was 10.8 ± 6.6 kg and the mean decrease was 12.7 ± 12.5 kg.

In the group of MFT, 81.1% presented an average weight increase and 18.9 % reported a weight decrease at some point of the treatment. The mean increase was 8.7 ± 9.8 kg and the mean decrease was 7.0 ± 4.0 kg.

As reported before, at the time of the study, 25 out of the 37 FMT (67.6 %) and 41 out of 58 MFT (70.7 %) had undergone surgery for sex reassignment. It is interesting to notice that 53.3 % of the FMT who had an ovariectomy and 57.1 % of those who had a hysterectomy (but not an ovariectomy) reported that some effects of the hormonal treatment were more marked after the surgery. A similar finding was observed in the MFT who underwent surgery to remove the testicles: 50 % of them reported more marked effects of the hormonal treatment after the surgical procedure.

5.8 General evaluation of the perceived physical and psychological status

The level of satisfaction of the FMT and MFT patients with each of the treatment procedures was evaluated with a scale that scored from 0 to 100.

FMT reported a level of satisfaction of 77.2 ± 24.6 out of 100 with the psychotherapeutic procedures, 88.4 ± 13.3 with the HT and 77.6 ± 19.3 with the surgeries. MFT reported a 75.5 ± 23.4 out of 100 of satisfaction with psychotherapy (p=0.510), 75.6 ± 24.8 with HT (p=0.009) and 87.9 ± 14.8 with surgeries (p=0.016) (Table 12).

	FMT (n = 37)		MFT (n = 58)		p
Treatment	Mean	SD	Mean	SD	
Psychotherapy	77.2	24.6	75.5	23.4	0.510
Hormone therapy	88.4	13.3	75.6	24.8	0.009
Surgery	77.6	19.3	87.9	14.8	0.016

Table 12: Level of satisfaction of the transsexual patients with psychotherapeutic, hormonal and surgical treatment (Scale 0–100, 0 = worst and 100 = best).

In the final part of our questionnaire, we evaluated the overall corporal and psychological status of the patients in the different time points of the treatment phases (before diagnosis, during psychotherapy, under HT and after surgery).

In the FMT, the average subjective corporal score before the medical diagnosis in our scale (0 to 100) was 66.2 ± 28.3. During psychotherapy, the score raised to 70.6 ± 24.1, under HT to 82.3 ± 16.3. Finally after surgery it was found to be worse, with 79.7 ± 13.9 (p=0.083) (Figure 5). The psychological score before the medical diagnosis in FMT was of 37.6 ± 24.4. This increased to 59.8 ± 23.6 during the psychotherapy and to 81.0 ± 14.9 under hormonal therapy. Finally after surgery, the patients achieved their highest level of psychological satisfaction with 92.4 ± 7.1 (p<0.001) (Figure 6).

In the MFT the results were similar to the FMT for corporal score, and with an increasing tendency: before medical diagnosis the status was 70.3 ± 29.0. This value increased to 74.0 ± 22.4 during psychotherapy, to 75.8 ± 19.0 under HT and finally to 82.0 ± 18.7 after surgery (p=0.018) (Figure 5).

The psychological score in the MFT before the medical diagnosis was low (39.0 ± 30.0), like the FMT. This increased to 58.9 ± 23.0 during the psychotherapy, then to 67.8 ± 19.5 under HT. This increasing tendency reached the highest level after surgery with 88.7 ± 13.0 (p<0.001) (Figure 6).

The difference between FMT and MFT regarding psychological status under HT is statistically significant (p=0.002)

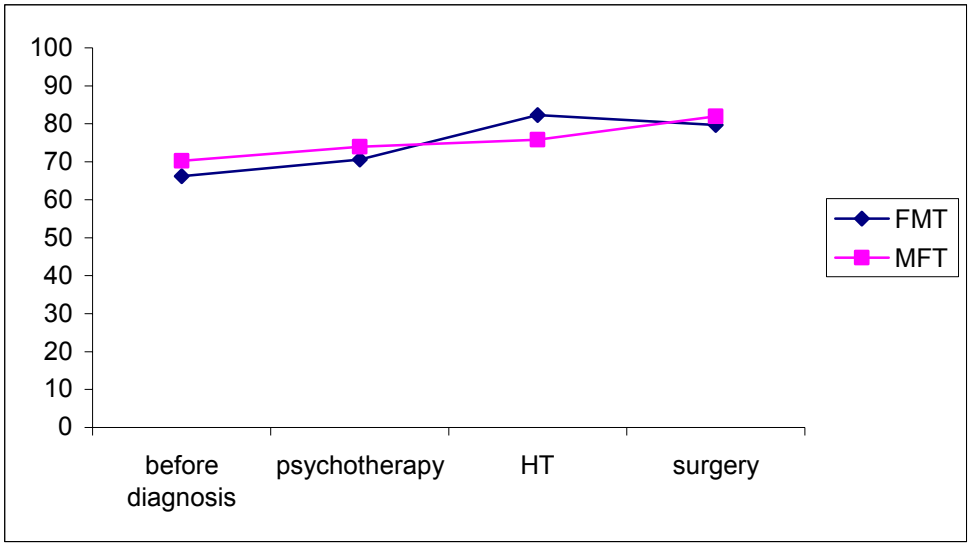

Figure 5: Progression curve for perceived corporal score
(Scale 0–100, 0 = worst and 100 = best).

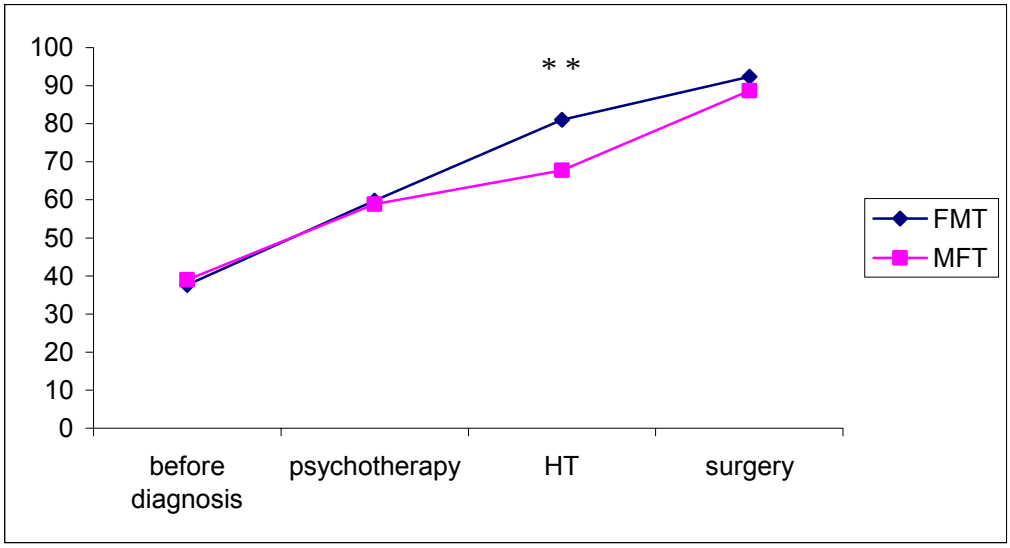

Figure 6: Progression curve for perceived psychological score (Scale 0–100, 0 = worst and 100 = best).

6. DISCUSSION

6.1 Results

The three main findings of our study were:

(I) There was not a high rate of transsexualism in the families of our patient sample, nor a high rate of medical intake or complications during their mother's pregnancy. Nevertheless there was a higher rate of distocies than are observed in normal population. The prevalence of alterations in childhood and puberty in relation to gender and psychological disorders was also high.

(II) Apart from the wished effects of the HT, there was a high prevalence of side effects. Nevertheless the prevalence of lifelong comorbidities did not differ from a control gender- and age-matched population.

(III) Transsexual patients were highly satisfied with all medical procedures and they reported an increasing level of satisfaction along all treatments.

Ad (I) From the early clinical history, we observed that most of the patients did not report that their mothers took hormones or other medications during pregnancy. There were also not many alterations reported during pregnancy. In the case of the patients who reported complications during their birth, these complications did not differ from those observed in general society, although the prevalence was higher in our patient sample (around 10% of distocies reported in previous studies). That is why we cannot make any conclusive statement by using our questionnaire about the origin of the disease. We can only observe from the reported information that, already in childhood and puberty, an important proportion of patients reported problems with their sexual identity and also other psychiatric symptoms in some cases.

Most of the patients reported no gender identity disorders in the members of their families. Nevertheless the information obtained from the questionnaire was limited. Future studies to analyse genetic aspects would be interesting to find a hereditary pattern.

The fact that these patients did not present any remarkable abnormality in their chromosomes does not exclude that they might have slight abnormalities at a genetic level that could explain the origin of their disorder. That means that further studies would be helpful to determine what possible polymorphisms in the sexual chromosomes and autosomes of these patients could explain the phenomenon. Recently there have been reports in the literature of gene polymorphisms proposed to be related to transsexualism, like polymorphisms in the SRD5A2 gene [47] and the CYP17 gene [48]. Polymorphisms in other sex steroid-related genes were proposed to be linked with male-to-female transsexualism [49, 50]. Other genes related to GID were, for instance, *Xist* [51], 21-hydroxylase and 3beta-hydroxysteroid dehydrogenase genes [52]. The H-Y antigen was also discussed as an associated factor to transsexualism [53].

Ad (II) Almost all patients took psychotherapy and hormonal therapy at the time of the study. FMT were much younger when they started with medical treatment, therefore it is expected and also known from the clinical experience, that they will undergo all possible surgical interventions. This is something that does not always happen in MFT, since they are also older on average. The younger the patients are, the most likely that they will go through all the available medical procedures.

