

Factors Associated with Self-Perceived Health among Women Attending a Sports Fitness Centre ¹

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Abstract

The aim of the present study was to investigate the demographic, socioeconomic, life style and health status factors associated with self-perceived health (SPH) among Brazilian women attending a health fitness centre. The exploratory cross-sectional study involved 162 participants each of whom answered a questionnaire and underwent anthropometric evaluation. The mean age of the participants was 31.46 ± 12.41 years and the average educational level was 13.77 ± 2.68 years of schooling. Most of the women were young (44.4%), physically active (69.8%), eutrophic (58.6%) with good bowel function (58.6%), and good SPH. The dietary habits of 67.4% of the participants required improvement. Body mass index (BMI) and physical activity were the only factors associated significantly with SPH ($P < 0.001$ and $P = 0.050$, respectively). Eutrophic and physically active women exhibited higher probabilities (92.7 and 90.1%, respectively) of presenting good SPH. Since women who have normal BMI and practice exercises are more optimistic in relation to their health status, it is important to implement programs that stimulate healthy life style.

Keywords: self-perceived health, women's health, nutritional status, physical activity.

1. Introduction

Good health is an essential prerequisite not only for the emotional and social well-being of individuals but also for their economic productivity. The state of health of a population clearly constitutes an important research topic (Segre & Ferraz, 1997), but most studies relating to the health of women have typically focussed on reproductive and gynaecological issues. More recently, however, other aspects of female health have received attention, primarily because of significant changes in the roles of women in society regarding their participation in the workforce while retaining most of the responsibilities for maternity and family care. Moreover, it is acknowledged that the pressures associated with these roles represent significant risk factors for the development of diseases and contribute to a poorer perception of health status (Cohen, 1998; Meyer, 1999; Gomes & Tanaka, 2003; Aquino, 2006; Sabbag, 2012).

¹ This study comprised one the research topics undertaken by Projeto Integrado de Nutrição Humana Aplicada (PRINUTHA) as part of the Programa de Pós-Graduação Interunidades em Nutrição Humana Aplicada da Universidade de São Paulo, the guiding principles of which are teaching, research and extension on nutrition, health and quality of life.

Considering the fast-pace of contemporary life style, and accepting the concept of health as physical, mental and social well-being, the evaluation of self-perception of health has been applied as a reliable means of inferring the objective and subjective health status of an individual, and of predicting risk of functional limitation and mortality (Idler & Benyamini, 1997; Lebrão & Laurenti, 2003; Barros, 2005). In respect of the female population, previous studies have shown that age influences the self-perception of health status, particularly at climacterium when hormonal alterations cause discomfort and a series of unpleasant symptoms that reflect negatively on the perception of well-being (Pedro et al., 2003). Additionally, women within the higher socioeconomic strata of society have greater access to health care and advanced levels of education, conditions that permit improved awareness of health issues and of the prevention and treatment of disease. Hence, income and education should be correlated with better health status and, consequently, with a more positive self-perception of well-being (Idler & Benyamini, 1997; Cavelaars et al., 1998; Manor et al., 2001).

In contrast, some studies have indicated that women with unhealthy life styles and altered nutritional status have a more pessimistic perception of health. Indeed, poor diet, physical inactivity, and excess weight are directly related to the development of chronic non-communicable diseases which, in turn, are associated with the reduction in physical capacity, morbidity and mortality (Visscher & Seidell, 2001; World Health Organization, 2002; Ministério da Saúde do Brasil, 2004). A sedentary life style and unhealthy eating habits are also associated with intestinal constipation and abdominal discomfort. Such conditions are highly prevalent among women and generally interfere negatively in the perception of health and quality of life (Andre et al., 2000).

The objective of the present study was to investigate life style and demographic, socioeconomic and health status as factors associated with self-perceived health (SPH) among women attending a health fitness centre in the city of São Paulo (SP, Brazil).

2. Materials and Methods

The study was approved by the Ethics Committee in Research of the Faculdade de Ciências Farmacêuticas (Universidade de São Paulo, SP, Brazil; Proc. No. 259). The aims and objectives of the investigation were explained to all potential participants, and written informed consent was obtained from each participant prior to the commencement of the project.

