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–Nursing Research and Education–

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Editorial

The Journal *Investigación y Educación en Enfermería* is Indexed in PubMed Central

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As Editor, it is a joy to share with you the great news that the journal *Investigación y Educación en Enfermería* was accepted for indexation in PubMed Central (PMC), which is the world's largest repository of knowledge on health sciences. PubMed Central has close to seven million articles in full text and in Open Access that can be recovered through the PubMed search engine.

Currently, PMC archives over 3018 journals accepted after demanding scientific and technical evaluations. Being included in this repository is a recognition distinction of the quality of our publication with the global academic community, with 22 nursing journals sharing this honor globally and only two of these are Latin American.

The journal *Investigación y Educación en Enfermería* has also been part of MEDLINE since 2014, a fact

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that marked a milestone on the excellence of our journal. We are convinced that with the new PMC indexation, visibility will increase further of the articles published in our journal, thus, improving the dissemination of the knowledge produced in nursing research.

Lastly, I wish to thank the authors, reviewers, members of the editorial committee, and, most specially, I thank our readers for their loyalty throughout these years. We count on your perseverance and enthusiasm to make this the best medium

I share with you the congratulatory messages from the members of the Editorial Committee of the Journal *Investigación y Educación en Enfermería* upon its indexation in PubMed Central:

Carmen de la Cuesta y Benjumea. Universidad de Alicante, Spain: "Congratulations, María de los Ángeles, and thank you for sharing the link. It provides phenomenal visibility to the journal and to the work of all the authors".

Isabel Amélia Costa Mendes. Universidade de São Paulo, School of Nursing of Ribeirão Preto, Brazil: "Dear, María de los Ángeles, what great news! Congratulations to you and your entire team. I know how much effort you have invested throughout this trajectory and, with it, much more success will come to improve and give further value to Nursing. Receive my compliments as nurse, researcher, member of the editorial committee of this important and outstanding journal, *Investigación y Educación Enfermería.* I also record my effusive greetings as coordinator of the Iberian-American Network of Scientific Editing in Nursing -RedEDIT-".

Cristina García Vivar. Universidad Pública de Navarra, Spain: "It is a success that the journal is indexed in PMC, given that as you state it, this is a badge of recognition of the journal's quality. Undoubtedly, this success is due to the steadfast work you have performed as editor, as well as to the authors who have submitted their articles for publication in the journal".

Rafael Fernández Castillo, Universidad de Granada, Spain: "I am proud to be with you and to be part of the editorial staff".

Martha Lucía Vásquez Truissi. Universidad del Valle, Colombia: Congratulations! This accomplishment is the product of effort, perseverance, and discipline; characteristics that have always distinguished the Journal.

Neusa Collet. Universidade Federal da Paraíba, Brazil: "What great news! Congratulations for the work done with great judgment and scientific criteria. It is a giant leap for the Journal, much more success will come!"

Manuel Alves Rodrigues. Escola Superior de Enfermagem de Coimbra, Portugal: "Good work! Greetings also to the entire editorial staff".

José Rafael González López. Universidad de Sevilla, Spain. "My most sincere congratulations for the recognition, the fruit of your excellent work and dedication as editor. A kiss and thank you very much again for having me on the Journal's Editorial Committee".

R. Mauricio Barría P. Universidad Austral, Chile. "Esteemed, María de los Ángeles, thank you for sharing this great news. This, without a doubt, is another sign of recognition to the exhaustive and committed work carried out by the entire Journal staff under your management and leadership. I am proud to be part of the Journal and I express my commitment to continue working with all of you in the transition to reach and consolidate new achievements".

Gladys Eugenia Canaval Erazo. Universidad del Valle, Colombia. "Dear, María de los Ángeles: Receive my greetings for this achievement extended to all members of the staff. What pride for all who are involved with the Journal in one way or another".

Sonia Semenic. McGill University, Canada. "Congratulations on having the journal indexed in PubMed Central! It is a great testament to your hard work and expertise as an editor."

Original article

Factors associated with knowledge of the disease in people with type 2 diabetes mellitus

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Factors associated with knowledge of the disease in people with type 2 diabetes mellitus

Abstract

Objective. To identify factors associated with the level of knowledge of the disease in people with type 2 Diabetes. **Methods.** A cross-sectional study carried out with 412 people with diabetes registered in the Primary Health Care network of a Brazil Northeast municipality. For data collection, we used a questionnaire with sociodemographic and clinical variables and to identify the level of knowledge, we used the *Diabetes Knowledge Questionnaire*. **Results.** Insufficient knowledge prevailed in 54.7% of the participants, associated in significant bivariate analysis with the sociodemographic variables: age (≥ 60 years old), marital status (without a partner), education (up to complete / incomplete elementary school), family income (≤ 1 minimum wage). For clinical variables, the level of insufficient knowledge was

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Conflicts of interest: None.

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significantly associated with not participating in an educational group, not using insulin, and not practicing physical activity. In logistic regression, we observed that the factors that increase the risk for insufficient knowledge were: never having participated in an educational group (OR=2.0), age ≥ 60 years old (OR=2.2), illiterate and primary education (OR=8.3) and income less than or equal to 1 minimum wage (OR = 2.4). **Conclusion.** The level of knowledge of people with type 2 diabetes mellitus about their disease is insufficient, with socioeconomic and educational characteristics being the factors that increase the odds of having this level of knowledge.

Descriptors: health education; primary health care; self-management; diabetes mellitus; risk factors.

Factores asociados al conocimiento de la enfermedad en pacientes con Diabetes Mellitus Tipo 2

Resumen

Objetivo. Identificar los factores asociados al nivel de conocimiento de la enfermedad en personas con Diabetes Mellitus Tipo 2. **Métodos.** Estudio transversal realizado con 413 personas con diabetes inscritas en la red de Atención Primaria de Salud de un municipio del Nordeste de Brasil. Para la recolección de los datos, se utilizó un cuestionario con variables sociodemográficas y clínicas y, para identificar el nivel de conocimiento, se utilizó el *Diabetes Knowledge Questionnaire*. **Resultados.** Prevaleció el conocimiento insuficiente en el 54.7% de los participantes, asociándose significativamente en el análisis bivariado con las variables sociodemográficas: edad (≥ 60 años), estado civil (sin pareja), escolaridad (hasta primaria completa / incompleta) e ingreso familiar (≤1 salario mínimo). En cuanto a las variables clínicas, el nivel de conocimiento insuficiente se asoció significativamente con no participar en un grupo educativo, no usar insulina y no practicar actividad física. En la regresión logística, se observó que los factores que incrementan el riesgo de conocimiento insuficiente fueron: nunca haber participado en un grupo educativo (OR=2.0), edad ≥ 60 años (OR=2.2), nivel educativo de analfabetismo o de educación primaria (OR=8.3) e ingresos menores o iguales a 1 salario mínimo (OR=2.4). **Conclusión.** El nivel de conocimiento sobre su enfermedad de las

personas con Diabetes Mellitus Tipo 2 es insuficiente, siendo las características socioeconómicas y educativas los factores que más aumentan la probabilidad de tener este nivel de conocimiento.

Descriptores: educación en salud; atención primaria de salud; automanejo; diabetes mellitus; factores de riesgo.

Fatores associados ao conhecimento da doença em pessoas com Diabetes Mellitus tipo 2

Resumo

Objetivo. Identificar os fatores associados ao nível de conhecimento da doença em pessoas com Diabetes Mellitus tipo 2. **Métodos.** Estudo transversal realizado com 413 pessoas com diabetes cadastradas na rede de Atenção Primária a Saúde de um município do Nordeste do Brasil. Para coleta de dados foi utilizado questionário com variáveis sociodemográficas e clínicas e para identificar o nível de conhecimento foi utilizado o instrumento *Diabetes Knowledge Questionnaire*. **Resultados.** Prevaleceu o nível de conhecimento insuficiente em 54.7% dos participantes, associando-se em uma análise bivariada de forma significativa com as variáveis sociodemográficas: idade (≥ 60 anos), situação conjugal (sem companheiro), escolaridade (até o ensino fundamental completo/incompleto), renda familiar (≤ 1 salário mínimo). Quanto as variáveis clínicas, o nível de conhecimento insuficiente se associou de forma significativa com a não participação em grupo educativo, não utilização de insulina e não praticar atividade física. Em regressão logística se observou que os fatores que aumentam o risco para o conhecimento insuficientes foram: nunca ter participado de grupo educativo (OR=2.0), idade ≥ 60 anos (OR=2.2), escolaridade analfabeto e primário (OR=8.3) e renda menor ou igual a 1 salário mínimo (OR=2.4). **Conclusão.** O nível de conhecimento das pessoas com diabetes mellitus tipo 2 acerca de sua doença é insuficiente, sendo as características socioeconômicas e educacionais os fatores que aumentam as razões de chances do conhecimento insuficiente.

Descritores: educação em saúde; atenção primária à saúde; autogestão; diabetes mellitus; fatores de risco.

Introduction

Diabetes mellitus (DM) is a chronic condition of high prevalence that consists of a metabolic disorder with a deficiency in the production and/or action of insulin, characterized by persistent hyperglycemia, which is the determining factor in the diagnosis, treatment, and prevention of complications. It is considered a public health problem with approximately 425 million cases registered in 2017, with a growth estimate of 629 million adults by 2045.[1] The most common is type 2 diabetes mellitus (DM2), representing 90 to 95% of cases, characterized by a deficiency in insulin action/production and insulin resistance, with advanced age, obesity, lack of physical activity, and family history as the risk factors for its development.[2]

A study carried out by the Surveillance of Risk and Protection Factors for Chronic Diseases by Telephone Survey (VIGITEL, Portuguese initials) in Brazil found that diabetes affects 7.7% of the population and the frequency of this condition increases considerably with advancing age and decreased with more levels of education.[3] Factors such as socioeconomic and demographic variables (male gender; race/skin color black or brown), lifestyle (smoking; increased waist-hip ratio), individual's health condition (use of insulin; poor self-rated health), functional category compatible with high school (technical position) and not having a health plan are associated with a greater chance of inadequate glycemic control.[4] The therapeutic plan aims at the appropriate glycemic control that needs drug treatment, lifestyle changes, physical activity, and health education to be achieved.[5] As a way of collaborating in the execution of these activities, educational interventions have shown positive results in knowledge about diabetes, adherence to drug treatment, and glycated hemoglobin rates.[6]

Practices based on empowerment through an approach mainly on problematization to acquire knowledge, to obtain essential skills and attitudes to live with diabetes contribute to the achievement of adequate glycemic control.[7] Therefore, health education represents an important pillar in the treatment of diabetes since the care measures are implemented through knowledge of the mechanisms that involve the disease. Thus, the greater the knowledge, the greater the chances of adopting positive attitudes in self-management of health,[8] so nurses must consider the potential of educational tools and use them in the monitoring of patients with DM2. In this context, Primary Health Care (PHC) is the scenario capable of promoting health education programs that improve the self-care indicators of people with diabetes, inserting them in the therapeutic process. PHC is the structuring axis of the Brazilian Unified Health System (SUS), being the first and broadest level of care in the country, responsible for health promotion, prevention, and treatment of diseases

such as Diabetes Mellitus.[9] Therefore, during the follow-up of people with diabetes in PHC, we need to assess the level of knowledge about the disease and identify the associated factors, as this will support the educational actions that assist in the treatment of people with DM2. Thus, this study aimed to identify the factors associated with the level of knowledge of people with type 2 Diabetes Mellitus registered in the PHC of a municipality in the Northeast of Brazil.

Methods

This is a cross-sectional study with a quantitative approach, carried out in a municipality in the Northeast region of Brazil, with an estimated population of 213 685 inhabitants. The municipality has thirty Health Units in its PHC Network, which are geographically divided into four Assistance Modules. This research chose one unit of each Assistance Module for data collection, defined by a proportional sampling of size, totaling four Health Units. Based on the population of people with DM2 registered in the four Health Units of the research ($n=1115$), insufficient knowledge prevalence of 56.1%[10] in people with DM2 and adopting the parameters of 99% confidence level and 1% estimation error, we obtained a necessary sample of 420 individuals. We selected 420 participants by simple random sampling from the list of people with DM2 in each unit, and afterward, we conducted a home visit guided by the Community Health Agent (CHA). The inclusion criteria were: being eighteen years old or older, having a medical diagnosis of DM2, being registered in one of the units where data collection took place, being able to understand and answer questions in the questionnaire and instrument, and agreeing to participate in the research by signing the Free and Informed Consent Term. The exclusion criterion adopted was the absence of answers to the questions of the research instruments. Thus, we excluded 7 participants, totaling 413 individuals for data analysis.

The outcome variable of the study was the knowledge of people with DM2 about the disease. To assess the level of knowledge about diabetes, we used the Diabetes Knowledge Questionnaire (DKN-A) instrument,[11] translated into Portuguese and validated in Brazil and we presented it in the analysis of reliability and test-retest, the Kappa coefficient ranging from 0.56 to 0.69.[12] Also, this instrument is widely used in national and international scientific research, indicated by the Brazilian Diabetes Society.[2] The DKN-A is composed of fifteen multiple-choice questions that address categories related to DM: basic physiology, hypoglycemia, food and substitutions, management, and self-care. For each correct answer, 1 point is counted, with the measurement scale from 0 to 15. Scores less than or equal to 7 are classified as insufficient knowledge about diabetes.

The variables of the sociodemographic conditions were: gender (male and female); marital status (living with and without a partner); age; school level; occupation (with and without occupation); family income; the number of residents in the house. The self-reported clinical variables evaluated were: time of diagnosis DM2 (in years); educational group (participating or participated in an educational group and never participated); treatment (does not use insulin and using insulin); medical consultation and nursing consultation (length of consultation, ≤ 3 months adequate follow-up, and> 3 months inadequate follow-up); performing physical activity (yes and no).

Data collection took place through a home visit that was guided by the CHA, from December 2017 to June 2018. The collection team consisted of six students in the health area, scholarship holders from a state public university in Brazil, duly trained. At home, the objective of the research was presented and

when accepted, an invitation to participate was formalized through reading and signing the informed consent form. When denied or absent at the time of the visit, the collection team sought another residence until the quantitative data established by the health unit. We sought to perform data collection in the residence environment that had less noise and interference, started with the application of the sociodemographic and clinical questionnaire followed by the DKN-A instrument.

The data were analyzed using the Statistical Package for the Social Sciences (version 21.0). We performed a descriptive analysis of sociodemographic and clinical variables and calculated the frequencies (absolute and relative). After the non-normality was confirmed by the Shapiro Wilk test, the association of diabetes knowledge and the sociodemographic and clinical characteristics was verified using bivariate analysis, with Pearson's chi-square test. The variables that presented $p < 0.2$ in the bivariate analysis were inserted in a binary logistic regression model, stepwise backward method, with the results expressed in Odds Ratio and 95% confidence interval, with significance at $p < 0.05$ for all analyzes.

This research was approved by the Research Ethics Committee of the State University of Southwest Bahia, under the opinion 2,346,497 of October 24, 2017, through the number of CAAE 74607417.6.0000.0055, following Resolution 466/12 of the National Council of Cheers.

Results

We interviewed 420 people with DM2. There was a loss of 8 participants who showed no answers in the DKN-A instrument, totaling 412 people for data analysis. Table 1 shows that the most prevalent demographic characteristics in the studio group were: female (69.7%), 60 years old and older (67.7%), without a partner (57.5%), with elementary education (91.2%), not working outside (work activities carried out outside the home environment) (84.5%), with a family income less or equal to a minimum wage (41%) and living with 1 to 3 people.

The level of knowledge of the population with DM2 about their disease was insufficient in 54.7% of the participants. Table 1 shows the characteristics of the population according to the level of knowledge. Most people with insufficient knowledge were female, age $\geq$ 60 years old, living without a partner, studied up to complete/incomplete elementary school, did not work outside home, and had a family income $\leq$1 salary and living with 1 to 3 people.

