

The Expert Nurse Profile and Diagnostic Content Validity of Sedentary Lifestyle: The Spanish Validation

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PURPOSE. *To identify the diagnostic content validity of Sedentary Lifestyle and to identify the expert nurse profile in validating this nursing diagnosis in the Spanish cultural context.*

METHODS. *Fehring's Diagnostic Content Validity (DCV), the factorial validity of the defining characteristics, the analysis of convergent validity, and the expert profile were assessed.*

FINDINGS. *The DCV index for experts was .70. The factorial validity showed two different factors: the expression of laziness and the performance of activities of daily living. On the expert profile related factors analysis, two factors, experience and education, were identified.*

CONCLUSIONS. *The DCV for Sedentary Lifestyle was high among the expert nurses. A nurse was considered to be an expert who was able to accurately answer the four labels identified as nursing diagnoses, had read at least one nursing process article in the past year, and was able to list three nursing process reference books.*

IMPLICATIONS FOR PRACTICE. *Clarifying the manifestations of sedentary lifestyle will assist clinical nurses in determining this diagnosis, and the expert profiles will assist in the selection of participants for content validity studies.*

Search terms: *Content validity, measurement, nursing diagnosis, sedentary lifestyle*

OBJETIVO. *Identificar la validez de contenido del diagnóstico "Sedentarismo" e identificar el perfil de los expertos para validar diagnósticos enfermeros en el contexto cultural Español.*

MÉTODO. *Se estudia el modelo de Validez de Contenido Diagnóstico de Fehring, así como la validez factorial de las características definitorias, el análisis de la validez convergente y el perfil de los expertos.*

RESULTADOS. *El índice de validez de contenido para los expertos es .70. La validez factorial muestra dos factores diferentes: expresión de pereza, y desempeño exclusivo de actividades para la vida diaria. El perfil de los expertos en relación con el análisis factorial muestra dos factores: experiencia y formación.*

CONCLUSIONES. *La Validez de Contenido Diagnóstico en enfermeras expertas es alta. Se considera a una enfermera como experta si es capaz de responder de forma precisa si cuatro enunciados son diagnósticos enfermeros, ha leído al menos un artículo de metodología de cuidados en el último año y es capaz de citar tres obras bibliográficas de referencia sobre metodología de cuidados.*

IMPLICACIONES. *Para la práctica: validez de contenido. Clarificar las manifestaciones de la etiqueta sedentarismo ayuda a las enfermeras clínicas a identificarlo. Clarificar el perfil de los expertos permite controlar las amenazas de los estudios de.*

Palabras clave: *Diagnóstico enfermero, sedentarismo, validez de contenido, medición*

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Introduction

Nursing diagnoses establish a useful framework for nursing research because they define health situations that nurses identify and treat in independent clinical practice (Carpenito, 1990). The use and acceptance of a new diagnosis require critical thinking (Lunney, 2000), and the use of a nursing diagnosis presents the need for content validity studies on the diagnosis (Parker & Lunney, 1998). The role of a community health nurse basically consists of dealing with issues of illness prevention and health promotion and involves the use of nursing diagnoses dealing with these issues. A critical area of nursing assessment is that of physical activity. Within the conceptual nursing framework, an individual's physical activity is assessed as the need to move (Wertman & Tamara, 1989) and to maintain a proper position, or as a universal self-care requirement, which is "a balance between activity and rest" (Cavanagh, 1993).

Higher levels of regular physical activity are associated with lower mortality rates, decreased risk of mortality related to cardiovascular disease, decreased risk of colon cancer and of developing non-insulin-dependent diabetes mellitus, and may reduce the risk of developing depression (Blair & Panffenbarguer, 1989). Physical activity appears to improve health-related quality of life by enhancing psychological well-being and by improving physical functioning in persons compromised by poor health (U.S. Department of Health and Human Services, 1996).

Prevalence of sedentary lifestyle in the European Union is high. Percentages of sedentary lifestyles across European countries have ranged between 43.3% (Sweden) and 87.8% (Portugal) (Varo et al., 2003). More than half of adults in the United States are not regularly active at the recommended levels of physical activity

(Centers for Disease Control and Prevention, 2005). The magnitude of inactivity in the Latin America shows that more than two-thirds of the population do not meet the recommended levels of physical activity sufficient to gain health benefits (Jacoby, Bull, & Neiman, 2003).

