

Body image distortion and dissatisfaction in incarcerated women

Distorção e insatisfação com a imagem corporal em mulheres privadas de liberdade

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ABSTRACT

Objective

To investigate the prevalence of Body Image distortion and dissatisfaction and evaluate the associated factors in incarcerated women in a closed regime.

Methods

Cross-sectional observational study, conducted with female inmates (n=107) in *Rio Grande do Norte*, Brazil. Personal sociodemographic data were collected through an interview, and the height and weight were measured to obtain the body mass index. Body image was assessed using a scale of silhouettes figures for Brazilian adults. Prevalence *Ratios* with their respective 95% Confidence Intervals and Bland-Altman method were used in the statistical analysis.

Results

A total of 83.3% of the participants were affected by body image distortion and 91.6% by body image dissatisfaction. More than a half (58.9%) wanted a lower Body Mass Index ($9.01 \pm 5.25 \text{Kg/m}^2$), however, 32.7% wanted to increase the body size ($6.43 \pm 4.34 \text{Kg/m}^2$). The sociodemographic characteristics, nutritional status (PR=0.99; 95%CI:0.89-1.11), and the time of imprisonment (PR=1.06; 95%CI:0.94-1.19) were not associated with Body Image dissatisfaction. No associations were observed between body image distortion and the time of imprisonment (PR=1.17; 95%CI:0.96-1.42) or nutritional status (PR=1.10; 95%CI:0.89-1.36).

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Conclusion

Most female inmates were dissatisfied with their bodies and distort their body image, indicating the need for these aspects to be included in the health promotion actions in the prison system.

Keywords: Body image. Nutritional status. Prisons. Women's health.

RESUMO

Objetivo

Estimar a prevalência da distorção e da insatisfação com a Imagem Corporal e identificar seus fatores associados numa população de mulheres encarceradas em regime fechado.

Métodos

Estudo observacional transversal realizado com mulheres reclusas ($n=107$) do Rio Grande do Norte, Brasil. Foram coletadas informações pessoais sociodemográficas por meio de entrevista, e mensurados o peso e a estatura para obtenção do Índice de Massa Corporal. A avaliação da imagem corporal ocorreu por meio da escala de figuras de silhuetas para adultos brasileiros. Razão de Prevalência com seus respectivos intervalos de confiança de 95% e método Bland-Altman foram empregados nas análises estatísticas.

Resultados

A distorção da imagem corporal afetou 83,3% das participantes e a insatisfação com a imagem corporal, 91,6%. Mais da metade (58,9%) desejava um índice de massa corporal menor ($9,01 \pm 5,25 \text{Kg/m}^2$), entretanto, 32,7% queria aumentar o tamanho corporal ($6,43 \pm 4,34 \text{Kg/m}^2$). As características sociodemográficas, o estado nutricional ($RP=0,99$ $IC95\%:0,89-1,11$) e o tempo de reclusão ($RP=1,06$ $IC95\%:0,94-1,19$) não estiveram associados à insatisfação com a imagem corporal. Não foram verificadas associações entre a distorção da imagem corporal e o tempo de encarceramento ($RP=1,17$ $IC95\%:0,96-1,42$) ou estado nutricional ($RP=1,10$ $IC95\%:0,89-1,36$).

Conclusão

A maioria das mulheres em reclusão é insatisfeita com seus corpos e distorce sua imagem corporal, apontando para a necessidade de incluir esses aspectos nas ações de promoção da saúde no sistema prisional.

Palavras-chave: Imagem corporal. Estado nutricional. Prisões. Saúde da mulher.

INTRODUCTION

Body Image (BI) is a multidimensional construct that involves mental representations of the body, including size, shape, feelings, cognition and behavior [1], and researchers keep seeking to understand what BI represents and the magnitude of its effects on the behavior of individuals [2].

