THAYNÁ LETÍCIA DE ALMEIDA SOUSA

O ESTADO NUTRICIONAL PRÉ-GESTACIONAL É UM PREDITOR DA IMAGEM CORPORAL DE MULHERES BRASILEIRAS DURANTE A GESTAÇÃO? UMA ANÁLISE DE UM ASPECTO POUCO DISCUTIDO DURANTE O PRÉ-NATAL

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Trabalho de Conclusão de Curso apresentado à Universidade Federal de Lavras, como parte das exigências do Curso de Nutrição, para obtenção do título de Bacharel.

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LAVRAS - MG
2021

ÀS MULHERES

AGRADECIMENTOS

Às mulheres.

A Deus, por me fazer trilhar caminhos nunca antes pensados por mim, em todos esses anos e todos os dias eu vejo como os Teus planos são melhores que os meus.

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Que venha um novo ser ao mundo é feito Que ocorre aos nossos olhos muitas vezes (Não que o torne menor – nem nós, maiores);
Gerar um ser em si é movimento
Singular, em que a intensa alteração
Faz do corpo da mãe nova mulher.
Que todo leitor viva esta mudança
Fazendo esta leitura, tanto quanto
Nasceu outra mulher nesta pesquisa.
(Fábio Paifer Cairolli)

ÍNDICE

APRESENTAÇÃO

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Running title: Body image during pregnancy

Is the pregestational nutritional status a predictor of the Brazilian women's body image during pregnancy? An analysis of a little discussed aspect during prenatal care

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Running title: Body image during pregnancy

Abstract

Backgroud: During pregnancy, women go through physical, psychological, and metabolic changes. In the non-pregnant population, higher Body Mass Index (BMI) is related to important concerns about their body image and satisfaction. However, in Brazil, body image is under explored in pregnant women. Main objetictive of this research was to investigate if pregestational BMI is a risk factor to dissatisfaction body during pregnancy.

Method: A total of 169 Brazilian pregnant women with pregnancy duration between 4 to 40 weeks, completed a survey comprised of anthropometric, sociodemographic, and the Body Shape Questionnaire.

Results: Women who have higher BMI show significantly higher body dissatisfaction. Pregnant women with BMI classified as "Obesity", according to WHO classification, were more dissatisfied with their body images.

Conclusion: BMI is a signficantly predictor of body dissatisfaction on pregnancy due to likely weight stigma, standarts of beauty, and fear of bodily changes. At Brazil, body image is a theme under-discussed on the antenatal appointments, so, this study shows a topic that should be addressed to women.

Keywords: body image; pregnant women; pregestational BMI; body size; weight stigma

Introduction

During pregnancy, women go through several physiological changes as weight gain, inreased breasts, skin pigmentation, strength marks, besides psychological changes (Clark et. al., 2009; Rocco et. al., 2005). Although these factors are expected in this period, women may find conflicts with their body images due the social imposed concepts of beauty and the “Thin Ideal” (Duncombe et al, 2004). Thus, at the time, the body becomes vulnerable to the evaluation of the appearance (Skouteris, 2011).

In this sense, body image is a part of the perception that a person has of the body, and which are the feelings and thoughts coming from this perception. If there are no concerns with the body or weight, so it's defined as body satisfaction (Grogan, 2017). On the other hand, body dissatisfaction is defined when there are negative feelings and discomfort about the body and appearance (Jung & Peterson, 2007). Body image is a multifaceted construct, and in the Western societies, women are frequently targets of a esthetic pressures, as thinness, defined muscles, and straight abdomen (Frederickson & Roberts, 1997). These standards of beauty are consistent with the culturally normative sexual objectification of the female body (Frederickson & Roberts, 1997). According to Frederickson and Roberts (1997), in a male chauvinist society, female bodies are sexualy objetifieds, so the body becomes a concern to women.