The level of knowledge of the population with DM2 about their disease was insufficient in 54.7% of the participants. Table 1 also presents the characteristics of the population according to the level of knowledge. We found a statistically significant difference for the proportion of insufficient knowledge in the variables: age ($\geq$ 60 years old), marital status (living without a partner), school level (studied up to elementary school), and family income (incomes $\leq$1 wage).

Table 1. Sociodemographic data of the study population according to total and level of knowledge about diabetes mellitus

Variables	Level of Knowledge		*p-value*	Total *n* (%)
	Sufficient *n* (%)	Insufficient *n* (%)		
Total	187 (45.3)	226 (54.7)		412 (100.0)
Gender			0.874	
Female	131 (70.1)	156 (69.3)		287 (69.7)
Male	56 (29.9)	69 (30.7)		125 (30.3)
Age			<0.001	
< 60 years old	86 (46)	47 (20.9)		133 (32.3)
≥ 60 years old	101 (54)	178 (79.1)		279 (67.7)
Marital status			0.015	
With a partner	89 (48.1)	80 (36.2)		169 (41.0)
Without a partner	96 (51.9)	141 (63.8)		237 (57.5)
Without information				6 (1.5)
Education level	3 (1.6)	45 (20.2)	<0.001	
Illiterate	40 (21.7)	66 (29.6)		48 (11.7)
Primary	55 (29.9)	81 (36.3)		106 (25.7)
Elementary	62 (33.7)	28 (12.6)		136 (33.0)
High school	24 (13.0)	3 (1.3)		90 (21.8)
Higher education				27 (6.6)
Without information	36 (19.4)	28 (12.4)		5 (1.2)
Occupation	150 (80.6)	198 (87.6)	0.052	
With occupation				64 (15.5)
Without occupation	58 (31.7)	111 (52.1)		348 (84.5)
Family income*	97 (53)	89 (41.8)	<0.001	
≤ 1 minimum wage	28 (15.3)	13 (6.1)		169 (41.0)
2 – 3 minimum wages				186 (45.1)
≥ 4 minimum wages	0 (0)	2 (0.8)		41 (10.0)
Without occupation	122 (65.6)	154 (68.8)		6 (1.5)
People living in the same residence	64 (34.4)	68 (30.4)	0.312	
Alone	131 (70.1)	156 (69.3)		2 (0.5)
1 – 3 people	56 (29.9)	69 (30.7)		276 (67.0)
≥ 4 people				132 (32.0)
Without occupation				2 (0.5)

*1 minimum wage in 2018: R$ 954 reais. Note: 1US dollar = R$ 3.88 reais

In Table 2, the clinical characteristics of the population that prevailed were people with a diagnosis time <10 years (68.5%), who never participated in an educational group (54%), non-insulin-dependent (91.3%), with adequate medical follow-up (52.8 %) and inadequate nursing (83.8%) and not practicing physical activity (75.5%).

Most people with insufficient knowledge had been diagnosed with DM2 for ten years or less, never participated in an educational group, underwent treatment without the use of insulin, underwent adequate periodic medical follow-up and inadequate nursing follow-up, and did not practice physical activity. Some clinical variables showed a statistically significant association with the level of knowledge, although the proportion of the level was inadequate in not participating in educational groups, using insulin, and not practicing physical activity.

Table 2. Clinical data of the study population, according to the level of knowledge about diabetes mellitus, 2018

Variables	Level of Knowledge		*p*-value	Total n (%) 412 (100.0)
	Sufficient n (%)	Insufficient n (%)		
Time of diagnosis			0.360	
≤ 10 years	127 (70.1)	156 (72.9)		283 (68.5)
>10 years	54 (29,9)	58 (27.1)		112 (27.1)
Without occupation				17 (4.4)
Educational Group			0.001	
Participating/participated	97 (53.3)	80 (36.7)		177 (42.9)
Never participated	85 (46.7)	138 (63.3)		223 (54.0)
Without occupation				12 (3.1)
Treatment			0.047	
Not using insulin	165 (88.2)	211 (93.8)		376 (91.3)
Using insulin	22 (11.8)	14 (6.2)		36 (8.7)
Consultation with Doctor			0.463	
Adequate	95 (50.8)	123 (54.4)		218 (52.8)
Inadequate	92 (49.2)	102 (45.6)		194 (47.2)
Consultation with Nursing			0.326	
Adequate	34 (18.2)	32 (14.6)		66 (16.2)
Inadequate	153 (81.8)	193 (85.4)		346 (83.8)
Practicing Physical Activity			0.001	
Yes	50 (28.6)	34 (15.4)		84 (20.3)
No	125 (71.4)	187 (84.6)		312 (75.5)
Without occupation				16 (4.2)

From the gross and adjusted indicators of the final regression model, we could estimate an increased risk for insufficient knowledge in individuals who never participated in an educational group (OR=2.0 [95% CI 1.2 - 3.1]), aged 60 years old or older (OR = 2.2 [95% CI 1.3 - 3.6]), illiterate and with primary education (OR=8.4 [95% CI 2.2 - 31.7]) and with an income equal to or less than one minimum wage (OR=2.4 [95% CI 1.1 - 5.6])

Table 3. Odds ratio and 95% confidence interval of the final risk regression model in people with Type 2 Diabetes Mellitus for insufficient knowledge about the disease.

	Crude OR	Crude CI 95%	Adjusted OR	CI 95% Adjusted OR
Never participated in an Educational Group	1.9	1.2 – 3.0	2.0	1.2 – 3.1
Age ≥ 60 years old	2.1	1.2 – 3.5	2.2	1.3 – 3.6
Illiterate and primary education	7.5	1.9 – 28.6	8.4	2.2 – 31.7
Income ≤ 1 wage	2.1	0.9 – 5.2	2.4	1.1 – 5.6

Discussion

In this study, the insufficient knowledge identified in 54.7% of the sample is related to a higher risk in individuals who never participated in an educational group, aged ≥ 60 years old, illiterate and primary school level and with an income less than or equal to 1 minimum wage. The prevalence of insufficient knowledge evidenced in this study is in line with national research.[13–18] A strong similarity was found with recent research carried out in Minas Gerais, where 56.1% had insufficient knowledge, associated with advanced age and low education level.[10] The relevance of having different professional conduct for the population aged ≥ 60 years old is necessary because it is a population with low adherence to drug therapy due to the lack of knowledge, complexity of the medication regimen, and relationship between the prescriber and the patient.[19]

Regarding education, similar data were evidenced in a Brazilian study that associated insufficient knowledge with low education. The participants had difficulty reading and understanding medical prescriptions, making adherence to treatment more difficult, and increasing health risks.[20] Low education is one of the causes of insufficient knowledge since most people with DM2 who had insufficient knowledge in this study had low education, and illiterate participants who had complete/incomplete primary education were eight times more likely to have insufficient knowledge. The population with diabetes monitored by PHC has a low level of education predominance.[17] Therefore, educational actions carried out in the context of PHC must be periodically evaluated and restructured to meet the needs of the population in each region.

Education is an important tool in the care of people with diabetes. Sufficient knowledge is possible through educational programs for self-care and care by a multi-professional team, seeking the empowerment of people with diabetes.[21] Scenarios that work with educational actions confirm the importance of education to increase the level of knowledge and consequently diabetes treatment. This study revealed that most never participated in an educational group. Thus, these people have 1.98 chances of having insufficient knowledge. Educational interventions are important for helping adherence to drug

treatment, controlling glycated hemoglobin rates, improving self-care and quality of life, and especially decreasing the suffering of living with diabetes.[8] Also, people with sufficient knowledge tend to follow the therapeutic plan and avoid hyperglycemia and disease complications.[16]

Regarding the socioeconomic level, people with low family income are twice as likely to have insufficient knowledge.[16] In this study, most of the population with insufficient knowledge has an income below or equal to a minimum wage. People with diabetes who have low-income have difficulties to follow the therapeutic plan, the food changes increase food expenses because it is necessary to buy fresh food and periodic purchases.[22] Also, the free drugs distributed in the Units Health services are often unavailable, requiring travel to pharmacies that guarantee free prescription drugs.[23] The health of this population depends exclusively on SUS, which has weaknesses such as low quotas for periodic examinations and difficulty in referrals.

A significant association was also identified between living without a partner and insufficient knowledge. We observed that family support as a support network and support for coexistence is fundamental in adapting to the changes in habits required in the treatment of diabetes. The family must be evaluated and considered in the educational approach, where actions with an emphasis on autonomy and self-sufficiency should prevail.[24] The association between insufficient knowledge and not performing physical activity may have been influenced by the predominance of low income and dependence on SUS in the study population. Within the scope of SUS in Brazil, the Heath Gym Program exists as a promotion strategy for bodily practices and physical activity. However, in the municipality of the study, this program has not yet been fully implemented.

Regarding the treatment, most people in the study did not use insulin, and this variable is associated with insufficient knowledge. A previous study showed that treatment with only diet or oral medication was presented by most of the population with insufficient knowledge and negative attitudes towards the disease.[10] The findings of this study are relevant in the context of public health since they point to the need for interventions under factors that can be easily modified, which would provide greater knowledge to individuals affected by DM. However, the transversal nature of this study and the lack of evaluation of other geographical realities could be pointed out as limitations of this study and, for this reason, direct new studies addressing the theme.

We conclude that the risk for insufficient knowledge is increased in individuals who have never participated in an educational group, aged 60 years old or over, illiterate and with primary education and with income equal to or less than the minimum wage. The level of knowledge found in this study evidenced the need for educational interventions that assist in the treatment of diabetes. This study recommends the implementation of multi-professional educational actions, considering the results presented to support the planning of actions.

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References

1. Cho NH, Shaw JE, Karuranga S, Huang Y, Fernandes JDR, Ohlrogge AW, et al. IDF Diabetes Atlas: Global estimates of diabetes prevalence for 2017 and projections for 2045. Diabetes Res. Clin. Pract. 2018; 38:271-81.
2. Sociedade Brasileira de Diabetes - SBD. Diretrizes da Sociedade Brasileira de Diabetes 2017-2018. São Paulo; 2017.
3. Brasil, Ministério da Saúde. VIGITEL Brasil 2014: vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico. Brasília; 2015.
4. Moraes HABD, Mengue SS, Molina MDCB, Cade NV. Factors associated with glycemic control in a sample of individuals with Diabetes Mellitus taken from the Longitudinal Study of Adult Health, Brazil, 2008-2010. Epidemiol. Serv. Saúde. 2020; 29:e2018500.
5. América Diabetes Association. Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes-2018. Diabetes Care. 2018; 41 (Suppl 1): S13-S27.
6. Figueira ALG, Boas LCGV, Coelho ACM, Freitas MCF de, Pace AE, Figueira ALG, et al. Educational interventions for knowledge on the disease, treatment adherence and control of diabetes mellitus. Rev. Lat-Am Enfermagem. 2017; 25:eE2863.
7. Cortez DN, Santos JC, Macedo MML, Souza DAS, Reis IA, Torres H C. Efeito de um programa educacional em empoderamento do autocuidado para cumprimento de metas em diabetes. Cienc. Enferm. 2018 [cited 1 Dec 2020]; 24(3). Available from: http://dx.doi.org/10.4067/s0717-95532018000100203
8. Binh TQ, Phuong PT, Nhung BT. Knowledge and associated factors towards type 2 diabetes among a rural population in the Red River Delta region, Vietnam. Rural Remote Health. 2015; 15(3):3275.
9. Brasil. Ministério da Saúde. Cadernos de Atenção Básica: Estratégias para o cuidado da pessoa com doença crônica: diabetes mellitus. Brasília; 2013.
10. Assunção SC, Fonseca AP, Silveira MF, Caldeira AP, de Pinho L. Knowledge and attitude of patients with diabetes mellitus in Primary Health Care. Esc. Anna Nery. 2017; 21(4):e20170208.
11. Beeney LJ, Dunn SM, Welch G. Measurement of diabetes knowledge: the development of the DKN scales. In: Bradley C, editor. Handbook of psychology and diabetes. Amsterdam: Harwood Academic Publishers. 2001;159-89.
12. Torres HC, Virginia A H, Schall VT. Validação dos questionários de conhecimento (DKN-A) e atitude (ATT-19) de Diabetes Mellitus. Rev. Saude Publica. 2005; 39(6):906–11.
13. Oliveira KCS, Zanetti ML. Conhecimento e atitude de usuários com diabetes mellitus em um Serviço de Atenção Básica à Saúde. Rev. Esc. Enferm. USP. 2011; 45(4):862-8.
14. Rodrigues FFL, Santos MA, Teixeira CRS, Gonela JT, Zanetti ML. Relação entre conhecimento, atitude, escolaridade e tempo de doença em indivíduos com diabetes mellitus. Acta Paul. Enferm. 2012; 25(2):284-90.
15. Silva DAR, Lutkmeier R, Moraes MA, Souza EN. Knowledge about diabetes in patients hospitalized for heart disease: a descriptive research. Online Braz. J. Nurs. 2013; 12(2): 222-37.
16. Mazzuchello FR, Tuon L, Simões PW, Mazon J, Dagostin VS, Tomasi CD, et al. Knowledge, attitudes and adherence to treatment in individuals with hypertension and diabetes mellitus. Mundo Saúde. 2016; 40(4):418-32.
17. Teston EF, Serafim D, Cubas MR, Haddad M do CL, Marcon SS. Fatores associados ao conhecimento e à atitude em relação ao Diabetes Mellitus. Cogitare Enferm. 2017; 22(4):e50850.
18. Borba AKOT, Arruda IKG, Marques APO, Leal MCC, Diniz AS. Knowledge and attitude about diabetes self-care of older adults in primary health care. Cien Saude Colet. 2017; 24(1):125-136.
19. Moreschi C, Rempel C, Foggiato De Siqueira D, Stein D, Iii B, et al. Family Health Strategies: Profile/quality of life of people with diabetes. Rev. Bras. Enferm. 2018; 71(6):3073-80.
20. Barsaglini RA, Canesqui AM. A alimentação e a dieta alimentar no gerenciamento da condição crônica do diabetes. Saúde Soc. 2010; 19(4):919-32.
21. Gonçalves NEXM, Zanetti ML, Vassimon HS, Neiva CM. Knowledge of individuals with diabetes mellitus in the family health strategy. J. Nurs. UFPE. 2017; 11(7):2779-87.

22. Pinto CBS, Miranda ES, Moritz ÂFE, Osorio-de-Castro CGS. A provisão de medicamentos pelo "Saúde Não Tem Preço" em municípios prioritários para o Plano Brasil Sem Miséria em Mato Grosso do Sul. Physis Ver. Saúde Coletiva. 2018; 28(1): e280106.
23. Neves RG, Duro SMS, Muñiz J, Castro TRP, Facchini LA, Tomasi E. Estrutura das unidades básicas de saúde para atenção às pessoas com diabetes: Ciclos I e II do Programa Nacional de Melhoria do Acesso e da Qualidade. Cad. Saúde Publica. 2018; 34(4): e00072317.
24. Santos AL, Marcon SS. How people with diabetes evaluate participation of their family in their health care? Invest. Educ. Enferm. 2014; 32(2):260-69.

Excess weight in children living in rural areas related to the nutritional profile and to maternal habits

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Excess weight in children living in rural areas related to the nutritional profile and to maternal habits

Abstract

Objective. To assess the relationship between the nutritional status and eating habits of children aged from five to ten years old and their mothers, living in rural areas. **Methods.** A cross-sectional study conducted with 156 children aged from five to ten years old, registered in the Family Health Strategies of the rural area of the Municipality of Divinópolis-MG (Brazil) from July 2017 to April 2018. **Results.** The prevalence of excess weight was 27.5%. The following parameters were significantly associated with excess weight in the children: maternal waist circumference (OR=1.04), protein consumption (OR=1.02), irregular consumption of natural juice (OR=5.05), and the most favored socioeconomic level, C1 social stratum (OR=3.54). Regarding the correlation between nutrient intake of the children and their mothers, most of the correlations were

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weak to moderate, being statistically significant for all the dietary components evaluated (r=0.185 to 0.496). **Conclusion.** Maternal nutritional status was related to the child's excess weight and a weak to moderate correlation was observed for nutrient intake among the children and their mothers. A high prevalence of children with excess weight was observed in the rural areas. The results point to the need to implement collective approaches, targeted at rural families, so as to prevent this problem.