The BI perception can be affected by both intrinsic factors and environmental factors, especially in women [3,4], in which the desire to meet standards can trigger health problems, such as depressive states, self-image and self-esteem disorders, anxiety and abusive use of licit drugs [1].

The construction of subjectivity as to what is a desirable body begins in childhood and is consolidated throughout life, *i.e.*, BI is developed and regenerates, being constantly renewed [1,5]. In incarcerated women, in addition to these factors, there are those imposed by the prison environment, which may potentiate or even influence in a different way the perception of their BI [6].

Imprisonment causes suffering, which is intensified by the degrading conditions of detention, overcrowding and the precarious installations [7]. It is important, therefore, to consider the "life that comes to pass within the walls of the system", seeking to understand the cultural references that circulate in this space, how the subjects signify things that occur there, and the rules which interfere with values and behaviors of confined individuals [8]. According to Verdi *et al.* [8], imprisoned

individuals live in another social context with numerous special features and difficulties, which may facilitate the establishment of their own standards and references about a “normal” “adequate” and even “desirable” body within the prison.

The dissatisfaction and distortion of BI in a prison environment may foster the development of Chronic Non-Communicable Diseases (CNCD), in particular, obesity, and trigger inappropriate practices of weight control, depression, isolation, abandonment of self-care, low self-esteem, eating and psychological disorders. In the context of the prison system, controlling these health problems is critical, since health care is precarious such that inmates have difficult access of to healthcare professionals in everyday life [9-11].

Studies on BI in the prison environment are scarce [6,12,13], thus, the objective of this work was to estimate the prevalence of BI Distortion (BIDist) and BI Dissatisfaction (BIDiss), and identify the factors associated in the population of women imprisoned in a closed regime.

METHODS

This was a cross-sectional, census-type study carried out with the female inmates, who were sentenced to a closed system in *Natal, Rio Grande do Norte, Brazil*. The prison unit investigated is one of three existing in the state of *Rio Grande do Norte* that have female pavilions for prisoners already sentenced in closed regime (located in the cities of *Natal, Caicó* and *Mossoró*), and contains one of the largest concentration of female inmates with this sentence.

Although the population base was the same assessed by Andrade *et al.* [6], most of the participants were different, since in the prison itinerary it is very common that the closed regime evolves to semi-open, open or freedom, as well as the occurrence of exchange between prisons and the arrival of new detainees.

Pregnant, lactating, physically handicapped women or women with a disease that hindered anthropometric evaluation were considered ineligible. Women in isolation, or no longer belonging to the Prison Unit during the data collection period were excluded.

The data was collected from January to April 2015, on days and times established by the direction of the prison complex. Measurements of body weight were taken using a digital scale with precision of 100g (InBody® Model R20, *Seul, Coreia*) and stature using a portable stadiometer with precision of 0.1cm (Altuxata®, *Minas Gerais, Brazil*), in order to assess the Body Mass Index (BMI), categorizing the nutritional status as recommended internationally by the World Health Organization. For the collection of anthropometric data, the inmates were taken in small groups by the prison staff from the cells to a small auditorium of the prison unit.

Interviews were conducted by the researchers using a questionnaire with open and closed questions, addressing socioeconomic, demographic and nutritional aspects. For security reasons, all the interviews were held with the inmates inside the cells. To favor privacy and minimize the interference of other inmates, the researchers positioned themselves next to the outside door rails and interviewed them individually in low voice.

The BI was evaluated through the Scale of Silhouette Figures (SSF) created and validated for Brazilians by Kakeshita [14] and considered reliable and valid for a clinical and epidemiological application [2,14]. The prison director requested that there be minimal manipulation of papers and

pens by detainees during the study. Thus, the figures were printed on the questionnaire used in the interview, which was kept by the researcher, in a single document.