Several studies had shown how women experience bodily changes during pregnancy, but the results of the researches are controversial. Some authors found that for some women, gestation is a time for a break from the standard beauty concept because the weight gain is acceptable during pregnancy, different from other periods of life (Watson et al, 2015, Duncombe et al, 2008). However, there are studies that found high levels of body dissatisfaction in this period (Clark et al, 2009; Roomruangwong et al, 2017; Schlaff et al, 2020). It’s important to highlight that the negative body image of

pregnant women has been linked with excessive gestational weight gain (Bagheri et al., 2013), higher BMI, disfunctionals eating behaviors, lower self-esteem, decreased intention to breastfeed (Morley-Hewitt & Owen, 2019, Bigman, et al., 2018; Brown, Rance & Warren, 2015), depressive postpartum symtopms (Elise et al., 2019), increased risk for childhood obesity for the baby, and cesarean delivery (Bergmeier et. al., 2020). A recent study found that parents who were unsatisfied with their body image tended to be more also dissatisfied with their children's silhouette (Warkentin, Henriques & Oliveira, 2020). A systematic review showed that women who had better body image were more likely to breastfeed (Morley- Hewitt & Owen, 2019), and as it's known, breastfeeding brings benefits for mothers and babies (Agunbíade & Ogunleye, 2012). These factors are important for the public health in general and for maternal and child health. Therefore, it's necessary to investigate body image and the associated factors during pregnancy.

Regarding the risk factors related to body image during pregnancy, several studies found higher pre-gestational BMI, eating disorders, age, marital status, inadequate weight gain, historic of restrictive diets, and time spent on social media (Hicks & Brown, 2016, Meireles et al, 2016; Bergmeier et al, 2020; Dryer, Schulenburg; Brunton, 2020). To investigate which factors are associated with construction of the body image may help to provide well-being, self-esteem, self confidence (e.g. to incentive breastfeeding and vaginal delivery), consequently, providing better health to mother and babies. Besides that, when investigating women vulnerable to development concerns with their body, so they may be the target of early interventions in the health sector (Elise et. al, 2019; Hartley et. al, 2020).

However, studies about body image of pregnant women were realized in other countries a lot and this topic is not broadly discussed in Brazil (Hodgkinson, Smith &

Wittkowski, 2014). Due to the importance of the topic, this study aims to investigate the relationship between pre-gestational BMI and body image between Brazilian pregnant women, considering that pregnancy is a moment of the learned and vunerability to some women.

Method

Procedure

This research is part of a longitudinal project denominated CAGESLACT, acronym in Portuguese to "Evaluation of Nutritional Status, Eating Behavior and Eating Practices in the stages of Pregnancy, Breastfeeding and Food Introduction". Project CAGesLact was approved by the Human Research Ethics Committee from the Federal University of Lavras (CAAE: 110989519.5.0000.5148, number 3.362.629). There was a treined team for data collection and questionnaires application. Then, the Secretary of Health of the city was contacted and it allows data collected among public prenatal medical appointments. Other obstetricians with private offices allow recruitment in their clinics.

For the sample size calculation of the CAGesLact project, proportional stratified planning was used among pregnant women attended by the Unified Health System (SUS) and in the private sector. According to the Survey National Childbirth and Birth - Born in Southeastern Brazil, 15.4% of women have their children in private care and 84.6% born by SUS (Leal et al, 2012; Diniz et al, 2016). EPI INFO version 7.2 software was used, considering the latest data available at DATASUS at the time of the consultation on March 29, 2019. The average number of live births in Lavras from 2013 to 2017 was 1396. A significance level of 95%, a sampling error of 5%, a prevalence of pregnant women with excessive concern about the body weight of 5.5% (Soares et al.,

2009) and losses of 40% were considered, resulting in a minimum sample of 107 participants in the study. Inclusion criteria were age ≥ 18 years, being literate, resident of Lavras, Minas Gerais, single pregnancy, and not having visible mental disorder that avoid verbal communication.

Included particpants were informed about the aim of the study and signed a informed consent. The selection was for convenience. Questionnaires were applied while women were in the waiting rooms of health centers. The sociodemographic data were filled out by researchers; obstetrics and clinic data (pregestational weight, current weight, height, and gestational age) were collected from medical records; and the Body Shape Questionnaire was self-applied. Data were collected between July 2019 and February 2020. All participation was voluntary without any monetary incentive.