Descriptors: child; obesity; nutritional status; feeding behavior; mother-child relations.

Exceso de peso en niños que viven en área rural relacionado con perfil nutricional y hábitos maternos

Resumen

Objetivo. Evaluar la relación entre el estado nutricional y los hábitos alimentarios de los niños de cinco a diez años y sus respectivas madres, las cuales residen en zonas rurales. **Métodos.** Se trató de un estudio transversal realizado con 156 niños de cinco a diez años, registrados en las Estrategias de Salud de la Familia del área rural del municipio de Divinópolis-MG (Brasil) de julio de 2017 a abril de 2018. **Resultados.** La prevalencia de sobrepeso fue del 27.5%. Se asoció significativamente con el sobrepeso de los niños: la circunferencia de la cintura materna (OR=1.04), el consumo de proteínas (OR=1.02), el consumo irregular de jugo natural (OR=5.05) y el nivel socioeconómico más favorecido, estrato social C1 (OR=3.54). En cuanto a la correlación entre la ingesta de nutrientes de los niños y la de sus madres, la mayoría de las correlaciones fueron débiles o moderadas, siendo estadísticamente significativas para todos los componentes dietéticos evaluados (r=0.185 a 0.496). **Conclusión.** El estado nutricional de la madre se relacionó con el sobrepeso del niño y se observó una correlación de débil a moderada para la ingesta de nutrientes entre los niños y sus madres. Se identificó una alta prevalencia de niños con sobrepeso en

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las zonas rurales. Los resultados apuntan a la necesidad de implementar enfoques colectivos, dirigidos a familias del medio rural, para prevenir este problema.

Descriptores: niño; obesidad; estado nutricional; conducta alimentaria; relaciones madre-hijo.

Excesso de peso em crianças de zona rural relacionado ao perfil nutricional e hábitos maternos

Resumo

Objetivo. Avaliar a relação entre estado nutricional e hábitos alimentares de crianças de cinco a dez anos e de suas respectivas mães, residentes em zona rural. **Métodos.** Estudo transversal, realizado com 156 crianças de cinco a dez anos, cadastradas nas Estratégias de Saúde da Família da zona rural do município de Divinópolis-MG (Brasil), de julho de 2017 a abril de 2018. **Resultados.** A prevalência de excesso de peso foi 27.5%. Associou-se significativamente ao excesso de peso das crianças: a circunferência de cintura materna (OR=1.04), o consumo de proteína (OR:1.02), o consumo irregular de suco natural (OR=5.05); o nível socioeconômico mais favorecido, estrato social C1 (OR=3.54). No que diz respeito à correlação entre o consumo de nutrientes das crianças e suas mães, a maioria das correlações foi de fraca a moderada, sendo significativas estatisticamente para todos os componentes dietéticos avaliados (r=0.185 a 0.496). **Conclusão.** O estado nutricional materno relacionou-se ao excesso de peso da criança e observou-se correlação fraca-moderada para ingestão de nutrientes entre as crianças e suas mães. Foi identificada elevada prevalência de excesso de peso infantil na zona rural. Os resultados apontam a necessidade de implementação de abordagens de ordem coletiva, voltadas às famílias de áreas rurais, para prevenção desse agravo.

Descritores: criança; obesidade; estado nutricional; comportamento alimentar; relações mãe-filho.

Introduction

Obesity constitutes an important public health problem. The prevalence of excess weight in children rose from 16.9% in 1980 to 23.8% in 2013 in boys and from 16.2% to 22.6% in girls, especially in developed countries. In developing countries, the prevalence of excess weight rose from 8.1% in 1980 to 12.9% in 2013 in boys and from 8.4% to 13.4% in girls.[1] In Brazil, between 1974-1975 and 2008-2009, the prevalence of excess weight in children from five to nine years old rose from 10.9% to 34.8% in the male gender and from 8.6% to 32.0% in the female gender. The trend was also increasing for obesity in those years, rising from 2.9% to 16.6% in boys and from 1.8% to 11.8% in girls. The increase in excess weight from the age of five was detected in all income groups and regions of the country.[2]

When comparing the evolution of the median weight of children under nine years of age depending on the residence area (urban or rural), there is a tendency for those in rural areas to have a nutritional aspect similar to those in urban areas, since the evolution curve of the median weight of these children is almost overlapped with the curve of the expected pattern.[2] This suggests that the nutritional transition also affects the rural area, and that, despite the fact that the family's work practices in the countryside involve planting and harvesting, which would favor physical exercise and access to *in natura* food, there is an increase in consumption of processed products and sedentary behaviors among children and their families.[3] The situation is worrying, since obese children are more likely to become obese adolescents and adults, and may consequently present associated chronic diseases,[4] which will increase public spending on health, in addition to reducing time and quality of life.[5]

It is believed that the formation of eating habits has a great contribution from the family, since children, besides having their eating preferences genetically influenced, tend to imitate the preferences, attitudes, beliefs and behaviors of their parents.[6] However, when investigating the family influence on child excess weight, the most prominent role seems to be that of the mother, who is often the primary caregiver.[7] Possibly, these elements contribute to the rise of excess weight in children, also in rural environments[8] and, considering all the implications of childhood obesity, it is relevant to assess this context.

It is worth mentioning that, both in Brazil and worldwide, there are few manuscripts that assess in greater depth and simultaneously the relationship between eating habits and nutritional status of children and their mothers, and most of the existing studies are international and include only urban environments. Therefore, there is a gap in studies that address this issue in rural residents. It is imperative for Nursing to have a greater understanding of the theme, since it directly acts in monitoring the child's growth and development, and can contribute to health promotion through guidelines on

appropriate eating habits.[9] In view of this, the present research aims to assess the relationship between nutritional status and eating habits of children and their mothers, living in rural areas.

Methods

This is a qualitative study of a cross-sectional nature. The research was conducted along with four Family Health Strategy (FHS) units located in the rural area of the Municipality of Divinópolis, state of Minas Gerais, Brazil. The FHS consists in a basic care assistance model, based on the work of a multi-professional team in an attached territory, and performs health actions triggered by the local reality and by the needs of the population covered. This model favors the closeness of the health unit to the families, promotes access to the services, and facilitates the establishment of bonds between the team and the users, which results in greater impact on the local health condition.[10]

The study population consisted of 307 children aged between five and ten years old, registered in the FHS units in rural areas in 2017, and their respective mothers. The sample size was calculated using the Open Epi program, version 3.01, for a confidence level of 95%, accuracy of 5% and proportion of excess weight in the municipality of 28.85%, according to a report by SISVAN-WEB,[11] which led to an estimated sample of 156 children. Stratified sampling was carried out, considering four allocation strata represented by the FHS teams in the rural area, with the participants being selected in a simple random way.

The following inclusion criteria were adopted: children aged between five and ten years old and their mothers attended by the FHS units in the rural area of the Municipality of Divinópolis. The following exclusion criteria were considered: children with some illness, genetic disease or syndrome, which could add bias to the research. Data collection took place in the period from July 2017 to April 2018. The socioeconomic level of the families was assessed using the questionnaire and classification criteria of the Brazilian Association of Research Companies (*Associação Brasileira de Empresas de Pesquisa*, ABEP).[12] Dietary intake was evaluated by the 24-hour food reminder survey for both children and mothers. The foods were quantified in calories and nutrients with the aid of the Avanutri® software, version 4.0.

The anthropometric assessment (weight, height, waist and arm circumference of children and their mothers) was performed according to technical procedures recommended by the WHO and the Brazilian Ministry of Health.[13] The measurements were performed in triplicate and the arithmetic mean of the data obtained was then calculated. The current weight of the mother and child was obtained by measuring on a Tanitta® digital scale, model HD-313, with 100g precision and a maximum capacity of 150 kilograms (kg). The children and their mothers were barefoot and in light clothes, positioned on the scale with their feet together, body erect and looking at the horizon, so that their body weight was evenly distributed on both feet. After stabilization of the measurement presented by the scale, weight was recorded.[13]

The portable Alturexata® stadiometer, with a vertical mobile rod with a scale in centimeters (cm) and a variation of one millimeter (mm), was used to measure height. The children and mothers evaluated stood with their backs to the equipment, barefoot, with their feet together, body erect, looking towards the horizon, and with their arms relaxed along their bodies. The mobile part of the stadiometer was placed at the highest point of the head, so that the height reading could be performed.[13]

The waist circumference of the child and the mother were measured with an inelastic measuring tape, during normal expiration, with the midpoint

between the margin of the last rib and the iliac crest as the reference point.[14] Anatomical markings to measure the arm circumference, of both mother and child, were performed with the arm flexed towards the chest, forming a 90° angle. The midpoint between the acromion and the olecranon was identified and marked. The arm was contoured with the inelastic measuring tape at the marked point, in an adjusted way, avoiding skin compression or slack. Measurement reading was performed with the arm along the body.[15]

For the nutritional assessment of the children, the *WHO Anthro Plus* program of the World Health Organization (WHO) was used, establishing as evaluation index the Body Mass Index (BMI) by age according to the WHO curves. BMI calculation was also used, classifying them according to the WHO criteria, for the nutritional assessment of the mothers.[13]

The dependent variable (outcome) was excess weight in the child. The children with excess weight were those classified as overweight, obesity, and severe obesity. The independent (explanatory) variables were selected considering demographic characteristics (gender, age, skin color), socioeconomic status,[12] clinical data (emotional characteristics, sleep time, habit of eating in front of the TV, screen time), dietary intake (energy, macro- and micro-nutrients), maternal characteristics and habits (BMI, anthropometry, dietary intake). The data collected were processed in the Epidata® program, version 3.1, by means of double entry, which allowed for due data consistency and validation analysis. Data analysis was performed in the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL) software, version 20.0, from the calculation of the distributions of frequencies and measures of central tendency and dispersion. Pearson's chi-square test/Fisher's Exact test or the Mann-Whitney's test were used, respectively, for comparing the percentages and medians.

The Spearman's Correlation test was used to analyze the dietary habits of children and their mothers for the quantitative variables of food consumption. The strength of the correlations was considered weak when the coefficients were below 0.30; moderate, when the *r* values were between 0.30 and 0.50; and strong, when $r \geq 0.50$.[16] In addition, multivariate logistic regression models were built using non-automatic methods of retroactive selection of variables to control confounding between the variables associated with excess weight. A significance level of 5% was used.

The research project was approved by the Ethics and Research Committee of the Federal University of São João Del-Rei (*Universidade Federal de São João Del-Rei*, UFSJ) under opinion number: 1,945,317 and CAAE: 62370816.2.0000.5545. A free and informed consent form was given to the population studied, with information regarding the objectives of the research, their rights, as well as the risks and benefits arising from the research, assuring them of the anonymous nature of the interviewees and the freedom to refuse to participate or withdraw from the research at any moment.

Results

A total of 156 pairs of children and their respective mothers were evaluated. Considering that among the drawn children were siblings, the number of mothers totaled 138. The children presented a median of 7.5 years old, varying between 5 and 9.9 years old; 55.8% were male; and 27.5% had excess weight. The participants presented a median of 10 sleep hours a day, always ate in front of the TV (64.1%) and were considered calm (42.9%) and agitated (34.6%) (Table 1).

Table 1. Socioeconomic and health characteristics of the 156 children of the study

Variables	Value
Sociodemographic characteristics	
Age group; *n* (%)	
5 years old	24 (15.4)
6 years old	29 (18.6)
7 years old	25 (16)
8 years old	40 (25.6)
9 years old	38 (24.4)
Gender; *n* (%)	
Female	69 (44.2)
Male	87 (55.8)
Skin color; *n* (%)	
White	86 (55.1)
Brown	60 (38.5)
Black	10 (6.4)
Lifestyle characteristics	
Sleep hours; median (min-max)	10.0 (7.0-12.5)
Screen Time; *n* (%)	
≤ 2 hours a day	63 (40.4)
> 2 hours a day	93 (59.6)
Eats in front of the TV; *n* (%)	
Always	100 (64.1)
Sometimes	26 (16.7)
Never	30 (19.2)
Emotional temper; *n* (%)	
Calm	67 (42.9)
Agitated	54 (34.6)
Anxious	35 (22.4)
Anthropometric characteristics	
Nutritional state; *n* (%)	
Thinness	5 (3.2)
Eutrophy	108 (69.2)
Overweight	28 (17.9)
Obesity	15 (9.6)
Severe Obesity	0 (0.0)
Waist circumference (cm); median (min-max)	55.7 (41.7-93.0)
Arm circumference (cm); median (min-max)	18.5 (13.5-32.5)
Waist/Height ratio; median (min-max)	0.44 (0.36-0.61)

The children's mothers had a mean age of 34.9 years old, 60.1% presented excess weight, 3.6% had diabetes mellitus, 11.6% had arterial hypertension, and 8.0% had thyroid disorder. Regarding the socioeconomic level, 44.2% of the families were grouped in class D-E, which represents the least favored social class, and 5.4% are beneficiaries of the government income transfer program called *Bolsa Família*.

Regarding the correlation between the consumption of nutrients by children and their mothers, most of the correlations were weak to moderate, being statistically significant for all the dietary components evaluated considering the analysis without stratification (r=0.185 to 0.496).[16] The correlations were slightly stronger among children with excess weight only for proteins, polyunsaturated fats, vitamin A, vitamin E and zinc (Table 2).

Table 2. Spearman's correlation coefficient between the dietary intake of 156 children and their mothers according to the presence of excess weight in the child and to gender

Dietary Intake (Energy, macro - and micro-nutrients)		Gender (child)		Excess Weight (child)	
	Total	Fem.	Male	No	Yes
Energy (kcal)	0.299*	0.272*	0.324*	0.367*	0.183
Protein (% TCV)	0.346*	0.389*	0.309*	0.322*	0.428*
Carbohydrate (% TCV)	0.251*	0.289*	0.222*	0.247*	0.250
Lipid (% TCV)	0.385*	0.478*	0.303*	0.392*	0.341*
Cholesterol (mg)	0.185*	0.102	0.261*	0.205*	0.108
Saturated Fat (g)	0.313*	0.250*	0.360*	0.410*	0.129
Polyunsaturated Fat (g)	0.316*	0.257*	0.355*	0.252*	0.439*
Monounsaturated Fat (g)	0.404*	0.475*	0.357*	0.456*	0.313*
Fibers (g)	0.324*	0.343*	0.317*	0.391*	0.203
Vitamin A (Re)	0.410*	0.475*	0.363*	0.384*	0.424*
Vitamin D (mcg)	0.331*	0.301*	0.359*	0.377*	0.198
Vitamin E (mg)	0.296*	0.312*	0.297*	0.251*	0.408*
Calcium (mcg)	0.330*	0.262*	0.380*	0.350*	0.246
Iron (mg)	0.299*	0.246*	0.342*	0.321*	0.288
Zinc (mg)	0.496*	0.491*	0.494*	0.486*	0.573*

* *p-value* <0.05. % TCV: Percentage of the Total Caloric Value.

In the analysis of multivariate association between the explanatory variables and the excess weight of the children we have the following: maternal waist circumference (OR=1.04), protein consumption (OR=1.02), irregular consumption of natural juice (OR=5.05), and CI social stratum socioeconomic level (OR=3.54) (Table 3).