Inmates were asked to identify which figure reflected their body before imprisonment, which resembled their current body at the moment of the interview and which body figure they would like to have. The presence of BIDist was determined when the current BMI measured by Anthropometry (BMI-A) was not compatible with the current BMI Estimated by the SSF (BMI-E), *i.e.*, when it was out of the BMI range of the selected as similar to their present body, defined by Kakeshita [14]. The level BIDist (in kg/m²) was calculated by the difference between BMI-E and BMI-A, with positive values indicating an overestimation and negative values an underestimation of the BMI.

BIDiss was defined when the figure indicated to represent the body desired differed from that pointed out as similar to the current body at the moment of the interview. The degree of BIDiss was measured by the difference between the Desired body BMI (BMI-D) and the current body (Dissatisfaction=BMI-D–BMI-E), with positive values indicating the desire to gain weight and negative values the desire to lose weight. Values equal to zero were indicative of body image satisfaction.

The outcome variables (BIDist and BIDiss) were treated as both categorical (present or absent) and continuous variables (BMI units). Exposure variables were age (<30 years; 30–49 years; ≥50 years), schooling (read and write/elementary education; secondary/higher education; and post-graduation), monthly *per capita* family income (<1/4 minimum wage; 1/4–1/2 minimum wages; ≥1/2 minimum wages), marital status (single/separated/widowed; married/living with a partner), time of imprisonment (<12 months; 12–24 months; >24 months), the frequency of visits (weekly, fortnightly, monthly, sporadic, not receiving), having children (yes/no), and the nutritional status (eutrophic: BMI between 18.5 to 24.9Kg/m²; Excess weight: BMI from 25Kg/m²).

The limited time available for data collection or the refusal to answer questions in the interview resulted in loss of information for some of the variables investigated. The number of individuals with missing data was higher for the variables family income per capita (n=63) and education (n=35), followed by time of imprisonment (n=16), anthropometry (n=15), frequency of visits (n=12), have children (n=1) and age (n=1).

Individuals with such information losses were not excluded from the study as this would reduce the number of participants by more than half. It was also decided not to perform data imputation in order to avoid information bias, considering the small number of study participants remaining for some of the variables. In addition, these losses occurred randomly and in a relatively small proportion for the dependent variables (0.0% for satisfaction with BI and 16.0% for distortion of BI), thus not violating the principle of internal validity of the study. Specifically, for the variable family income per capita (58.9% of missing data), it was presented only to describe the population investigated and evidence the low social conditions of women, as well as to show the reader the difficulty of obtaining this type of data vulnerable populations such as this. However, since information loss exceeded 50.0%, it was not included in the analysis of the Prevalence *Ratio* (PR).

Initially, an exploratory analysis of the outcome and exposure variables was performed, and presented the frequencies and 95% Confidence Intervals (CI) for the categorical variables, and the means and respective dispersion measures for the continuous variables. The Wilcoxon test was used to compare the medians of the different BMI.

The agreement between the BMI-A and BMI-E values was analyzed using the Bland-Altman method. This type of analysis requires a normal distribution of the variable “Difference (Current BMI-E–BMI-A)”, which was not the case. Thus, the Box-Cox analysis was conducted for this procedure.

In addition, the Linear Regression line with its 95%CI was added to the Bland-Altman graph to show if there was a positive or negative trend regarding the BMI-E and the BMI-A.

The PR, with the respective 95%CI, were used to measure the strength of the association between the dependent and independent variables. All analyses were performed using the Statistical Package for the Social Sciences, version 20.0 (SPSS Inc., Chicago, Illinois, United States), considering $p < 0.05$ as statistically significant.

This study was approved by the Research Ethics Committee of the School of Health Sciences of *Trairi*, of the *Universidade Federal do Rio Grande do Norte* (UFRN, Federal University of *Rio Grande do Norte*), opinion No.928.144; CAAE: 38714714.0.0000.5568; and followed the recommendations of Resolution 466/2012 of the National Health Council, having participated only women who signed the Informed Consent Form.