The exploratory cross-sectional study was conducted during the period 4th to 8th April 2005, and involved a group of female participants in the program “Red Card to Sedentarianism” (*Cartão Vermelho ao Sedentarismo*; supported by the Centro de Práticas Esportivas da Universidade de São Paulo in conjunction with PRINUTHA) who agreed voluntarily to take part in the present investigation. The required sample size was estimated using the formula proposed by Snedecor & Cochran (1967) assuming a statistical significance of 2.5%. Questionnaires relating to age, family income, education (number of years of schooling), bowel function, eating habits, physical activity and SPH were completed by an initial sample population of 168 women in the age range 18 to 59 years, but six individuals were subsequently excluded from the study because the information provided was inconsistent. Bowel function was assessed from responses to six questions relating to the occurrence of symptoms of constipation (namely, hard stools, irregular bowel movements, excessive efforts in passing stools, sensation of incomplete defecation, long time required for defecation or lack of success in doing so) as proposed by the Rome II diagnostic criteria of intestinal disorders. Bowel function was classified as poor when a positive response was provided for one or more of the questions, otherwise bowel function was classified as good (Drossman, 1999; Andre et al., 2000).

Dietary habits were assessed by 24-hour food recall, while food composition was analysed using NutWin software (Anção et al., 2002; Universidade Federal de São Paulo, 2010). For food stuffs that were not included in the NutWin data bank, the Tabela Brasileira de Composição de Alimentos (TBCAUSP; Universidade de São Paulo, 2004) and the Tabela de Composição de Alimentos (TACO; Universidade Estadual de Campinas, 2011) were employed. The quality of food intake was evaluated using the healthy eating index (HEI) developed by the Center for Nutrition Policy and Promotion (United States Department of Agriculture) and adapted for the population of Brazil by Fisberg et al. (2004). The index comprised ten components, of which the first six measured the adequacy of consumption of different groups of foods (i.e. grains, vegetables, fruits, milk and meat); components 7 and 8 assessed total and saturated fat consumption, respectively, as a percentage of total food energy intake; component 9 related to cholesterol intake; and component 10 examined the variety within the diet.

Each component attracted a score from 0 to 10, such that the overall index varied between 0 and 100, and diets were classified as poor (score < 51), in need of improvement (score between 51 and 80) or adequate (score > 80 points).

Physical activity was assessed on the basis of five questions relating to the frequency (never, rarely, frequently or constantly) of exercise (classified as mild, moderate or vigorous) extracted from the short version of the International Physical Activity Questionnaire (IPAQ; Matsudo et al., 2001). Based on the scores obtained, participants were categorized as physically active or inactive.

Assessment of SPH followed the method employed by Lebrao & Laurenti (2003) in which the allowed responses to the question “How would you describe your health?” were “very poor, poor, fair, good or excellent”. In the present study, however, the responses were dichotomized to “poor” (incorporating “very poor” and “poor”) and good (incorporating “fair”, “good” and “excellent”) as proposed by Alves & Rodrigues (2005).

All participants were subjected to anthropometric assessment performed by trained nutritionists in accordance with guidelines proposed by the World Health Organization (1995). Body weight was determined using a Toledo (São Bernardo do Campo, SP, Brazil) digital scale with 150 kg capacity and 50 g sensitivity. Height was measured using a Cardiomed (Curitiba, PR, Brazil) vertical stadiometer equipped with a non-extendable metric tape with 0.1 cm accuracy. Body mass index (BMI) was calculated by dividing body weight (kg) by the square of the height (m), and individuals were classified according to the cut-off points recommended by the World Health Organization (1995) as follows: underweight BMI < 18.5 kg/m², eutrophic BMI 18.5 to < 25.0, overweight BMI 25 to < 30 kg/m² and obese BMI ≥ 30 kg/m².

The factors associated with the probability of an optimistic SPH among women of the study population were evaluated using the model:

$$\text{SPH} = f(\text{A, E, BMI, BP, HEI, PA}) \quad \text{Eq. 1}$$

where A is age, E is education, BMI is body mass index (nutritional status), BP is bowel function, HEI is healthy eating index and PA is physical activity. Owing to the possibility of multicollinearity between the variables family income and education, and the frequently observed under-declaration of income (Hoffman, 2004), the variable education was selected to represent the socioeconomic characteristics of the sample population in the estimation of the econometric model. The objective indicators of health status were represented by BMI and BP, while HEI and PA corresponded to life style indicators.

In order to evaluate the model, binary logistic regression (logit) was employed in which SPH represented the binary categorical dependent variable (dummy variable) with values 1 (good SPH) or 0 (poor SPH). Logit regression estimates coefficients that are consistent and non-biased from the maximum likelihood method. The explanatory variables and the expected marginal effects on the probability of good SPH are shown in Figure 1. Statistical analysis was performed with the aid of the program Statistical Package for the Social Sciences (SPSS) version 13. The significances of the variables estimated in the logit model were determined using the Wald chi-square test.