Table 3. Variables associated with excess weight in the 156 children from 5 to 10 years old, living in rural areas, according to the multivariate regression model

Associations with excess weight in children	*p*-value	OR	CI (95%)
Variables of the child			
Protein consumption (g)	0.001	1.02	(1.01 – 1.04)
Irregular Consumption of Natural Juice (< 5 times a week)	<0.001	5.05	(2.09 – 12.2)
Socioeconomic level – ABEP			
B2	0.134	4.91	(0.61 – 39.46)
C1	0.021	3.54	(1.21 – 10.38)
C2	0.950	0.97	(0.34 – 2.73)
D-E*	0.046	1	
Maternal variable			
Waist Circumference (cm)	0.023	1.04	(1.01 – 1.07)

(*) Reference stratum for associations of the socioeconomic level (lowest level).

Discussion

In the present study, children's excess weight was significantly related to the maternal nutritional status, observed by the direct association with the measurement of the mother's waist circumference, which increased by 0.04 times the chance of the child having excess weight. Corroborating this result, a Brazilian study carried out with children aged three to ten years old observed that a mother with accumulation of abdominal fat increased by 2.7 times the chance of the child also presenting this condition.[17] This indicates that the maternal nutritional status can also be related to the outcome of childhood obesity in rural areas. It must be considered that such influence can be associated with both genetic and sociocultural factors of family habits. Therefore, it is essential that the care with nutritional attention to maternal-infant health begins in the prenatal period, considering the entire family structure.[17]

The socioeconomic level was significantly associated with excess weight in the children, being that children allocated to level C1, had a 3.54-fold chance of presenting this problem when compared to children at level D-E, who represent the less favored class. In fact, greater purchasing power also favors access to a nutritionally inadequate dietary pattern, such as consumption of sugary drinks, sweets and high energy density industrialized foods.[18] In addition, a review that included studies published between 1985 and 2008 pointed out that this outcome can differ between geographic regions, since residents of rural areas are more affected by precarious access to supermarkets and healthy foods.[19]

The child's protein intake presented a 1.02 chance ratio for excess weight. A similar result was found in a population-based longitudinal study carried out in Portugal, which assessed the nutritional status outcome of children aged four years old at baseline after three years, and found that protein consumption was significantly associated with a higher BMI both in boys and girls.[20] This phenomenon is justified by the fact that excessive protein intake can stimulate insulin secretion as well as IGF 1, which is a growth factor similar

to insulin, and both contribute to increased adipogenesis and differentiation of adipocytes, thus inducing obesity.[21]

In this research it was observed that children who reported irregular consumption (less than five times a week) of natural fruit juice had a 5.05 chance of presenting excess weight. Corroborating this finding, a Canadian survey indicated that 56.8% of the respondents reported consuming fruit juice regularly. These authors suggested that regular consumption of natural fruit juice would be associated with eutrophy.[22] These results are possibly explained by the fact that the habit of drinking natural juice regularly causes the child to stop drinking other sugary drinks, with higher energy density and without significant nutritional values, such as box juice, soft drinks and soda. It is worth noting that the high consumption of sugary non-alcoholic beverages has been systematically discussed in the literature as having a possible positive association with the BMI of children and adolescents.[23]

The present study identified a prevalence of 27.5% of excess weight among children living in rural areas, considered higher than the results of another Brazilian study of national scope.[2] A systematic literature review identified, among nine articles included, three international studies that found a higher prevalence of childhood obesity in the rural area when compared to the urban area. The findings of these studies are justified by the food intake poor in nutrients and excessive in fats, in addition to the lower practice of physical exercise and use of electronic equipment during longer periods by children in the urban area.[24]

The study has limitations, including the application of the 24-hour food reminder, which, for being a survey from the previous day, may not represent the individual's usual intake. However, despite its limitations, the 24-hour reminder is still the most appropriate method for estimating the food consumption of a population.[25] The research design allowed us to estimate the prevalence of excess weight in children living in the rural area of the Municipality of Divinópolis, as well as its association with maternal habits and nutritional status, not being possible, due to the cross-sectional nature, to make cause and effect inferences. However, this design answered the research question and the study objectives.

The findings of this research bring potential contributions to the Brazilian literature, since it makes important clarifications about factors associated with excess weight in children from rural areas. The association of the children's excess weight with the mother's waist circumference stands out, which points to the lack of interventions, especially in family planning of residents in rural areas, in order to provide guidance on the importance of the maternal nutritional status, habits and lifestyle for the health of their children, thereby reducing the need for treatment of the comorbidities resulting from childhood obesity. However, this result must be analyzed with caution, as more research studies must be carried out in rural areas, including longitudinal ones, for any generalization.

The results of this study allow us to conclude that the child's excess weight is related to the maternal nutritional status, evidenced especially by the direct association between the measurement of the mother's waist circumference and the presence of excess weight in the child. In addition, it showed that this condition was significantly associated with protein consumption by children, irregular consumption of natural fruit juice and better socioeconomic status. We also noticed a high prevalence of excess weight in children living in rural areas. These findings point to the need to implement new collective approaches in order to establish public policies related to nutrition, aimed at families living in rural areas, especially for the mother, through multi-factorial interventions considering their social contexts.

It is important to emphasize that the early onset of excess weight in children is a worrying factor, with

the resulting need for educational interventions in the school environment in conjunction with the FHS of rural areas, promoting healthy life habits, such as regular practice of physical activity and a diet rich in fruits and vegetables. In addition, the incentive to cultivate gardens and orchards needs to be rescued in rural residents in order to enable greater intake of *in natura* food, thus reducing the consumption of processed foods. It is recommended to work on autonomy and to encourage an attitude to change habits even in childhood, as a way to prevent possible health problems. The importance of this study for the improvement of the Nursing praxis is highlighted, insofar as it signals to the nurses, professionals who deal directly with education in health, the need to prioritize the promotion of adequate and healthy food in every opportunity that they access children and their families, favoring the prevention of nutritional problems and contributing to the improvement of the population's quality of life.

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References

1. Ng M, Fleming T, Robinson M, Thomson B, Graetz N, Margono C, et al. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980±2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2014; 384(9945):766-81.
2. Instituto Brasileiro de Geografia e Estatística – IBGE. Pesquisa de orçamento familiar 2008-2009: Antropometria e Estado Nutricional de Crianças, Adolescentes e Adultos no Brasil. Rio de Janeiro: IBGE. 2010 [cited 17 Nov 2020]. Available from: https://biblioteca.ibge.gov.br/visualizacao/livros/liv50063.pdf
3. Silva DAS, Petroski EL, Gaya ACA. Secular changes in aerobic fitness levels in brazilian children. Rev. Bras. Med. Esporte. 2017; 23(6):450-4.
4. Nobre RS, Guimarães MR, Batista AMO, Sousa AF, Lima LHO, Silva ARV. Anthropometric indicators that predict metabolic syndrome among adolescentes. Texto-Contexto Enferm. 2018; 27(1):e5270016.
5. Dalapicola MM, Liberali R, Coutinho VF. Perfil epidemiológico da obesidade em crianças: revisão sistemática. Cad. Saude Desenvolv. 2014; 3(2):16-28.
6. Almeida LM, Campos KFC, Randow R, Guerra VA. Estratégias e desafios da gestão da Atenção Primária à Saúde no controle e prevenção da obesidade. Rev. Gestao Saude. 2017; 8(1):114-39.
7. Camargo APPM, Filho AAB, AntonioMARGM, Giglio JS. The non perception of obesity can be an obstacle to the role of mothers in taking care of their children. Cien. Saude Colet. 2013; 18(2):323-33.
8. Sehn AP, Reuter CP, Kern DG, Silva CF, Barbian CD, Welser L, et al. Perfil sociodemográfico associado em nível de aptidão física relacionada à saúde em escolares. Rev. Saude Pesqui. 2017; 10(1):75-82.
9. Lagares EB, Resende KA, Romano MCC. Obesity the rural area: relationship with maternal elements. Rev. Enferm. UFPE on line. 2019; 13(3):796-810.
10. Macinko J, Mendonça CS. Estratégia Saúde da Família, um forte modelo de Atenção Primária à Saúde que traz resultados. Saúde Debate. 2018; 42(1):18-37.
11. Brasil. Sistema de Vigilância Alimentar e Nutricional (SISVAN). Dados de registros no sistema. 2016 [Cited 2020 Nov 30]. Available from: http://dabsistemas.saude.gov.br/si stemas/sisvan/relatorios_publicos/relatorios.php.
12. Associação Brasileira de Empresas de Pesquisa (2015). Critério de Classificação Econômica Brasil. [Cited 2016 Out 30]. Available from: www.abep.org/Servicos/Download.aspx?id=09.
13. Brasil. Ministério da Saúde. Orientações para a coleta e análise de dados antropométricos em serviços de saúde: Norma Técnica do Sistema de Vigilância Alimentar e Nutricional – SISVAN. Brasília (DF): MS, 2011. [Cited 2016 Out 30]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/orientacoes_coleta_analise_dados_antropometricos.pdf.
14. Cook S, Weitzman M, Auinger P, Nguyen M, Dietz WH. Prevalence of a metabolic syndrome phenotype in adolescents: findings from the third National Health and Nutrition Examination Survey, 1988-1994. Arch. Pediatr. Adolesc. Med. 2003; 157(8):821-7.
15. Lohman TG, Roche AF, Reynaldo M. Anthropometric standardization reference manual. Champaign, IL: Human Kinetics; 1988, p.177.
16. Wang Y, Li J, Caballero B. Resemblance in dietary intakes between urban low-income African-American adolescents and their mothers: the healthy eating and active lifestyles from school to home for kids study. J. Am. Diet. Assoc. 2009; 109(1):52-63.
17. Melzer MRTF, Magrini IM, Domene SMA, Martins PA. Fatores associados ao acúmulo de gordura abdominal em crianças. Ver. Paul. Pediatr. 2015; 33(4):437-44.
18. Villa JKD, Santos TSS, Ribeiro AQ, Silva AR, Sant'Ana LFR, Pessoa MC. Dietary patterns of children and socioeconomical, behavioral and maternal determinants. Rev. Paul. Pediatr. 2015; 33(3):302-9.
19. Larson NI, Story MT, Nelson MC. Neighborhood environments: disparities in access to healthy foods in the U.S. Am. J. Prev. Med. 2009; 36(1):74-81.
20. Durão C, Oliveira A, Santos AC, Severo M, Guerra A, Barros H, Lopes C. Protein intake and dietary glycemic load of 4-year-olds and association with adiposity and serum insulin at 7 years of age: sex-nutrient and nutrient-nutrient interactions. Int. J. Obes (Lond). 2017; 41(4):533-41.

21. Sulzbach EAG, Bosco SM. Obesidade infantil – uma revisão bibliográfica. Rev. Destaques Academ. 2012; 4(3):113-27.
22. Akhtar-Danesh N, Dehghan M. Association between fruit juice consumption and self-reported body mass index among adult Canadians. J. Hum. Nutr. Diet. 2010; 23(2):162-8.
23. Café ACC, Lopes CAO, Novais RLR, Bila WC, Silva DK, Romano MCC, Lamounier JA. Intake of sugar-sweetened beverages, milk and its association with body mass index in adolescence: a systematic review. Rev. Paul. Pediatr. 2018; 36(1):91-9.
24. Baggio A, Marques F, Mendes KG. Obesidade infantojuvenil na área urbana e rural: uma revisão sistemática. Rev. Bras. Nutr. Clin. 2014; 29 (1):76-80.
25. Santos DRL, Lira PIC, Silva GAP. Excess weight in preschool children: The role of food intake. Rev. Nut. 2017; 30(1): 45-56.

Effectiveness of nursing case management versus usual care for blood pressure control in adults with hypertension: a systematic review

Systematic Review

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Effectiveness of nursing case management versus usual care for blood pressure control in adults with hypertension: a systematic review

Abstract

Objective. To synthesize the best available evidence regarding the effectiveness of nursing case management in primary health care, compared to usual care, in improving blood pressure in adults over 18 years with hypertension. **Methods.** systematic review that includes studies carried out with adult patients diagnosed with hypertension, with or without other concomitant chronic diseases, followed-up by a case manager nurse, who evaluated the effectiveness of case management in the improvement of blood pressure. A critical evaluation of the studies was made and the results of interest were described using the instruments and tools from the Joanna Briggs Institute. Due to the heterogeneity of the included studies, the results of similar measures were

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not grouped in statistical meta-analysis. A narrative and tabular format was used to synthesize and present them. **Results.** Six randomized controlled trials were critically evaluated and included in the review. The total sample was 1963 participants. The results showed the outcomes compared at baseline and at the end of follow-up (six or twelve months). Regarding the main outcome, systolic and diastolic blood pressure, there was some reduction in the group followed-up through case management in studies lasting six months; however, the impossibility of comparing the findings poses limitations to answering the questions in this review. **Conclusions.** Despite the heterogeneity of the studies, the narrative and tabular analysis demonstrated that short-term case management in primary care (six-month studies) helped to reduce blood pressure levels, although the level of evidence for these results is low or very low.

Descriptors: adult; case management; hypertension; nursing care; patient care planning; primary health care; systematic review.

Efectividad en el manejo de casos por enfermería versus cuidados habituales para el control de la presión arterial en adultos con hipertensión: una revisión sistemática

Resumen

Objetivo. Sintetizar las mejores evidencias disponibles sobre la efectividad del manejo de casos de enfermería en la atención primaria en salud en comparación con los cuidados habituales para mejorar la presión arterial en adultos mayores de 18 años con hipertensión arterial sistémica. **Métodos.** Revisión sistemática de estudios realizados en pacientes adultos con diagnóstico de hipertensión arterial, monitoreados por el enfermero gestor de casos quien evaluó la efectividad del manejo de la mejoría de la presión arterial con o sin otras enfermedades crónicas concomitantes. Se realizó una evaluación crítica de los estudios y se describieron los resultados de interés utilizando los instrumentos y herramientas del Instituto Joanna Briggs. Debido a la heterogeneidad de los estudios, los resultados de medidas similares no se agruparon en el meta-análisis estadístico. Se utilizó un formato narrativo y tabular para sintetizarlos y presentarlos. **Resultados.** Seis ensayos clínicos aleatorios fueron evaluados críticamente e incluidos en la revisión. La muestra total fue de 1963 participantes. Los resultados mostraron los hallazgos comparados al inicio y al final del seguimiento (seis o doce meses). En cuanto al resultado principal, la presión arterial sistólica y diastólica tuvo una reducción en el grupo acompañado por el gestor de manejo de casos en los estudios que duraron seis meses; sin embargo, la imposibilidad de comparar los hallazgos plantea limitaciones para responder las preguntas de esta revisión. **Conclusión.** A pesar

de la heterogeneidad de los estudios, el análisis narrativo y de las tablas demostró que la gestión de casos por enfermería, a corto plazo (estudios de seis meses), en atención primaria, ayudó a reducir los niveles de presión arterial, aunque el nivel de evidencia para estos resultados fue bajo o muy bajo.

Descriptors: adult; case management; hypertension; nursing care; patient care planning; primary health care; systematic review.

Efetividade do gerenciamento de casos de enfermagem versus cuidados usuais para controle da pressão arterial em adultos com hipertensão: uma revisão sistemática

Resumo

Objetivo. Sintetizar as melhores evidências disponíveis sobre a efetividade do gerenciamento de casos de enfermagem na atenção primária em saúde, em comparação com os cuidados usuais na melhoria da pressão arterial em adultos acima de 18 anos com hipertensão arterial sistêmica. **Métodos.** Revisão sistemática que incluiu estudos realizados com pacientes adultos diagnosticados com hipertensão, com ou sem outras doenças crônicas concomitantes, acompanhados por enfermeiro gestor de casos, que avaliou a eficácia do gerenciamento de casos na melhora da pressão arterial. Foi realizada uma avaliação crítica dos estudos e descritos os resultados de interesse com a utilização dos instrumentos e ferramentas do Instituto Joanna Briggs. Devido à heterogeneidade dos estudos incluídos, os resultados de medidas semelhantes não foram agrupados na meta-análise estatística. Um formato narrativo e tabular foi usado para sintetizá-los e apresentá-los. **Resultados.** Seis ensaios clínicos randomizados foram avaliados criticamente e incluídos na revisão. A amostra total foi de 1963 participantes. Os resultados mostraram os desfechos comparados no início e no final do acompanhamento (seis ou doze meses). Em relação ao desfecho principal, pressão arterial sistólica e diastólica, houve alguma redução no grupo acompanhado pelo gerenciamento de casos em estudos com duração de seis meses; no entanto, a impossibilidade de comparar os achados impõe limitações para responder às perguntas desta revisão. **Conclusões.** Apesar da heterogeneidade dos estudos, a análise narrativa e tabular demonstrou que o gerenciamento de casos de curto prazo na atenção primária (estudos de seis meses) ajudou a reduzir os níveis de pressão arterial, embora o nível de evidência para esses resultados seja baixo ou muito baixo.

