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Body composition in transgender women living with HIV/AIDS: a discussion of changes that impact on the assessment of nutritional status

Composição corporal em mulheres transgênero vivendo com HIV/AIDS: uma discussão das transformações que interferem na avaliação do estado nutricional

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Abstract

The clinical practice in care of transgender woman living with HIV/AIDS has drawn attention to the consequences of gender transformation procedures in the evaluation of body composition. Transgender women are people who were attributed as being men at birth, but identify themselves as women and claim for the social and legal recognition as women. In seeking for feminization, these people are likely to make use of silicone gels, hormone therapy or even harmful procedures such as silicone oil injection. These procedures result in anthropometric and body compartment changes such as the ones observed in subcutaneous adipose tissue, bone and lean body mass. In some cases, there is the occurrence of prostatic volume reduction and development of lobular and acinar breasts. In the context of HIV infection, this scenario is even more difficult to handle, since the treatment with antiretroviral, in some cases, could generate adverse reactions such as lipodystrophy. Lipodystrophy is characterized by changes in body fat distribution (lipoatrophy and lipohypertrophy) and must be considered in the body composition evaluation of this population. Because of the considerable vulnerability of transgender women with HIV infection, the World Health Organization recommends the adoption of specific actions of prevention, treatment and health care for this population. Therefore, in the present work, we intend to start thinking about the challenges to nutrition evaluation of transgender women living with HIV/AIDS.

Keywords: Transgender. Silicone. Lipodystrophy. Body composition, HIV.

Resumo

A prática clínica no atendimento de mulheres transgênero vivendo com HIV/AIDS despertou o olhar sobre as consequências dos procedimentos para a adequação ao gênero autodeterminado no processo de avaliação da composição corporal. Mulheres transgênero são pessoas que, ao nascer, receberam a atribuição de homem, mas se autoidentificam e reivindicam o reconhecimento social e legal como mulheres. Em busca da feminilização, podem vir a fazer uso de géis de silicone, de terapia hormonal ou até mesmo de procedimentos nocivos, como injeção de óleo de silicone. Esses procedimentos resultam em alterações antropométricas e modificações dos compartimentos corporais, como o tecido adiposo subcutâneo, massa óssea e massa magra. Ocorrem também, em alguns casos, especificidades, como a redução do volume prostático e o desenvolvimento lobular e acinar das mamas. O panorama é dificultado ainda no contexto da infecção pelo HIV, cujo tratamento antirretroviral, em alguns casos, tem como reação adversa a lipodistrofia. A lipodistrofia é caracterizada por alterações na distribuição de gordura corporal (lipoatrofia e lipo-hipertrofia) e deve ser considerada na avaliação da composição corporal dessa população. Diante da grande vulnerabilidade de mulheres transgênero pela infecção com o HIV, a OMS recomenda que sejam adotadas medidas específicas de prevenção, tratamento e serviços de saúde para essa população. Portanto, no presente trabalho pretendemos iniciar a reflexão sobre os desafios para a avaliação nutricional de mulheres transgênero vivendo com HIV/AIDS.

Palavras-chave: Transgênero. Silicone. Lipodistrofia. Composição corporal, HIV.

Introduction

Recently, (the United Nations specialized agency) WHO (World Health Organization) has recognized the differentiated vulnerability of transgender women to HIV infection, which is about 50 times greater than in male or female genders, and has recommended that specific prevention, treatment and health care measures be adopted.[1,2]

Transgender is the key word for people whose gender identity and its expression do not conform to the norms and expectations traditionally associated with the gender they have been attributed to at birth. Persons who are transsexuals, transgenders or otherwise non-conforming to other genders are part of this denomination.[2]

Gender expression can occur in a variety of ways, such as masculine, feminine and androgynous (in which there are imprecise gender traits and behaviors). There is also the term gender-fluid, in which the individual polarizes between feminine and masculine in alternating moments of their daily lives. Transgender people can self-identify as transgender women, trans women or trans men, transexual or by a variety of specific cultural terms, such as *Hijra* (India), *Kathoey* (Thailand), *Waria* (Indonesia) or one of the many transsexual identities.[2] For purposes of understanding the present article, we shall use the definition of a *transgender woman* for the person who, at birth, was assigned as a man but self-identified as a woman. Another term used in this article is cisgender, which refers to people whose gender is the same as that designated at birth. In the context of health care in Brazil, much is discussed about this subject and since 2009 the right to use the social name by transgender people is ensured.[3]