Measures

Participant characteristics

Participants were asked for: age (in years), ethnicity, marital status (married, single, separated, divorced), family monthly income, highest education level attained (primary schooling, high school, undergraduate degree, or in the process of completing education), current employment (homemaker, student, full-time, self-employed), number of children (one, two, three or more), and pregnancy planning. Regarding Obstetric characteristics, medical record of the pregnant woman was used for date of pregestational, atual weight, and gestational weeks. Height was self-reported.

BMI was calculated (weight/height²) and classified based on the most recent World Health Organization (WHO) classification (WHO, 2000). According the definition proposed by the WHO, subjects with BMI below 18,5kg/m² were classified as underweight, subjects with BMI between 18.5 to 24.9 kg/m² were classified as eutrophic, those with BMI ≥ 25 kg/m² and <30 kg/m² were classified as overweight and

those with BMI ≥ 30 kg/m² were classified as obesity. Atalah curve was used to classify BMI of pregnant women in underweight, eutrophic, overweight, and obesity (Atalah, Catro & Aldea, 1997). Gestational trimester was classified: first trimester – conception to 12 weeks; second trimester – 12 to 24 weeks; third trimester – 24 to 40 weeks.

Body image

Body image was evaluated by Body Shape Questionnaire (BSQ), designed by Cooper (Cooper et al, 1987). BSQ was validated in Portuguese by Dipietro & Silveira (2009) and it has a good valid and reliable measure (Conti et al, 2009; Silva et al, 2016). This is a gold standard instrument to measure the concern with body shape, including among pregnant women (Gjerdingen et al, 2009; Silveira et al, 2015). BSQ includes 34 items on body shape, in particular, the experience of "feeling fat". The items are answered on a Likert scale, from O - never to 6 – always. The sum of all items provides a total score of 34 to 204. Level of body dissatisfaction can be: absent (less than 80 points); slight (80 to 110); moderate (110 to 140); or severe (higher than 140) (Cordás & Castilho, 1994). For analyzes, women were classified as satisfied (less than 80 points) or unsatisfied (higher than 80 points). Cronbach's alpha for this study was .96.

Statistical analyses and data screening

Data were double typed and validated in the software EPI INFO version 7.2. SPSS Statistics version 20 was used for all statistical analyses. Descriptive analyzes were calculated for numeric variable and them were expressed by mean, SD (Standard Deviation), and minimum and maximum values. Distribution of data was evaluated by the Shapiro-Wilk test that indicated non-parametric data (Leotti, Coster & Riboldi, 2012; Razali & Wah, 2011). Mann-Whitney tests and Kruskal-Wallis tests were used to evaluate the BSQ in different groups (BMI, civil status, gestational trimester, type of assistance, employment, pregnancy planning, and whether to have or not to have

children). Kruskal Wallis tests were corrected with a Bonferroni correction ($\alpha = 0.05$). Spearman Rho correlations coefficients were used to test the association between numeric variables (age, gestational age, BMI, and BSQ). Correlations of $r = .20$, $r = .50$ and $r = .80$ were interpreted as small, moderate and strong, respectively (Cohen, 1992). Linear regression was realized to evaluate how much numeric variable moderate body image. Level of significance was adjusted at .05.

