Prevalence of the nursing diagnosis, imbalanced nutrition: more than body requirements, in pregnant women*

Prevalência do diagnóstico de enfermagem – nutrição desequilibrada mais do que as necessidades corporais em gestantes

Prevalencia del diagnóstico de enfermería – nutrición desequilibrada más que las necesidades corporales en gestantes

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ABSTRACT

Objective: To identify the prevalence of the nursing diagnosis (ND) *imbalanced nutrition: more than body requirements* during pregnancy and the association between ND and the sociodemographic and obstetric variables. **Methods:** A transversal, descriptive, exploratory study conducted with 146 pregnant women seen in primary health care units, in a city in the metropolitan region of Fortaleza (Ceará). Data were collected by means of a prenatal nursing consultation form. We performed the calculation of Body Mass Index and the measurement of the triceps skin fold. **Results:** The ND in this study was identified in 100 (68.4%) of the pregnant women. There was a statistically significant difference in age between women with and without the ND (p = 0.001), parity (p = 0.026) and gestational age (p = 0.002). **Conclusion:** The ND was determined to have a marked prevalence in pregnant women participating in the research, and was associated with preventable factors and associated with educational interventions in family planning, such as maternal age and parity.
Keywords: Prevalence; Nursing diagnosis; Pregnant women; Prenatal nutrition

RESUMO

Objetivo: Identificar a prevalência do Diagnóstico de Enfermagem (DE) nutrição desequilibrada: mais do que as necessidades corporais em gestantes e verificar a associação entre o DE e as variáveis sociodemográficas e obstétricas. **Métodos:** Estudo transversal, descritivo,exploratório, realizado com 146 gestantes atendidas em unidades básicas de saúde de Município da região metropolitana de Fortaleza(Ceará). Os dados foram coletados por meio de formulário durante consulta de enfermagem ao pré-natal. Foram realizados o cálculo do Índice de Massa Corporal e da mensuração da dobra da pele do tríceps. **Resultados:** O DE em estudo foi determinado em 100 (68,4%) gestantes. Verificou-se diferença estatística significativa da idade entre gestantes com e sem o DE (p= 0,001); paridade (p= 0,026) e idade gestacional (p= 0,002). **Conclusão:** O DE pesquisado apresentou prevalência marcante nas gestantes pesquisadas, estando associado a fatores evitáveis por ações educativas voltadas ao planejamento familiar, como idade materna e paridade.
Descritores: Prevalência; Diagnóstico de enfermagem; Gestantes; Nutrição pré-natal

RESUMEN

Objetivo: Identificar la prevalencia del Diagnóstico de Enfermería (DE) nutrición desequilibrada: más que las necesidades corporales en gestantes y verificar la asociación entre el DE y las variables sociodemográficas y obstétricas. **Métodos:** Estudio transversal, descriptivo, exploratorio, realizado con 146 gestantes atendidas en unidades básicas de salud del Municipio de la región metropolitana de Fortaleza(Ceará). Los datos fueron recolectados por medio de un formulario durante la consulta de enfermería al prenatal. Fueron realizados el cálculo del Índice de Masa Corporal y de la mensuración del doblez cutáneo del triceps. **Resultados:** El DE en estudio fue determinado en 100 (68,4%) gestantes. Se verificó una diferencia estadística significativa de la edad entre gestantes con y sin el DE (p= 0,001); paridad (p= 0,026) y edad gestacional (p= 0,002). **Conclusión:** El DE investigado presentó marcada prevalencia en las gestantes investigadas, estando asociado a factores evitables por acciones educativas volcadas a la planificación familiar, como edad materna y paridad.
Descriptores: Prevalencia; Diagnóstico de enfermería; Mujeres embarazadas; Nutrición prenatal

INTRODUCTION

The nursing diagnosis (ND), *imbalanced nutrition: more than body requirements* (00001), consists of the intake of nutrients that exceeds metabolic needs, and includes the defining characteristics: triceps skin fold greater than 25 mm in women; weight 20% over ideal for height and frame; eating in response to external cues; eating in response to internal cues other than hunger; dysfunctional eating pattern (e.g., pairing food with other activities), sedentary lifestyle, and concentrated food intake at the end of the day. Related factors include an excessive intake in relation to metabolic need [1].