RESULTS

Of the 115 inmates in the prison complex in the data collection period, 1 was pregnant, 3 refused to participate in the study and 4 were released, totaling 6.1% of losses of eligible candidates.

The 107 participants were aged between 18 and 57 years (31.7 ± 8.48 years), and most of them could read and write or had studied until elementary school (65.3%), had a *per capita* family income lower than 1/4 minimum salary (68.2%) and were imprisoned for less than 2 years (73.6%) (Table 1).

In general, participants realized that from their pre-imprisonment time to the time of data collection, their body size increased, since the median BMI-E was higher than that of the BMI Prior to imprisonment, estimated by the SSF (BMI-P). In addition, a large part also considered having a larger body than they had and what they wished to have (Figure 1).

The average BMI in the anthropometric assessment was 27.67Kg/m^2 and approximately 65.0% of the participants were above weight. The average BMI-E was 30.63Kg/m^2 , and 83.3% of the participants exhibited a BIDist (Table 1). Of these, 82.7% overestimated their body size, attributing on average $5.59 (\pm 2.73)$ extra BMI units on their real body BMI.

The Bland-Altman graph revealed a trend between estimated and measured BMI in the population studied, since a higher average between the BMI-E and BMI-A indicates a greater difference between the two methods. Therefore, the higher the average, the greater the BIDist, as shown by the linear regression and statistical significance (Figure 2). The BMI-E values may be 7.52Kg/m^2 below or 13.68Kg/m^2 above those obtained by BMI-A. The mean difference (bias) between BMI-E and BMI-A was 3.08Kg/m^2 , being statistically significant.

The prevalence of women with BIDist did not differ regarding sociodemographic characteristics, the time of imprisonment (PR=1.17; 95%CI:0.96-1.42), nutritional status (PR=1.10; 95%CI:0.89-1.36), nor with the presence of BIDiss (PR=1.00; 95%CI:0.86-1.11) (Table 2).

When questioned about the body that they would like to have, most women (91.6%) were dissatisfied and wanted a body different from the one they thought they had (Table 1). Most women wanted a BMI, on average, $9.01 \text{Kg/m}^2 (\pm 5.25)$ lower. However, approximately one-third of them wished to increase the body BMI, on average, by 6.43Kg/m^2 . A total of 26.0% of the women who wished to increase their BMI had already excess weight.

Table 1. Socioeconomic and demographic characteristics, nutritional status and body image of the female inmate population in a closed system (N=107). Natal (RN), Brazil, 2015.

Variables	Prevalence		CI(95%)
	N	%	
<i>Age (years) (n=106)</i>			
<30	46	43.4	33.8-53.4
30-49	55	51.9	42.0-61.7
≥50	5	4.7	1.5-10.7
<i>Schooling (n=72)</i>			
Knowing how to read and write/ Basic Education	47	65.3	53.1-76.1
Secondary/Higher Education	23	31.9	21.4-44.0
Post-graduation	2	2.8	0.3-9.70
<i>Per capita family income (n=44)</i>			
<0.25 MW	30	68.2	52.4-81.4
0.25-0.50 MW	8	18.2	8.2-32.7
>0.50 MW	6	13.6	5.2-27.4
<i>Marital Status (n=107)</i>			
Single/separated/widowed	73	68.2	58.5-76.9
Married/living with a partner	34	31.8	23.1-41.5
<i>Time of imprisonment (n=91)</i>			
<12 months	33	36.3	26.4-47.0
12-24 months	34	37.4	27.4-48.1
>24 months	24	26.4	17.7-36.7
<i>Frequency of visits (n=95)</i>			
Weekly	19	20.0	12.5-29.5
Fortnightly	14	14.7	8.3-23.5
Monthly	13	13.7	7.5-22.3
Sporadically	7	7.4	3.0-14.6
None	42	44.2	34.0-54.8
<i>Have children (n=106)</i>			
No	16	15.1	8.9-23.4
Yes	90	84.9	76.6-91.1
<i>Nutritional status* (n=90)</i>			
Eutrophy	32	35.6	25.7-46.3
Overweight	33	36.7	26.8-47.5
Obesity	25	27.8	18.9-38.2
<i>Body image distortion (n=90)</i>			
Absent	15	16.7	9.6-26.0
Present	75	83.3	74.0-90.0
Overestimation of the body	62	82.7	72.2-90.4
Underestimation of the body	13	17.3	9.6-27.8
<i>Satisfaction with Body Image (n=107)</i>			
Satisfied	9	8.4	3.9-15.4
Dissatisfied	98	91.6	84.6-96.1
<i>Desired body size (n=107)</i>			
Increase	35	32.7	24.0-42.5
Reduce	63	58.9	49.0-68.3
Maintain	9	8.4	3.9-15.4

