




ORIGINAL


Physical activity assessment and quality of life in nursing

Avaliação da atividade física e qualidade de vida da enfermagem
Evaluación de la actividad física y la calidad de vida en enfermería

Joiceléia de Fátima Camargo¹

 <https://orcid.org/0000-0002-4984-3792>


Edna Thais Jeremias Martins¹

 <http://orcid.org/0000-0002-2546-2987>

Lucas Porto Santos²

 <http://orcid.org/0000-0001-7934-0427>

Patrícia Martins Bock^{1,2}

 <https://orcid.org/0000-0001-8572-3950>

¹Faculdades Integradas de Taquara. Taquara, Rio Grande do Sul, Brasil. ²Laboratório de Fisiopatologia do Exercício - Hospital de Clínicas de Porto Alegre. Porto Alegre, Rio Grande do Sul, Brasil.

ABSTRACT

Objective: evaluate the level of physical activity, body mass index and quality of life of nursing students and nurses in Rio Grande do Sul. **Method:** this was a cross-sectional study, with application of digital questionnaires for anamnesis and for survey of the level of physical activity, by the *International Physical Activity Questionnaire*, and of the quality of life, by means of the *Short Form-36*. Data were collected and analyzed by *SurveyMonkey* and *SPSS software* (Mann-Whitney and chi-square test). **Results:** the results of the physical activity questionnaire showed that a total of 22 (25%) individuals had insufficient level of physical activity, 33 (37%) were sufficiently active and 34 (38%) were very active. The body mass index of the nurses and students had a mean of 24.7 (22-29) kg/m². Evaluating the quality of life according to the domains of the questionnaire, it was observed that the nurses and academics had high functional capacity (90% of the maximum), but the other domains of quality of life presented values below 75% of the maximum possible. **Conclusion:** most nurses and students have satisfactory levels of physical activity, body mass index within the recommended parameters and partially adequate quality of life. **Descriptors:** Quality of life. Nursing. Exercise. Body mass index.

RESUMO

Objetivo: avaliar o nível de atividade física, índice de massa corporal e a qualidade de vida dos acadêmicos de enfermagem e enfermeiros do Rio Grande do Sul. **Método:** trata-se de um estudo transversal, com aplicação de questionários digitais de anamnese e para levantamento do nível de atividade física, pelo *International Physical Activity Questionnaire*, e da qualidade de vida, por meio do *Short Form-36*. Os dados foram coletados e analisados pelos softwares *SurveyMonkey* e *SPSS* (teste de Mann-Whitney e qui-quadrado). **Resultados:** os resultados do questionário de atividade física mostraram que um total de 22 (25%) indivíduos apresentava nível de atividade física insuficiente, 33 (37%) eram suficientemente ativos e 34 (38%) muito ativos. O índice de massa corporal dos enfermeiros e acadêmicos apresentou uma média de 24,7 (22-29) kg/m². Avaliando a qualidade de vida segundo os domínios do questionário, observou-se que os enfermeiros e acadêmicos apresentam alta capacidade funcional (90% do máximo), porém os demais domínios da qualidade de vida apresentam-se com valores abaixo de 75% do máximo possível. **Conclusão:** a maioria dos enfermeiros e acadêmicos possuem níveis satisfatórios de atividade física, índice de massa corporal dentro dos parâmetros recomendados e qualidade de vida parcialmente adequada. **Descritores:** Qualidade de vida. Enfermagem. Exercício físico. Índice de massa corporal.