Results

Sample Characterization

Of the 200 participants, 174 completed the entire forms, 26 incomplete questionnaires were excluded from analyses (13.86%). Of those 26 excluded participants, 6 had no weight and height data, and 20 had not filled BSQ. Then, total sample was 174 women with a range of age from 18 to 42 years (M = 27.76 years, SD = 6.11) with pregestational Body Mass Index (BMI) from 16.2 to 50.0 kg/m² (M = 25.53, SD = 6.10), BMI classification according to World Health Organization was 7,2% classified as low weight; 44% as euthrophic; 30,1% as overweight; and 18,7% were obese. Regarding gestational BMI, 14.9% were classified as low weight, 31.0% as eutrophic, and 48.2% as overweight and obesity. Moreover, gestational age ranged from 4 to 40 weeks (M = 23.66 weeks, SD = 9.96). Regarding gestational period, 19.0% were in the first gestational trimester, 40.8% in the second, and 39.7% in the third. Concerning the type of medical service, 73% were assisted by the public medical system, and the remainder (27%) by the private system. The majority considered themselves as Black (69.0%), and 46.5% had completed high school. Also the marital status showed that the majority had a conjugal relation (64.9%) and the remainder (%35.1) was single or divorced. Of the total sample, 43.7 % were employed, 62.7 self-related unplanned pregnancies, and 54.9% reported having children.

Body image

Regarding the score of BSQ during pregnancy, 68.4% reported no body dissatisfaction, and 31.6 % dissatisfaction. Concerning BSQ, there were not significant differences in different type of assistance (U = 26,415.00, p = .245), whether there was a relationship or not (U = 32,905.00, p = .623), planned pregnancy or not (U = 32,415.00, p = .56) , have or not have employed (U = 32,865.00, p = .17), and have or not have other children (U = 34,765.00, p = .486).

Kruskal-Wallis H Tests were conducted to assess non-parametric one-way between groups analysis of variance between BMI categories and gestational trimester with level of body dissatisfaction. Results from the Kruskal–Wallis analysis of variances tests showed a significant difference in level of body dissatisfaction between the pre-gestational BMI categories (chi-square = 19.026, $p = .000$); and post hoc bonferroni test showed that the women with BMI in the Obesity group exhibited greater dissatisfaction than eutrophic or low weight women (see Table 1 for descriptive statistics for the 'BMI' groups). There were no significant differences between body image in different trimesters.

Table 1 - Descriptive statistics of BSQ for pregestational BMI

	Low weight n=15	**Euthrophic n=76**	**Overweight n=52**	**Obesity n=31**
Mean BMI ± SD (Min-Max)	17,45 ± 0,7 kg/m² (16,2 – 18,4)	21,65 ± 1,71 kg/m² (18,5 – 24,9)	27,00 ± 1,40 kg/m² (25-29,9)	35,40 ± 5,26 kg/m² (30,1-50)
Score of BSQ Mean ± SD (Min-Max)	49,85 ± 15,66[a] (34 – 92)	66,00 ± 30,13[a] (34 – 154)	74,10 ± 34,70[a,b] (34-154)	93,23 ± 42,22[b] (34-189)

BMI=Body Mass Index, SD=Standard Deviation, BSQ=Body Shape Questionnaire
Different letters indicate statistically significant differences at $p < 0.05$

Spearman Rho Correlations (Table 2) were calculated to test the associations between age, gestational weeks, pre-gestational BMI, and BSQ. Age has a positively significant association with pregestational BMI. BMI was associated with values of BSQ, indicating that women with higher BMI before pregnancy were more concerned with their body images (r=0.451; p<0.01).

Table 2 – Descriptions, Spearman rho correlations between measured variables.

	Age	**Gestational age**	**Pregestational BMI**	**BSQ**
Age		-0.04	0.275**	0.157*
Gestational weeks			-0.43	0.61
Pregestational BMI				0.451**

*BMI=Body Mass Index, BSQ=Body Shape Questionnaire, *p<.05, **p<.01*

Table 3 describes the results of the linear regression analysis between body image, age, gestational weeks, and pregestational BMI, body image image was dependent variable. Three models were elaborated: 1) age, gestational weeks, and pregestational BMI; 2) gestational weeks and pregestational BMI; and 3) only pregestational BMI. It was observaded that the third model explain better the concerns with body image during pregnancy. Main effect was revealed for pregestational BMI ($\beta = 0.410$, $p < 0.001$)**.** From the results of the final model, it can be observed that 16.7% (R^2) of the variation in the BSQ total score was explained by the BMI.