Note: *Eutrophy: BMI between 18.5 to 24.9Kg/m²; Overweight: BMI from 25.0 to 29.9Kg/m²; Obesity: BMI from 30.0Kg/m². MW: Minimum Wage in 2015 (R\$ 788.00); N: Total number of inmates; n: Number of respondent inmates.

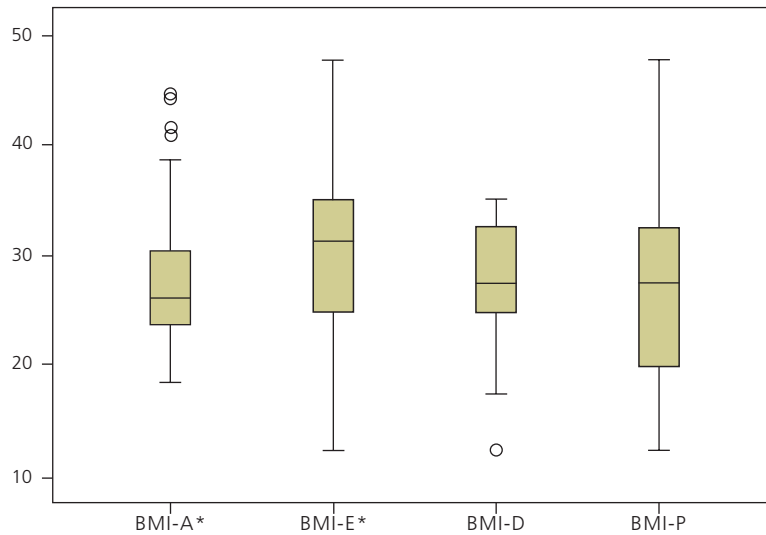


Figure 1. Medians of the different Body Mass Indexes (BMI) evaluated in female prison population in a closed regime (n=107). *Natal* (RN), Brazil, 2015.

Note: *There was a statistically significant difference between the median values of BMI-A and BMI-E according to the Wilcoxon test (<0.0001). BMI-A: current BMI measured by Anthropometry; BMI-E: Current BMI Estimated by SSF; BMI-D: Desired BMI estimated by SSF; BMI-P: BMI Prior to seclusion, estimated by SSF.