RESUMÉN

Objetivo: evaluar el nivel de actividad física, índice de masa corporal y calidad de vida de estudiantes de enfermería y enfermeros en Rio Grande do Sul. **Método:** este es un estudio transversal, con la aplicación de cuestionarios digitales de anamnesis y relevar el nivel de actividad física, mediante el *International Physical Activity Questionnaire*, y de calidad de vida, mediante el *Short Form-36*. Los datos fueron recolectados y analizados por los softwares *SurveyMonkey* y *SPSS* (prueba de Mann-Whitney y de Chi-cuadrado). **Resultados:** los resultados del cuestionario de actividad física mostraron que un total de 22 (25%) individuos tenían un nivel insuficiente de actividad física, 33 (37%) eran suficientemente activos y 34 (38%) eran muy activos. El índice de masa corporal de enfermeros y académicos mostró un promedio de 24,7 (22-29) kg/m². Evaluando la calidad de vida según los dominios del cuestionario, se observó que enfermeros y académicos tienen alta capacidad funcional (90% del máximo), sin embargo los demás dominios de calidad de vida se presentan con valores por debajo del 75% del máximo posible. **Conclusión:** la mayoría de enfermeros y académicos tienen niveles satisfactorios de actividad física, índice de masa corporal dentro de los parámetros recomendados y calidad de vida parcialmente adecuada. **Descritores:** Calidad de vida. Enfermería. Ejercicio físico. Índice de masa corporal.

INTRODUCTION

Sufficient levels of physical activity (PA) are part of desirable health behaviors, in addition to having the potential for favorable modifications of several physiological parameters, and bringing a more positive perception of quality of life.⁽¹⁾ PA is considered a low-cost tool, and is characterized as any type of body movement in which energy expenditure occurs, including activities practiced at work, commuting, performing household chores and leisure activities - differing from physical exercise, which is characterized by being planned, repetitive, and aimed at improving physical fitness and muscle strength.⁽²⁾

Physical inactivity increases the risk of many chronic diseases, and an increase in their prevalence has been observed over the last 5 decades.⁽³⁾ The adoption of higher levels of physical activity may bring benefits to health, acting preventively on risk factors for conditions such as obesity and cardiovascular diseases, as well as serving as a therapeutic tool in the treatment of various health conditions.⁽⁴⁾ In addition, exercising has a positive effect on a large number of different aspects of health, such as sleep quality, cognition, and anxiety symptoms, and may be considered a key component in population health.⁽⁵⁾

In turn, quality of life (QoL) is subjective, comprising the individual's perception of his insertion in life, culture, and his values in relation to his goals, expectations, standards, and concerns, besides involving spiritual, physical, mental, psychological, and emotional well-being, social relationships, health, and education, among others.⁽⁶⁾ Many factors may interfere in the quality of life of nursing professionals, such as low salaries, accumulation of activities, precarious working conditions and little time for leisure⁽⁷⁾, as well as work characteristics of each institution, modalities of temporary or permanent work contracts⁽⁸⁾, as well as the format of extensive work shifts.⁽⁹⁾

Interestingly, specifically within undergraduate students, PA performance has a positive impact on quality of life.⁽¹⁰⁾ However, only some types of PA performed by college students show a positive relationship with quality of life, such as household chores, professional activity and activities during transportation. Surprisingly, no relationship was found between leisure activities and quality of life, because some people may not associate PA with pleasurable situations.⁽¹¹⁾ Regarding nursing professionals, it is important that they maintain an adequate level of PA, because a low level can directly influence the health care provided.⁽¹²⁾

Another factor to be highlighted is the fact that during the nursing undergraduate period, weight gain in undergraduate students can be observed, which tends to generate damages to health during and after the course completion, since the high demands of the area hinder the practice of physical activities.⁽¹³⁾ The increase in the prevalence of overweight over the years is observed among college men and women, and may be due to inappropriate health behaviors during graduation.⁽¹⁴⁾

Although nursing professionals take care of other people's health, it is also important to have responsibility for one's own health, so it is essential that students and nurses are willing to maintain an adequate quality of life and level of PA, avoiding short- and long-term damage resulting from inadequacy, such as the development of overweight and obesity. Since there are no data available in the literature on physical activity, body mass index (BMI), and QoL of nurses and nursing students in the state of Rio Grande do Sul, the aim of this study was to evaluate the level of PA, BMI, and the QoL of nursing students and nurses in Rio Grande do Sul.