Table 3 - Regression analyses between body image, age, gestational weeks, and pregestational BMI.

BSQ				
Unadjusted Model				
Variable	***β***	***SE***	***P***	***IC 95%***
Age	0.009	0.431	0.908	-.801 - .901
Gestational weeks	0.035	0.253	0.630	-.378 - .622
Pregestational BMI	0.410	0.427	0.000	1.516 – 3.204

BSQ				
Adjusted model				
Variable	***β***	***SE***	***P***	***IC 95%***
Age	-	-	-	-
Gestational weeks	-	-	-	-

Pregestational BMI	0.409	0.412	0.000	1.542 – 3.168

Discussion

The present study aimed to investigate whether pregestational BMI influences body image of Brazilian pregnant women. The prevalence of pregnant women dissatisfied their body image was high, mainly on the overweight women. The regression analysis confirmed the importance of pregestational BMI as a significant predictor of the body dissatisfaction.

According to our results, there is a prevalence of body dissatisfaction at pregnancy, and pregnant women with obesity are more dissatisfied with their body. The rates of body dissatisfaction are consistent with previous studies in Brazilian population. Must be highlighted that mainly studies of body image in Brazil focus in adolescents and graduate students (Leal, Philippi, & Alvarenga, 2020; Santana et al, 2020; Chiminazzo et al, 2019). In other countries, studies showed that body dissatisfaction is common during pregnancy (Chan et al, 2019; Elise et al, 2019; Brown, Rance, & Warren, 2015; Lai et al, 2006). In this sense, most studies on body dissatisfaction in the pregestational, gestational and postpartum period are from Western countries (Hodgkinson, Smith, & Wittkowski, 2014). However, it is important to investigate how Eastern, African and Latin women experience changes in their bodies. At Latin American, there is a lack of studies about body image in pregnant population, as far as is known, up to the presente moment, there are only two studies about body image of pregnant women in Latin American: Borelli et al. (2016) investigated at Argentin, and Meireles et al. (2015) investigated at Brazil, this shows the importance of our study.

In a study conducted in Argentina, the results showed that 58% of women had a distorted body image. The researches found significative association between nutritional status and body image perception, but overweight women were more likely to

underestimate nutritional status, that is, they thought that were low weight or eutrophic instead of overweight (Borelli et al, 2016). Differently, in Brazil, women with adequate weight had reduced body-related concerns when compared to those with overweight and obesity (Meirelles et al, 2016), this result is similar to ours.

Regarding body dissatisfaction in pregnancy, a likely explanation is that in this period, women may get concerned with changes bodly and with fear of body doesn't back to size prepregnancy. There are socially constructed ideals to be of thinness, shapely breasts and unmarked skin, so, in pregnancy, these factors may contribute to concerns with the body. (Nash, M., 2012; Clark et al, 2009). It's interesting reflect about the impacts of the concerns with the body at the phase. Brown, Rance, and Warren (2015) found that mothers who are affected negatively by changes to their body during pregnancy may be less likely to plan to or initiate breast feeding. Possibly because they can feel themselves embarrassment with the body, and such the culture of seeing the breast as a sexual object. How we know, the World Health Organization recommends exclusive breast feeding for the first six months post partum (World Health Organization, 2003), so, the impact of body dissatisfaction is a major public health problem.

Body image dissatisfaction during pregnancy has also been associated with increased risk of depression during pregnancy and the postpartum period (Downs et al, 2008). In this sense, a longitudinal study of Norwegian women (N = 39,915) found that greater body image concerns at the beginning of pregnancy predicted the incidence of postpartum depression in the first three years postpartum, and that women with the highest body weight were most negatively affected (Han et al., 2016). Moreover, higher levels of body dissatisfaction in pregnancy may be associated with higher gestational weight gain (Hill, Skouteris, McCabe, & Fuller-Tyszkiewicz, 2013). A hypothesis for

the link between body dissatisfaction and excess gestational weight gain is that the concerns about the body shape can bring anxiety, sadness, and fear to women, and these negative feelings can trigger emotional eating (Zhang et al., 2020). These are the main relations that the studies bring linked with body dissatisfaction. Therefore, it is clear how serious the impact of the concerns with the body shape during pregnancy is.