Physical activity is related to movement ability. When an impediment to movement and to the development of physical activities does not exist, the person may develop activities of daily living, instrumental activities of daily living, and self-development activities such as exercise, sports, or physical fitness activities (European Food Information Council, 2003). From a quantitative point of view, physical activity could be described as physical inactivity, moderate physical activity, and vigorous physical activity. Sedentary lifestyle is defined as performing physical activities such as walking briskly, gardening, or heavy housework less than three times a week (Burton, Paglia, German, Shapiro, & Damiano, 1995). In an effort to better understand what factors lead to physical activity behaviors, social-cognitive theorists have attempted to identify its correlates. The variables are self-efficacy, one's confidence in one's ability to take the steps necessary to be regularly physically active, social support, the perceived support for physical activity received from others such as family and friends, and outcome expectations, the expected positive and negatives consequences of increasing physical activity (Anderson, Wojcik, Winnett, & Williams, 2006). Bandura (1997) specifically cited self-regulatory self-efficacy, defined as one's faith in one's ability to maintain physical activity in the face of challenges and setbacks, as a key to success in regular exercise. Following a concept analysis, Guirao-Goris, Moreno Pina, and Martínez-Del Campo (2001) described sedentary lifestyle as a specific concept of physical activity and suggested it as a nursing diagnosis label. In that study, a qualitative approach and Delphi technique were used to achieve consensus. Table 1 lists the description of consensus achieved for each defining characteristic. Subsequently, this diagnosis was included in NANDA's Taxonomy II

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Table 1. Description of the Defining Characteristics of Sedentary Lifestyle

Sedentary lifestyle label

DC 1	The person or family verbalizes low physical activity level.
DC 2	The person says "I do less than 30 min of physical activity like walking, swimming, and bicycling three times a week."
DC 3	Only performs activities of daily living (ADL) like shopping, washing up, money transactions, cooking, home activities, and work activities.
DC 4	Laziness. Verbalizes preference for activities low in physical activity.
DC 5	Demonstrates physical deconditioning.
DC 6	A score > 3 on the physical fitness COOP/WONCA chart.

DC, defining characteristic.
From Guirao-Goris et al., 2001.

(NANDA International, 2005, 2007; Scroggins, 2004). NANDA International (2007) defines Sedentary Lifestyle as "reports a habit of life that is characterized by low physical activity level" with three defining characteristics: chooses a daily routine lacking physical exercise, demonstrates physical deconditioning, and verbalizes preference for activities low in physical activity.

Fehring's method is the most frequently used methodology to assess content validity. The definition of what constitutes an expert is a limitation of the Diagnostic Content Validity model (DCV), as well as of content validity studies in general. Fehring (1994) proposed a modification to the model by suggesting alternative criteria for identifying the extent that experts are in fact experts. However, these criteria are difficult to apply in other cultural backgrounds, such as Japan (Sato, 1998), where there are not many certified nurses, or in Spain, where there are no certified nurses at all (Guirao-Goris, 2001). Sato identified expert nurses as nurses with a different educational background. On the other hand, and in order to be sensitive to other cultural realities, Levin (2001) recommends being flexible in what one considers to be an expert.

An initial attempt to assess the content validity of the nursing diagnosis Sedentary Lifestyle was done with a small sample of experts (Guirao-Goris et al., 2001). No other content validity studies that included a larger sample of nurses in which the expert profiles were controlled were found. This is one of the largest

difficulties in establishing validity in this type of study.

The objectives of the study were:

- to determine Fehring's content validity index for Sedentary Lifestyle;
- to determine the DCV for each one of the defining characteristics of Sedentary Lifestyle;
- to analyze the factorial and convergent validity of the Sedentary Lifestyle label; and
- to determine how characteristics of an expert profile affect DCV with Sedentary Lifestyle as an example.

Method

A quantitative approach within a descriptive correlational design was used. The population was composed of Spanish-speaking nurses. The study was performed between January and April 2002 and included the following variables:

1. Expert profile (Grant & Kinney, 1992): age, training level, years of professional experience, specialty, years of professional experience in the present area of specialization, the period of time that nursing diagnosis has been used in professional practice, hours of nursing process methodological training, scientific articles on nursing process read, and attendance at conferences dealing with nursing terminology.