METHOD

The present report describes a cross-sectional study, quantitative in nature, with application of questionnaires to evaluate the level of PA, quality of life, and BMI of nursing academics and nurses in Rio Grande do Sul. This study was conducted and reported according to the *STrengthening the Reporting of OBservational studies in Epidemiology* (STROBE Statement).⁽¹⁵⁾

The primary endpoint used for the sample size calculation was the PA level in nursing students and nurses. An estimated prevalence of 50% of individuals with low levels of PA was used for the sample size calculation, since this prevalence allows obtaining the largest sample size. A confidence level of 95% was adopted, and a maximum error of 10%, and the calculated sample size was 97 individuals. An additional 15% was included in the sample in order to minimize possible sample losses, totaling an intended sample size of 110 subjects.

The IPAQ questionnaire requires that all questions be answered to enable the calculation of metabolic equivalents and consequently the level of physical activity, so it was not possible to perform the analysis when part of the questions was not answered. The sample size of 110 individuals already considered a loss of 15% of the answers, but there was a loss of 23%. A *posteriori* analysis of the confidence level was performed, and with 89 individuals the confidence level was 94% instead of the 95% initially calculated, so the inclusion of 8 more participants to reach the calculated n of 97 individuals would not lead to proportion differences in the results obtained.

We included undergraduate nursing students and nurses from the state of Rio Grande do Sul, over 18 years of age, who agreed to participate in the research.

Participation in the study occurred by completing digital questionnaires generated on the *SurveyMonkey platform* (<https://pt.surveymonkey.com>), in the period from August to October 2019. The selection of the sample and access to the questionnaires occurred through links disseminated and made available by social networks (*WhatsApp*, *Facebook*) or by e-mail, forwarded to distribution lists of higher education institutions and hospitals. The link contained, on its homepage, the TCLE. By agreeing to the terms presented, the participant was directed to the

anamnesis, in which data on body weight, height, age, gender, marital status, region where they live, education, workplace, weekly hours worked, and monthly income were collected. Afterwards, the questionnaires on quality of life and PA level were applied.

To assess the level of PA, we used the *International Physical Activity Questionnaire* (IPAQ-long version), presented in its validated version for Portuguese. In this questionnaire, the respondents report the time spent in PA performed in four different domains: work, leisure, household activities and transportation. PA is then mapped to metabolic equivalent values (METs) using one of three intensities: "vigorous" (8.0 METs), "moderate" (4.0 METs) and "light" (3.3 METs). Light PA includes walking at a slow or leisurely pace and performing light household activities. Moderate activity includes walking briskly, and household activities such as cleaning the yard. Vigorous activity includes running, carrying groceries or heavy loads.⁽¹⁶⁾

To assess quality of life, we used the *Short Form-36* (SF36) instrument, in its version validated for Portuguese. The SF36 is a 36-item instrument that encompasses 8 domains: functional capacity, physical aspects, pain, general health status, vitality, social aspects, emotional aspects, and mental health. The instrument presents a final score of 0-100, divided by domains, in which 0 represents the worst general health status and 100 the best general health status.⁽¹⁷⁾

For data analysis, we used the statistical program SPSS, version 18.0. The normality of continuous variables was assessed using the Shapiro-Wilk test. Medians and interquartile ranges were used to describe non-parametric continuous variables, while absolute and relative frequencies were used to describe categorical variables. Mann-Whitney's test and Pearson's chi-square were used for comparisons between the groups of nurses and nursing students. The significance level adopted was $\alpha=0.05$.

Bioethical precepts were respected, according to resolution 510/2016 for research in human and social sciences. All participants consented to their participation through the Informed Consent Form (ICF). This study was approved by the institutional research ethics committee, as per certificate of presentation of ethical appreciation (CAAE) number 17208819.7.0000.8135.

RESULTS

Responses were obtained from 110 individuals, but only 89 participants completed the questionnaires to the point that analysis was possible. Of the participants, 62 (69.7%) were nursing students and 27 (30.3%) were nurses. The general characteristics of the participants are presented in Table 1. Age was 21 to 29 years for academics and 28 to 39 years for nurses. Nurses' workplaces included hospitals (23.6%), primary care (11.2%), and other places (48.3%), and (16.9%) of the nurses had no job.