An integrative literature review was conducted using the *Scientific Electronic Library Online* (SciELO) collection of databases including: *Medical Literature Analysis and Retrieval System Online* (Medline), Latin American and Caribbean Health Sciences (LILACS) and Database of Nursing (BDENF), during the period of January 1997 and May 2008 on ND in pregnant women. The descriptors *nursing diagnosis* and *prenatal care* were used for the review; six articles were analyzed. However, none of these were aimed at the ND delimited for this study, which used a low-risk pregnant population [2]. It should be emphasized that the phenomena of *obesity* and *overweight*, not included in aforementioned review, may contribute to the survey of articles about the diagnosis in this study.

Increased maternal stores, fetal growth, expansion of maternal tissues (placenta, adipose tissue and uterus), breast enlargement, the extracellular fluid, blood volume and formation of amniotic fluid lead to increased weight gain of pregnant women. But, this physiological increase is expected and not a cause of disorders of maternal-fetal health. Weight gain should be differentiated according to the pre-pregnancy nutritional status: underweight pregnant women should have a weight gain between 12.5 to 18.0 kg; adequate weight pregnant women should gain between 11.5 to 16.0 kg; in overweight pregnant women, the gain should be 7.0 to 11.0 kg; and in obese women, the gain should remain below 7.0 kg [3].

When the weight change becomes more than expected during the pregnancy, according to the weight pre-pregnancy, the chances of operative deliveries and adverse perinatal outcomes, such as macrosomic fetus, cephalopelvic disproportion, trauma, asphyxia, and perinatal death are higher [4-5]. Moreover, the excessive weight gain can increase postpartum weight retention, and has a greater association with gestational diabetes *mellitus* and hypertensive disorders of pregnancy [6-8].

In this context, the present research sought to answer the following questions: What is the prevalence of the ND, *imbalanced nutrition: more than body requirements*, in pregnant women? What demographic, socioeconomic and obstetric factors present a statistical association

with this ND? Thus, our objective was to verify the prevalence of pregnant women with the ND, *imbalanced nutrition: more than body requirements*, and to verify the association between this ND with the age of the mother, education, family income, occupation, marital status, parity and gestational age. It should be added that only one related factor of the ND proposed in NANDA-I (excessive intake in relation to metabolic need) was considered to be a variable to be associated with the presence of obesity and overweight, but this aspect was addressed in another article.

METHODS

This was a cross-sectional, descriptive, exploratory study, developed in six basic health units in the municipality of the metropolitan region of Fortaleza (CE), between April and September 2009.

Participants included 146 pregnant women assisted by teams from the Family Health Strategy of each respective city. The sample was calculated by taking the confidence coefficient of 95% ($Z_\alpha = 1.96$), population (N = 237) corresponding to the total number of pregnant women enrolled in the Information System of Primary Care (ISPC); random error of 5% and 50% prevalence, due to a lack of knowledge of the prevalence of the ND investigated in other studies with these characteristics.

The pregnant women were selected consecutively as they appeared at the UBS for prenatal nursing consultation care. We excluded those with less than two years of menarche, because they are in a phase of biological immaturity, an aspect that leads to the non-use of the nutritional assessment parameter selected for the study; and, pregnant women with pathological conditions that lead to weight gain during pregnancy, such as Pregnancy-induced Hypertension Syndrome, diabetes *mellitus*, fetal macrosomia, and polyhydramnios.