Descritores: adulto; administração de caso; hipertensão; cuidados de enfermagem; planejamento de assistência ao paciente; atenção primária à saúde; revisão sistemática.

Summary of Findings

Case management compared to usual care for hypertensive adults in primary care **Bibliography**: Effectiveness of nursing case management versus usual care for blood pressure control in adults with hypertension: a systematic review		
Outcomes (Follow up)	**№ of participants (studies)**	**Certainty of the evidence (GRADE)**
Systolic blood pressure (6 months)	695 (4 RCTs)	⊕ VERY LOW[a,b,c]
Diastolic blood pressure (6 months)	695 (4 RCTs)	⊕⊕ LOW[a,c]
Systolic blood pressure (12 months)	1216 (2 RCTs)	⊕⊕ LOW[e,d]
Diastolic blood pressure (12 months)	1216 (2 RCTs)	⊕⊕⊕ MODERATE[e]

Explanations: (a) Risk of bias: downgraded once because one article scored 11/13, one scored 9/13, and two scored below 9 (JBI-SUMARI appraisal score); (b) Inconsistency: downgraded twice because heterogeneity was over 75%; (c) Inaccuracy: downgraded once due to sample size; (d) Inconsistency: downgraded once due to heterogeneity between 50 and 75%; and (e) Risk of bias: downgraded once because one article scored 11/13 and another article scored 7/13 (JBI-SUMARI appraisal score).

Introduction

Hypertension is one of the main risk factors for cardiovascular diseases (CVD). In recent years, progress has been made in its treatment, but the number of hospitalizations with important socioeconomic costs remains high.[1] Worldwide, hypertension affects 22% of people over 18 years of age.[2] In Brazil, data from the Surveillance of Risk and Protection Factors for Chronic Diseases by Telephone Survey (Vigitel) in 2018 pointed out that the prevalence of adults who reported having a medical diagnosis of hypertension was 24.7%, with frequency increasing with age in both sexes and in the less educated part of the population.[3]

Hypertension represents a public health problem due to its numerical magnitude and potential to cause damage to the population. In view of this context, research about hypertension aimed at enhancing prevention and control actions arising from the health policies of local governments is sorely needed. This health condition is considered a silent threat because it does not commonly present signs and symptoms that alert to the severity of complications.[1] Thus, its prevention, diagnosis and control is an attribution of Primary Health Care, which may use measures that do not require a high investment, such as case management (CM), in order to keep the disease under control. According to Mendes,[4] CM is a collaborative process between the patient and the professional case manager which aims to agree goals and try to achieve them with the sole purpose of preventing or delaying the occurrence of associated complications, increasing the individual autonomy that allows decision making in the health situation. Studies have shown evidence on the effectiveness of CM developed by nurses for reducing risk factors and decreasing blood pressure levels, as well as improving adherence to the therapeutic regimen.[5-9]

Case management actions also have proved beneficial to increase knowledge about the disease and self-management of treatment.[10] They reduce the number of hospitalizations and aggravations that require emergency care, impacting the improvement of quality of life.[11] The results of the systematic review[12] confirmed that CM is the most frequent intervention in the chronic care model. It has been associated with significant improvements, especially in relation to diabetes and hypertension. Although publications consider the case manager nurse's role important to control blood pressure levels, no systematic review published in the Cochrane, JBI Database of Systematic Reviews and Implementation Reports or PROSPERO Library, to our knowledge, has examined the effectiveness of nursing CM in the control of hypertension. This gap motivated the development of the present research, whose aim was to verify the effectiveness of nursing CM in primary care compared to usual care, already offered by the health system, in controlling blood pressure in adults with hypertension.

Because it is a chronic disease directly influenced by eating habits, levels of physical activity and adherence to treatment, it was decided to verify whether the literature addressed the influence of CM on these outcomes and blood pressure levels. The review question is: what is the effectiveness of nursing CM versus usual care in primary health care for improving blood pressure in adults over 18 years with hypertension?

Inclusion criteria

Participants. This review considered studies that included adult patients (over 18 years old) diagnosed with hypertension, with or without other concomitant chronic diseases and followed-up by a case manager nurse as part of a multiprofessional team.

Intervention. This review considered studies that evaluated the effectiveness of case management carried out by nurses and a multidisciplinary team in improving blood pressure. Techniques involving follow-up, monitoring, and health interventions using call centers, tele-nursing, home visits and/or nursing consultations were considered as CM. All studies in which the only systematic difference between the groups was the presence or absence of case management were included; thus, studies with more than two arms were excluded.

Comparators. This review considered studies that compared the intervention to usual care already offered by primary health care centers, which involved the assistance of the health team, with actions that were already part of the normal schedule for patients diagnosed with hypertension, without adding extra activities, only the monitoring regular.

Outcomes. This review considered studies that included the following outcome measures: (i) Blood pressure in mmHg;[1] (ii) Improvement in body mass index (BMI) measured as weight/height^2 (kg/m^2);[1] (iii) Increased physical activity measured as time spent performing physical activity each day;(iv) Improvements in lipid profile measured by laboratory examination values of total cholesterol, or high-density lipoprotein, or low-density lipoprotein, or triglycerides; (v) Medication compliance assessed through self-report questionnaires, like the one described by Morisky *et al.*,[13] the Brief Medication Questionnaire;[14] (vi) Quality of life measured through validated generic or specific questionnaires, such as the hypertension quality of life questionnaire - short form,[15] the Short Form-36 Health Survey;[16] (vii) Smoking cessation assessed through data collection tools, questionnaires or patient self-reports, and eventually assessed by serum cotinine levels; (viii) Financial implications analyzed through cost differences (case management versus usual care).

Types of studies. This review considered study with experimental designs, including randomized and non-randomized controlled clinical trials published in Portuguese, English or Spanish between the years 1990 and 2018. The time limitation is due to the fact that CM has become a strategy used more frequently since the 1990s, due to the rising costs of complex treatments.[17]

Methods

This systematic review was conducted in accordance with the Joanna Briggs Institute methodology for systematic reviews of effectiveness evidence.[18] This review was conducted in accordance with an *a priori* protocol[19] (PROSPERO CRD42019112762 – Registration number).

Search strategy. Aiming to find both published and unpublished studies. A three-step search strategy was used in this review. First, an initial limited search of Pubmed an Cinahl was undertaken followed by analysis of the text words contained in titles and abstracts and the index terms used to describe the articles. The search strategy, including all identified keywords and index terms, was adapted for each included information source,

and a second search was undertaken on July 12, 2018, to august 30, 2018.

PubMed

#1 ("adult"[MeSH Terms]) AND "hypertension" [MeSH Terms]) OR "hipertenso" [Title/Abstract]) OR "adult"[Title])

#2 (((((((("case management"[MeSH Terms]) OR "case managers"[Title/Abstract]) OR "managed care programs"[MeSH Terms]) OR "patient care planning"[MeSH Terms]) OR "house calls"[MeSH Terms]) OR "office visits"[MeSH Terms]) OR "visitas a pacientes"[Text Word]))

#3 (("nurses"[MeSH Terms]) OR "nursing"[MeSH Terms]) OR "nurse/case manager"[Title/Abstract]) OR "nurse/case management"[Title/Abstract]

#4 OR/2-3

#5 ((((((((((((((((((((("random allocation"[MeSH Terms] OR "randomized clinical trial" [Abstract]) OR "randomized clinical trial" [Title]) OR "randomized controlled trial" [Abstract]) OR "randomized controlled trial" [Title]) OR "randomized" [Abstract]) OR "randomized" [Title]) OR "randomised" [Abstract]) OR "randomised" [Title]) OR "clinical study" [Abstract]) OR "clinical study" [Title]) OR "clinical trial" [Abstract]) OR "clinical trial"[Title]) OR "clinical trials as topic" [MeSH Terms]) OR "randomly" [Abstract]) OR "trial" [Abstract]) OR "trial" [Title]) OR "groups" [Title]) OR "groups" [Abstract]) OR "placebos" [MeSH Terms]) OR "controlled clinical trial" [Abstract]) OR "controlled clinical trial" [Title] OR "randomised")))))

6 AND/1,4-5 (Filters: Humans) ("1990"[Date - Publication])

Information sources. The databases searched included Pubmed, Cinahl, Lilacs, Web of Science, Scopus, Academic Search Premier, Cochrane Library, WHO Trials. Sources of unpublished studies and gray literature searched included the Directory of Open Acess Journal (DOAJ), CAPES System Portal, Open Gray, European Union Clinical Trial, Proquest Dissertations and Theses, DART Europe E-thesis Portal, World Cat and Electronic Thesis Online System (Ethos). The results obtained in each search in the databases were electronically imported to the Mendeley reference manager (Elsevier), and duplicate records were removed before screening. All the identified studies were evaluated according to the eligibility criteria, based on the information presented in the titles and abstracts. Studies were accessed and assessedin full length for compliance with the eligibility criteria when titles and/or abstracts were not clear/did not have sufficient details to support a decision on their inclusion or exclusion.

Study selection. Following the search, all the identified citations were collated and uploaded into the Mendeley reference manager (Elsevier) and duplicates were removed. Titles and abstracts were screened by two independent reviewers for assessment based on the inclusion criteria for the review. Potentially relevant studies were retrieved in full length and their citation details imported into the Joanna Briggs Institute System for the Unified Management, Assessment and Review of Information (JBI-SUMARI) (Joanna Briggs Institute, Adelaide, Australia). Any disagreements that arose between the reviewers were resolved through discussion, or with a third reviewer.

Assessment of methodological quality. Eligible studies were critically appraised by two independent reviewers at the study level (ATM and JPA) for methodological quality in the review using standardized critical appraisal instrument from the Joanna Briggs Institute.[20] Any disagreements that arose between the reviewers were resolved through discussion, or with a third reviewer (MFM).

Data extraction. Data were extracted from the studies included in the review by two independent reviewers using the standardized Joanna Briggs Institute data extraction tool.[20] The data extracted included specific details about the intervention and time of follow-up, number of participants,

comparison group, and results of interest to the review question [systolic (SBP) and diastolic (DBP) blood pressure, BMI, knowledge about hypertension, treatment adherence, abdominal circumference (CA), lipid profile, smoking, consumption of fruits, salt, and alcohol, and physical activity]. Any disagreements that arose between the reviewers were resolved through discussion, or with a third reviewer.

Data synthesis. The results were synthesized using the JBI-SUMARI tool,[20] which were expressed as continuous variables (means and standard deviations), when available, and analyzed. After the analysis, wide heterogeneity was identified for the main outcomes (SBP and DBP) and thus the results of similar outcomes were not grouped in statistical meta-analysis. A narrative and tabular format was used to synthesize and present the results of this review.

Assessment of certainty of evidence in the findings. The Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach for grading the certainty of evidence followed.[21] The certainty of evidence can be classified high, moderate, low or very low. High certainty: the true effect lies close to that of the estimate of the effect. Moderate certainty: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different. Low certainty: the true effect may be substantially different from the estimate of the effect and, Very low certainty: the true effect is likely to be substantially different from the estimate of effect.[21] A Summary of Findings (SoF) was created using GRADEPro GDT (McMaster University, ON, Canada). The SoF presents the following information when appropriate: absolute risks for treatment and control, estimates of relative risk, and a ranking of evidence quality based on the risk of bias, directness, heterogeneity, precision and risk of publication bias of the results of the review. The outcomes reported in the SOF included the PAS and PAD (main outcomes).

Results

Study inclusion. The initial search for commercially published articles and gray literature resulted in a total of 1289 studies. Forty-eight articles remained after removing duplicates and analyzing the titles and abstracts. They were read in full length, and 42 were excluded for not meeting the eligibility criteria. The six remaining articles were critically analyzed using standardized instruments provided by JBI-SUMARI. The main reason for exclusion of articles in this stage - a total of 13 articles - was the fact that none of the study groups received only usual care (Figure 1).

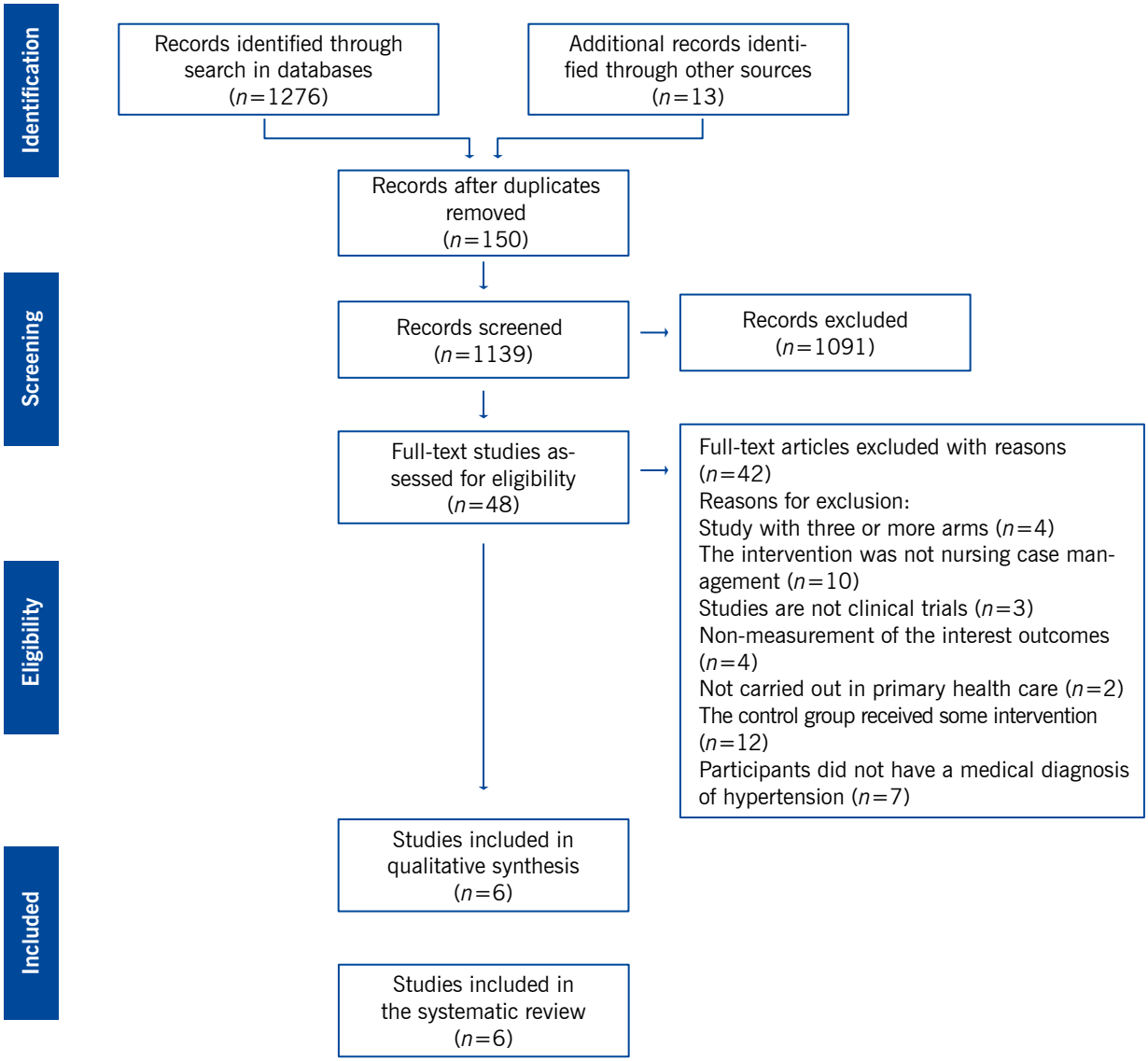

Figure 1. Search results and study selection and inclusion process[22]

Methodological quality. The reviewers, in teams of two, independently assessed the methodological quality. Despite methodological limitations, none of the six studies undergoing critical appraisal were excluded from the review, because all obtained scores above 60% for the evaluated items. Table 1 outlines the critical appraisal scores for the studies. The assessment of evidence quality and the strength of recommendation of the results obtained through the GRADEPro GDT are presented for the main outcomes of interest in this review (SBP and DBP) according to time of follow-up (6 and 12 months). In none of the studies the participants or researchers who performed the intervention were blind to treatment assignment, or this information was not even described. As for the evaluators, only two studies[23,24] report that they were blinded, avoiding detection bias. In one of the articles[25] it was not possible to identify how the allocation of participants was made and in another,[7] this item was not respected. This may be related to the nature of the intervention that did not allow the participant or the nurse to be unaware of the division of the groups. The factors that influenced the reduction of evidence quality were mainly the presence of risk of bias, inconsistency related to high heterogeneity, and imprecision due to the reduced sample.