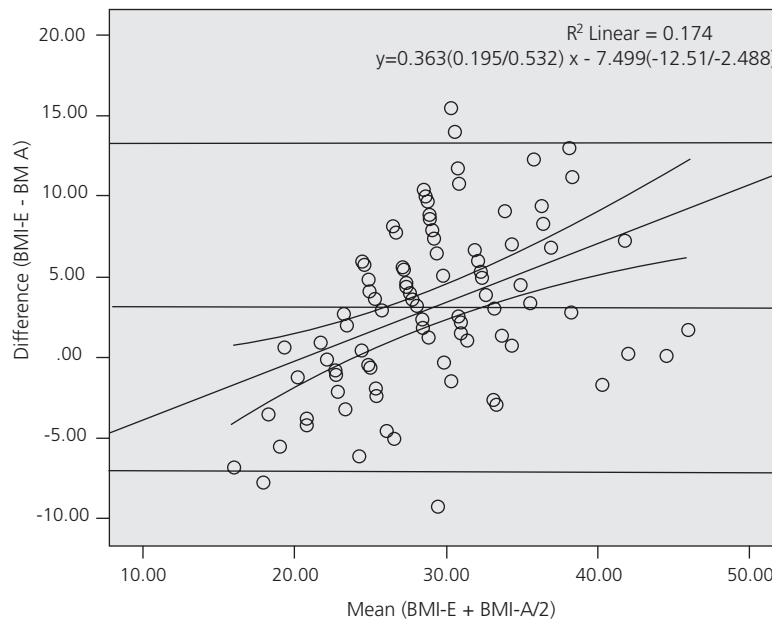


Figure 2. Bland and Altman plots showing the mean difference and the 95% Confidence limits for different Body Mass Indexes (BMI), with linear regression, evaluated in the female prison population in a closed regime (n=107). *Natal* (RN), Brazil, 2015.

Note: BMI-E: Current BMI Estimated by a scale of Figure Silhouettes; BMI-A: current BMI obtained by Anthropometry.

The prevalence of BIDiss did not differ regarding sociodemographic characteristics and nutritional status of the participants. Moreover, BIDiss was not associated with the time of imprisonment (PR=1.06; 95%CI:0.94-1.19) or with the presence of BIDist (PR=1.00; 95% CI:0.69-1.45) (Table 2).

Table 2. Prevalence (%) and Prevalence Ratios (PR) of Body Image distortion and dissatisfaction according to the characteristics of the female prison population in a closed regime (n=107). Natal (RN), Brazil, 2015.

Variables and categories	Outcomes					
	Distortion			Dissatisfaction		
	N	%	PR (95%CI)	N	%	PR (95%CI)
<i>Age (years) (n=106)</i>						
<30	29	74.4	0.82 (0.67-1.01)	42	91.3	1.00 (0.89-1.12)
≥30	46	90.2	1.00	55	91.7	1.00
<i>Schooling (n=72)</i>						
Secondary/ Higher Education	18	85.7	1.00	22	95.7	1.00
Knowing how to read and write/Elementary Education	27	73.0	0.85 (0.66-1.11)	42	89.4	0.93 (0.82-1.07)
<i>Marital Status (n=107)</i>						
Single/separated/widowed	52	85.2	1.08 (0.87-1.33)	66	90.4	0.96 (0.86-1.08)
Married/living with a partner	23	79.3	1.00	32	94.1	1.00
<i>Time of imprisonment (months) (n=91)</i>						
≤18 months	32	78.0	1.00	44	89.8	1.00
≥19 months	30	90.9	1.17 (0.96-1.42)	38	95.0	1.06 (0.94-1.19)
<i>Frequency of visits (n=95)</i>						
Not regularly	35	87.5	1.06 (0.88-1.28)	44	89.8	0.98 (0.86-1.12)
Regularly	33	82.5	1.00	42	91.3	1.00
<i>Have children (n=106)</i>						
Yes	65	86.7	1.00	82	91.1	1.00
No	9	64.3	0.74 (0.50-1.11)	15	93.8	1.03 (0.89-1.19)
<i>Nutritional status* (n=90)</i>						
Eutrophy	25	78.1	1.00	30	93.8	1.00
Excess weight	50	86.2	1.10 (0.89-1.36)	54	93.1	0.99 (0.89-1.11)
<i>Body image distortion (n=90)</i>						
Present	-	-	-	70	93.3	1.00 (0.86-1.16)
Absent	-	-	-	14	93.3	1.00
<i>Body image dissatisfaction (n=98)</i>						
Present	70	83.3	1.00 (0.69-1.45)	-	-	-
Absent	5	83.3	1.00	-	-	-

Note: *Eutrophy: BMI between 18.5 to 24.9Kg/m²; Excess weight: BMI from 25.0Kg/m².