Data were collected through interviews that followed a pre-established form, covering demographic, socio-economic, obstetrical, and clinical variables for the ND study. Nutritional status was assessed by the body mass index (BMI); we assessed the BMI and triceps skin fold. The pre-pregnancy nutritional status was considered by means of interviewing the pregnant women who reported their pre-pregnancy weight and height, and we then determined the pre-pregnancy BMI, then we calculated the current BMI using the weight and height of the mother at the time of the research. For the classification of nutritional status, we used the recommendation of the *National Academy of Sciences* of the *Institute of Medicine*: underweight (BMI <19.8), normal weight (BMI 19.8 to 26), overweight (BMI 26-29) and obesity (BMI> 29) [9]. The skin fold was measured on the triceps by an adipom-

eter, and we defined a midpoint between the shoulder and elbow of the pregnant woman, posterior to her right arm. We marked the location delimited by a cross sign (+), with a pen. We pinched up the skin that had the sign and used the adipometer, placing it the intersection of the lines forming the cross. The skin was stretched, holding it between the thumb and forefinger, away from the muscle. Then, we read the measure to the nearest millimeter. We completed two additional measurements in the same place, and average of the results was noted, in cases in which the values were different [10].

The ND analysis was determined according to the presence of defining characteristics: overweight (weight 10% above the ideal for height and frame), obesity (weight 20% above the ideal for height and frame), and triceps skin fold greater than 25 mm. The presence of one or more of these defining characteristics is sufficient to establish the diagnosis in the study [11]. Therefore, during the diagnostic reasoning, when the pregnant woman did not present with at least one of these defining characteristics, it was established that the ND was absent; the presence of, at least, one of them was used as a basis for considering this diagnosis to be present. Considering that tests of accuracy provide better statistical inference in the relationship between the defining characteristics and the ND, we recognize the impropriety in advance to specify defining characteristics to define a diagnosis. As the majority of the indicators analyzed referred to the anthropometric measurements, the analyses related to the presence of the diagnosis are limited to such characteristics.

The data were organized in *Excel,* version 2003, analyzed using the *Statistical Package for the Social Sciences* (SPSS) software, version 16.0. To verify independence between variables, we applied the Pearson's chi-square test, and when at least 25% of the expected frequencies were below five, we applied the *Fisher's* exact probability test or the *Fisher-Freeman-Halton* test. For the comparison of medians, we applied the H test of Kruskal-Wallis.

The recommendations of Resolution No. 196/96, National Council of Health-MS were followed. The research project was approved by the Committee on Ethics in Research of the Federal University of Ceará, conforming to Protocol No. 18/09.18/09. The participants signed the Terms of Free and Informed Consent form, and those under the age of 16 years, after consenting to participate in the research, had a form signed by the designated responsible person.

RESULTS

The age of the pregnant women ranged between 14 and 39 years, and despite the predominance of young adult pregnant women (20-35 years), we emphasize the percentage of 43 (30%) pregnant adolescents and

9 (6%) pregnant women in the final phase of reproduction (more than 35 years). Their educational levels varied from illiterate to those who had completed higher education, with a predominance, 71 (48.6%), of pregnant women with incomplete primary education. Family income ranged from zero all the way to five times the minimum wage; the highest percentage of pregnant women were housewives, 96 (65.8%); 126 (86.3%) were married or living in a consensual union (Table 1).

Table 1. Pregnant women, according to demographic and socio-economic variables. Itaitinga-CE, Brazil, Apr./Sept., 2009