Among health services, nutritional assistance is recognized as a strategic area capable of reducing the risk of injury and mortality in people living with HIV/AIDS. Initially, malnutrition and nutrient deficiency were the focus of nutritional assistance for this group of individuals. With prescription and increasingly early use of antiretrovirals, malnutrition has been limited to some specific groups, such as individuals with poor adherence to antiretroviral therapy, in addition to those who experience situations of social vulnerability, such as drug users.[4-6] Inadequate eating habits and sedentary lifestyles associated with fear of weight loss, characteristic of the disease, have led to overweight in people living with HIV/AIDS.[7] Also, as a side effect of the use of antiretroviral therapy, these individuals may develop changes in body composition, with loss or ectopic deposition of adipose tissue, generally referred to as lipodystrophy.[5]

Nutritional assessment is one of the components of nutrition assistance and among its methods it uses the measurement of body compartments at different levels. As part of nutritional assessment it is possible to mention the determination of body mass index (BMI), measurement of body circumferences and skinfolds and the determination of fat mass and fat-free mass by the technique of electric bioelectric impedance analysis (BIA). Once measured, such parameters are compared to reference values and classified by cutoff points that are previously defined for the population and which, in some cases, are also established according to gender.[8]

In search of adaptation to the self-determined gender, transgender women may choose to undergo surgical or non-surgical interventions, from which we can name sex reassignment surgery (SRS), thyroplasty, silicone gel-filled implants, floating ribs resection, liposuction, in addition to procedures such as hormone therapy. Some of these interventions may generate important body changes, thus creating new metric parameters that make it difficult to compare this population within the existing cutoff points for the male and female cisgender populations. Summing these changes to those caused by lipodystrophy increases the complexity of the body composition assessment.[9]

Therefore, the present article proposes to reflect on body composition changes with the purpose of conforming to the self-determined gender, as well as those caused by HIV antiretroviral therapy in transgender women living with HIV/AIDS. In our understanding, this is the first work proposing such reflection.

Methodology

The present research fits the field of gender diversity with focus on health care for transgender women infected with HIV. This is a qualitative study based on the analysis of phenomena inherent in nutritional care for these women, described from the perspective of a nutritionist at hospital and outpatient settings at Brazilian *Instituto Nacional de Infectologia Evandro Chagas* (INI; National Institute of Infectious Diseases Evandro Chagas).

The Instituto Nacional de Infectologia Evandro Chagas (INI) is a unit at Brazilian *Fundação Oswaldo Cruz* (FIOCRUZ; Oswaldo Cruz Foundation) which provides assistance and clinical research on infectious diseases. Adult and elderly patients with HIV/AIDS, HTLV (human T-lymphotropic virus), Chagas disease, leishmaniasis, tuberculosis, acute febrile illness (AFI), among others, are cared for. At INI, patient care is carried out in a multi-professional way, aiming at an integral attention to their needs and the following sectors are developed: Outpatient clinic, Day Hospital and Hospital Inpatient Center.

The Nutrition Service aims to perform specialized nutritional care and promote nutritional education for patients, aiming at promoting, maintaining and recovering their health. The nutritional care routine includes clinical and food anamnesis and anthropometric measurements, laboratory examination, nutritional treatment planning and nutritional guidance for the patient.

The care provided by this Service, as well as other INI professionals, is guided by the Brazilian Unified Health System (SUS, in the Portuguese abbreviation) and by the expanded concept of health described in the Brazilian government Organic Health Law:

> Health is determined by factors such as, among others, diet, housing, basic sanitation, environment, work, income, education, transportation, leisure and access to essential goods and services. Populations' health levels express the social and economic organization of the country (BRASIL, *Lei Orgânica da Saúde* – Law no. 8080/90, Art. 3).[10]

In order to reflect on the subject, a study systematized bibliographical survey was carried out in (free search engine) PubMed and SciELO (Scientific Electronic Library Online) database on issues related to transgender women's body composition. Descriptors used in the research were: "*transgenderpersons,*" "*bodycomposition*," "*silicone oils,*" "*silicone gels,*" "*HIV,*" according to Health Sciences Descriptors (DeCS). As an inclusion criterion were selected studies listing body composition changes related to the process of gender compliance to body

characteristics associated with HIV infection and antiretroviral therapy in transgender women. Papers on transgender women who would not deal with aspects related to body composition were not included. There was no temporal range limitation.

Results and Discussion

Transgender women care in health services implies some challenges for the multi-professional team that need to be overcome. In the present work, we have intended to reflect on the factors that should be considered in nutritional care for these women. Despite the great relevance of the topic, it is still neglected and scientific literature with this approach is scarce.