The HT regimes and different combinations of compounds are more diverse in MFT than in FMT. An interesting future topic of research would be to evaluate which combinations of drugs are more optimal and cause less side effects. Nevertheless in the group of MFT it is more difficult to evaluate the efficiency of the drug, due to the more heterogeneous range of possibilities and to the frequency of patients changing from one drug regime to another.

The hormonal regimens in presurgical transsexual people differ from one clinic to another [23]. For instance, in the Academic Hospital Vrije Universiteit in Amsterdam, they use testosterone esters 250 mg intramuscular every 2 weeks or testosterone undecanoate 160 mg/d in the treatment of FMT [24, 54]. In the Deparment of Obstretics and Gynecology at the National University of Singapore, they use testosterone esters 250 mg intramuscular every 3-4 weeks or testosterone cyclopentylpropionate 100 mg intramuscular every week [55].

Other examples of hormonal treatment regimens in MFT are that used in the Division of Endocrinology of the Mount Sinai School of Medicine (New York), where ethinyl estradiol 100 µg/d or conjugated equine estrogens 1.25-2.5 mg/d and medroxyprogesterone acetate 5-10 mg/d for 10 d/month during the first 6 months are used, with optional spirololactone 100-200 mg/d or cyproterone acetate [56]. In the Department of Endocrinology at the University of British Columbia (Vancouver), they use conjugated equine estrogens 0.625 g/d increased to 5 g/d for 3 of 4 weeks and spironolactone 100-200 mg/d gradually increased until testosterone is suppressed, and medroxyprogesterone 10 mg/d 2 weeks/month or continuously if needed [27].

Some positive and negative side effects of the HT that we observed in our patient sample were already reported in the literature. For instance, in FMT there are the changes in voice (deepened voice) [21], changes in menstruation (cessation of menses) [21, 29], changes in hair growth (hirsutism) [21], changes in clitoris (growth) [29], changes in larynx (laryngeal prominence) [57], changes in libido (increased libido and hypersexuality) [57], changes in breasts (breast atrophy) [58], changes in fat distribution (male fat distribution) [59], changes in muscles (increased muscle mass) [60], appearance of acne [24], changes in weight (weight increase) [25] and changes in mood (aggression) [57]. Other side effects reported in the literature which we did not observe in our group of FMT are; endometrial hyperplasia [33], sleep apnea [61] and ovarian cancer [34].

In MFT some effects and side effects already reported and that we also observed were: changes in breasts (gynecomastia) [62], changes in nipples (enlarged areola and nipple) [21], changes in skin (softened skin) [21], changes in testicles (reduced volume) [63], changes in erections (decreased spontaneous erections) [29], changes in libido (decreased libido) [21], redistribution of fat (female fat distribution) [57], changes in mood (calming effect) [57] and changes in hair growth (decreased hair growth) [64]. Amongst the negative effects are reported venous thrombosis [24] and changes in mood (depression) [25]. Other side effects reported in MFT which we did not observe were cholelithiasis [24], prolactinoma [2, 36, 65], breast cancer [66] and prostatic carcinoma after orchiectomy [67].

We found that in both groups of transsexual patients, two of the most prevalent comorbidities were psychiatric and endocrine diseases, specifically depression and overweight. The diagnosis of transsexualism is a psychiatric diagnosis, therefore it makes sense that it appears to be related to other psychiatric disorders. On the other hand, the high prevalence of overweight disorders also makes sense in this frame, since one of the most prevalent side effects in patients under cross-sex HT was a marked weight increase. Nevertheless, the difference in the prevalence of comorbidities between FMT and MFT was only statistically significant for neurological problems: neurological diseases were more frequent in MFT than in FMT. It is also interesting to notice that FMT, in comparison with an age-matched control group of females, had a significant lower prevalence of neurological diseases (including migraine, epilepsy or multiple sclerosis amongst others), but there was no difference in comparison with an age-matched group of males. In a previous study by Gourie-Devi et al., there was a lower prevalence of neurological disorders among men in comparison with women [68]. This allows us to speculate about an underlying common genetic predisposition that may link males to FMT, or a protective effect of testosterone and negative effect of estrogens in males and females in relation to this type of diseases.

In comparison with a population of females of the same average age from the DETECT cohort, we did not observe a statistically significant higher prevalence of lifetime diseases in our sample of FMT. We obtained the same result when we compared MFT with males of the same age. Moreover, neurological, urinary and immune mediated diseases were significantly more prevalent in females than in FMT. Nevertheless, when we compared FMT with males of the same age, we saw that in the latter tumoral and also immune mediated diseases were significantly less frequent. In MFT, we found that tumoral diseases were less frequent than in control males and females of the same age. A study by Parker et al. reported that the probability of a person developing cancer for the interval between birth and 59 years is higher in females than in males [69]. In this respect, we speculate about a protective effect of estrogens in relation to tumoral diseases only in men and a negative effect of testosterone only in females. The BMI did not differ for the FMT in relation to control females and males. We did not find differences between the BMI of MFT with control females, although in comparison with control males the BMI was

slightly higher. Nevertheless the average BMI value was, in all these cases, within the limit of normal weight and overweight. This data allows us to conclude that, despite the side effects of the HT, this therapy is not contraindicated, at least not in the short term. However, since in our study the patients were under HT for 5–6 years on average, further long-term studies should be conducted for a better evaluation.

Concerning toxic habits (tobacco and alcohol), we only found statistical differences between FMT and females: a significantly higher proportion of females smoke and drank alcohol in comparison with FMT. This reflects a healthier lifestyle in the FMT group.

In a small percentage of the patients a congenital disease was known, adrenogenital syndrome. This condition caused the ambiguity of sexual development that may have led to the actual sexual identity disorder. Other cases of children with adrenogenital syndrome that also developed gender identity disorders have been reported in previous studies [70, 71]. In all these cases, the pre-/perinatal androgenic imbalances played a role in the origin of the disease. On the other hand, a high prevalence of polycystic ovaries was observed in FMT, also due to the hyperandrogenemia [32, 72].

Ad (III) There are very few studies addressing the level of satisfaction and health in transsexual patients under medical treatment [73, 74]. Therefore we included some questions in our questionnaire to evaluate our sample of patients in this frame. We used a numerical scale to measure the subjective level of satisfaction of our patients in different respects.

In relation to the satisfaction of the patients with the medical procedures, we observed that, in general, the scored was always higher than 75 out of 100, which means an overall positive acceptance and well-being. This finding correlates with the fact that the corporal and psychological status before the medical diagnosis was in the lower ranges.

It is interesting also to see that FMT reported a higher level of satisfaction with HT than MFT. However, MFT were more satisfied with the surgeries than FMT. One of the possible explanations for this phenomenon could be the euphorizing effects of

testosterone in comparison with estrogens, which normally lead to a less positive psychological status. On the other hand, the fact that MFT were more satisfied with the surgery than FMT can be explained by taking into account that cross-gender surgeries in MFT have a more aesthetic and functional result than in FMT.

In relation to the corporal status, we saw that both FMT and MFT reported a high subjective level of satisfaction before diagnosis (more than 65 over 100 in our scale in average). This value increased on average in FMT, and statistically significantly in MFT, along all the medical procedures to the point after surgery. After having reported the side effects of the HT and also having taken into account all the common problems associated with surgery (possible infections, pain etc.), it is interesting to see that the subjective physical status improved significantly.

From the psychological point of view, the patients started on average from a lower level of well-being (not higher than 40 out of 100 in our scale in average). But in both MFT and FMT we observed a statistically significant increase through the different steps, showing a high subjective satisfaction after surgery.

Apart from the three mentioned main findings, we can also point out some other observations.

(i) FMT on average noticed their condition some years earlier than MFT, nevertheless both groups realized their gender disconformity on average the late childhood or at the beginning of puberty. A possible explanation for the fact that FMT were more precocious may be that girls reach puberty before boys, and this point in life seems to be the moment when they started questioning their gender condition. We confirm that transsexualism in most of the cases is noticed very early by the patients and it perturbs in a not unimportant way the life of the patient, their social interaction and further development.

(ii) The average age of medical diagnosis was significantly much earlier in FMT than in MFT. FMT sought medical support in early adulthood, whereas MFT did so more than a decade later in life. This may be due to social reasons that kept the male patients away from making their condition public. Another explanation could be that MFT did not have such an urgent need to reveal themselves.

(iii) The age when FMT and MFT started living in the opposite gender role corresponds on average to the age of diagnosis. This might reflect that the patients waited until they had sought medical help to make their condition public. This is may be because they could be better accepted socially if it could be said that a doctor had diagnosed and treated their disease. On the other hand, FMT started living in the opposite gender role significantly much earlier than MFT. This showed again that FMT are more eager than MFT to change their condition. It seems that for FMT it was easier to reveal themselves, or that perhaps they had a greater need to do so.

Here the question arises if it would not be better for the patient to start with the treatment in the puberty, at least with the hormonal part, so that the body, starting from the early stages of sexual development, is changed in a more successful way. Since the patients come to treatment much later in life (especially the MFT), by then their body has already achieved the undesired masculine or feminine shape (bone structure, for instance), something that is very difficult to reverse.

(iv) It is interesting to compare both groups of patients in terms of the people who first noticed their transsexual condition. In the case of FMT, the number of patients reporting that people close to them realized first their condition is very high, meaning their parents and friends. In comparison, nearly half of MFT report that nobody realized their condition. We noticed that it was easier to recognize the condition of FMT at an early stage in life for the people who lived close to them than for MFT. The reason may be that they were more eager to show their condition, whereas MFT tried to hide it more. This was perhaps due to the MFT not being so affected by their GID, or that they had a better sense of well-being and therefore did not need to manifest their condition so eagerly.

In previous studies by Zucker and collaborators on sibling sex ratio and birth order in children with GID, it was observed that boys with GID had a significant excess of brothers to sisters, and that they were born later relative to their brothers than they were relative to their sisters [75]. Girls with GID were significantly more likely to be early born than were controls [76].