N: Total number of inmates; n: Number of respondent inmates.

DISCUSSION

Body Image dissatisfaction and distortion in female prisoners is a very complex matter, going beyond the desire of a beautiful and slim body. This study is pioneering on BI in a population of imprisoned women in a developing country, demonstrating that almost all of these inmates were dissatisfied with their body image, and one third wanted to increase their body size, including overweight inmates. Body size overestimation was present in almost all women, indicating impaired proprioception in prison environment.

BIDist prevalence evidenced in our study is similar to that reported for young inmates in Australia, although 47.9% were overweight or obese, and only 24.1% viewed themselves as above

weight [12]. In such study [12], 20.4% perceived themselves with weight below the appropriate, while only 1.0% were in fact underweight. It is clear, therefore, that both overestimation and underestimation of the BI may be present among imprisoned individuals.

In this study, the SSF figures identified by women as representing them before imprisonment were, in most cases, smaller bodies than those identified to represent their current body, revealing their perception of weight gain during incarceration. Weight gain was also high in other studies with inmates [11,12,15,16], being more prevalent in women [16,17].

This phenomenon may be related to inadequate diet with low consumption of healthy foods and high consumption of industrialized food, sedentary life style, without working programs or recreational and physical activities, depression or even drug abstinence, and the use of atypical antipsychotic medications [6,9-11,15,16,18].

Damages brought on by continued weight gain and overweight in the prison environment increase the risk for CNCD. Since weight gain occurs gradually in an environment where all people gain weight together and have little contact with others outside the prison, the inmates loses their standards of normality and BI distortion emerges. This is worsened by the fact that in prisons there no scales and anthropometers available for periodic assessment of BMI, and so these women are not sure which body size would be compatible with the nutritional status classified as "overweight or obesity" and could pose a risk of CNDC. Thus, with a distorted BI perception (which in this context of life is linked to the loss of notion about which body size is undesirable) the self-care process is impaired, enabling the aggravation of their nutritional status and the onset of health problems due to excessive weight gain.

The underestimation of BI occurs both in people living in society [19] and those deprived of their freedom, as observed in this and in other studies [12]. The overestimation of body size is also very frequent in women, regardless of their life context [1,4,20]. A Brazilian study with female students revealed a high imprecision in the perception of body size, confirmed by an 81.3% overestimation [20].

One aspect that could encourage BIDist in prison is the absence of a parameter for body evaluation, since mirrors are prohibited in the detention cells. Thus, they adopt the body of their imprisoned colleagues (who are mostly overweight) as a parameter for comparison. In addition, in this study, the common sense expressed during the interviews, of not having a healthy lifestyle within the prison, may also have influenced the choice of a silhouette that is not representative of a body considered adequate (eutrophy). BIDist may also be related to the use of illicit and psychotropic drugs. Some medications may favor a gradual weight gain [16] without the inmate noticing, resulting in BIDist.

A BIDiss was reported by almost all the participants, and the most of them wanted to have a smaller BMI value. However, about 1/3 desired a larger figure, that is, many wished to be even more corpulent even while having excess weight, showing that the BIDiss issue in prison is very complex, going beyond wanting a beautiful and slim body. Possibly, this behavior is coupled to the desire for a more robust body that intimidates and provides protection against violence and abuse in prisons [21]. In addition, a large body is popularly associated with a "strong" body and less susceptible to diseases. Transsexuality and homosexuality, common among inmates [22], could also result in a desire for greater corpulence. Also, the fact that "becoming a man" inside a female prison can ensure inmates power and privileges socially attributed to men, such as the legitimate use of force [23].