Regarding nutritional evaluation, object of the present article, we must consider that the final effect of the transformation process for female body construction is still unknown. Procedures of gender adaptation are very broad and include behavior alterations, posture, voice projection, hormone use, vaginal canal dilation and silicone implants or injection.[11]

In transgender women care one is faced with the issue of the so-called normality parameters being constructed based on binary genders. As these are the only tools available for body classification and diagnosis for these women, a new impasse arises: To what extent should they be applied to transgender individuals? We realize in our routine that there may be a bias in interpreting data. Transgender women's new body proportions, which have undergone feminization interventions, no longer fit the cisgender men pattern but are also inadequate to female cisgender proportions. Therefore, diagnosis based on anthropometric measures can mistakenly identify these people's nutritional status.

Recent recommendations from the (University of California, San Francisco) Center of Excellence for Transgender Health indicate that people who initiate the process of physical reassignment still in puberty with administration of hormones shall present less body differences in relation to cisgender ones.[12] After sexual maturation, transformations to reassign gender may be more superficial, impacting to a lesser degree body proportions and aspects, as well as tissue characteristics.[12]

In Brazil, it is well known that the process of gender reassignment in adult life is the most common reality. Social, cultural and religious impasses permeate individuals' construction, hindering early self-designation of the chosen gender identity and also access to hormonal treatment.[13] In regions where the issue of gender reassessment is more debated, as in North America and Europe, it is possible that there is greater similarity between cis and trans bodies.

Some relevant aspects to be considered in assessing transgender women's body composition shall be discussed below.

Use of silicone gels for body transformation

Silicone gel implants are widely used for breast reconstruction and augmentation since 1960.[14] Among transgender women, an important percentage opts for breast augmentation through this technique. Literature is still scarce on effects of silicone gel implants on evaluation of body composition. A first study has been published in 2012, in which Yamaguchi and collaborators[15] have attempted to clarify whether silicone gel implants could interfere in body composition analysis by the bioelectric impedance analysis (BIA) technique. For this, a prospective study was conducted with 20 women in which body composition analysis by bioelectric impedance analysis (BIA) was performed preoperatively and two months after silicone gel implants. The authors have concluded that silicone gel implant was recognized as fat mass. Regarding BMI, there was no variation, since the implants average weight was 600 grams. This work opens the perspective of considering the presence of silicone gels for body composition evaluation by bioelectric impedance analysis (BIA), since individual fat mass overestimation occurs.

However, the greatest challenge regarding body modification by transgender women concerns the use of silicone oils for industrial purposes as an aesthetic alternative. *Pumping* is the English term for the illegal and potentially aggressive practice of injecting silicone oil directly into tissues for bodily feminization. It is generally performed under inadequate sanitary conditions and has become popular among transgender women because of rapid outcome, high availability and low cost.[16] Transgender women across the world have used this practice not only for breast augmentation but also for remodeling buttocks, thighs and face.[17] The volumes subcutaneously injected can be considerably high, changing weight, circumference dimensions, skinfolds and BMI. In the case of individuals who inject large amounts of silicone oil, the use of anthropometric parameters is compromised, even if one chooses to compare the very individual's measurements over time.

Bioelectric impedance analysis (BIA) in individuals with silicone oil injection shall likely present the same limitation discussed above, with overestimation of the fat mass. However, there is a possibility that the same result can not be obtained since silicone oil has chemical properties that are different from the ones in silicone gels, besides not being encapsulated and being subcutaneously injected, permeating the tissues. Regarding the most serious complications of silicone oil injection, there is the chronic inflammatory process, which is also the most common one, with granuloma formation and extensive fibrosis.

Hormone therapy and its consequences for body composition

Transgender women often resort to pharmacotherapy as part of the adjustment process to the self-determined gender. Initially, the patient uses antiandrogen to block androgen production and gonadal androgens (popularly called chemical castration).[19] Then the use of estrogens is started, which in turn decrease the production of adrenal androgens in 27% to 48%.[18] Estrogen oral administration increases bone mineral density but decreases bone turnover. It also reduces prostate volume and, in combination with antiandrogens, increases serum leptin levels. Subcutaneous adipose tissue is increased and visceral adipose tissue is decreased with estrogen oral use. Another important change in hormonal pharmacotherapy is the lobular and acinar development of breasts, which are histological changes similar to female ones.[19]

Hormonal therapy is able to modify these transgender women's corporal composition with maximum alterations around 1 to 3 years after the beginning of the treatment.[20]

In 2008, Lapauw[21] and collaborators have evaluated, in a cross-sectional study, the body composition of 23 transgender women using dual-energy X-ray absorptiometry (DXA, previously DEXA) and peripheral computed tomography. Volunteers were recruited at least 3 years after the sexual reassignment surgery and were using pharmacotherapy. As a control group, 46 healthy cisgender men were recruited, matched by height and age. Results indicated a total and regional reduction in muscle mass, in addition to the reduction of hand grip strength evaluated by a dynamometer compared to the control group. Conversely, total and regional increase in fat mass has occurred. Content and bone density were also lower in the transgender women group. The results of this study were correlated with lower levels of testosterone as well as physical activity.