(v) We found no statistical difference between the percentage of FMT and MFT who were right-handed. In other studies where control females and males were used, it was observed that the transsexuals are less often right-handed for different

one-hand tasks than the control [77, 78], in other words, a higher proportion of transsexuals were left-handed in those studies. This supports the idea of an altered pattern of cerebral hemispheric organization in male and female transsexuals.

(vi) Most FMT, as expected, were sexually oriented to women, and for nearly all of those who had a partnership it was with a woman. In contrast to what we would expect to find, there was much more diversity in the sexual inclination of MFT. Many of them were oriented to women or to both sexes. Also for most of those who had a partnership it was with a woman. On the other hand, many MFT were divorced or separated, most likely from a woman. Again we observed that MFT were not so straightforward with defining their tendencies as FMT, whereas FMT showed a clearer behaviour that was more in accordance with their masculine role.

(vii) Finally, we want to discuss also the possibility that we are facing two different phenomena: male-to-female transsexualism and female-to-male transsexualism. Some of the studies that support the biological hypothesis of causes of transsexualism are in favour of the idea that they are two different entities. Similarities between MFT and females were found, whereas there were less similarities between FMT and males [7, 79]. In our study we also found differences in the behaviour and development of MFT and FMT that support this idea.

For future projects, it would be interesting to conduct genetic studies to clarify the etiology of transsexualism and long-term clinical trials to evaluate the efficacy and side effects of the hormonal treatment.

6.2 Methodology and patient sample

Of the 421 patients treated at the Endocrine Outpatient Clinic of the Max Planck Institute to whom the questionnaire was sent, 112 (26.6 %) were FMT and 185 (43.9 %) were MFT (ratio MFT:FMT = 1.65). Of the 95 patients who participated in our study, the ratio was similar (MFT:FMT = 1.57). Here we observe a higher prevalence of MFT, which corresponds with the observations in other prevalence

studies [2]. In a study by Weitze and Osburg [46], the prevalence of FMT in relation to MFT in German society was found to be 2.5 times lower. Therefore we feel confident to assume our sample is a representative sample despite the fact that the response rate was low.

One of the sources of error in this study is the “missing data” that occurs, for instance, from a no validation of the questionnaire, a false response or a misunderstanding of the questions (measurement bias).

An important percentage of patients to whom the questionnaire was sent did not respond (65.6 %). This may be due to their particular satisfaction or dissatisfaction about the medical support for their problem or due to their particular physical and psychological health state (selection bias).

There were two drop-outs in our study. One of them was due to the intersexual condition of one of the respondents, which is an exclusion criterion for the study. Another drop-out was because of the poor quality of the completed questionnaire.

All the information for the study was obtained from this questionnaire. This means that some results are based on the patients’ own perceptions, although there is also some objective information. Nevertheless, it would also be interesting to complete this study with a review of the clinical history, where some parameters like laboratory data are measured in an objective way.

Age at the time of the study was significantly higher for the MFT than the FMT (more than 10 years on average).

The BMI was on average similar in FMT and MFT, and in both cases the value was within the limit between normal weight and overweight. That shows that even after the weight gain due to the hormonal treatment, the BMI remained still in the limits of normality. This fact excludes overweight as a risk factor for other metabolic diseases in these patients, at least at present.

We observed that the differences in school education level between MFT and FMT are not statistically significant. The average number of years of school was similar in both groups. The years of education did not differ in the FMT compared with an age-matched control group of males and females. Neither was there a difference between the number of years of education of the MFT matched with a

control group of males, although in comparison with females of the same age, we found that MFT had almost one year more of school education on average.

The distribution of professional education in transsexual patients was similar to the rest of society, the majority of them having an intermediate level. The differences between MFT and FMT were statistically significant. A similar average proportion of FMT and MFT had a university degree. The largest part of the MFT had a *Facharbeiterabschluss*, whereas in the FMT the *Berufsfachschuleabschluss* was the most common.

7. CONCLUSION

We obtained three main findings from our study.

Regarding the etiology, we did not find a high rate of transsexualism in the family histories of our patient sample, nor did we find a high rate of intake of medication by the mothers or other complications during pregnancy. Nevertheless the prevalence of birth complications is higher than that reported by other studies in the normal population. Genetic studies are scarce up to now, but could provide more detailed knowledge on etiological aspects of transsexualism in the future.

Regarding adverse events and side effects of the HT in FMT and MFT, we found that many patients experienced a change in fat distribution (94.1% of FMT and 85.7 % of MFT), weight (85.3 % of FMT and 66.1 % of MFT) and mood (67.6 % of FMT and 67.8 % of MFT) after starting hormonal therapy. Among the positive effects were increased muscular mass, masculine hair and fat distribution in FMT and enlargement of breasts, feminine fat distribution and softened skin in MFT. Negative effects included acne, alopecia and aggressivity in FMT, and decreased muscular mass, decreased libido and depression in MFT. Both FMT and MFT reported a considerable weight increase of 10.8 ± 6.6 kg in FMT and 8.7 ± 9.8 kg in MFT. Compared to age-matched control groups, we did not see higher prevalences of cardiovascular, endocrine or tumoral comorbidities in either FMT or MFT, matched to females and males in both groups. Therefore, we can conclude that the HT is safe, at least in the short term. Clinical trials are needed in order to evaluate the long-term consequences and to compare different treatment regimens head to head.

Finally, the transsexual patients in our sample were highly satisfied with all medical procedures. After very low scores for psychologically perceived health at the time of diagnosis, both FMT and MFT reported a continuous rise of psychological and physiological perceived satisfaction levels along the medical procedures. However, MFT were less satisfied with HT than FMT, while FMT were less satisfied than MFT with the surgical procedures.

In general, we can conclude that the therapy for transsexual patients provided by the medical system in southern Germany seems to be safe, with high levels of satisfaction reported by the patients.

Future studies revealing the etiology of transsexualism and clinical trials evaluating optimal therapy regimes regarding long-term efficacy and side effects are needed.

8. ABSTRACT/ SUMMARY

Background: Transsexual patients are characterized by biologically normal genotypes and phenotypes which are combined with the conviction of belonging to the opposite sex. This conviction goes along with a desire for gender reassignment, which involves psychological, hormonal and surgical treatment. Limited data on the various aspects of transsexualism exists at present.

Objective: This study aimed at evaluating etiological aspects of transsexualism, the efficacy and safety of the therapeutical procedures, and the role of patients' satisfaction with the treatment.

Methods: Questionnaires evaluating medical history, therapy side effects and therapy satisfaction, including standardized questionnaires on sleep and psychopathology have been developed and sent to all 439 transsexual patients that are currently treated at the Max-Planck-Institut of Psychiatry in Munich.

Results: Ninety-five patients returned the questionnaire and their responses were analysed. Out of 95, 37 were FMT (average age 32 years; average age at diagnosis 25 years) and 58 were MFT (average age 48 years; average age at diagnosis 39 years). We found neither a high rate of gender identity disorders in the family histories of our patient sample nor a high rate of intake of medications by the mothers or other complications during pregnancy. Ninety-eight percent of the patients received psychotherapy, 94.7 % benefited from HT and 69.5 % had undergone surgery at the time of the study. The patients followed different HT regimes: FMT received testosterone in transdermal and/or intramuscular applications; MFT received transdermal, oral or intramuscular estrogens and cyproterone acetate in different combinations. Frequent side effects reported by FMT were acne, aggressivity and alopecia. In the group of MFT, depression, muscle mass decrease and libido

decrease were frequently found. Both groups experienced a significant weight increase following HT (mean increase 10.8 ± 6.6 kg in FMT and 8.7 ± 9.8 kg in MFT). Nevertheless, in comparison with an age-matched control group, we did not see higher prevalences of lifelong cardiovascular, endocrine or tumoral comorbidities. Both groups reported a high overall satisfaction with all therapies (MFT mean value for HT: 75.6 ± 24.8 on a scale of 0=worst to 100=best possible satisfaction. FMT mean value: 88.4 ± 13.3).

Conclusion: We conclude that the therapy for transsexual patients seems to be safe with high levels of satisfaction reported by the patients. Further studies should be conducted in order to clarify the etiological aspects of transsexualism and to evaluate the long term consequences of the HT in comparison with each other (head-to-head studies).

9. ZUSAMMENFASSUNG

Hintergrund: Transsexuelle Menschen sind durch unauffällige Geno- und Phänotypen charakterisiert, verbunden mit der Überzeugung, dem gegengeschlechtlichen Geschlecht anzugehören. Diese Überzeugung geht mit dem Wunsch einer Geschlechtsumwandlung einher und diesbezügliche psychologische, hormonelle und chirurgische Behandlung zu erhalten. Es gibt bislang nur wenige Daten zu den verschiedenen Aspekten der Transsexualität.

Objektive: Ziel des Projekts war es ätiologische Aspekte, Effektivität und Nebenwirkungen der geschlechtsangleichenden Therapie sowie grundsätzliche Therapiezufriedenheit von transsexuellen Patienten zu evaluieren.

Methodik: Ein Fragebogen zu den Themenkomplexen medizinische Anamnese, Nebenwirkungen der Therapie und Therapiezufriedenheit, inklusive standardisierter Fragebögen zur Schlaf und Psychopathologie, wurde entwickelt und an alle 439 transsexuellen Patienten gesandt, die derzeit im Max-Planck-Institut für Psychiatrie in München behandelt werden.