Table 1. Critical appraisal results of eligible studies

Studies	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Total
Leiva *et al*. 2014[23]	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	11/13
Beune *et al*. 2014[24]	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	11/13
Cicolini *et al*. 2014[6]	Y	Y	Y	U	U	U	Y	Y	Y	U	U	Y	Y	8/13
Dean *et al*. 2014[7]	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	9/13
Guirardo *et al*. 2011[25]	U	U	Y	U	U	U	U	Y	Y	Y	Y	Y	Y	7/13
Tonstad *et al*. 2007[26]	Y	Y	Y	U	N	N	Y	N	N	Y	Y	Y	Y	8/13
%	83.3	66.6	100.0	0.0	0.0	33.3	83.3	83.3	83.3	83.3	83.3	100.0	100.0	

Y = Yes, N = No, U = Unclear. JBI critical appraisal checklist for randomized controlled trials: Q1 = Was true randomization used for assignment of participants to treatment groups?; Q2 = Was allocation to treatment groups concealed?; Q3 = Were treatment groups similar at baseline?; Q4 = Were participants blind to treatment assignment?; Q5 = Were those delivering treatment blind to treatment assignment?; Q6 = Were outcome assessors blind to treatment assignment?; Q7 = Were treatment groups treated identically other than the intervention of interest?; Q8 = Was follow-up complete, and if not, were strategies to address incomplete follow-up utilized?; Q9 = Were participants analyzed in the groups to which they were randomized?; Q10 = Were outcomes

Table 2. Characteristics of the studies included in the sample

Study	Synthesis of intervention	Duration and frequency of intervention	Comparison	Outcomes
Leiva *et al*. 2014[23]	Divided into 5 components: 1 - A motivational interview based on the Health Belief Model; 2 - Reminders to take the medication; 3 - Family support; 4 - Blood pressure measurements and reminders; 5 - simplification of the therapeutic regime.	Duration: 12 months; Follow-up frequency: 1, 3 and 9 months.	Usual care	SBP and DBP BMI Adherence to treatment/lifestyle Cholesterol (total, LDL, HDL)
Beune *et al*. 2014[24]	Usual care plus three counseling sessions using culturally adapted educational materials and, if necessary, referrals to walking clubs and healthy food stores.	Duration: 6 months; Follow-up frequency: 2 weeks, 8 weeks and 20 weeks.	Usual care	SBP and DBP BMI Adherence to treatment/lifestyle
Cicolini *et al*. 2014[6]	Usual care, follow-up visits with nurses, and reminders by email and phone calls.	Duration: 6 months; Follow-up frequency: 1, 3 and 6 months. Every day, participants filled out a self-assessment form for treatment adherence and followed an educational program.	Usual care	SBP and DBP BMI Adherence to treatment/lifestyle Cholesterol (total, LDL, HDL) Triglycerides Smoking Alcohol consumption, fruit and vegetable consumption, salt intake, and physical activity
Dean *et al*. 2014[7]	Medication review, follow-up with motivational interviews where nurses encouraged changes in habits, and phone calls.	Duration: 6 months; Follow-up frequency: monthly.	Usual care	SBP and DBP
Guirardo *et al*. 2011[25]	Four visits adapted according to the needs of the patients. Guidelines were used and leaflets were provided containing information on prescription drugs, dosage and schedule, as well as basic advice on how to maximize treatment schedules.	Duration: 12 months; Follow-up frequency: 1, 3, 6 and 12 months.	Usual care	SBP and DBP BMI Knowledge about hypertension Adherence to treatment/lifestyle
Tonstad *et al*. 2007[26]	Monthly meetings with nurses, promotion of changes in lifestyle based on the behavioral self-management model. Individual guidelines were reinforced every month.	Duration: 6 months; Follow-up frequency: monthly.	Usual care with the primary care physician.	SBP and DBP BMI Abdominal circumference Cholesterol (total, LDL, HDL) Triglycerides Glucose

measured in the same way for treatment groups?; Q11 = Were outcomes measured in a reliable way?; Q12 = Was appropriate statistical analysis used?; Q13 = Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?

Characteristics of included studies. All studies were carried out in primary care centers on the European continent, two in Spain,[23,25] one[24] in the Netherlands, one[6] in Italy and one[7] in England. However, one of them[24] was performed on a specific population of Ghanaians and Surinamese. As for the division by sex, all studies included participants of both sexes in both groups (control and intervention). The average percentage of men in the control groups was 49.7% and in the intervention groups 40.8%. As for age, the participants were aged between 18 and 80 years in two studies,[23,25] between 30 and 69 years in one study,[26] over 18 years in one study,[7] over 20 years in one study[24] and there was no age limit in one study.[6] The mean age per group, but not per sex, could be identified. The mean age of participants was 59.6 years in the intervention group [min 53.3,[24] max 64.5[23]] and 60 years in the control group [min 54.6,[24] max 66.7[23]]. Hypertension was defined in all articles as SBP greater than or equal to 140 mmHg and DBP greater than or equal to 90 mmHg. There was heterogeneity in interventions, frequencies of activities developed, and comparisons. Detailed descriptions of interventions can be seen in Table 2 and a summary of the analyzed outcomes and measurement methods in Table 3.

Table 3. Summary of analyzed outcomes and measurement methods

Outcome	Study	Evaluation mode
SBP and DBP	Cicolini *et al.* 2014[6]; Tonstad *et al.* 2007[26]	The device used for measurement is not described.
	Leiva *et al.* 2014[23]; Beune *et al.* 2014[24]	Automatic device (Omrom-705 IT/Omrom 705 CP)
	Dean *et al.* 2014[7]	Computerized method
	Guirardo *et al.* 2011[25]	Mercury sphygmomanometer (average of two measurements with an interval of 2 minutes).
BMI	Beune *et al.* 2014[24]; Guirardo *et al.* 2011[25]	Weight divided by height in meters
	Cicolini *et al.* 2014[6]	Evaluated through a questionnaire validated during a previous cluster randomized trial
	Tonstad *et al.* 2007[26]	Not described
	Leiva *et al.* 2014[23]	
Knowledge about hypertension	Guirardo *et al.* 2011[25]	Batalla test
Adherence to treatment/lifestyle	Guirardo *et al.* 2011[25]	Haynes-Sackett and Morisky-Green questionnaires
	Cicolini *et al.* 2014[6]; Beune *et al.* 2014[24]	Morisky-Green questionnaire
	Leiva *et al.* 2014[23]	Retrospective evaluation and determination by the ratio between the number of drugs obtained for the period and the number of days evaluated (6 months)
Abdominal circumference	Tonstad *et al.* 2007[26]	Manual
Cholesterol (total, LDL, HDL)	Cicolini *et al.* 2014[6]; Tonstad *et al.* 2007[26]	Blood sample (automated equipment)
	Leiva *et al.* 2014[23]	Form of measurement is not reported, only the parameters used are described.
Triglycerides	Cicolini *et al.* 2014[6]; Tonstad *et al.* 2007[26]	Blood sample (automated equipment)
Glucose	Tonstad *et al.* 2007[26]	Automated equipment (Hitachi 911)
Smoking	Cicolini *et al.* 2014[6]	Evaluation through a questionnaire validated during a previous cluster randomized trial.
Alcohol consumption, fruit and vegetable consumption, salt intake, and realization of physical activity	Cicolini *et al.* 2014[6]	Evaluated through a questionnaire validated during a previous cluster randomized trial.

Review findings

The reading of the selected articles revealed a significant reduction in SBP in two studies,[6,7] and in DBP in three studies [6,7,24] and such reductions were favorable for the intervention group (Table 4). All studies that showed statistical significance were those with a six-month follow-up. Noteworthy is the study by Guirardo *et al*.[25] which did not present the mean values of SBP and DBP at the end of the study, after a 12-month follow-up, showing only the average difference without a significance test. BMI was another outcome analyzed in two studies, as shown in Table 5.

Table 4. Results of studies analyzing SBP and DBP

Study/Groups	Sample	Baseline	End	p-value [a]	Baseline	End	*p*-value
Beune *et al*. 2014[24]		SBP				DBP	
Intervention	71	156.7±12.26	146.8±16.23	0.119[a]	91.02±9.61	85.3±10.93	0.009[a]
Usual care	68	155.2±10.69	148.9±13.25		89.60±9.36	87.9±9.53	
Cicolini *et al*. 2014[6]							
Intervention	100	150±11	135±8	< 0.001[b]	87.5±5.7	76.4±5.8	< 0.001[b]
Usual care	98	153±12	143±6		88.6±2.3	81±3.6	
Dean *et al*. 2014[7]							
Intervention	144	154.2±17.7	142±15.6	0.021[c]	85.6±11.6	79.4±11.1	0.004[c]
Usual care	169	152.9±14.0	146.1±18.9		85.5±1.7	82.6±11.8	
Tonstad *et al*. 2007[26]							
Intervention	29	157±9	147±9	>0.05[c]	94±6	91±8	>0.05[c]
Usual care	16	153±9	143±10		71±10	92±8	
Leiva *et al*. 2014[23]							
Intervention	115	156.3±15.1	151.3±18.3	0.208[c]	84.7±10.7	83.4±11.1	0.405[c]
Usual care	105	155.5±13.4	153.7±16.8		83.6±10.3	83.6±10.3	
Guirardo *et al*. 2011[25]							
Intervention	515	140.9±22.8	-	-	82.5±8.9	-	-
Usual care	481	139.3±17.3	-		82.2±8.8	-	

Note: (a) Linear regression analysis; (b) t-test for normally distributed continuous variables; Kruskal–Wallis test for non-normally distributed continuous variables; (c) t-test

Table 5. Results of studies analyzing BMI, cholesterol and triglyceride levels

Study/Groups	Sample	Baseline	End	*p*-value
BMI				
Cicolini *et al*. 2014[6]				
Intervention	100	29±6.7	26.5±5.1	< 0.001 [a]
Usual care	98	26.5±5.1	27.7±4.6	
Tonstad *et al*. 2007[26]				
Intervention	29	27.7±4	27.9±3.9	>0.05 [b]
Usual care	16	28.6±3.7	29±4	
Cholesterol levels				
Cicolini *et al*. 2014[6]		**Total cholesterol *(mg/dL)***		
Intervention	100	265±64	205±40	< 0.001 [a]
Usual care	98	251±59	218±32	
Tonstad *et al*. 2007[26]		**Total cholesterol *(mmol/l)***		
Intervention	29	6.5	6.3	>0.05 [b]
Usual care	16	6.2	5.9	
Triglyceride levels				
Cicolini *et al*. 2014[6]		**Triglyceride level *(mg/dL)***		
Intervention	100	166±40	142±24	0.12[a]
Usual care	98	177±34	160±37	
Tonstad *et al*. 2007[26]		**Triglyceride level *(mmol/l)***		
Intervention	29	1.97±2.16	1.56±1.40	0.03[b]
Usual care	16	1.93±1.39)	2.08±1.30	

Note: (a) t-test for normally distributed continuous variables; Kruskal–Wallis test for non-normally distributed continuous variables; (b) t-test

In addition to the two studies mentioned above, it was found that three others[23-25] measured BMI values, but did not compare the outcome at baseline and end moments through statistical tests. The study by Guirado *et al.*[25] pointed out the average change between the first and the last measurement, without stating whether the value was significant. Regarding treatment adherence, three studies[6,24,25] evaluated the outcome using the Morisky-Green questionnaire. One of them[6] used only one question of the instrument (Did you take your medication yesterday?) and Guirardo *et al*.[25] also assessed adherence with the Haynes-Sackett questionnaire.

Leiva *et al*.[23] measured adherence by counting medications and not by a specific instrument like the other studies. However, the research did not compare baseline and end values after the intervention. Guirardo *et al*.[25] evaluated adherence to treatment through the percentage of people who were adherent to treatment at the initial visit

and then presented the percentages of adherence changes for both questionnaires (Haynes-Sackett and Morisky-Green) and identified an increase in treatment adherence assessed by the Morisky-Green Test of 9.6% (95% CI: 5.5–13.6) in the intervention group and 8.8 (95% CI: 4.9-12.6) in the usual care group. The studies by Beune *et al*.[24] and Cicolini *et al*.[6] demonstrated an increase in adherence to treatment in both groups. Cicolini *et al*.[6] analyzed adherence by domains, namely: complete adherence to the drug, dose and hours of therapy. There was an improvement in the percentage of adherence to treatment for all domains in both groups.

Beune *et al*.[24] presented the results in terms of averages. Higher scores in the questionnaire indicated greater adherence to treatment. Thus, the average score at baseline was 5.99 in the intervention group, reaching 6.49 at the end of the study, whereas, these values were 5.59 and 6.24, respectively, in the usual care group. The total cholesterol was an outcome assessed and compared in two studies.[6,26] Both showed a reduction in cholesterol levels after a six-month follow-up, with a significant reduction in Cicolini *et al.*[6] (Table 5).
Cicolini *et al.* [6] compared LDL-cholesterol levels and identified a significant reduction in the intervention group by the end of the follow-up when compared to the change that occurred in the usual care group ($p<0.001$). Tonstad *et al.*[26] measured HDL-cholesterol levels and found a reduction, although not significant, in both groups after follow-up.

Leiva *et al*.[23] evaluated total cholesterol only for the the purpose of characterization of the sample at baseline. Two clinical trials[6,26] evaluated triglyceride levels as outcome at the beginning and end of the follow-up; one observed a significant reduction in the intervention group[26] and the other showed a reduction in both groups.[6]

The waist circumference was an outcome assessed by Tonstad *et al.*[26] showing no improvements at the end of the follow-up in either of the groups. This study also evaluated the glucose outcome. It was observed that glucose levels after six months of intervention decreased in the intervention group and increased in the control group, but these differences were not significant. The smoking outcome was assessed in the clinical trial by Cicolini *et al*.[6] There were significant improvements only for the intervention group in the first three months of follow-up, and this difference was confirmed at the end of the six months. Leiva *et al.*[23] evaluated smoking only for baseline sample characterization.

In Cicolini *et al.*[6] fruit consumption and physical activity were evaluated. There was a significant increase of fruit consumption in the intervention group, with a consequent decrease in the percentage of people who had low fruit consumption per day. With regard to physical activity, at the end of the CM actions, a significant increase in the time of physical activity performed by the intervention group was detected. Alcohol and salt consumption was also evaluated in the clinical trial of Cicolini *et al*.[6] A significant decrease in the number of alcohol doses per day consumed by the intervention group was observed at the end of the treatment, but no significant differences in salt consumption were seen. The included studies did not analyze the influence of CM on quality of life, nor the financial implications in relation to usual care.