The main found of this study was the relation between body image and pregestational BMI. One of the most commonly used model to explain body image dissatisfaction is the tripartite influence model (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). This model proposes that three influences affect body image and eating problems: peers, parents and media; through two mediational mechanisms: internalization of societal standards of appearance and excessive appearance comparison. People that not meet society's bodily ideal suffer of the negative preconceptions, therefore, it seems unsurprising that body dissatisfaction is particularly prevalent in individuals with overweight or obesity (Purton et al, 2019). Moreover, relationships between BMI status and body dissatisfaction reflects the influence of a cultural weight stigma.

Weight stigma is a communication barrier between healthcare professionals and overweight/obese pregnant individuals, obese pregnant patients frequently report perceptions of stigmatizing behavior by professionals based on their weight (Furness et al, 2011; Grohmann et al, 2012; Lindhardt et al, 2013; Schmied, Duff, Dahlen, Mills, & Kolt, 2011).

Furthermore, in Brazil, prenatal appointments on primary care units commonly focus on weight gain, and at all women are weighted in each appointment (Nucci et al, 2001), it may be that because they are usually weighed up, they are more concerned with the weight at the scale, and the fear of judgment about weight their. Since that

there is a weight stigma in the medical care, women may feel fear of judgment. Although our study didn't investigate weight stigma, researchers show that there is a new context of stigmatization among pregnant and postpartum women. According to Incollingo Rodriguez et al. (2020), nearly two thirds of participants reported experiencing weight stigma from at least one source. (Incollingo Rodriguez et al, 2020). In other study of Incollingo Rodriguez et al. (2019), revealed that women experiencing weight stigma reported more depressive symptoms, maladaptive dieting behavior and perceived stress. Weight-stigmatizing experiences were also related to more emotional eating behavior in pregnant participants and greater postpartum weight retention in postpartum. (Incollingo Rodriguez et al, 2019).

A other likely hypothese to explain body disatisfaction and BMI is that women with obesity are victims of the weight stigma on antenatal health center, a space very frequented by women during pregnancy. Thereby, they feel concerns with the appearance of the body and size their (Allen-Walker et al, 2017).

However we did not found relations between gestational trimester and body dissatisfaction. Longitudinal studies had showed that body dissatisfaction was greatest in early pregnancy and the tendency for such dissatisfaction to decrease in later stages of pregnancy (Duncombe et al, 2008; Clark et al, 2009). Our study is a cross-cut, so, data of different trimester were not of same people, maybe due this we do not found statical diferentes between trimester. Stands out the importance of longitudinal studies in this target.

This study presentes some limitation, such as cross sectional study are unable to reveal an analysis of causality and consequences. However, in order to investigate prevalence, the cross-sectional design is useful. It's important to highlight that this study did not received research financial. Another limitation is the different economic

status of the volunteers, since they are women served by publich health system and the private health network. Self-reported anthropometric measures also become a limitation, as they can influence nutritional status. However, the use of self-reported measures to calculate BMI is considered an acceptable practice in research and in pregnant women (Araújo et al, 2017).

Recommendations for research and practice

We encourage longitudinal studies in relation to body image before, during and after pregnancy. In addition, weight stigma should be further explored during pregnancy and postpartum. In practice, health professionals should be better prepared to deal with issues about body image, weight gain, since pregnancy is a period of many changes in the body. In prenatal consultations, it can be considered asking how the woman is dealing with body changes, one should also investigate excessive gestational weight gain. In addition, health professionals must offer non-judgmental care to all women, and with neutrality in relation to the sizes of their bodies.

Conclusions

The women from this study had a considerable rate of body dissatisfaction, mainly women with Obesity, possibly due to beauty standarts, wish to return to prepregnancy body, and weight stigma. This study introduce important points to considerate on prenatal appointments.

Disclosure of interest

The authors report no conflict of interest

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