2. Demonstrated knowledge of the nursing process: this included the variable "nursing process bibliographical suggestions" that was defined as "the number of nursing process books or articles that the nurse who was being surveyed was able to mention."
3. "Knowledge level of nursing diagnosis methodology": the nurses were requested to check whether the four statements identified as nursing diagnoses were correct or incorrect. The statements were:
 - Risk of disuse syndrome is related to immobilization (correct).
 - An abnormal blood pressure is related to inadequate medication (incorrect).
 - Metastasis is related to cancer (incorrect).
 - Deficient knowledge is related to lack of exposure (correct).

Nurses who were able to identify all four statements correctly were considered to have adequate knowledge of nursing diagnosis methodology; those who correctly identified three or fewer statements were considered to have inadequate incorrect knowledge.

Diagnostic content validity variables of each defining characteristic and the Sedentary Lifestyle label were calculated according to the Fehring model. To analyze factorial validity (Badía, Salamero, & Alonso, 1999), a factor analysis of the value given to the five items proposed as defining characteristics of Sedentary Lifestyle was performed. The defining characteristic 6 was excluded so that it could be used as another criterion to study convergent validity. To analyze convergent validity, the correlation between the identified factors and Fehring's DCV index was analyzed.

Fehring (1986) established that at least 25 to 50 experts were required. Nunnally and Berstein (1995) later determined that at least 200 people were needed to achieve enough stability in the analysis. A sample size of 200 nurses was determined to be required. The Spanish Association of Nomenclature, Taxonomy, and Nursing Diagnosis (AENTDE) was asked to provide a list of nurses who had nursing process training. A convenience sample was obtained through four consecutive

mailings using the snowball or networking sampling technique. In this technique, the selection of participants was done through referrals from earlier participants until an adequate sample was achieved.

The data were gathered using the software program File Maker®, and the statistical analysis was performed using the statistical software SPSS version 11.0. The arithmetic mean, dispersion measurements, and 95% confidence intervals were calculated for the quantitative variables. Percentages were calculated for qualitative variables. Student's *t*-test was used for analysis by controlling the variables of knowledge, bibliographical suggestions, attendance at congresses, reading of articles, and hours of training in nursing process. Three values were taken as reference points for the analysis of each variable: the arithmetic means minus the standard deviation, the arithmetic means, and the arithmetic means plus the standard deviation. Pearson's correlation analysis was done for quantitative variables. A $p < .05$ was accepted as signifying statistical significance. No parametric hypotheses were tested. The chi-square test was used to compare the subjects who correctly identified the four statements about nursing diagnosis and those who did not, based on the following characteristics: age, professional level, years working, years working in a specialized area, use of nursing process methodology, number of hours that nursing process methodology was studied, number of articles read in the year, attendance at conferences, and number of bibliographical references listed.

To identify the categories defining the "expert" concept, the personal characteristics that differed significantly between experts and nonexperts were identified and submitted to factor analysis (González, 1991). This analysis was then further expanded to include the correlations between the experts' characteristics and the DCV index.

Results

The data were gathered by sending the questionnaire to 320 nurses in the first stage. Between March 6 and

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Table 2. Sample Description (*n* = 108)

Variable	Arithmetic mean	Confidence interval 95%
Age (years)	42.20	40.53–43.88
Professional experience (years)	19.28	17.61–20.94
Specialty experience (years)	12.06	10.69–13.43
Time that nursing diagnoses have been used in professional practice (years)	7.48	6.40–8.56
Nursing process methodology training (hr)	90.82	83.83–97.80
Nursing process scientific articles read in the last year (number of articles)	9.84	7.94–11.73
Attendance at nursing terminology conferences in the last 5 years (number of conferences)	2.92	2.44–3.40
Nursing process bibliography suggestions (number of references)	3.38	2.88–3.88