There was a predominance of female nurses and nursing students (89% and 84%, respectively). Regarding marital status, most of the nurses are in a

stable relationship (63%), while most of the students are single (55%). The participants live in the Região do Vale do Paranhana (15%), Região das Hortênsias (9%) and Região Metropolitana (76%). The average family income of the nurses was R\$5,000.00 per month and of the academics R\$1,325.00 per month. As for the daily hours worked, the average was 40 hours per week for nurses, and 36 hours per week for academics.

Regarding BMI, it was observed that (2.2%) of the participants were underweight, (50.6%) were eutrophic, (32.6%) were overweight, and (14.6%) were obese. The mean BMI value for nurses was 24.60 kg/m² and for academics 24.87 kg/m². In the nurses group (52%) were eutrophic, (26%) overweight and (22%) obese, while among the academics, (3%) were underweight, (50%) eutrophic, (36%) overweight and (11%) obese.

Regarding the PA level verified through IPAQ, it was observed that a total of 22 (25%) of the individuals presented insufficient PA level, 33 (37%) were sufficiently active and 34 (38%) were very active. Most of the nurses were sufficiently active (48%) or very active (41%) and few were insufficiently active (11%). Among the nursing students, 23 (37%) were very active, 20 (32%) were sufficiently active, and 19 (30%) were insufficiently active (Table 1). Figure 1 represents the metabolic equivalents (METs) per week in the domains of work, transportation, home activities and leisure activities of the nurses and students groups, showing that these groups have the same energy expenditure in the different domains.

Table 2 evaluates the QoL according to the SF-36 domains, and it was observed that the participants have high functional capacity (90% of the maximum score), physical aspects (75% of the maximum score), considerable pain (72% of the maximum score), general quality status in (62%) of the maximum score, low vitality (55% of the maximum score), social aspects (63%) of the maximum score, emotional aspects (67%) of the maximum score, and mental health (68%) of the maximum score. There was no significant difference in SF-36 questionnaire scores when comparing academics and nurses.

DISCUSSION

The results showed that most participants presented PA level classified as very active or sufficiently active, satisfactory quality of life levels and BMI within the eutrophic parameters. It was also observed that there was no significant difference when comparing the PA level, BMI and quality of life of nurses and students.

The BMI of the nurses and academics is in the eutrophic classification (between 18.5 kg/m² and 25 kg/m²), but at the upper limit, and about half of the participants are overweight or obese, values similar to those found in the Brazilian population.⁽¹⁸⁾ Regarding overweight and obesity in health professionals, a study that analyzed community health agents in Rio Grande do Sul found a prevalence of overweight and obesity close to 70%, and an association with anxiety and sedentarism.⁽¹⁹⁾

It is possible that the lower prevalence found in the present study is related to the fact that self-report measures of weight and height were used, which can cause the prevalence rates of overweight to be underestimated by 24% in men and 28% in women. ⁽²⁰⁾

Table 1 - Sociodemographic characteristics, working hours and level of physical activity of the participants. Taquara, RS, Brazil, 2019

Characteristics	Total (n=89)	Nurse (n= 27)	Academic (n=62)	p
Age (years)	26 (23-35)	35 (28-39)	24 (21-29)	<0,001
< 30	58 (65,2)	9 (33,3)	49 (79)	
31-40	21 (23,6)	13 (48,1)	8 (12,9)	
41-50	8 (9)	4 (14,8)	4 (6,5)	
> 50	2 (2,2)	1 (3,7)	1 (1,6)	
Female	76 (85)	24 (89)	52 (84)	0,398
BMI (Kg/m ²)	24,7 (22-29)	24,6 (23-39)	24,87 (22-29)	0,643
Civil Status				0,150
Single	49 (43)	10 (37)	34 (55)	
Stable relationship	43 (48)	17 (63)	26 (42)	
Separated/divorced	2 (2)	0 (0)	2 (3)	
Income in R\$	1800 (1000-4000)	5000 (3796-7000)	1325 (400-2000)	<0,001
Hours worked per week	36 (20-44)	40 (29-44)	36 (8-42)	0,151
IPAQ				0,119
Not active enough	22 (25)	3 (11)	19 (30)	
Sufficiently active	33 (37)	13 (48)	20 (32)	
Very active	34 (38)	11 (41)	23 (37)	

BMI: body mass index; IPAQ: International Physical Activity Questionnaire (long version). Continuous variables are expressed as median [interquartile range (p25-p75)]. Categorical variables are expressed as number (%). Comparisons (Nurses vs. Academics) were analyzed by Mann-Whitney and Pearson's Chi-square tests.