Ergebnisse: Fünfundneunzig Patienten sandten die Fragebögen zurück, die analysiert wurden. Von 95 Patienten, erfüllten 37 Patienten die Diagnose Frau-zu-Mann Transsexualismus (FMT) (Durchschnittsalter 32 Jahre; Durchschnittsalter bei Diagnose 25 Jahre) und 58 Patientinnen die Diagnose Mann-zu-Frau Transsexualität (MFT) (Durchschnittsalter 48 Jahre; Durchschnittsalter bei Diagnose 39 Jahre). Wir sahen weder erhöhte Raten von Geschlechtsidentifikationsstörungen in den Familienanamnesen noch fanden wir erhöhte Raten von Medikamenteneinnahmen der Mütter oder andere Komplikationen während der Schwangerschaft. Achtundneunzig Prozent der Patienten erhielten Psychotherapie, 94,7% der Patienten erhielten hormonelle Therapie (HT) und 69,5% hatten bereits chirurgische Eingriffe zum Studienzeitpunkt hinter sich. Die Patienten wurden mit unterschiedlichen hormonellen Behandlungskonzepten behandelt: FMT erhielten Testosteron in transdermaler Form und/oder intramuskular. MFT erhielten transdermal, oral oder intramuskular Östrogene und Cyproteron Acetat in verschiedenen Kombinationen. Häufige Nebenwirkungen bei FMT waren Akne, Aggressivität und Haarausfall. In der Gruppe der MFT fanden sich häufig Depressionen, Abnahme der Muskelmasse und der Libido. Beide Gruppen erfuhren eine signifikante Gewichtszunahme infolge der HT (durchschnittliche Zunahme um 10.8 ± 6.6 kg in FMT und 8.7 ± 9.8 kg in MFT). Dennoch sahen wir im Vergleich zu einer alters-gematchte Kontrollgruppe keine erhöhten Lebenszeitprävalenzen für kardiovaskuläre, endokrine oder maligne Komorbiditäten. Beide Gruppen berichteten über eine hohe umfassende Zufriedenheit unter allen Therapien (Durchschnittswert für HT bei MFT: 75.6 ± 24.8 auf einer Skala von 0 = schlechteste bis 100 = bestmögliche Zufriedenheit. Durchschnittswert FMT: 88.4 ± 13.3).

Zusammenfassung: Wir schließen daraus, dass die Therapie von transsexuellen Patienten sicher zu sein scheint bei hoher Zufriedenheit der Patienten. Zukünftig sind klinische Studien wünschenswert, die ätiologische Aspekte des Phänomens Transsexualität klären können sowie die Langzeitkonsequenzen von HT im Vergleich mit einander (Head-to-head-Studien) untersuchen.

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***APPENDIX**: Questionnaire*

Max-Planck-Institut für Psychiatrie

Fragebogenerhebung zu Therapieeffekten, -nebenwirkungen und -zufriedenheit transsexueller Patienten im Süddeutschen Raum

Bitte ausfüllen:

Datum:_____ Uhrzeit:_____

Initialen:_____ Geburtsdatum:_____

Max-Planck-Institut für Psychiatrie

BASISFRAGEN

BASISDATEN ZUR PERSON:

Initialen: _____

Geburtsdatum: _____

Nationalität: _____

Größe: _____

Gewicht: _____

Geschlecht:

Frau-zu-Mann-Transsexuell	O
Mann-zu-Frau-Transsexuell	O
Weder, noch	O Kommentar:_____

Schulabschluss:

keiner	O
Hauptschule	O
Mittlere Reife	O
Fachoberschule	O
Abitur	O
Sonstiges:	_____

Gesamtanzahl an Schuljahren (ohne Berufsschule, Hochschule):_____

Berufsausbildung:

keine	O
noch in Ausbildung	O
Facharbeiter-Abschluss	O
Berufsfachschulabschluss	O
Fachhochschulabschluss	O
Hochschulabschluss	O
Sonstiges:	_____

Berufsstand:

Schüler/Student/in Ausbildung	O
Wehr-/Zivildienst	O
berufstätig Vollzeit	O
berufstätig Teilzeit	O
berentet/pensioniert	O
arbeitssuchend	O
nicht berufstätig	O

Erlernter Beruf: _____

Derzeitige Tätigkeit: _____

FRAGEN ZUR ENTWICKLUNG/VORGESCHICHTE:

Hat Ihre Mutter während der Schwangerschaft Hormone oder andere Medikamente eingenommen?

Nicht bekannt	O
Nein	O
Ja	O

Wenn ja, welche und aus welchem Grund_____

Gab es Besonderheiten während der Schwangerschaft Ihrer Mutter (Krankheiten, Infektionen)?

Nicht bekannt	O
Nein	O
Ja	O

Wenn ja, inwiefern_____

Gab es Besonderheiten bei Ihrer Geburt?

Nicht bekannt	O
Nein	O
Ja	O

Wenn ja, welche:_____

Infektion	O
Mechanische Probleme	O
Abnormales Gewicht	O
Geburtszeitpunkt	O

Leiden oder litten Sie an einer angeborenen oder erblichen Erkrankung?

Nicht bekannt O
Nein O
Ja O

Wenn ja, an welcher_____

Adrenogenitales Syndrom (AGS) O
Enzymatische Erkrankung O
Fehlentwicklung der Geschlechtsorgane O

Kennen Sie Ihr chromosomales Geschlecht?

Nein O
Ja O

Wenn ja:

Biologische Frau (46, XX) O
Biologischer Mann (46, XY) O
Klinefelter-Syndrom (47, XXY) O
Turner-Syndrom (45, X0) O
Anderes:_____

Gab es Besonderheiten in Ihrer Entwicklung während der Kindheit?

Nicht bekannt O
Nein O
Ja O

Wenn ja, welche:_____

Auffälligkeiten beim Wachstum O
Auffälligkeiten beim Beginn des Laufens O
Auffälligkeiten beim Beginn des Sprechens O

Gab es Besonderheiten in Ihrer Entwicklung während der Pubertät?

Nicht bekannt O
Nein O
Ja O

Wenn ja, welche:_____

Alter bei erster Regelblutung (wenn zutreffend)

_____Jahre

Hatten Sie normale weitere Regelblutungen (wenn zutreffend)?

Ja O
Nein O

Wenn nein, welche Besonderheiten:_____

Haben Sie leibliche Kinder?

Nein O
Ja O

Wenn ja:

Anzahl und Alter der Söhne:_____

Anzahl und Alter der Töchter:_____

Gab es Besonderheiten in Ihrer Schwangerschaft (wenn zutreffend)?

Nein O
Ja O

Wenn ja, welche (inklusive Fehlgeburt und Abtreibungen):_____

Händigkeit (Schreibhand):

rechts O
links O
beidhändig O

In welchem Alter haben Sie Ihre Transsexualität das erste Mal bemerkt?

Im _____Lebensjahr

Wer hat außer Ihnen Ihre Transsexualität zuerst bemerkt (z.B. Eltern, Freunde)?

_____

Woran haben Sie oder andere Ihre Transsexualität bemerkt?

_____

_____

In welchem Alter wurde die Transsexualität von ärztlicher Seite diagnostiziert?

Im _____Lebensjahr

Seit welchem Alter leben Sie in der gegengeschlechtlichen Geschlechtsrolle?

Seit _____Lebensjahr

Hat eine Namensänderung stattgefunden?

Nein O
Ja O

Wenn ja, wann_____

Hat eine Personenstandsänderung stattgefunden?

Nein O
Ja O

Wenn ja, wann_____

Fühlen Sie sich eher zu Männern oder Frauen hingezogen?

eher zu Männern	O
eher zu Frauen	O
zu beiden Geschlechtern	O
unentschieden	O

Leben Sie in einer festen Partnerschaft?

Nein O
Ja O

Wenn, ja:

Mit Mann	O
Mit Frau	O
Mit Mann-zu-Frau Transsexueller	O
Mit Frau-zu-Mann Transsexuellem	O

Wie ist die sexuelle Orientierung Ihres Partners/Ihrer Partnerin?

eher zu Männern	O
eher zu Frauen	O
zu beiden Geschlechtern	O
Mann-zu-Frau Transsexualität	O
Frau-zu-Mann Transsexualität	O

Wie ist Ihr Familienstand?

ledig	O
verheiratet mit Mann	O
verheiratet mit Frau	O
geschieden/getrennt lebend	O
verwitwet	O
eingetragene Lebensgemeinschaft	O

Erkrankungen:

Leiden Sie derzeit oder litten Sie in der Vergangenheit an einer körperlichen oder psychischen Krankheit?

Nein O
Ja O

Wenn ja, bitte genauere Angaben:

Erkrankungen des Herz-Kreislauf-Systems O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Erkrankungen des Atemtrakts O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Erkrankungen des Gehirns oder Nervensystems O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Hormonelle Erkrankungen O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Erkrankungen der sexuellen Organe O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Erkrankungen des Magen-Darm-Trakts O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Erkrankungen der Nieren und Harnwege O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Tumorerkrankungen O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Psychiatrische Erkrankungen O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Erkrankungen des Inmunsystems O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Erkrankungen des Blutes (z. B. Gerinnungsstörung) O

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

Erkrankungen des Knochenapparats O

(z.B. Frakturen, Osteoporose)

Welche:_____

Seit wann:_____

Therapie:_____

Derzeit: Nein O Ja O

<u>Welche Medikation nehmen Sie derzeit ein?</u>

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Gewohnheiten:

Rauchen Sie?

Nein O
Ja O
Aufgehört O Datum:_____

Kommentar: _____

Trinken Sie regelmäßig Alkohol?

Nein O
Ja O
Aufgehört O Datum:_____

Kommentar: _____

Treiben Sie mehr als 2 x 30 Minuten pro Woche Sport?

Nein O
Ja O

Kommentar: _____

Familienanamnese:

Gibt es in Ihrer Familie Personen, bei denen eine Transsexualität vorliegt?

Nein O
Ja O

Wenn ja, bei wem:_____

Gibt es in Ihrer Familie Personen, bei denen eine Homosexualität vorliegt?

Nein O
Ja O

Wenn ja, bei wem:_____

Haben Sie Geschwister?

Nein O
Ja O

Wenn ja, bitte Kommentar (Anzahl und Alter von Brüdern und Schwestern mit Angabe, ob von gleichen Eltern):

_____

_____

_____

_____

An welcher Stelle stehen Sie in der Geschwisterreihe?