Table 3. Diagnostic Content Validity (DCV) by Knowledge

	Global Score DCV (95% CI)	Appropriate knowledge Score DCV (95% CI)	Inappropriate knowledge Score DCV (95% CI)	<i>t</i> -test <i>p</i>
Sedentary lifestyle label	.67 (.64–.70)	.69 (.66–.73)	.63 (.58–.68)	.004*
DC 1	.70 (.65–.76)	.73 (.66–.79)	.66 (.57–.76)	.301
DC 2	.61 (.55–.67)	.64 (.56–.71)	.57 (.47–.67)	.527
DC 3	.63 (.58–.67)	.64 (.55–.70)	.61 (.53–.69)	.275
DC 4	.74 (.69–.79)	.76 (.71–.82)	.69 (.60–.79)	.076
DC 5	.62 (.55–.67)	.64 (.57–.71)	.57 (.45–.69)	.281
DC 6	.73 (.67–.78)	.76 (.70–.83)	.66 (.56–.76)	.038*

*Statistically significant difference. DC, defining characteristic; CI, confidence interval.

April 10, 2002, 60 nurses responded and 8 answered by e-mail. Ultimately, after three stages, the final sample consisted of 108 nurses, for an accuracy of 9.5%, assuming a probability of each variable in the general population of 50% and a confidence level of 95%.

The average time in the nursing profession was 19.28 years, and the average time using nursing process methodology was 7.48 years (Table 2). The average training level was approximately 90 hr, an average of 9.84 articles was read, an average of 2.92 congresses were attended in the last 5 years, and an average of 3.38 bibliographical references dealing with nursing process methodology was listed.

With respect to the control variable “knowledge,” 61.11% of the sample correctly identified all four

statements, while 38.8% responded incorrectly or did not know the answer to any of the four statements. There was a statistically significant difference between the DCV index obtained by experts (those who identified all four statements correctly) and by nonexperts (those who did not identify all four statements correctly).

The DCV and DCV-defining characteristics are listed in Table 3; the defining characteristics with the highest scores were laziness, the score obtained using the physical fitness Cooperative Project–World Organization of National Colleges and Academies (COOP-WONCA) chart (Lizán Tudela & Reig Ferrer, 2002), and verbal expression of low physical activity. The DCV index for the sample was .67 (.64–.70). When the DCV index of the label and the defining characteristics was studied

Table 4. Diagnostic Content Validity (DCV) by Appropriate Knowledge, Read at Least One Article, and Listed Three Nursing Process Books

	Fulfilled requirements DCV (95% CI)	Did not fulfill requirements DCV (95% CI)	<i>t</i> -test <i>p</i>
Sedentary lifestyle label	.70 (.65-.74)	.64 (.61-.69)	.018*
DC 1	.73 (.65-.80)	.69 (.62-.76)	.42
DC 2	.65 (.55-.75)	.60 (.51-.67)	.39
DC 3	.65 (.58-.73)	.58 (.54-.68)	.17
DC 4	.77 (.70-.83)	.71 (.64-.77)	.18
DC 5	.66 (.57-.74)	.59 (.51-.67)	.18
DC 6	.75 (.66-.82)	.70 (.63-.78)	.18

DC, defining characteristic; CI, confidence interval.

according to the nurses' knowledge (Table 4), a statistically significant difference was noted for the overall average for the diagnostic label and for defining characteristic 6 (score higher than 3 in the physical fitness COOP-WONCA chart).

To determine if the expert profile affected the DCV index, the mean values of the expert profile variables were studied. Only the bibliography variable was associated with a statistically significant difference in the DCV index. When the mean plus one standard deviation was used for the analysis, no significant differences were found for any variables. When the mean minus one standard deviation was used for the analysis, the variables "bibliography" and "nursing process scientific articles read in the last year" were associated with statistically significant differences in the DCV index.

Finally, the sample was divided into two groups: the first group demonstrated adequate knowledge of nursing diagnosis methodology, had read an article about nursing diagnosis in the last year, and could list at least three nursing process books (Table 4). The second group consisted of the remaining nurses who did not meet these criteria.

Pearson's correlation analysis showed that the DCV index was related to the number of hours of training in nursing process methodology ($r = .21, p < .005$). In the

same way, the number of hours of training in nursing process methodology was related to the number of articles read ($r = .27, p < .005$), the suggested bibliographical references ($r = .28, p < .005$), and the number of years that the expert had used nursing process methodology ($r = .21, p < .005$). A categorical factor analysis was chosen for the factorial validity analysis because the defining characteristics of the Sedentary Lifestyle diagnoses were non-numerical variables. Only the professionals' correct answers were included in the analysis ($n = 66$). Two factors were isolated in the analysis (Table 5). In order of explicative capacity, the first factor was composed of the defining characteristics "laziness," "physical deconditioning," and "expression of low physical activity"; we called this factor the laziness expression factor. The second factor was composed of, in order of explicative capacity, the defining characteristic "only performs activities of daily living" and expressions like "I do less than 30 min of physical activity like walking, swimming, and bicycling three times a week"; we called this factor the low performance of activities of daily living factor.