Variables (n = 146)	N	%
Age (in complete years)		
$\overline{X}$ = 24.34, Standard Deviation (SD) = 6.43		
14-19	43	30.0
20-35	94	64.0
36-39	9	6.0
Education		
Illiterate	1	0.7
Literate	10	6.8
Primary School (Incomplete – n = 71; Complete – n = 7)	78	53.4
Secondary School (Incomplete – n = 26; Complete – n = 28)	54	37.0
Superior (Incomplete – n = 2; Complete – n = 1)	3	2.1
Family income (in minimum wages) *		
$\overline{X}$ = 671.54, SD = 466.85		
Without income	1	0.7
Up to ½	13	9.0
> 1/2 – 1	57	39.0
> 1-2	45	30.8
> 2-3	14	9.6
> 3-4	11	7.5
> 4-5	5	3.4
Occupation		
Homemaker	96	65.8
Student	19	13.0
Work outside the home (sales (6), domestic (6), seamstress (4), professor (3), farmer (2) and others (10)	31	21.2
Marital status		
Consensual union or married	126	86.3
Single or without a partner	20	13.7

*Current monthly minimum wage = R$ 465.00

Pregnant women with overweight / obesity presented with a higher age when compared to pregnant women with normal weight or underweight (H = 16.984, df = 3, p = 0.001). On the other hand, no association was identified between the weight classification of the pregnant women and these variables: educational level (p = 0.341), monthly family income (p = 0.928), occupation "work outside the home" (p = 0.467) and marital status (p = 0.070).

Table 2. Pregnant women, conforming to the obstetrical variables. Itaitinga-CE, Brazil, Apr./Sept., 2009

Variables (n = 146)	N	%
Parity $\overline{X}$ = 1.24, SD = 1.52		
None (Nulliparous)	60	41.1
1 (Primipara)	39	26.7
2 (Secundipara)	25	17.1
3-4 (Multiparous)	14	9.5
5-7 (Grand multipara)	8	5.6
Gestational age (per trimester of pregnancy) $\overline{X}$ = 21wks,8d, SD = 60.05		
First (8wks,4d – 13wks,6d)	29	20.0
Second (14wks – 28wks,6d)	83	57.0
Third (29wks – 40wks)	34	23.0

It was found that women with higher parity (Table 2) were more likely to present as overweight / obese (H = 9283, df = 3, p = 0.026), and this a significant increase also showed with increasing gestational age (H = 15,094, df = 3, p = 0.002).

Table 3. Pregnant women, conforming to pre-pregnancy nutritional status, pregnancy and measures of triceps skin fold. Itaitinga-CE, Brazil, Apr./Sept., 2009

Variables (n = 146)	nº	%
Pre-pregnancy nutritional status BMI: $\overline{X}$ = 23.67, SD = 4.13		
Underweight (BMI <19.8)	20	13,0
Normal weight (BMI> 19.8 – 26.0)	89	61,0
Overweight (BMI> 26.0 – 29.0)	23	16,0
Obesity (BMI> 29.0)	14	10,0
Gestational nutritional status BMI: $\overline{X}$ = 26.10, SD = 4.41		
Underweight (BMI <19.8)	10	6,9
Normal weight (BMI> 19.8 to 26.0)	43	29,5
Overweight (BMI> 26.0 to 29.0)	60	41,0
Obesity (BMI> 29.0)	33	22,6
Measurements of triceps fold (mm) $\overline{X}$ = 15.19, SD = 4.65		
≤ 25	139	95,2
>25	7	4,8

According to the data in Table 3, in the pre-pregnancy state, there was a greater percentage of women with low weight – 20 (13.0%) and eutrophic weight – 89 (61.0%), when compared to the pregnant status. During pregnancy, there was a higher percentage of overweight, 60 (41.0%), and obesity, 33 (22.6%). Underweight decreased by 50%, and pregnant women with normal weight by 51.7%; the largest increase was of overweight, 160.8%; obesity increased by 135.7%. There was a statistically significant association between the pre-pregnancy and pregnancy measurements (p = 0.034).

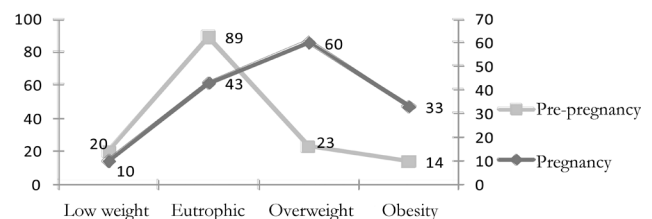Figure 1 illustrates the nutritional behavior of pregnant women surveyed.