Erstgeborener/e O
Zweitgeborener/e O
Drittgeborener/e O
Letztgeborener/e O
Andere Reihenfolge O Welche?_____

Gab es oder gibt es schwere oder chronische Erkrankungen in Ihrer Familie?

Nicht bekannt O
Nein O
Ja O

Wenn ja, wer und welche:_____

FRAGEN ZUR THERAPIE:

Wer behandelt Sie? (Mehrfachnennungen möglich)

Hausarzt/Hausärztin	O
Endokrinologe/in	O
Urologe/in	O
Gynäkologe/in	O
Psychiater/in	O
Psychotherapeut/in	O

Andere (wer?):_____

PSYCHOTHERAPIE

Erhalten Sie oder haben Sie eine Psychotherapie erhalten?

Nein	O
Ja	O

Wenn ja:

vor dem Alltagstest	O
während des Alltagstests	O
im Anschluß an die OP	O

Anzahl der Sitzungen insgesamt: _____

Welche Art von Psychotherapie erhalten Sie oder haben Sie erhalten?

Verhaltenstherapie	O
Tiefenpsychologische/analytische Psychotherapie	O
Nicht bekannt	O
Andere Therapieverfahren	O

Kommentar:_____

Was war Ihre Motivation für die Psychotherapie?

Gutachten	O
eigene Motivation	O

Andere:_____

Hat Ihr/e Therapeut/in Erfahrung mit der Behandlung von transsexuellen Patienten?

Nicht bekannt	O
Nein	O
Ja	O

Wie sehr sind Sie oder waren Sie zufrieden mit der Psychotherapie?

Bitte markieren Sie: 0= überhaupt nicht zufrieden, 100= total zufrieden).

Beispiel: „Ich bin 75% zufrieden“

----------X----------

0 10 20 30 40 50 60 70 80 90 100

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Haben oder hatten Sie Probleme bei der Psychotherapie?

Eher nein O
Eher ja O

Wenn ja, welche_____

Was hätten Sie beim Psychotherapieverlauf gerne geändert?

_____

_____

_____

HORMONTHERAPIE

Erhalten Sie eine gegengeschlechtliche hormonelle Therapie?

Nein O
Ja O

Wenn ja, seit wann? Datum_____

Welche Hormontherapie erhielten bzw. erhalten Sie (mit Datum, Dauer, Dosierung und Einnahmeintervall)?

a)_____

von_____ bis_____

b)_____

von_____ bis_____

c)_____

von_____ bis_____

d)_____

vom_____ bis_____

Sind Sie zufrieden mit der hormonellen Therapie?
(0= überhaupt nicht zufrieden, 100= total zufrieden)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Sind Sie zufrieden mit dem Zeitpunkt des Beginns der hormonellen Therapie?

Nein O
Ja O

Wer hat den Zeitpunkt festgelegt?

_____

Haben Sie Wirkungen, Nebenwirkungen bzw. Veränderungen durch die hormonelle Therapie bemerkt?

Nein O
Ja O

Wenn ja, bitte Zutreffendes ankreuzen (mit der Bitte um nähere Angaben):

Veränderungen der Haut O
Wenn ja, inwiefern_____

Veränderungen der Haarstruktur O
Wenn ja, inwiefern_____

Veränderungen des Haarwuchses O
Wenn ja, inwiefern_____

Akne/Pickel/Pusteln O
Wenn ja, inwiefern_____

Veränderungen der Hodengröße (wenn zutreffend) O
Wenn ja, inwiefern_____

Veränderungen der Klitoris (wenn zutreffend) O
Wenn ja, inwiefern_____

Neu aufgetretene Krebserkrankungen O
Wenn ja, welche (mit Erstdiagnosedatum)_____

Veränderungen/Ausbleiben der Menstruation (wenn zutreffend) O
Wenn ja, inwiefern_____

Prostatahyperplasie (wenn zutreffend) O
Wenn ja, inwiefern_____

Veränderungen der sexuellen Lust/Libido O
Wenn ja, inwiefern_____

Veränderungen des Sexualverhaltens O
Wenn ja, inwiefern_____

Veränderung der Sexualpraktiken O
Wenn ja, inwiefern_____

Veränderung spontaner Erektionen (wenn zutreffend) O
Wenn ja, inwiefern_____

Veränderungen des Brustumfangs O
Wenn ja, inwiefern_____

Veränderungen der Brustwarzengröße O
Wenn ja, inwiefern_____

Veränderungen der Stimmung O
Wenn ja, inwiefern_____

Veränderungen der Ängstlichkeit O
Wenn ja, inwiefern_____

Veränderungen von Leber, Gallenblase, Gallenwegen O
Wenn ja, inwiefern_____

Auftreten eines Herzinfarktes O
Wenn ja, wann:_____

Auftreten eines Schlaganfalls O
Wenn ja, wann:_____

Auftreten eines Diabetes mellitus (Blutzuckererkrankung) O
Wenn ja, wann:_____

Auftreten einer Thrombose/Embolie O
Wenn ja, wann:_____

Veränderung der Stimme O
Wenn ja, inwiefern_____

Veränderungen des Kehlkopfes O
Wenn ja, inwiefern_____

Veränderungen des Körpergewichts O
Wenn ja, inwiefern_____

Gewichtzunahme um_____ kg
Gewichtabnahme um_____ kg

Veränderung der Fettverteilung O
Wenn ja,

männlicher O
weiblicher O

männlich weiblich

Veränderungen der Muskelmasse/Muskelstärke O
Wenn ja, inwiefern_____

Treiben Sie Sport oder machen Sie Krafttraining unter der hormonellen Therapie?
Nein O
Ja O

Veränderung der Knochendichte O
Wenn ja, inwiefern_____

Auftreten von Wassereinlagerungen (Ödemen) O
Wenn ja, wann:_____

Auftreten von Milchfluß aus der Brust O
Wenn ja, wann:_____

Prolaktinom O
Wenn ja, wann:_____

Haben Sie bemerkt, dass einige der oben genannten Veränderungen ausgeprägter nach der geschlechtsangleichenden-OP (wenn zutreffend) waren?

Nein O
Ja O

Wenn ja, welche_____

Haben oder hatten Sie andere Probleme mit der hormonellen Therapie?

Nein O
Ja O

Wenn ja, welche_____

Was hätten Sie beim Verlauf der hormonellen Therapie gerne geändert?

_____

_____

_____

_____

CHIRURGISCHE THERAPIE

Wurden Sie geschlechtsangleichend operiert?

Nein O
Ja O

Wenn ja, welche Operationen wurden durchgeführt (mit Datum)?

1.Art der OP/Datum:_____

2.Art der OP/Datum:_____

3.Art der OP/Datum:_____

4.Art der OP/Datum:_____

Sind Sie zufrieden mit der operativen Therapie?
(0= überhaupt nicht zufrieden, 100= total zufrieden)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Gab es Probleme/Nebenwirkungen der operativen Therapie?

eher nein O
eher ja O

Wenn ja, inwiefern_____

Was hätten Sie am operativen Therapieverlauf gerne geändert?

_____

_____

_____

_____

ZUSATZTHERAPIEN

Erhalten oder haben Sie jemals eine Epilationstherapie erhalten?

Nein O
Ja O

Wenn ja, wann und wie oft:_____

Wie sehr sind bzw. waren Sie zufrieden mit der Epilationstherapie?
(0= überhaupt nicht zufrieden, 100= total zufrieden)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Haben oder hatten Sie jemals eine logopädische Therapie?

Nein O
Ja O

Wenn ja, wann und wie oft:_____

Wie sehr sind bzw. waren Sie zufrieden mit der Logotherapie?
(0= überhaupt nicht zufrieden, 100= total zufrieden)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Hatten Sie eine Kehlkopf-OP?

Nein O
Ja O

Wenn ja, wann:_____

Wie sehr sind bzw. waren Sie zufrieden mit der Kehlkopf-OP?
(0= überhaupt nicht zufrieden, 100= total zufrieden)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

GESAMTBEURTEILUNG:

Wie würden Sie Ihren **körperlichen** Gesundheitszustand vor der Erstdiagnose und Beginn der psychiatrisch/psychotherapeutischen Behandlung beschreiben?
(0= schlechtester denkbarer Zustand, 100=bester denkbarer Zustand)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Wie würden Sie Ihren **körperlichen** Gesundheitszustand während der psychiatrisch/psychotherapeutischen Behandlung beschreiben (wenn zutreffend)?
(0= schlechtester denkbarer Zustand, 100=bester denkbarer Zustand)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Wie würden Sie Ihren **körperlichen** Gesundheitszustand während der endokrinologischen Behandlung beschreiben (wenn zutreffend)?
(0= schlechtester denkbarer Zustand, 100=bester denkbarer Zustand)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Wie würden Sie Ihren **körperlichen** Gesundheitszustand nach der operativen Behandlung beschreiben (wenn zutreffend)?
(0= schlechtester denkbarer Zustand, 100=bester denkbarer Zustand)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Wie würden Sie Ihren **psychischen** Gesundheitszustand vor der Erstdiagnose und Beginn der psychiatrisch/psychotherapeutischen Behandlung beschreiben?
(0= schlechtester denkbarer Zustand, 100=bester denkbarer Zustand)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Wie würden Sie Ihren **psychischen** Gesundheitszustand während der psychiatrisch/psychotherapeutischen Behandlung beschreiben (wenn zutreffend)?
(0= schlechtester denkbarer Zustand, 100=bester denkbarer Zustand)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Wie würden Sie Ihren **psychischen** Gesundheitszustand während der endokrinologischen Behandlung beschreiben (wenn zutreffend)?
(0= schlechtester denkbarer Zustand, 100=bester denkbarer Zustand)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Wie würden Sie Ihren **psychischen** Gesundheitszustand nach der operativen Behandlung beschreiben (wenn zutreffend)?
(0= schlechtester denkbarer Zustand, 100=bester denkbarer Zustand)

Bitte hier ankreuzen:

_____

0 10 20 30 40 50 60 70 80 90 100

Vielen Dank!!