Discussion

The purpose of this review was to synthesize the best available evidence on the effectiveness of nursing CM in primary health care, compared to usual care, in improving hypertension in hypertensive adults over 18 years of age. The main challenge was related to the type of intervention, which was considered complex because different components were involved. The heterogeneity of the interventions and assessment methods limited

the comparisons of results and demonstrated that there is a variety of possible readings about what it means to be a case manager nurse among hypertensive patients, and what strategies can be used for this purpose.

All studies included in this review[6,7,23-26] applied CM with several activities such as home visits, telephone contact, reminders about the therapeutic regime, motivational interviews, counseling with culturally adapted educational materials, and monthly meetings with nurses. It was found that two studies with duration of six months[6,7] showed a significant reduction in SBP and DBP over time for the intervention group, one of which[6] applied CM through visits for follow-up by nurses, as well as email and phone reminders. Dean *et al*.[7] carried out follow-up by nurses with motivational interviews to encourage changes in habits, phone calls and medication reviews.

Although two studies showed significant results of the intervention in the SBP and DBP outcomes, Beune *et al* [24] reported a greater reduction in blood pressure levels and Tonstad *et al.*[26] demonstrated a similar reduction in SBP. In both studies, a greater reduction in DBP was obtained for the intervention group. According to the GRADE approach for assessing the certainty of evidence, a low degree of certainty was found. This fact was mainly due to the risk of bias,[6,7,24,26] and serious inaccuracy due to the sample size. [24,26] Despite the absence of significant results in the comparison between reductions in blood pressure levels in both groups, the 12-month study of Leiva *et al*.[23] found higher values for the intervention group. However, another study[25] with the same follow-up time found greater reduction in DBP for the intervention group, although SBP was reduced in the control group.

Regarding the quality of the evidence analyzed according to the GRADE approach, it was found that the degree of certainty was low for the SBP outcome due to the risk of bias and inconsistency (heterogeneity above 75%). For the DBP outcome, the degree of certainty was moderate due to the observed risk of bias.

BMI was assessed between the groups in three articles,[6,25,26] with only one of them[6] showing a significant reduction in this outcome for the group followed-up with CM, while the other studies showed an increase in values. Regarding adherence to treatment, although different instruments were used to measure this outcome,[6,24,25] a fact that hinders comparisons, all showed improvement in treatment adherence among people followed-up with CM. Total cholesterol had a significant reduction in the intervention group in the six-month studies.[6,26] As for triglyceride levels, only Tonstad *et al.*[26] reported significant improvement for the group followed-up with CM.

Tonstad *et al.*[26] was the only study assessing waist circumference and glucose, without significant improvements for the intervention group. Although only one of the articles evaluated these two outcomes, both are risk factors for hypertension and must be a target of intervention for primary care nurses to reduce complications related to the disease.

Lifestyle changes such as smoking cessation, increased fruit consumption, realization of physical activity, and decreased salt consumption were assessed by Cicolini *et al*.[6] which obtained significant improvements in all outcomes. It is known that lifestyle changes together with the use of the prescribed therapy are key points for the control of hypertension[1].

The strong point of this review is the inclusion of literature from a wide variety of databases and gray literature, as well as the inclusion of studies published in several languages. The limitations of this review are the heterogeneity of the data and the quality of the articles which prevented a meta-analysis. Although comprehensive, it is possible that smaller potentially eligible studies have been published in different languages and were not captured by the search strategies employed here.

Conclusions. Efectiveness of nursing CM for adults with hypertension treated in primary care was not consistently detected in this review. However, some clinical trials reported positive results in terms of reduced blood pressure, improved treatment adherence, and improved cholesterol levels. The wide variety of actions used in CM, as well as the different ways of measuring the analyzed outcomes, prevented a statistical comparison of studies.

Recommendations for practice. The findings of this review demonstrated with low and very low certainty that case management performed by six months had a positive impact in reducing DBP and SBP respectively. Although there is no high evidence, it is considered that CMs performed in primary health care can assist in the planning of health actions, health promotion activities, disease prevention, reduction of comorbidities, and control of chronic diseases, as for example control of hypertension.

Recommendations for research. Many studies address the importance of monitoring by nurses to reduce pressoric levels, but the methodologies used in the studies do not provide strong evidence to confirm this statement. More randomized clinical trials with methodological quality and expressive samples need to be performed to confirm or refute the effect of case management for people with hypertension in primary care.

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References

1. Malachias MVB, Souza WKSB, Plavnik FL, Rodrigues CIS, Brandão AA, Neves MFT, *et al.* 7th Brazilian Arterial Hypertension Guidelines. Arq Bras Cardiol. 2016; 107(Suppl 3):1–83.
2. World Health Organization (WHO). Noncommunicable diseases country profiles 2018. Geneva: World Health Organization. 2018 [cited 2019 Dec 09]. Avaliable from: https://www.who.int/nmh/publications/ncd-profiles-2018/en/
3. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Departamento de Vigilância de Doenças e Agravos não Transmissíveis e Promoção da Saúde. Vigitel Brasil 2018: vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico. Brasília: Ministério da Saúde. 2019 [cited 2019 Dec 09]. Available from: https://portalarquivos2.saude.gov.br/images/pdf/2019/julho/25/vigitel-brasil-2018.pdf
4. Mendes EV. The care of chronic conditions in primary health care: the imperative of consolidating family health strategy. Brasília: Pan American Health Organization. 2012 [cited 2019 Dec 09]. Available from: http://www.conass.org.br/biblioteca/o-cuidado-das-condicoes-cronicas-na-atencao-primaria-a-saude/
5. Hebert PL, Sisk JE, Tuzzio L, Casabianca JM, Pogue VA, Wang JJ, Chen Y,Cowles C, McLaughlin MA. Nurse-led Disease Management for Hypertension Control in a Diverse Urban Community: a Randomized Trial. J. Gen. Intern. Med. 2012; 27(6):630–9.
6. Cicolini G, Simonetti V, Comparcini D, Celiberti I, Di Nicola M, Capasso LM, *et al*. Efficacy of a nurse-led email reminder program for cardiovascular prevention risk reduction in hypertensive patients: a randomized controlled trial. Int. J. Nurs. Stud. 2014; 51(6):833–43.
7. Dean SC, Kerry SM, Khong TK, Kerry SR, Oakeshott P. Evaluation of a specialist nurse-led hypertension clinic with consultant backup in two inner city general practices: randomized controlled trial. Fam. Pract. 2014; 31(2):172-9.
8. Ozpancar N, Pakyuz SC, Topcu B. Hypertension management: what is the role of case management? Rev. Esc. Enferm. USP. 2017; 51:e03291.
9. Silva ATM, Mantovani MF, Moreira RC, Arthur JP, Souza RM. Nursing case management for people with hypertension in primary health care: A randomized controlled trial. Res. Nurs. Health. 2020; 43(1):68-78.
10. Kim GS, Ko IS, Lee T, Kim EJ. Effects of hypertension management. JPN J. Nurs. Sci. 2014; 11:35-43.
11. İncirkus K, Nahcivan NÖ. A guide for chronic disease management: the chronic care model. F. N. Hem. Derg. 2015; 23(1):66-75.
12. Reynolds, R., Dennis, S., Hasan, I. *et al*. A systematic review of chronic disease management interventions in primary care. BMC Fam. Pract. 2018; 19:11.
13. Morisky DE, Ang A, Krousel-Wood, M, Ward, HJ. Predictive validity of a medication adherence measure in an outpatient setting. J. Clin. Hypertens. 2008; 10(5):348–54.
14. Svarstad BL, Chewning BA, Sleath BL, Claesson C. The Brief Medication Questionnaire: a tool for screening patient adherence and barriers to adherence. Patient Educ. Couns. 1999; 37(2):113–24.
15. Badia X, Roca-Cusachs A, Dalfó A, Gascón G, Abellán J, Lahos R, *et al*. Validation of the short form of the Spanish Hypertension Quality of Life Questionnaire (MINICHAL). Clin. Ther. 2002; 24(12):2137–54.
16. Ware JE, Sherbourne CD. The MOS 36-item short-form health survey (SF36). I. Conceptual framework and item selection. Med Care. 1992; 30(6):473–83.
17. Gonzales RIC, Casarin SNA, Caliri MHL, Sassaki CM, Monroe AA, Villa TCS. Case management: a new focus on health care. Rev Latino-Am Enferm. 2003; 11(2):227–31
18. Tufanaru C, Munn Z, Aromataris E, Campbell J, Hopp L. Chapter 3: Systematic reviews of effectiveness. In: Aromataris E, Munn Z (Editors). Joanna Briggs Institute Reviewer's Manual. The Joanna Briggs Institute, 2017.
19. Mantovani MF, Kalinke LP; Silva ATM, Arthur JP, Radovanovic CAT, Bortolato-Major, C. Effectiveness of case management performed by nurses for blood pressure control in adults with hypertension a systematic review protocol. JBI Database Syst. Rev. Implement. Rep. 2018; 16(9):1889-784.
20. Tufanaru C, Munn Z, Stephenson M, Aromataris E. Fixed or random effects meta-analysis? Common methodological issues in systematic reviews of effectiveness. Int. J. Evid. Based Healthc. 2015; 13(3):196–207

21. Schünemann H, Brożek J, Guyatt G, Oxman A, editor(s). Handbook for grading the quality of evidence and the strength of recommendations using the GRADE approach (updated October 2013). GRADE Working Group; 2013.
22. Moher D, Liberati A, Tetzlaff J, Altman DG. The PRISMA Group Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. J. Clin. Epidemiol. 2009; 62 (10):1006–12.
23. Leiva A, Aguiló A, Fajó-Pascual M, Moreno L, Martín MC, Garcia EM *et al*. Efficacy of a brief multifactorial adherence-based intervention in reducing blood pressure: a randomized clinical trial. Patient Prefer. Adherence. 2014; 8:1683-90.
24. Beune EJAJ, Charante EPM, Beem L, Mohrs J, Agyemang CO, Ogedegbe G *et al*. Culturally adapted hypertension education (CAHE) to improve blood pressure control and treatment adherence in patients of African origin with uncontrolled hypertension: cluster-randomized trial. PLoS One. 2014; 9(3):e90103.
25. Guirardo EA, Ribera EP, Huergo VP, Borras JM, Group., ADIEHTA. Knowledge and adherence to antihypertensive therapy in primary care: results of a randomized trial. Gac. Sanit. 2011; 25(1):62-7.
26. Tonstad S, Alm CS, Sandvik E. Effect of nurse counselling on metabolic risk factors in patients with mild hypertension: a randomised controlled trial. Eur. J. Cardiovasc. Nurs. 2007; 6:160-4.

Fear, Stress, and Knowledge regarding COVID-19 in Nursing Students and Recent Graduates in Mexico

Original article

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Abstract

Objective. The study sought to correlate fear, stress, knowledge regarding COVID-19 in Nursing students and recent graduates in Mexico. **Methods.** Correlational design, sample comprising 912 nursing students and graduates during the last 18 months from public and private universities of Mexico. To measure the variables, the study applied the instrument *Fear of COVID-19 Scale*, knowledge subscale of the scale *Knowledge, attitudes, and practices towards COVID-19*, and the instrument *COVID Stress Scale*. **Results.** Relationship was found of the age variable with fear, danger of contamination, traumatic stress, knowledge and minor socioeconomic consequences ($p<0.05$). Likewise, relationship was observed of fear with stress regarding COVID-19, danger of contamination, socioeconomic consequences, xenophobia, traumatic stress, and

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compulsive checking ($p<0.05$). Stress and knowledge explain the presence of fear regarding COVID-19 in 50.3%, and fear and knowledge explain stress regarding COVID-19 in 50.4%. **Conclusion.** Nursing students and recent graduates have high levels of stress and fear, besides low level of knowledge. The presence of high stress and low knowledge predict fear regarding COVID-19. Interventions are required on knowledge, stress, and fear regarding COVID-19 in the population studied.

Descriptors: fear; stress, psychological; knowledge; students, nursing; nurses; coronavirus infections; pandemics.

Temor, estrés y conocimientos ante el covid-19 en estudiantes y recién egresados de enfermería en México

Resumen

Objetivo. Correlacionar el temor, estrés, conocimientos frente al COVID-19 en estudiantes y recién egresados de enfermería en México**. Métodos.** Diseño correlacional, muestra constituida por 912 estudiantes de enfermería y egresados en los últimos 18 meses de universidades públicas y privadas de México. Para medir las variables se aplicó el instrumento *Fear of COVID-19 Scale*, subescala de conocimientos de la escala *Knowledge, attitudes, and practices towards COVID-19*, y el instrumento *COVID Stress Scale*. **Resultados.** Se encontró relación de la variable edad con temor, peligro de contaminación, estrés traumático, conocimientos y menores consecuencias socioeconómicas ($p<0.05$). De igual forma, se observó relación del temor con estrés ante el COVID-19, peligro de contaminación, consecuencias socioeconómicas, xenofobia, estrés traumático, y comprobación compulsiva ($p<0.05$). El estrés y los conocimientos explican la presencia del temor ante el COVID-19 en un 50.3 %, así como el temor y conocimiento explican el estrés ante el COVID-19 en un 50.4 %. **Conclusión.** Los estudiantes y recién egresados de enfermería tienen altos niveles de estrés y temor, además de bajo nivel de conocimientos. La presencia de alto estrés y bajos conocimientos predicen

el temor ante del COVID-19. Se requieren intervenciones sobre los conocimientos, estrés y temor ante el covid-19 en la población estudiada.

Descriptores: miedo; estrés psicológico; conocimiento; estudiantes de enfermería; enfermeras y enfermeros; infecciones por coronavirus; pandemias.

Medo, estresse e conhecimento do COVID-19 em estudantes e recém-formados em enfermagem no México

Resumo

Objetivo. Correlacionar medo, estresse, conhecimento contra COVID-19 em estudantes e recém-formados em enfermagem no México. **Métodos.** Desenho correlacional, amostra composta por 912 estudantes e graduados de enfermagem nos últimos 18 meses de universidades públicas e privadas do México. Para mensurar as variáveis, foram aplicados o instrumento Escala de Medo do COVID-19, a subescala Conhecimento da escala Conhecimento, atitudes e práticas em relação ao COVID-19 e o instrumento Escala de Estresse COVID. **Resultados.** Foi encontrada relação entre a variável idade e medo, perigo de contaminação, estresse traumático, conhecimento e menores consequências socioeconômicas ($p<0.05$). Da mesma forma, foi observada relação entre medo e estresse frente ao COVID-19, perigo de contaminação, consequências socioeconômicas, xenofobia, estresse traumático e verificação compulsiva ($p<0.05$). O estresse e o conhecimento explicam a presença do medo do COVID-19 em 50.3%, assim como o medo e o conhecimento explicam o estresse do COVID-19 em 50.4%. **Conclusão.** Estudantes de enfermagem e recém-formados apresentam altos níveis de estresse e medo, bem como baixo nível de conhecimento sobre o COVID-19. A presença de alto estresse e baixo conhecimento prediz medo de COVID-19. Se faz necessário intervenções sobre o conhecimento, estresse e medo de covid-19 na população estudada.

Descritores: medo; estresse psicológico; conhecimento; estudantes de enfermagem; enfermeiras e enfermeiros; infecções por coronavirus; pandemias.