Figure 1. Behavior of the nutritional status of women in the pre-pregnancy and pregnancy periods. Itaitinga-CE, Brazil, Apr./Sept., 2009.

The triceps skin fold varied between 8-30 mm, presenting a mean of 15.19 mm. We observed the measure of the fold to be greater than 25 mm in 7 (4.8%) of the pregnant women in the study.

DISCUSSION

Studies have found a mean age of pregnant women consistent with the present study ($\overline{X}$ = 24.34, SD = 6.43). A study conducted with 141 pregnant women attending a low risk prenatal service in São Paulo (SP), found a prevalence of pregnant women between the ages of 20 and 30 years [12]. In a cohort of 115 pregnant women enrolled in the FHS of Campina Grande (PB), the mean age was 24 years [13]. In another study conducted with 219 pregnant women attending the Philanthropic Institution of São Paulo-SP, the mean age was 24.3 years [14]. This means that women of this research and these other studies are deciding to become pregnant, predominantly, at an age that does not represent reproductive risk, an aspect that should be maintained and encouraged in actions aimed at sexual and reproductive health.

We note, however, the 43 (30.0%) pregnant adolescents, and suggest that the percentage remains high. This is an age group least likely to gain too much weight, since the fetus competes with the adolescent for nutrients, to support her own growth [15]. But two studies conducted in public services in Fortaleza (CE) with 40 and with 99 pregnant adolescents detected overweight / obesity in 9

(22.5%) and 5 (5.1%) of pregnant adolescents, respectively [16,17]. However, in a study with 558 pregnant adolescents in São Paulo (SP), overweight / obesity was found in 133 (44.3%) of the pregnant teens [18]. Therefore, it is clear that these percentages are varied in the same city (Fortaleza) and in the southeastern municipality (São Paulo), suggesting that qualitative studies should be conducted in order to clarify the peculiarities of this outcome.

Changes in weight (obesity and overweight) are more prominent than simply a nutritional problem in itself; there is a lack of literature that focuses on the ND. However, studies show the relationship between nutrition and weight gain (obesity and overweight). Inadequate nutrition is a risk factor that contributes most to the increase in obesity and overweight worldwide [19]. Studies have related the increase in energy density of the diet and nutritional standards characterized by foods of the fast-food variety (sweets, chocolates, processed meats, soft drinks, among others) during pregnancy with increased weight gain in late pregnancy [20,21]. Research conducted in Rio de Janeiro (RJ) with 173 women utilized a food frequency questionnaire and noted that gestational weight gain was lower among those who had an adequate consumption of energy, as recommended by the *Food and Agriculture Organization* (22).

The relationship between the increase in the percentage of pregnant women with overweight or obesity with increasing age should be monitored, because it may indicate late consequences of inadequate dietary habits among women in the studied community.

Considering the predominance of women with incomplete primary education, 71 (48.6%), a similar result was found in a study conducted with 110 pregnant women from São Paulo (SP), where 59% had the same educational level [23]. The secondary education corresponded to 54 (37%), with results well below those found in a study of 219 pregnant women attending prenatal consultation in philanthropic institution in São Paulo (SP), which detected 62.1% of pregnant women with the abovementioned education [14]. These findings confirm the discrepancy in the education of women in the Northeastern and Southeastern regions.

In the present study, there was no statistically significant association between anthropometric measures used and the educational level. But, when comparing women with more than 4 and less than 4 years of education, it was found that the former gained 1.9 kg more in late pregnancy [12]. Therefore, the variable of education should be seen as a possible influencer of anthropometric changes related to changes in nutritional status.

The absence of a statistically significant association between family income and the different classifications of weight gain of pregnant women reinforced the study that affirmed that pregnant women with low incomes have less access to food in qualitative terms, consuming more caloric foods because they are cheaper, and maintaining an unbalanced nutritional status [24].