SCHLAF

Schlafqualitäts-Fragebogen (PSQI)

Die folgenden Fragen beziehen sich auf Ihre üblichen Schlafgewohnheiten und zwar *nur während der letzten vier Wochen.* Ihre Antworten sollten möglichst genau sein und sich auf die Mehrzahl der Tage und Nächte während der letzten vier Wochen beziehen. Bean tworten Sie bitte alle Fragen.

1. Wann sind Sie während der letzten vier Wochen gewöhnlich abends zu Bett gegangen?

übliche Uhrzeit:

2. Wie lange hat es während der letzten vier Wochen gewöhnlich gedauert, bis Sie nachts eingeschlafen sind?

in Minuten:

3. Wann sind Sie während der letzten vier Wochen gewöhnlich morgens aufgestanden?

übliche Uhrzeit:

4. Wieviele Stunden haben Sie während der letzten vier Wochen pro Nacht tatsächlich geschlafen?
(Das muß nicht mit der Anzahl der Stunden, die Sie im Bett verbracht haben, übereinstimmen.)

Effektive Schlafzeit (Stunden) pro Nacht:

Kreuzen Sie bitte für jede der folgenden Fragen die für Sie zutreffende Antwort an. Bean tworten Sie bitte alle Fragen.

5. Wie oft haben Sie während der letzten vier Wochen schlecht geschlafen, ...

a) ... weil Sie nicht innerhalb von 30 Minuten einschlafen konnten?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

b) ... weil Sie mitten in der Nacht oder früh morgens aufgewacht sind?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

c) ... weil Sie aufstehen mußten, um zur Toilette zu gehen?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

d) ... weil Sie Beschwerden beim Atmen hatten?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

e) ... weil Sie husten mußten oder laut geschnarcht haben?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

f) ... weil Ihnen zu kalt war?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

g) ... weil Ihnen zu warm war?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

h) ... weil Sie schlecht geträumt hatten?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

i) ... weil Sie Schmerzen hatten?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

j) ... aus anderen Gründen?

Bitte beschreiben:

Und wie oft während des letzten Monats konnten Sie aus diesem Grund schlecht schlafen?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

6. Wie würden Sie insgesamt die Qualität Ihres Schlafes während der letzten vier Wochen beurteilen?

- ❍ Sehr gut
- ❍ Ziemlich gut
- ❍ Ziemlich schlecht
- ❍ Sehr schlecht

7. Wie oft haben Sie während der letzten vier Wochen Schlafmittel eingenommen (vom Arzt verschriebene oder frei verkäufliche)?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

8. Wie oft hatten Sie während der letzten vier Wochen Schwierigkeiten wachzubleiben, etwa beim Autofahren, beim Essen oder bei gesellschaftlichen Anlässen?

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

9. Hatten Sie während der letzten vier Wochen Probleme, mit genügend Schwung die üblichen Alltagsaufgaben zu erledigen?

- ❍ Keine Probleme
- ❍ Kaum Probleme
- ❍ Etwas Probleme
- ❍ Große Probleme

10. Schlafen Sie allein in Ihrem Zimmer?

- ❍ Ja
- ❍ Ja, aber ein Partner/Mitbewohner schläft in einem anderen Zimmer
- ❍ Nein, der Partner schläft im selben Zimmer, aber nicht im selben Bett
- ❍ Nein, der Partner schläft im selben Bett

Falls Sie einen Mitbewohner / Partner haben, fragen Sie sie/ihn bitte, ob und wie oft er/sie bei Ihnen folgendes bemerkt hat.

a) Lautes Schnarchen

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

b) Lange Atempausen während des Schlafes

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

c) Zucken oder ruckartige Bewegungen der Beine während des Schlafes

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

d) Nächtliche Phasen von Verwirrung oder Desorientierung während des Schlafes

- ❍ Während der letzten vier Wochen gar nicht
- ❍ Weniger als einmal pro Woche
- ❍ Einmal oder zweimal pro Woche
- ❍ Dreimal oder häufiger pro Woche

e) Oder andere Formen von Unruhe während des Schlafes

Bitte beschreiben:

Machen Sie bitte noch folgende Angaben zu Ihrer Person:

Alter: ____ Jahre

Körpergröße: .....

Gewicht:.....

Geschlecht:
- ❍ weiblich
- ❍ männlich

Beruf:
- ❍ Schüler/Student(in)
- ❍ Arbeiter(in)
- ❍ Rentner(in)
- ❍ selbständig
- ❍ Angestellte(r)
- ❍ arbeitslos/ Hausfrau(mann)

Fragebogen zur Tagesschläfrigkeit

(Epworth Sleepiness Scale)

Datum: .....

Die folgende Frage bezieht sich auf Ihr normales Alltagsleben in der letzten Zeit:

Für wie wahrscheinlich halten Sie es, daß Sie in einer der folgenden Situationen einnicken oder einschlafen würden, - sich also nicht nur müde fühlen?

Auch wenn Sie in der letzten Zeit einige dieser Situationen nicht erlebt haben, versuchen Sie sich trotzdem vorzustellen, wie sich diese Situationen auf Sie ausgewirkt hätten.

Benutzen Sie bitte die folgende Skala, um für jede Situation eine möglichst genaue Einschätzung vorzunehmen und kreuzen Sie die entsprechende Zahl an:

0 = würde *niemals* einnicken
1 = *geringe* Wahrscheinlichkeit einzunicken
2 = *mittlere* Wahrscheinlichkeit einzunicken
3 = *hohe* Wahrscheinlichkeit einzunicken

Situation	Wahrscheinlichkeit einzunicken
Im Sitzen lesend	⓪ ① ② ③
Beim Fernsehen	⓪ ① ② ③
Wenn Sie passiv (als Zuhörer) in der Öffentlichkeit sitzen (z.B. im Theater oder bei einem Vortrag)	⓪ ① ② ③
Als Beifahrer im Auto während einer einstündigen Fahrt ohne Pause	⓪ ① ② ③
Wenn Sie sich am Nachmittag hingelegt haben, um auszuruhen	⓪ ① ② ③
Wenn Sie sitzen und sich mit jemand unterhalten	⓪ ① ② ③
Wenn Sie nach dem Mittagessen (ohne Alkohol) ruhig dasitzen	⓪ ① ② ③
Wenn Sie als Fahrer eines Autos verkehrsbedingt einige Minuten halten müssen	⓪ ① ② ③
Bitte nicht ausfüllen Summe	

Fragebogen zur Erfassung von Ruhelosen Beinen

Bitte geben Sie an, ob die folgenden Aussagen auf Sie zutreffen:

1. Kommt es vor, dass Sie Missempfindungen (z.B. Ziehen, Stechen, Kribbeln, Schmerzen) oder ein schwer zu beschreibendes, unangenehmes Gefühl in den Beinen oder Armen haben?	□ ja	□ nein
2. Haben Sie häufig den Drang, die Beine zu bewegen oder umherzulaufen?	□ ja	□ nein
3. Treten Ihre Beschwerden überwiegend in entspannten Situationen (z.B. im Liegen oder Sitzen) auf?	□ ja	□ nein
4. Sind Ihre Beschwerden oder waren Ihre Beschwerden früher nachts stärker ausgeprägt als tagsüber?	□ ja	□ nein
5. Können Ihre Beschwerden durch Bewegung (z.B. Bewegen der Beine, Umhergehen) gelindert oder ganz zum Verschwinden gebracht werden?	□ ja	□ nein
6. Haben Sie Schwierigkeiten beim Einschlafen oder nachts durchzuschlafen?	□ ja	□ nein
7. Fühlen Sie sich tagsüber unausgeschlafen, erschöpft oder müde?	□ ja	□ nein
8. Kommt es vor, dass Ihre Beine während des Schlafes oder tagsüber in Ruhesituationen zucken oder Bewegungen durchführen, die Sie nicht beeinflussen können?	□ ja	□ nein
9. Treten oder traten früher Ihre Beschwerden nicht regelmäßig auf, sondern gibt/gab es auch Tage bzw. Nächte ohne Beschwerden?	□ ja	□ nein
10. Gibt es in Ihrer Familie noch andere Personen, die ähnliche Beschwerden haben?	□ ja	□ nein

wenn ja, wer: _____

Bitte beantworten Sie die folgenden Fragen NUR, wenn die oben genannten Missempfindungen in den Beinen oder der Drang, die Beine zu bewegen, bei Ihnen jemals aufgetreten sind:

11. Wie häufig treten die Beschwerden auf?

- ❍ Vor ca. _____ Jahren, jetzt nicht mehr
- ❍ Weniger als einmal pro Jahr
- ❍ Ein- oder mehrmals pro Jahr
- ❍ Ein- oder mehrmals pro Monat
- ❍ Ein- oder mehrmals pro Woche
- ❍ Jede oder fast jede Nacht

12. Wann sind diese Symptome zum ersten Mal aufgetreten: im Alter von _____ Jahren

13. Wie schwer sind diese Symptome insgesamt?

❍ sehr gering ❍ gering ❍ mäßig ❍ stark ❍ sehr stark

14. Wie stark wirken sich die Symptome insgesamt auf Ihre Alltagsaktivitäten aus, etwa auf Ihr Familienleben, Ihr häusliches Umfeld, Ihre Kontakte zu Freunden und Bekannten oder Ihre berufliche Arbeit?