3. Results

The study population comprised 162 women with mean age 31.46 ± 12.41 years, a relatively high educational level represented by an average of 13.77 ± 2.68 years of schooling, and a mean BMI of 24.25 ± 5.21 kg/m². Although the majority of the study population was classified as eutrophic (58.6%), a large proportion was overweight/obese (33.4%) while a small proportion was underweight (8.0%). The distribution of nutrition status observed in the present study was similar to that reported by Sabbag (2012) for a population of housewives.

According to the HEI values obtained for the study population, only 21.6% of the participants enjoyed a good quality diet, while the dietary habits of 11.0% of subjects were classified as poor and those of 67.4% of the women required improvement. The majority of participants reported good bowel function (58.6%) and were physically active (69.7%).

Assessment of SPH revealed that 87.0% of participants believed that their health status was good. The group of women reporting poor SPH were older (36.19 ± 12.03 years) and presented a lower level of education (12.62 ± 3.29 years of study) and a higher BMI value (28.94 ± 6.72 kg/m²) in comparison with those with good SPH (30.76 ± 12.35 years of age; 13.94 ± 2.55 years of schooling and BMI of 23.55 ± 4.58 kg/m²). As shown in [Table 1](#), the proportion of young women (18 – 24 years) who had good SPH was greater than that of women in the older age ranges, although a reasonable proportion of the eldest women (55 - 59 years) still reported good SPH. The majority of the eutrophic women had good SPH, while most of the participants classified as overweight/obese reported poor SPH. A large proportion (71.6%) of women with good SPH was physically active. Interestingly, however, most women (57.1%) with poor SPH were also physically active.

According to descriptive analysis, SPH was influenced by age, education, BMI and physical activity but not by bowel function or quality of dietary habit. The results of the binary logistic regression analysis for all variables (except bowel function and quality of dietary habit) are shown in [Table 2](#). The estimated logit model was statistically significant and presented an explanatory power of 24.1%. Among the variables investigated, only BMI and physical activity showed significant coefficients ($P < 0.001$ and $P = 0.050$, respectively) bearing the expected sign. Based on the coefficients associated with BMI and physical activity, it was possible to calculate the probabilities of participants reporting a positive SPH. Thus, the likelihood of eutrophic women presenting good SPH was higher (92.7%) than those of overweight (84.5%) or obese (61.1%) subjects. Furthermore, physically active women had a higher probability (90.1%) of reporting good SPH in comparison with those who were physically inactive (78.9%).

4. Discussion

Many factors can influence the perception of an individual regarding the status of their own health. In women, age is expected to be associated negatively with SPH because of the symptoms and discomfort caused by climacterium and menopause. However, age exerted no significant effect on the SPH of the study population of Brazilian women. In this context, a 10-year study of Finnish women aged between 45 and 64 years revealed no significant association between quality of life and menopause ([Moilanen et al., 2012](#)) indicating that the effect of age on quality of life or SPH was not related to menopausal status. It is possible that the result obtained for age in the present study was somewhat influenced by the young profile of the women involved, who were mainly 18 to 29 years old with little variation. In addition, these young adults may have not experienced signs of ill health, and this would contrast with studies involving sedentary elderly adults ([Bize et al., 2007](#)).

Education is considered a protective factor against diseases since well-informed individuals possess a greater knowledge of health issues, are more likely to live in favourable environments, have better accessibility to health services, and tend to opt for a healthier life style ([Mackenbach et al., 1994](#)). In the present study, most (72.2%) of the sample population presented a relatively high educational level (≥ 11 years of schooling) and positive SPH. However, according to the logit model employed, education had no statistically significant effects on SPH, a result that contrasts with the findings of [Moilanen et al. \(2012\)](#) who reported a positive association between schooling and quality of life. Clearly this variable requires more detailed examination using sample populations with greater statistical dispersion.

A significant association between physical activity and the SPH of participants was confirmed in the present study, although this effect may be related to the sensation of well-being and the reduction of stress and anxiety conferred by exercise ([Ministério da Saúde do Brasil, 2004](#); [Moilanen et al., 2012](#)). Interestingly, the older women of the sample population were physically active and presented a relatively high educational level, a profile that is somewhat different from that of older women in the general population of Brazil.

The effects of nutritional status (BMI), bowel function, and life style (dietary habits and physical activity) on SPH were also investigated. Theoretically, individuals of abnormal nutritional status and poor eating habits or irregular bowel function should exhibit poor SPH by virtue of the discomfort and disagreeable sensations associated with these conditions ([World Health Organization, 2002](#); [Pan American Health Organization & World Health Organization, 2003](#); [Pucci et al., 2012](#)). The results of the present investigation were similar to those of earlier reports ([Manor et al., 2001](#); [Moilanen et al., 2012](#); [Ul-Haq et al., 2012](#)) and confirmed that overweight women presented poor SPH in comparison with eutrophic women.