Another study carried out in 2013 has evaluated muscle mass and bone mass by DXA in 25 transgender women prior to pharmacotherapy start and compared them with a control group of 25 age-matched cisgender men, as well as a population with 941 cisgender men.[22] This study has found that this transgender women group presented reduction of muscle mass, strength and bone mass prior to hormone therapy compared to the control group. Data were attributed to the lower level of physical activity among transgender women.

Taken together, these data indicate that hormone therapy should also be considered in nutritional assessment of transgender women, since it modifies all redistribution of lean mass and fat mass compartments and that comparisons with cisgender men are not adequate.

Lipodystrophy and the challenges for its evaluation

After the introduction of high-efficiency antiretroviral therapy, HIV infection became a chronic disease and some health compromises, not necessarily related to the pathogenesis of the virus, were identified.[23]

HIV lipodystrophy is a syndrome associated with the use of antiretroviral therapy, characterized by dyslipidemia, increased cholesterol and triglyceride, increased glycemia associated with insulin resistance and changes in redistribution of body fat. Lipodystrophy symptoms related to fat mass redistribution involve lipoatrophy due to loss of subcutaneous fat in face and limbs, in addition to lipohypertrophy, in which there is an increase in central adiposity.[25]

Patients having antiretroviral therapy, including transgender women, may undergo esthetic procedures, surgical or otherwise, in order to minimize changes in body image.

Changes in body image are described in the literature as an important compromiser of femininity and self-esteem,[24] negatively interfering in self-image and causing psychological and social problems,[25] which strongly influence the quality of life.[26] In view of this fact, aesthetic treatments have been considered important strategies in promoting emotional health for this population.[27]

In the context of nutritional assessment, lipodystrophy needs additional attention. Recent work has determined cutoff points and body circumference ratios for assessing lipodystrophy in cisgender men living with HIV/AIDS. In this study, it was concluded that the use of specific anthropometric parameters for this population is able to aid in the diagnosis of lipodystrophy for the purpose of early intervention and even to protect individuals from metabolic dysfunctions.[28] Although the population analyzed is different from the one discussed in this article, it is possible to infer that the modifications generated by lipodystrophy should also be considered in these transgender women, as well as the important complicating element that such modifications often result in the need for aesthetic corrections that, as previously discussed, make it difficult to evaluate body composition.

Final thoughts

It is important to raise awareness to understand the population's new reality and to rethink individualized forms of evaluation that are better suited to people who are seen daily in doctors' offices, hospitals and research centers.

Nutritional care for transgender women should consider not only some differentiated physical evaluation, in which binary normality patterns do not allow sufficient reference for nutritional status classification but also questions related to self-esteem, which makes nutritionists' clinical practice more complex.

References

1. van Griensven F, Na Ayutthaya PP, Wilson E. HIV surveillance and prevention in transgender women. Lancet Infectious Diseases 2013; 13(3):185-186.
2. World Health Organization. Policy brief: transgender people and HIV. Geneva: WHO; 2015. 28 p.
3. Brasil. Portaria n0 1.820, Dispõe sobre os direitos e deveres dos usuários da saúde. 2009 ago 13. Diário Oficial da União 14 ago. 2009; 1(155):80.
4. Anema A, Chan K, Chen Y, Weiser S, Montaner JSG, Hogg RS. Relationship between food Insecurity and mortality among HIV-positive injection drug users receiving antiretroviral therapy in British Columbia, Canada. Plos One 2013; 8(5):e61277.
5. Fernandes APM, Sanches RS, Mill J, Lucy D, Palha PF, Dalri MCB. Lipodystrophy syndrome associated with antiretroviral therapy in HIV patients: considerations for psychosocial aspects. Rev Latino-Am Enfermagem 2007; 15(5):1041–5.
6. Ivers LC, Cullen KA, Freedberg KA, Block S, Coates J, Webb P, et al. HIV/AIDS, Undernutrition, and Food Insecurity. Clinical Infectious Diseases 2009; 49(7):1096-102.
7. Jaime PC, Florindo AA, Latorre MRDO, Brasil BG, Santos ECM, Segurado AAC. Prevalence of overweight and central obesity in HIV/AIDS patients treated with highly active antiretroviral therapy. Rev Bras Epidemiol. 2004; 7(1):65-72.
8. Agriculture USD of U.S. Department of Health and Human Services. Dietary guidelines for americans, 2010. 7th ed. Washington, DC: U.S. Government Printing Office; 2010. 97 p.
9. Athayde AVL. Transexualismo masculino. Arq Bras Endocrinol Metab. 2001; 45(4):407-14.
10. Brasil. Lei nº 8.080. Lei Orgânica do SUS. Diário Oficial da União 19 set. 1990.
11. Petry AR. Transgender women and the gender reassignment process: subjection experiences suffering and pleasure in body adaptation. Rev Gaúcha Enferm. 2015; 36(2):70-5.
12. Deutsch M, editor. Guidelines for the primary and gender–affirming care of transgender and gender nonbinary people. 2a ed. São Francisco: University of California; 2016. 199 p.
13. Vila S, Grossi MP. Transexualidade e movimento transgênero na perspectiva da diáspora queer. V Congresso da Associação Brasileira de Estudos da Homocultura; 23 set. 2010; Natal, RN. Natal: ABEH; 2010. 17 p.