❍ gar nicht ❍ gering ❍ mäßig ❍ stark ❍ sehr stark

FRAGEBOGEN ZUR ERFASSUNG VON SCHLAFBEZOGENEN ATMUNGSSTÖRUNGEN

Hat sich Ihr Gewicht verändert?	❑ zugenommen ❑ abgenommen ❑ unverändert
Schnarchen Sie?	❑ ja ❑ nein ❑ weiß nicht
Wie laut schnarchen Sie?	❑ so laut wie Atmen ❑ so laut wie Sprechen ❑ lauter als Sprechen ❑ sehr laut
Wie häufig schnarchen Sie?	❑ fast jeden Tag ❑ 3 – 4 mal pro Woche ❑ 1 – 2 mal pro Woche ❑ 1 – 2 mal pro Monat ❑ nie oder fast nie
Stört Ihr Schnarchen andere Personen?	❑ ja ❑ nein
Wie häufig fielen bei Ihnen Atempausen auf?	❑ fast jeden Tag ❑ 3 – 4 mal pro Woche ❑ 1 – 2 mal pro Woche ❑ 1 – 2 mal pro Monat ❑ nie oder fast nie
Sind Sie nach dem Erwachen müde?	❑ fast jeden Tag ❑ 3 – 4 mal pro Woche ❑ 1 – 2 mal pro Woche ❑ 1 – 2 mal pro Monat ❑ nie oder fast nie
Sind Sie während des Tages müde?	❑ fast jeden Tag ❑ 3 – 4 mal pro Woche ❑ 1 – 2 mal pro Woche ❑ 1 – 2 mal pro Monat ❑ nie oder fast nie
Sind Sie schon einmal beim Autofahren eingeschlafen?	❑ ja ❑ nein
Haben Sie einen erhöhten Blutdruck?	❑ ja ❑ nein ❑ weiß nicht

Münchner Parasomnie Screening (MuPS)

Dieser Fragebogen wurde entwickelt, um die Häufigkeit bestimmter nächtlicher Verhaltensweisen zu erfassen.

Was Sie bei dem folgenden Fragebogen beachten sollten

1. **Bitte vergessen Sie nicht,** die dick umrandete, dunklere Spalte mit der Aufschrift *„Woher wissen Sie, dass dieses Verhalten bei Ihnen auftritt?“* auszufüllen. Sie trifft immer dann zu, wenn das beschriebene Verhalten von Ihnen und/oder von anderen (z.B. Familie oder Zimmernachbar) tatsächlich beobachtet wurde.
2. Nutzen Sie bitte die Spalte ***„Bemerkungen“*** für genauere Angaben:
   wenn Häufigkeitsangaben wie „selten/manchmal/oft“ Ihnen schwer fallen, da das beschriebene Verhalten in *extrem* unregelmäßigen Intervallen auftritt
   wenn die Beschreibung des nächtlichen Verhaltens nicht ganz auf das Ihrige zutrifft, jedoch ähnlich ist
   wenn Sie eine Vermutung haben, wieso dieses Verhalten auftreten könnte (z.B. bei nächtlichen Wadenkrämpfen könnte die Ursache Magnesium-Mangel sein)
3. Falls ein aufgelistetes Verhalten bei Ihnen vor längerer Zeit auftrat, jedoch **nicht regelmäßig oder nicht zur Zeit auftritt,** nutzen Sie bitte die Spalte *„Wurde vor Jahren beobachtet, jetzt jedoch nicht mehr“.*

Angaben zum allgemeinen Schlafverhalten

1. Schlafen Sie zur Zeit alleine oder teilen Sie Ihr Schlafzimmer mit einem Bettpartner/einer anderen Person?

❍ Alleine
❍ Bettpartner/andere Person

2. Haben Sie Schlafstörungen?

❍ Nein
❍ Ja, und zwar_____

Wie häufig treten folgende Verhaltensweisen bei Ihnen auf?	Ich oder andere haben das noch nie beobachtet	Früher: Wurde vor Jahren beobachtet, jetzt jedoch nicht mehr	Aktuell: Sehr selten - Weniger als einmal pro Jahr	Selten- Ein- oder mehrmals pro Jahr	Manchmal- Ein- oder mehrmals pro Monat	Häufig- Ein- oder mehrmals pro Woche	Sehr häufig- Jede oder fast jede Nacht	Woher wissen Sie, dass dieses Verhalten bei Ihnen auftritt?	Bemerkungen
Einschlafzuckungen in den Beinen oder Körper, die plötzlich und unabsichtlich auftreten, oft mit einem Gefühl des Fallens verbunden	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Rhythmische und schnelle Beinbewegungen **während des Einschlafens oder Halbschlafes**, die auch willentlich auftreten können	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Rhythmische und wiederholte Bewegungen des Kopfes oder des Körpers beim Einschlafen oder während nächtlicher Wachphasen z.B. sich in den Schlaf wiegen, wippen oder schaukeln	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Die Wahrnehmung eines lauten Knalles, eines Knall-ähnlichen Geräusches (z.B. Türenknallen) oder das Gefühl einer „Explosion im Kopf“ beim Einschlafen oder Aufwachen	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Täuschungen des Hörens oder des Sehens , die das Einschlafen oder Aufwachen quälend oder bedrohlich begleiten (z.B. Geräusche oder Stimmen hören, Personen oder Dinge sehen, die nicht im Raum sind)	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Wiederholtes, unwillkürliches Zucken der Beine oder Treten **während des Schlafes (kann nur durch Dritte beobachtet werden)**	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ von anderen beobachtet	
Nächtliche Wadenkrämpfe	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Nächtliches Zähneknirschen	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Sprechen während des Schlafes	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Verschlucken während des Schlafes oder Erwachen mit dem Gefühl zu ersticken	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Lautes und wiederholtes Seufzen oder Stöhnen während des Schlafes	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Einnässen während des Schlafes	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	

Blatt bitte wenden

Seite 2/2		Früher	Aktuell						
Wie häufig treten folgende Verhaltensweisen bei Ihnen auf?	**Ich oder andere haben das noch nie beobachtet**	**Wurde vor Jahren beobachtet, jetzt jedoch nicht mehr**	**Sehr selten - Weniger als einmal pro Jahr**	**Selten- Ein- oder mehrmals pro Jahr**	**Manchmal- Ein- oder mehrmals pro Monat**	**Häufig- Ein- oder mehrmals pro Woche**	**Sehr häufig- Jede oder fast jede Nacht**	**Woher wissen Sie, dass dieses Verhalten bei Ihnen auftritt?**	**Bemerkungen**
Furchteinflössende Träume oder Albträume	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Erwachen mit massiver Angst und möglicherweise Schreien, **ohne** die Erinnerung an einen Traum	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Nach dem Einschlafen wieder aufwachen, um etwas zu essen	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Im Schlaf (also unbewußt) etwas essen oder eine Mahlzeit zubereiten, die auch ungewöhnliche oder ungenießbare Zutaten haben kann (z.B. Eis und Käse, Spülmittel statt Butter)	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Erwachen mit starker Verwirrtheit/Schwierigkeiten sich zu orientieren/verlangsamtem Sprechen	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Erwachen mit einer Lähmung des ganzen Körpers (bis auf Augen und Atmung), die mehrere Sekunden dauern kann	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Schlafwandeln oder sich aus dem Schlaf heraus aufrichten, ohne das Bett zu verlassen	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Kommt es vor, dass Sie während des Schlafes um sich schlagen oder –treten?	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Kommt es vor, dass Sie das, was Sie träumen, auch tatsächlich tun, z.B. gestikulieren oder um sich schlagen?	❍ Noch nie	❍ vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	
Andere außergewöhnliche Verhaltensweisen während der Nacht (bitte hier beschreiben):	❍ Noch nie	❍vor ____ Jahren, jetzt nicht mehr	❍	❍	❍	❍	❍	❍ selbst beobachtet ❍ von anderen beobachtet	

Name: _____ Datum: _____ **SCL 90 - R**

Anleitung
Sie finden nachstehend eine Liste von Problemen und Beschwerden, die man manchmal hat. Bitte lesen Sie jede Frage sorgfältig durch und entscheiden Sie, wie stark Sie **während der vergangenen 7 Tage bis heute** durch diese Beschwerden gestört oder bedrängt worden sind. Überlegen Sie bitte nicht erst, welche Antwort „den besten Eindruck" machen könnte, sondern antworten Sie so, wie es für Sie persönlich zutrifft. Machen Sie bitte hinter jeder Frage nur ein Kreuz in das Kästchen mit der für Sie am besten zutreffenden Antwort. Streichen Sie versehentliche Antworten deutlich durch, und kreuzen Sie danach das richtige Kästchen an.
Bitte beantworten Sie jede Frage!

Beispiel

Frage: Wie sehr litten Sie unter Rückenschmerzen?

Wenn bei Ihnen als Antwort auf diese Frage am besten „sehr stark" zutrifft, so kreuzen Sie das Kästchen „sehr stark" an.

Stärkegrad	überhaupt nicht	ein wenig	ziemlich	stark	sehr stark
					X

ALLE IHRE ANTWORTEN WERDEN VERTRAULICH BEHANDELT.