Figure 1 - Metabolic equivalents (METs) per week in the domains work, transportation, household activities and leisure activities of the nurses and academics groups. Taquara, RS, Brazil, 2019.

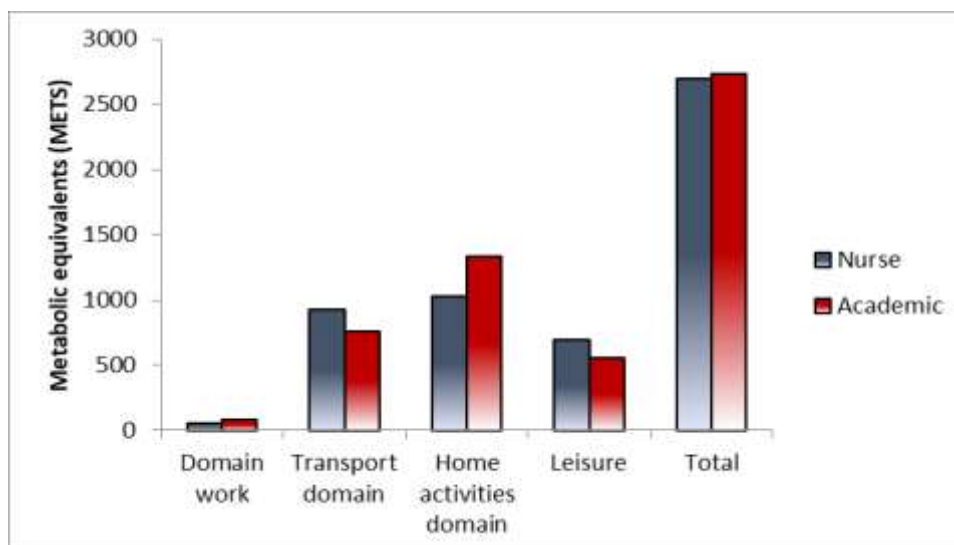


Table 2 - Quality of life according to the domains of the SF-36. Taquara, RS, Brazil, 2019.

Qualities	Total sample (n=89)	Nurse (n=27)	Academic (n=62)	P ≤ 0,005
Functional capacity	90 (75-97)	85 (70-95)	90 (80-100)	0,315
Physical aspects	75 (50-100)	100 (50-100)	75 (25-100)	0,190
Pain	72 (51-84)	62 (51-74)	72 (51-84)	0,324
General condition	62 (47-78)	67 (52-82)	62 (47-78)	0,848
Vitality	55 (40-65)	55 (50-65)	55 (40-62)	0,290
Social aspects	63 (50-88)	75 (63-100)	63 (50-88)	0,110
Emotional Aspects	67 (0-100)	67 (33-100)	67 (0-100)	0,565
Mental health	68 (52-80)	72 (48-80)	68 (52-80)	0,655

SF-36: Quality of life questionnaire. Continuous variables are expressed as median [interquartile range (p25-p75)]. Comparisons (Nurses vs. academics) were analyzed by the Mann-Whitney test.

Contrary to the hypothesis raised, most participants showed a PA level classified as very active or sufficiently active. Being an academic or a nurse did not seem to influence activity levels or quality of life, which were similar between groups for all domains. This observation contradicts the premise that the transition between college and the job market may have a significant impact on these variables in the nursing context. Additionally, only a small contribution of work activities was observed in the amount of weekly PA. This implies that, in our sample, household, transportation, and leisure activities constitute the vast majority of weekly PA. This information is important because it allows us to infer that the observed PA levels are not being influenced by an exacerbated amount of work effort, which is pertinent to the nursing activity itself. The overestimation of PA in certain domains is common in indirect PA measurement instruments, and Brazilian data demonstrate that the work domain is the most affected.⁽²¹⁾

Interestingly, the increased income of professionals, when compared with students - since nurses have a higher income, 3.7 times higher than that of academics - did not seem to imply differences in quality of life. Our data show that although it has been previously demonstrated that inadequate family income is a predictor of low quality of life in college students,⁽²²⁾ the academics already had an adequate level of QoL.