Studies with free-living women agree with results presented here, revealing that not always the ideal of thinner body type is the desire of women [20,24]. In Brazil, 79.1% of the female university students had BIDiss, and 18.9% of them also mentioned the wanting a larger body [20]. BIDiss was positively associated with the BIDist, with the real BMI, criticism from family and friends, overall dissatisfaction with life, internalization of media messages and TV exposure [1,5,20]. It was also shown that the greater the personal and family income and education, the lower the BIDiss of women [1,25]. Some of these factors are not present in prison or are limited, such as TV exposure. This may have possibly been the reason why the BIDiss was not associated with BI distortion in this study.

In this study, the BIDist and BIDiss associations with the time of imprisonment were not proven, possibly due to the homogeneity of the sample regarding this variable, to the self-report character of this variable, or to the insufficient incarceration time to affect BI. It was also expected to be associated with receiving visitors, since most inmates were not visited for body referencing or for comment on changes in their physical appearance. However, that incarceration time may have not been long enough to have such an effect on the participants.

Studies corroborate the lack of association between BIDiss and nutritional status [26], as well as BIDiss [27]. Other researchers, however, showed that women have BIDiss notably due to excess weight [20,27], showing a lack of consensus on the subject.

Another important point that can influence on BI is the expression of femininity in the prison system, which is continually suppressed. The prison environment itself is male and masculinizing in practice, which makes femininity even more invisible [28]. The use of masculine uniforms is mandatory, and the use of nail polish, props and other beauty items is prohibited, causing additional suffering for those who want to cultivate their femininity as a form of identity.

In and through the body is established institutional control of women in confinement [28]. Their daily life is marked by adversity and the administrative measures imposed on them seek control over their bodies, behaviors and subjective states [8,29,30], and are imposed a series of stigmas and also self-stigmatize. Most women are not visited regularly, and the abandonment by the family is frequent. Some, because they feel unworthy, ask family members not to visit them, which contributes even more to the "death" of their individuality [29].

This whole situation is possibly entwined with the self-esteem of these women and how they perceive their bodies. For Melo *et al.* [29], even control practices on the part of the penitentiary agents, act directly over the bodies and in the subjectivity of these women, who are often subjected to deprivation of visiting rights and from receiving objects and food, and to delays in the provision of information on their process, or suspension of social conviviality in isolation cells.

Some limitations inherent to this study should be considered, such as the incompleteness of some responses from the questionnaire due to disinterest, embarrassment, or ignorance; the limited time for data collection given the schedule imposed by the direction of the prison; and the impossibility of interviewing the inmates in a private location. Moreover, the life and current history on abuse and violence, the use of licit and illicit drugs, use of medications, presence of psychiatric problems, eating disorders, violence, or even the emotional fragility that permeates the violent and exclusionary prison environment were not assessed.

The referred information of time of imprisonment had to be used for the analyses, since it was not possible to obtain this data reliably from the direction of the prison. Many had already served time in detention regimes or had been detained in other moments of life in a closed system

and may not have counted correctly this period in their response. Thus, the association between the prevalence of BIDist and BIDiss with time of incarceration may have been weakened, masking the real effect of the arsenal of suffering caused by the environment.

Despite these limitations, the originality of this study in the national and international scenario brings to light the importance of attention to health issues that were previously ignored among incarcerated women, who are already living in a situation of vulnerability in relation to CNCD and other diseases. Thus, meets the current need to strengthen health promotion in prison settings [30], which may result in promising outcomes for individual, community and public health gain. Also reinforces the emphasis of comprehensive, multidisciplinary and transdisciplinary health promotion actions aimed at this population group to reduce the health inequalities in the prison system.

CONCLUSION

Female prisoners presented a high prevalence of BIDist and BIDiss, which increases their situation of vulnerability in relation to CNCD and other diseases and indicate the need for these aspects to be included in the health promotion actions in the prison system.

CONTRIBUTORS

All authors performed the data analysis and interpretation of the results, prepared, reviewed and approved the final version of the manuscript. APDI BARBOSA conducted the literature review and participated in data collection in the field. UV BAGNI collaborated in all stages of the study, including design and planning; performance and coordination of data collection in the field.

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