Thus, we can say that there is factorial validity for the construct Sedentary Lifestyle with two defining characteristics: the laziness expression factor and the low performance of activities of daily living factor. Convergent validity analysis was performed correlating

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Table 5. Factorial Analysis of the Defining Characteristics (DC) of Sedentary Lifestyle ($n = 66$)

Factor saturations	Dimension	
	1	2
DC 1: The person or family verbalizes low physical activity level.	.764	.202
DC 2: The person says "I do less than 30 min of physical activity like walking, swimming, and bicycling three times a week."	-.377	.788
DC 3: Only performs activities of daily living (ADL) like shopping, washing up, money transactions, cooking, home activities, and work activities.	-.479	.750
DC 4: Laziness. Verbalizes preference for activities low in physical activity.	.671	.502
DC 5: Demonstrates physical deconditioning.	.733	.226

these two factors to Fehring's DCV index (1986). Both factors were related to the DCV index in a significant way, although the low performance of activities of daily living factor showed the higher correlation (.729). This demonstrates the existence of convergent validity.

To analyze the experts' profile, a categorical factorial analysis was performed. This analysis identified two factors. The first one was composed of age, years of professional experience, and time that nursing diagnoses have been used in professional practice. We called this factor the experience factor. The second one was composed of the remaining variables analyzed in the expert profile. We called this factor the training factor.

Discussion

A nursing diagnosis content validity study must use true experts to yield valid results (Whitley, 1999). The present study determined the characteristics of the experts' profile and the effect on the content validity of Sedentary Lifestyle. In order to determine which characteristics made a nurse an "expert" for nursing diagnosis content validity studies, the variables "knowledge" and "suggested bibliography" were included as measures of the participating nurses' real knowledge. First, it was observed that statistical significance was higher among the nurses who had appropriate

knowledge than among those who did not. Similarly, DCV was statistically significantly higher among the nurses who were able to list more bibliographical references than among those who listed fewer. As expected, there was a correlation between the hours of training and the number of articles read, the suggested bibliographical references, and the number of years using nursing process methodology. In addition, the factorial analysis identified two clearly differentiated factors: the experience factor and the training factor. Thus, the factorial analysis appears to confirm that the "expert" concept can be described as a combination of experience and training.

The DCV for Sedentary Lifestyle was lower than in the previous study (Guirao-Goris et al., 2001), where the DCV index was .89, but in this research the DCV was higher among the expert nurses than the remaining nurses. Two factors isolated in the analysis agree with the NANDA International (2007) defining characteristic: the laziness expression factor that was composed of the defining characteristics "laziness," "physical deconditioning," and "expression of low physical activity" is consistent with NANDA International defining characteristic "verbalizes preference for activities low in physical activity"; the factor we called "low performance of activities of daily living factor" agrees with the NANDA International defining characteristic "daily routine lacking physical exercise."

Conclusions

The Sedentary Lifestyle DCV was high among the expert nurses. The factorial analysis of the defining characteristics identified two different factors, the laziness expression factor and the low performance of activities of daily living factor, that agree with two NANDA International defining characteristics. The convergent analysis of both factors confirmed the findings of the factorial analysis.

Experts can be considered to be those professionals who correctly identified the four nursing diagnosis questions. These nurses had read at least one nursing methodology article in the last year, and were able to list three nursing process bibliographical references. The limitations of the present study include the fact that the sample size obtained was not large enough to allow an analysis to be done that had adequate stability (Nunnally & Berstein, 1995); however, the sample size was similar to that proposed by Fehring (1986). Nevertheless, the analysis of the sample size gave our results a precision of 9.5%. Finally, it should be remembered that DCV only indicates what a group of experts thinks; it does not imply that the result coincides with the real world. Given the results of this DCV study, clinical validation studies are required.

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