With respect to the occupation of the pregnant women in which 96 (65.8%) were involved in homemaker activities and 31 (21.2%) worked outside the home, similar results were found in research conducted with 277 pregnant women attending the maternity ward of Piauí, where 75.8% were engaged in homemaker activities [25]. Although an association with occupation was not identified, it is believed that, to be involved outside the home results in a lack of time to prepare meals at home, leading the pregnant women workers to give preference to prepackaged foods. The work outside the home also has generated replacement of the more complete family meal by the *"fast food"* of the streets, characterized by a wide variety of foods rich in saturated fatty acids, accompanied by soft drinks and desserts with a high sugar content [26].

Despite the condition of a consensual union or marriage being prevalent in the present study, no association with these parameters used was identified. Regarding this point, a similar percentage of consensual unions was observed in a study conducted in Porto Alegre (RS) with 315 pregnant women, where 86.7% lived in a consensual union [27]. However, research with 622 pregnant women in the state of New York (USA) observed weight gain of 2.3 kg among women who did not have a partner, because this absence caused increased food intake than the body required due to lack of psychosocial support, which could lead the occurrence of an altered nutrition [28].

In this study, nulliparous women were predominant (60 – 41.1%), with a statistically significant association between parity and overweight / obesity (p = 0.026). The percentage of nulliparous women was similar to that found in a study conducted in Teresina (PI) with 277 pregnant women, where 39% were nulliparous [25]. A cohort study conducted with 215 pregnant women attending a public service in São Paulo (SP) also found a statistically significant association between parity and weight gain (on average 2.4 kg more) (p = 0.01) [28]. Thus, we emphasize that parity is a contributing factor to weight changes during pregnancy.

The relationship between changes in weight and gestational age found in this article are similar to those found in a study with 225 pregnant women who received care at a philanthropic maternity hospital in São Paulo (SP) (p = 0.004) [28]. Thus, it is important to consider the advancement of gestational age as a factor influencing these changes.

Research about weight gain during pregnancy, conducted in six Brazilian capitals, found 28% of women began pregnancy overweight / obese, and 6% were underweight. Although higher prevalence of overweight / obesity has been found in most industrialized capitals,

capitals of the Northeast also showed higher prevalences of overweight / obesity than of underweight [29]. In a study conducted in Campina Grande (PB) with 115 pregnant women, the prevalence of overweight and obesity was similar, 27% [13]. A study conducted in Teresina (PI) had a lower prevalence of 14.4% [25]. We observed similarities in the findings in different regions of the country, showing that underweight was once a dominant nutritional problem, that has been replaced by overweight / obesity. This nutritional transition is a consequence of diets rich in carbohydrates and lipids, as well as cultural values. It is still held as common sense, for example, that all pregnant women should double their caloric intake, and weight gain should ideally be around 12 kg, independent of baseline nutritional status of the pregnant woman [13].

CONCLUSION

Considering the parameters used in this study, the ND researched showed a significant prevalence among the pregnant women, and it remains a common nursing problem in this group. In this context, nurses working in primary care play a fundamental role: offering nursing consultation in the prenatal period, having the opportunity to monitor nutritional status, providing individual counseling to pregnant women according to their particular characteristics, and developing group activities for education in health, to address this topic. Nurses also have broad contact with the female clientele in other actions that they perform, directed at comprehensive women's health, and may use this contact as a space to promote healthy nutrition and the encouragement of physical activity, such as strategies for maintaining BMI in the normal range.

Among the variables studied, three showed a statistical relationship with the weight gain of pregnant women: increased age, higher parity and increasing gestational age. We suggest further studies on the ND, as it is still little explored, as well as the development of studies that address the related factors of this diagnosis, considering that at present there is only one factor described in the NANDA International taxonomy, which was not investigated in this study.

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