QoL assessment by means of the SF-36 questionnaire showed that participants had high functional capacity (90% of the maximum), but in the other domains, quality of life had values below 75% of the maximum possible, which suggests that strategies can be developed to boost increases in the quality of life of nurses and nursing students. Moreover, we noticed that the vitality item scored 55% of the maximum value, which was the lowest score in both groups. The vitality dimension refers to the level of energy and fatigue, and low scores indicate a constant feeling of tiredness and exhaustion.⁽¹⁷⁾

In a Brazilian cross-sectional study with nursing professionals, 62.5% was observed in this dimension, which is close to the findings of this research, but functional capacity was lower (77%).⁽²³⁾ Corroborating the results of this study, it was observed that professionals who work in critical sectors present unsatisfactory evaluation of quality of life in relation to the physical domain.⁽²⁴⁾ The low score in the vitality dimension can be partially explained by occupational stress, since nursing professionals may be exposed to several stressful sources at work.⁽²⁵⁾

Interestingly, despite the nurses' age being higher than the academics' age, no difference was observed regarding quality of life in the present sample. This finding disagrees with a previous study carried out with 1,806 nurses in Poland, which found a relationship between age and quality of life, with the observation of higher quality of life in younger nurses compared to older ones.⁽²⁶⁾

It was observed that part of the participant nurses work in hospitals, which can negatively impact their

physical and mental health, and the low level of PA among health professionals is strongly related to factors of negative impact on quality of life.⁽²⁷⁾ A study conducted in a university hospital in the USA with different professionals found that nurses have a satisfactory level of PA during the workday, suggesting that the physical intensity of hospital tasks is high.⁽²⁸⁾ However, such physical demands may be related to musculoskeletal disorders in nurses, with a significant increase in risk when associated with lack of PA.⁽²⁹⁾ It was also observed that the greater the number of anatomical sites with musculoskeletal symptoms, the worse the quality of life of nursing professionals.⁽³⁰⁾

Nursing has a prominent role in care, which makes it essential to have an excellent quality of life. This study analyzed the BMI, quality of life and PA level of nurses and students. The results of this study indicate that both nurses and students have satisfactory levels of PA and adequate quality of life, however, almost half of the participants are overweight or obese, which highlights the importance of these participants to pay attention to their health. This can be done by seeking encouragement for positive lifestyle changes, such as physical activity during leisure time and healthy eating, thus contributing to a good quality of life.

It is necessary to invest in strategies that raise awareness among students and nurses regarding the benefits of PA, interventions to encourage the adoption of healthy habits, seeking to combat the emergence of overweight among the academic community and nurses. This is important because, although the prevalence of overweight/obesity is similar to the local population, these rates can be considered high. Future studies exploring other factors such as caloric intake and diet composition, as well as assessing PA through objective tools such as accelerometry, may contribute to the understanding of the reasons for the appearance of these indices in the population of nursing students and professionals.

The present study has some limitations, such as the possibility of information bias, since the questionnaire was filled out by means of an electronic questionnaire, and thus, there may have been an error in the interpretation of the questions. Besides, the weight and height data of the participants were obtained by self-report, which may imply in less accurate estimates. Another important factor to be noted is the high number of dropouts from filling out the questionnaires, possibly due to their length. This limits the generalizability of the data obtained, since the participants who filled out the questionnaires to the end might have been more motivated to produce their answers. Additionally, the participants who completed the questionnaire come from a concentrated region of Rio Grande do Sul, reducing the socioeconomic representativeness of our data. A strong point of the study refers to the online application of the electronic questionnaire, which allows participants to take part in the research without having to travel.

CONCLUSION

From the data of this study, it was found that most nurses and academics have satisfactory levels of physical activity, BMI within recommended parameters, and partially adequate quality of life.

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Corresponding author:

Patrícia Martins Bock

Email: patriciabock74@gmail.com

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