However, the majority of underweight women in the sample population presented good SPH, indicating that low weight did not exert a negative effect on the perception of well-being. An explanation of this finding may be that most of the underweight women were in the age range 18 to 29 years, a stage in which most females associate attractiveness with a slender body to a point that many may develop eating disorders in order to attain the thin-ideal standard of beauty (Dachs & Santos, 2006). According to the Instituto Brasileiro de Geografia e Estatística (2004), the indicator employed for the evaluation of nutritional status (BMI) of young people is less specific since, in such individuals, the growth and body expansion process has not been completed.

Constipation is one of the most frequent complaints among women and may have negative effects on SPH. Although this problem was identified in the study population, slow intestinal transit was not associated with poor SPH, probably because participants were used to the problem and relegated the symptoms as unimportant to their well-being (Oliveira et al., 2005). Following a study involving nutritional intervention (in the form of increased intake of fibres and decreased intake fats) in a group of women, Corle et al. (2001) reported that there were no significant differences between the experimental and control groups regarding the satisfaction with life during the first year of investigation. However, during the four subsequent years, the experimental group showed significant improvement in respect of self-care and SPH. In the present study, however, HEI was not significantly associated with SPH. It is possible that a single 24-hour food recall was insufficient to determine the quality of dietary habits. Indeed, most studies have employed two or more 24-hour recalls because of intra-individual differences (Frainer et al., 2008). For this reason, the parameter HEI requires further investigation in order to make assumptions that are more accurate.

5. Conclusions

SPH represents a subjective assessment of the health status of women. Despite the limitations of this indicator and the scarcity of studies published in Brazil, the evaluation of SPH remains an important method of determining positive moods. SPH comprises various life style aspects that contribute to the status of well-being and is also strongly related to health issues in accordance with the principles of the World Health Organization. Our study has demonstrated that eutrophic and physically active women present a high probability of being more optimistic about their health than sedentary women and those with abnormal nutritional status. These findings support the strategies adopted so far by many national and international organizations in encouraging weight control and the daily practice of exercises as a strategy for achieving a better quality of life. Finally, it is important to emphasize the need for augmenting research on the welfare of Brazilian women since our society is presently undergoing significant transformation with substantial impacts on the health of this segment of the population.

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Variable	Description	Expected effect
Age	Continuous	-
Education	Continuous	+
Body mass index	Continuous	-
Healthy eating index	Continuous	+
Bowel function (good = 1; poor = 0)	Dummy	+
Physical activity (active = 1; inactive = 0)	Dummy	+

Figure 1. Explanatory variables included in the binary logistic regression model and their expected marginal effects on the dependent variable (self-perceived health)

Table 1 Distribution of women according to self-perceived health status

Variables	Self-perceived health				Total	
	Good		Poor		n	%
	n	%	n	%		
Age range (years)						
18 - 24	67	47.5	5	23.8	72	44.4
25 - 29	17	12.1	2	9.5	19	11.7
30 - 34	15	10.6	4	19.0	19	11.7
35 - 44	17	12.1	3	14.3	20	12.3
45 - 54	14	9.9	6	28.6	20	12.3
55 - 59	11	7.8	1	4.8	12	7.4
Total	141	100.0	21	100.0	162	100.0
Education (years of schooling)						
≤ 10	34	24.1	11	52.4	45	27.8
≥ 11	107	75.9	10	47.6	117	72.2
Total	141	100.0	21	100.0	162	100.0
Body mass index						
Underweight	12	8.5	1	4.8	13	8.0
Eutrophic	90	63.8	5	23.8	95	58.6
Overweight/Obese	39	27.7	15	71.4	54	33.4
Total	141	100.0	21	100.0	162	100.0
Physical activity						
Active	101	71.6	12	57.1	113	69.8
Inactive	40	28.4	9	42.9	49	30.2
Total	141	100.0	21	100.0	162	100.0

Table 2. Results of the binary logistic regression analysis

Variables	Coefficients	P values
Constant	-5.582	0.006**
Age	0.022	0.304*
Education	-0.112	0.226*
Body mass index	0.156	0.001**
Physical activity	1.092	0.050***

* Non-significant, **significant (1% level), *** significant (5% level)

Characteristics of the model: pseudo $R^2 = 0.241$; Wald chi-square test = 23.55; statistical significance at $P < 0.01$