14. Gampper TJ, Khoury H, Gottlieb W, Morgan RF. Silicone gel implants in breast augmentation and reconstruction. Annals of Plastic Surgery 2007; 59(5):581-90.

15. Yamaguchi CM, Faintuch J, Silva MM, Modolin M, Hayashi SY, Cecconello I. Interference of silicone breast implants on bioimpedance measurement of body fat. Clinical Nutrition 2012; 31(4):574-6.

16. Murariu D, Holland MC, Gampper TJ, Campbell CA. Illegal silicone injections create unique reconstructive challenges in transgender patients. Plast Reconstr Surg. 2015; 135(5):932e-933e.

17. Rettner R. Illegal silicone butt injections cause host of health problems [Internet]. 18 Jun. 2015 [acesso em: 15 abr. 2016]. Disponível em: http://www.livescience.com/51275-silicone-butt-injections-health-problems.html

18. Polderman KH, Gooren LJ, van der Veen EA. Effects of gonadal androgens and oestrogens on adrenal androgen levels. Clinical Endocrinology 1995; 43(4):415-21.

19. Giestas A, Palma I. Tratamento endócrino no transtorno de identidade de género. ACTA Obstet Ginecol Port. 2012; 6(4):180-7.

20. Leach C. Pharmacotherapy considerations in the management of transgender patients: an alternative viewpoint. Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy 2016; 36(4):28-29.

21. Lapauw B, Taes Y, Simoens S, Van Caenegem E, Weyers S, Goemaere S, et al. Body composition, volumetric and areal bone parameters in male-to-female transsexual persons. Bone 2008; 43(6):1016-21.

22. Van Caenegem E, Wierckx K, Taes Y, Schreiner T, Vandewalle S, Toye K, et al. Body composition, bone turnover, and bone mass in trans men during testosterone treatment: 1-year follow-up data from a prospective case-controlled study (ENIGI). Eur J Endocrinol. 2015; 172(2):163-71.

23. Alves MD, Brites C, Sprinz E. HIV-associated lipodystrophy: a review from a Brazilian perspective. Ther Clin Risk Manag. 2014; 10:559-66.

24. Brasil. Ministério da Saúde. Recomendações para terapia anti-retroviral em adultos infectados pelo HIV: 2008. Brasília: Programa Nacional de DST e AIDS; 2008.

25. Power R, Tate HL, McGill SML, Taylor C. A qualitative study of the psychosocial implications of lipodystrophy syndrome on HIV positive individuals. Sex Transm Infect. 2003; 79(2):137-141.

26. Plankey M, Bacchetti P, Jin C, Dass-Brailsford P, Gustafson D, Cohen MH, et al. The association of self-perception of body fat changes and quality of life in the Women's Interagency HIV Study. AIDS Care 2013; 25(12):1544-50.

27. Quintas RCS, França ER, Petribú KCL, Ximenes RAA, Quintas LFFM, Cavalcanti ELF, et al. Treatment of facial lipoatrophy with polymethylmethacrylate among patients with human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS): impact on the quality of life. Int J Dermatol. 2014; 53(4):497-502.

28. Beraldo RA, Vassimon HS, Aragon DC, Navarro AM, Albuquerque de Paula FJ, Foss-Freitas MC. Proposed ratios and cutoffs for the assessment of lipodystrophy in HIV-seropositive individuals. European Journal of Clinical Nutrition 2015; 69(2):274-78.

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