Wie sehr litten Sie unter … ?	überhaupt nicht	ein wenig	ziemlich	stark	sehr stark
1. Kopfschmerzen					
2. Nervosität oder innerem Zittern					
3. immer wieder auftauchenden unangenehmen Gedanken, Worten oder Ideen, die Ihnen nicht aus dem Kopf gehen					
4. Ohnmachts- oder Schwindelgefühlen					
5. Verminderung Ihres Interesses oder Ihrer Freude an Sexualität					
6. allzu kritischer Einstellung gegenüber anderen					
7. der Idee, dass irgend jemand Macht über Ihre Gedanken hat					
8. dem Gefühl, dass andere an den meisten Ihrer Schwierigkeiten Schuld sind					
9. Gedächtnisschwierigkeiten					
10. Beunruhigung wegen Achtlosigkeit und Nachlässigkeit					
11. dem Gefühl, leicht reizbar oder verärgerbar zu sein					
12. Herz- und Brustschmerzen					
13. Furcht auf offenen Plätzen oder auf der Straße					
14. Energielosigkeit oder Verlangsamung in den Bewegungen oder im Denken					
15. Gedanken, sich das Leben zu nehmen					
16. Hören von Stimmen, die sonst keiner hört					
17. Zittern					
18. dem Gefühl, dass man den meisten Leuten nicht trauen kann					
19. schlechtem Appetit					
20. Neigung zum Weinen					
21. Schüchternheit oder Unbeholfenheit im Umgang mit dem anderen Geschlecht					
22. der Befürchtung, ertappt oder erwischt zu werden					
23. plötzlichem Erschrecken ohne Grund					
24. Gefühlsausbrüchen, denen gegenüber Sie machtlos waren					
25. Befürchtungen, wenn Sie allein aus dem Haus gehen					
26. Selbstvorwürfen über bestimmte Dinge					
27. Kreuzschmerzen					
28. dem Gefühl, dass es Ihnen schwer fällt, etwas anzufangen					
29. Einsamkeitsgefühlen					
30. Schwermut					
31. dem Gefühl, sich zu viele Sorgen machen zu müssen					
32. dem Gefühl, sich für nichts zu interessieren					
33. Furchtsamkeit					
34. Verletzlichkeit in Gefühlsdingen					
35. der Idee, dass andere Leute von Ihren geheimsten Gedanken wissen					
36. dem Gefühl, dass andere Sie nicht verstehen oder teilnahmslos sind					
37. dem Gefühl, dass die Leute unfreundlich sind oder Sie nicht leiden können					
38. der Notwendigkeit, alles sehr langsam zu zu tun, um sicher zu sein, dass alles richtig wird					
39. Herzklopfen oder Herzjagen					
40. Übelkeit oder Magenverstimmung					
41. Minderwertigkeitsgefühlen gegenüber anderen					
42. Muskelschmerzen (Muskelkater, Gliederreißen)					
43. dem Gefühl, dass andere Sie beobachten oder über Sie reden					
44. Einschlafschwierigkeiten					
45. dem Zwang, wieder und wieder nachzukontrollieren, was Sie tun					
46. Schwierigkeiten sich zu entscheiden					
47. Furcht vor Fahrten in Bus, Straßenbahn, U-Bahn oder Zug					

Wie sehr litten Sie unter … ?	überhaupt nicht	ein wenig	ziemlich	stark	sehr stark
48. Schwierigkeiten beim Atmen	☐	☐	☐	☐	☐
49. Hitzewallungen oder Kälteschauern	☐	☐	☐	☐	☐
50. die Notwendigkeit, bestimmte Dinge, Orte oder Tätigkeiten zu meiden, weil Sie durch diese erschreckt werden	☐	☐	☐	☐	☐
51. Leere im Kopf	☐	☐	☐	☐	☐
52. Taubheit oder Kribbeln in einzelnen Körperteilen	☐	☐	☐	☐	☐
53. dem Gefühl, einen Klumpen (Kloß) im Hals zu haben	☐	☐	☐	☐	☐
54. einem Gefühl der Hoffnungslosigkeit angesichts der Zukunft	☐	☐	☐	☐	☐
55. Konzentrationsschwierigkeiten	☐	☐	☐	☐	☐
56. Schwächegefühl in einzelnen Körperteilen	☐	☐	☐	☐	☐
57. dem Gefühl, gespannt oder aufgeregt zu sein	☐	☐	☐	☐	☐
58. Schweregefühl in Armen oder Beinen	☐	☐	☐	☐	☐
59. Gedanken an den Tod und an das Sterben	☐	☐	☐	☐	☐
60. dem Drang sich zu überessen	☐	☐	☐	☐	☐
61. einem unbehaglichen Gefühl, wenn Leute Sie beobachten oder über Sie reden	☐	☐	☐	☐	☐
62. dem Auftauchen von Gedanken, die nicht Ihre eigenen sind	☐	☐	☐	☐	☐
63. dem Drang, jemanden zu schlagen, zu verletzen oder ihm Schmerzen zuzufügen	☐	☐	☐	☐	☐
64. frühem Erwachen am Morgen	☐	☐	☐	☐	☐
65. zwanghafter Wiederholung derselben Tätigkeiten wie Berühren, Zählen, Waschen	☐	☐	☐	☐	☐
66. unruhigem oder gestörtem Schlaf	☐	☐	☐	☐	☐
67. dem Drang, Dinge zu zerbrechen oder zu zerschmettern	☐	☐	☐	☐	☐
68. Ideen oder Anschauungen, die andere nicht mit Ihnen teilen	☐	☐	☐	☐	☐
69. starker Befangenheit im Umgang mit anderen	☐	☐	☐	☐	☐
70. Abneigung gegen Menschenmengen, z.B. beim Einkaufen oder im Kino	☐	☐	☐	☐	☐

Wie sehr litten Sie unter … ?	überhaupt nicht	ein wenig	ziemlich	stark	sehr stark
71. einem Gefühl, dass alles sehr anstrengend ist	☐	☐	☐	☐	☐
72. Schreck- oder Panikanfälle	☐	☐	☐	☐	☐
73. Unbehagen beim Essen oder Trinken in der Öffentlichkeit	☐	☐	☐	☐	☐
74. der Neigung, immer wieder in Erörterungen und Auseinandersetzungen zu geraten	☐	☐	☐	☐	☐
75. Nervosität, wenn Sie allein gelassen werden	☐	☐	☐	☐	☐
76. mangelnder Anerkennung Ihrer Leistungen durch andere	☐	☐	☐	☐	☐
77. Einsamkeitsgefühlen, selbst wenn Sie in Gesellschaft sind	☐	☐	☐	☐	☐
78. so starker Ruhelosigkeit, dass Sie nicht stillsitzen können	☐	☐	☐	☐	☐
79. dem Gefühl, wertlos zu sein	☐	☐	☐	☐	☐
80. dem Gefühl, dass Ihnen etwas Schlimmes passieren wird	☐	☐	☐	☐	☐
81. dem Bedürfnis, laut zu schreien oder mit Gegenständen zu werfen	☐	☐	☐	☐	☐
82. der Furcht, in der Öffentlichkeit in Ohnmacht zu fallen	☐	☐	☐	☐	☐
83. dem Gefühl, dass die Leute Sie ausnutzen, wenn Sie es zulassen würden	☐	☐	☐	☐	☐
84. sexuellen Vorstellungen, die ziemlich unangenehm für Sie sind	☐	☐	☐	☐	☐
85. dem Gedanken, dass Sie für Ihre Sünden bestraft werden sollten	☐	☐	☐	☐	☐
86. schreckerregenden Gedanken und Vorstellungen	☐	☐	☐	☐	☐
87. dem Gedanken, dass etwas ernstlich mit Ihrem Körper nicht in Ordnung ist	☐	☐	☐	☐	☐
88. dem Eindruck, sich einer anderen Person nie so richtig nahe fühlen zu können	☐	☐	☐	☐	☐
89. Schuldgefühlen	☐	☐	☐	☐	☐
90. dem Gedanken, dass irgend etwas mit Ihrem Verstand nicht in Ordnung ist	☐	☐	☐	☐	☐

Bitte prüfen Sie, ob Sie alle Fragen zutreffend beantwortet haben!

LEBENSLAUF

I. PERSÖNLICHE ANGABEN

- **Vorname, Nachname:** María Ángeles Bazarra Castro
- **Geboren** am 19. November 1982 in Santiago de Compostela (Spanien)
- **Familienstand:** ledig

II. AUSBILDUNG

1. Schule:

1988-1996	E.G.B (Enseñanza General Básica) mit Note 1
1996-1999	B.U.P (Bachiller Unificado Polivalente) mit Note 1 (100%)
1999-2000	C.O.U (Curso de Orientación Universitaria) mit Note 1 (98%)
	18. Juni 2000 – P.A.A.U. (Probas de aptitude para o acceso á universidade – Universitätszugang mit nationaler Prüfung) mit Note 2 (76,3%)

2. Universität:

2000-2006	Medizinstudium an der Universität Santiago de Compostela (Spanien) mit Abschluss: Licenciada en Medicina. Note 2
2005-2006	ERASMUS Jahr an der Universität RWTH Aachen
2006-2007	Forschungsjahr am Laboratoire de Médecine Experimental (Campus Erasme, Université Libre de Bruxelles). Fachbereich Endokrinologie (typ 2 Diabetes Mellitus) mit Abschluss: D.E.A. (Diplôme d'Études Approfondies)
2007-2008	Promotionsarbeit am Max-Planck-Institut für Psychiatrie

3. Weiterbildung:

2007-2008	Assistenzärztin am Max-Planck-Institut für Psychiatrie, Fachbereich Innere Medizin und Endokrinologie

4. Derzeitige Tätigkeiten:

Assistenzärztin und Fortbildungsstipendiatin am Max-Planck-Institut für Psychiatrie, Fachbereich Innere Medizin und Endokrinologie

III. SPRACHEN

- Spanisch (Muttersprache)
- Englisch (fliessend)

- Deutsch (Mittelstufe)
- Galizisch-Portugisisch (fliessend)
- Französisch (Grundkenntnisse)

IV. Zusatzqualifikationen

- Computertätigkeiten : Microsoft Office, Prism, SPSS
- Labortätigkeiten : Western Blot Analysen, PCR, virale Transfektionen, Viabilitäts-Tests, knock-out Mäuse, Immunohistochemie

V. Publikationsliste

Cunha, D.A., P. Hekerman, L. Ladrière, A. Bazarra-Castro, et al., *Initiation and execution of lipotoxic ER stress in pancreatic beta-cells.* J Cell Sci, 2008. **121**(14): p. 2308-2318.

Bazarra-Fernández, A. and M. A. Bazarra-Castro, *Cáncer de mama: ¿Dónde nos encontramos?.* Acta Ginecol, 2004. **61** (3): p. 92-95.