Introduction

The SARS-CoV-2 infection evolved into a pandemic of unforeseen dimensions due to its rate of spread, lack of knowledge of its mechanisms of infection and survival, besides the lack of global habits with respect to social distancing. In Mexico, the SARS-CoV-2 infection began with a case imported from Italy in February 2020, a situation upon which the Government of Mexico decreed the health emergency and its consequential measures of containment and mitigation of the spread of the virus. Since the confirmation of the first case and documentation of the first death due to COVID-19 in March 2020, the Mexican population in general began to fear upon this infection, developing behaviors of panic, such as excessive purchases and looting, which, together with the confinement order issued by the National Government, triggered different impacts, among them, affectation and fall of the economy.[1] However, fear regarding COVID-19 is not exclusive of the general population, given that it is a fact that one of the populations most vulnerable to the infection are health professionals, particularly those spending more time in the patient's environment. According to this, Mexico has reported high affectation of health professionals due to COVID-19, with over 2000 infected by 09 May 2020. Added to the figures of infection through COVID-19, complaints are known from staff working in health institutions, which expose the weakened, disorganized, and saturated Mexican health system, as well as the lack of personal preparation to address the pandemic and the lack of access to personal protection elements.[2]

Given the novelty of SARS-CoV-2, the scant information the world still has about its spread, control, and treatment, health professionals in general have situations of fear and stress regarding COVID-19. Fear, as an unpleasant mental state produced by the perception of danger, has been documented in situations of pandemic; particularly in COVID-19, related suicide attempts have been documented.[3] However, in spite of the unpleasantness of the sensation, fear can be a protective factor, given that it moves humans toward prevention behaviors.[4] In turn, stress regarding COVID-19 has been reported in health workers, especially in physicians and nurses of first line of care. Severe stress conditions with repercussion in mental symptoms were reported in a sample of health workers in Europe, observing as associated factors prior mental symptoms and the proximity with infected patients.[5]

The principal causes of stress related with COVID-19 is the sense of danger, the possibility of self-inoculation of the virus, concern for the possibility of infecting relatives, and sleep alterations.[6] Specifically in Nursing, a study conducted in Wuhan, China reported high levels of stress and anxiety, upon which nurses reported as cause, that of having to leave their children alone and the high work load. Said study concluded about the importance of adding evidence in this area, seeking to develop better strategies of emotional containment and support.[7]

Given the critical situation regarding COVID-19, it is imperative to modify knowledge, attitudes, and practices in this context. In this respect, studies of this type have been carried out in health professionals, students and general population. In health professionals, lack of staff training is highlighted regarding the approach and prevention of COVID-19,[8] besides the need to increase knowledge, given that inadequate knowledge was reported by 10% of the professionals studied; attitudes of fear toward the virus, and the need to strengthen infection prevention measures.[9] With respect to students from health sciences, adequate knowledge was reported by 85%, prevention behaviors by 94%, and a perception of moderate risk.[10]

Together with the concerns and uncertainty of the disease, presence of anxiety and fear of contracting COVID-19, epidemiological change still not under control, nursing students have equal concerns on the ambiguity regarding these new roles that can limit the learning opportunities, given the need to consolidate the abilities and skills necessary to permit a transition.[11] According with the aforementioned, the need is observed to enhance evidence available on COVID-19 not only in terms of its genetics, replication, spread and control, but also in terms of matters related with the population confronting it and its consequences on mental health. The purpose of this study was to correlate fear, stress, knowledge with regards to COVID-19 in Nursing students and recent graduates in Mexico.

Methods

This was a correlational, predictive, cross-sectional study conducted during May and June 2020 in Mexico. It used convenience sampling with 912 participants, which corresponded to undergraduate students (n = 711) and recent graduates from the Nursing program within a maximum period of 18 months (n = 201), being 18 years of age or more.

The study was carried out in the southeast, northeast, and central regions of Mexico. The characterization and measurement instruments were delivered via E-mail or shared through social media through Google forms; the average response time for the package of instruments was 30 minutes. The study was approved by the Bioethics Committee of the Faculty of Nursing at Universidad Autónoma de Coahuila with registry number CBFEUSUADEC-IEM2, respecting anonymity and confidentiality by applying the electronic informed consent.

The variables were analyzed with a participant characterization file and three instruments were applied. Permission was obtained from the authors to use the instruments. The instruments were translated into Spanish by an official translator and, thereafter, were adjusted in semantics by the authors to be used within the Mexican context: (i) *Fear of COVID-19 Scale,* this scale is made up of ten items, with one-dimensional behavior in the construct validity, which reported factor loads from 0.66 and above and an item-total correlation > 0.4. In its original version, it reports a Cronbach's alpha of 0.82 and an interclass correlation coefficient of 0.72, which is adequate for its stability. It has a five-point Likert-type response scale, from never to always. The scale was designed to be self or hetero administered and the results indicated that a higher score means greater fear regarding COVID-19;[12] (ii) *COVID Stress Scale*, which measures five dimensions established through confirmatory factor analysis; these being danger regarding COVID-19 and contamination, economic consequences, xenophobia, traumatic stress, and compulsive behavior. Cronbach's Alpha internal consistency was > 0.8 in total and in all dimensions,[13] where a higher score meant greater stress regarding COVID-19; and (iii) *Knowledge, attitudes, and practices towards COVID-19*, which is constituted by 12 questions of which four refer to the clinical aspects of the disease, three are about the transmission mechanisms, and five are about prevention and control mechanisms. The

questions have response options of false, true, and don't know. Likewise, the score of the scale goes up to 12 points, where each question has a value of one point, the result indicates that a higher score means greater knowledge. In its original version, the scale has a Cronbach's alpha of 0.71,[14] however, this study only applied the knowledge subscale.

Moreover, the description of the sample and analysis of the central variables of the study used absolute and relative frequencies for the discrete variables, besides central tendency measurements, dispersion and 95% confidence intervals for continuous variables. Correlations were explored among the continuous variables from Pearson's statistics, with prior compliance of normality requirements. Additionally, the Mann Whitney U was used to identify difference of measurements of stress, fear, and knowledge between groups. The variables included in the regression models were those reporting correlations and those the literature showed as relevant in the analysis.

Results

The study obtained 956 surveys from subjects of which 44 were discarded because they were under age. The sample showed that 78% (n = 711) of the participants were currently studying in the Nursing career and 22% (n = 201) had recently graduated, who were in the social service or had already finished (15.2%) or were within a year from having concluded their studies without having received their title (6.8%). Of all the participants, 33.7% live in Yucatán (southern Mexico), 32.1% of the students live in the state of Coahuila (northern Mexico), 15.2% live in Zacatecas (central Mexico), and the rest is distributed in the rest of the states of the Mexican Republic.

A total of 77.7% of the participants were women and 22.3% were men. The mean age was 21 ±2.25 years. Regarding involvement with COVID-19, only 4.7% of the participants were currently working in an area that cares for these patients and 66.1% of the subjects has taken some course related with prevention, diagnosis and/or treatment of the pathology.

Notably, 92.4% of the students indicated not having manifested symptoms, like coughing, sore throat, fever, or general discomfort in the last 14 days; 14.8% had been in contact with someone classified as suspected of having the disease and 6.6% with someone identified as positive case. With respect to whether the students live with someone considered at risk, it is highlighted that 57.6% indicated living with someone enduring a chronic disease and 35.6% with an elderly adult; 15.4% of the participants reported living with someone who Works directly in a health institution.

In addition, Table 1 identifies the descriptive statistics of the variables, with high scores for fear, stress, and knowledge regarding COVID-19.

Table 1. Descriptive statistics of fear, stress and knowledge regarding COVID-19

Scale / subscales	M	SD	Min	Max	95%CI of the median	
					LL	UL
Fear regarding COVID-19	25.71	6.90	11	50	25.26	26.16
Stress regarding COVID-19	98.22	25.47	37	180	95.57	98.88
Danger of contamination	39.34	10.01	12	60	38.69	39.99
Socioeconomic consequences	18.15	6.24	6	30	17.75	18.56
Xenophobia	17.15	6.35	6	30	16.73	17.56
Traumatic stress	10.68	5.12	6	30	10.35	11.01
Compulsive checking	12.89	4.81	6	30	12.58	13.20
Knowledge regarding COVID-19	8.24	1.04	3	12	8.17	8.31

Note: M = median, SD = Standard deviation, Min = minimum value, Max = maximum value, 95%CI = Confidence interval at 95%, LL = lower limit, UL = upper limit.

Table 2. Correlation of fear, stress, and knowledge regarding COVID-19

Variables	1	2	3	4	5	6	7	8	9
1- Age	1								
2- Fear regarding COVID-19	0.096**	1							
3- Stress regarding COVID-19	0.036	0.684**	1						
4- Danger of contamination	0.101*	0.657**	0.880**	1					
5-Socioeconomic consequences	-0.074*	0.421**	0.780**	0.582**	1				
6- Xenophobia	-0.031	0.652**	0.767**	0.680**	0.595**	1			
7- Traumatic stress	0.074**	0.450**	0.650**	0.503**	0.373**	0.331**	1		
8- Compulsive checking	-0.043	0.450**	0.625**	0.429**	0.394**	0.302**	0.501**	1	
9- Knowledge regarding COVID-19	0.070*	0.019	-0.055	-0.036	-0.085*	-0.080*	-0.003	0.044	1

(*) p <0.05, (**) p <0.001

It was found that fear and stress are different according to sex, being higher in women (p <0.05); with respect to being a student or recent graduate, stress and knowledge were significantly different (p <0.001), with stress being higher in students and recent graduates having greater knowledge. Likewise, it was found that being in contact with a case suspected of COVID-19 has greater knowledge with respect to those who have not has said contact (p <0.05). Similarly, the group of individuals who have taken a course related with COVID-19 has less fear and stress, as well as greater knowledge about the disease (p <0.05).

Table 2 shows the relationships among age, fear, stress, and knowledge regarding COVID-19 and their subscales. Furthermore, it was found that stress and knowledge are predictors of fear regarding COVID-19, as well as fear and knowledge about stress regarding COVID -19 and stress, fear, having been in contact with someone, as well as having taken some course related with the disease are predictors for knowledge regarding COVID-19 (Table 3). Two models contribute to the explained variance of stress and fear regarding COVID-19 with over 50%, and knowledge regarding COVID-19 was explained by 5.1%.

Table 3. Model of prediction factors of stress, fear, and knowledge regarding COVID-19

	Fear					Stress					Knowledge				
	R^2		F		p	R^2		F		p	R^2		F		p
	0.503		130.89		<0.001	0.504		131.24		<0.001	0.051		6.89		<0.001
	B	***TE***	***β***	***t***	***p***	***B***	***TE***	***β***	***t***	***p***	***B***	***TE***	***β***	***T***	***p***
Fear regarding COVID-19						2.60	0.087	0.705	29.92	0.001	0.017	0.007	0.111	2.41	0.016
Stress regarding COVID-19	0.191	0.006	0.706	29.92	0.001						-0.004	0.002	0.091	-1.984	0.048
Knowledge regarding COVID-19	0.384	0.159	0.058	2.41	0.016	-1.16	0.586	-0.048	-1.98	0.048					
Having symptoms of COVID-19 in the last 14 days	0.336	0.623	0.013	0.539	0.590	-0.703	2.29	-0.007	-0.306	0.760	-0.108	0.130	-0.027	-0.829	0.407
Having contact with someone suspected of COVID-19	0.769	0.554	0.040	1.38	0.165	-2.78	2.40	-0.039	-1.36	0.178	0.389	0.115	0.132	3.379	0.001
Having contact with someone diagnosed with COVID-19	-0.601	0.785	-0.022	-0.766	0.444	2.19	2.89	0.021	0.758	0.448	-0.145	0.164	-0.035	-0.888	0.375
Relative health worker	-0.509	0.452	-0.027	-1.12	0.260	2.02	1.66	0.029	1.21	0.224	-0.027	0.094	-0.009	-0.290	0.772
Having taken a course on COVID-19	-0.319	0.350	-0.022	-0.912	0.362	-2.06	1.28	-0.038	-1.60	0.109	0.375	0.072	0.170	5.200	0.000

Note: TE: Typical error; *β:* beta; *F* = Snedecor's F, *t* = Student's t, *p* = significance level

Discussion

The aim of this study was to correlate fear, stress, and knowledge regarding COVID-19 in Nursing students and recent graduates in Mexico. Nursing students in training are confronting diverse educational challenges caused by interrupted studies and modified learning strategies, besides going through situations related with the pandemic that could affect their mental health due to the presence of stress, fear, and poor knowledge about COVID-19. With respect to fear regarding COVID-19, this study obtained a median of 25.7; said result was higher than that reported by Winter *et al*.,[15] and Sakib *et al*.,[16] with a median of 2.75 and M = 18.3, respectively. That fear was greater in contrast with the literature; it could have been generated by uncertainty for students with anguish due to social isolation, anguish due to fear of contracting the disease, and moral anguish as a consequence of seeing death at large scale.[11] However, although the nursing students have knowledge about the disease, fear may be related with the uncertainty of future close contact with patients, lack of knowledge of real settings, and discomfort caused by special protection, upon the suffering and death of critical patients and fear of infecting the family.[17] Stress regarding COVID-19 obtained a median of 98.2, which is higher than that reported by Asmundson *et al.,*[18] with a median of 41.7 and 67.7 in the study by Lakaran *et al.*[19] Presence of a higher median may be related with the sense of security of people in each country, as well as the uncertainty of not having answers about the end of the pandemic, constant exposure to a flow of information on COVID-19 and its effects, and its dissemination in social relations and constant repetition of recommendations and prohibitions, all of which can affect negatively the mental health of the individuals.[18]

Regarding knowledge of COVID-19, the median in this study was 8.24, which is lower than that reported by Zhong *et al.*,[14] Azlan with a median of 10.5[20], and Begum[21] with a median of 10.8. The median was below that of various Asian countries; this indicates the possibility that students do not have appropriate practices to prevent COVID-19, which suggests that programs on health education must improve knowledge on the disease to help to promote an optimistic attitude and maintain safe practices.[22] With respect to the relation of knowledge and stress in our study, no relation was found; this was represented to the contrary by Maarefvand *et al*.,[23] where stress levels were related with preventive knowledge for COVID-19. Likewise, Zhi *et al.,*[24] suggested that stress levels are inversely proportional to knowledge in effective ways of managing the pandemic.

Our study found no relation between fear and knowledge on COVID-19, which was similar to the study by Ali *et al.*[25] In contrast, Hossain *et al.,*[26] reported that with greater knowledge, fear regarding COVID-19 is lower, which could support the hypothesis that lack of knowledge on a specific area could facilitate the construction or ingrained beliefs of myths of such. Thus, knowledge on COVID-19 is a prior requisite to establish prevention beliefs, form positive attitudes, and promote positive behaviors and cognition and the attitudes of people toward the disease affect the effectiveness of their coping strategies and behaviors to a certain extent.[27] Together with the aforementioned, this study found that fear is a predictor of stress regarding COVID-19; these results were similar to those by Bakioğlu[28] and Begum *et al*.[29] This may explain that fear is a strong emotion that affects physical responses, cognitive abilities, and mood of individuals, generating greater concern and further worsening the severity of the situation lived by the person, besides the impact on the mental health of Nursing students and professionals could be severe, given that they experience constant psychological affectation, caused by their work in the first line or worry for an uncertain future in the work environment.

In conclusion, higher scores are noted in the sample in this study than those reported by

studies in other countries for fear and stress regarding COVID-19; as well as lower level of knowledge. Low knowledge and high stress predict high levels of fear regarding COVID-19. Likewise, the high percentage of influence over the variables indicates the need for up-to-date interventions on the pathology and follow up and care of the mental health of students and recent graduates in Mexico.

References

1. Caldera-Villalobos C, Garza-Veloz I, Martínez-Ávila N, Delgado-Enciso I, Ortiz-Castro Y, Cabral-Pacheco GA et al. El desafío de la enfermedad del coronavirus (COVID-19) en México: una reflexión crítica y forzada como individuos y sociedad. Frente a la Salud Pública. 2020; 8:337.
2. Camjhi E. La pandemia golpea a casi 2.000 profesionales de la salud en México. El País; 4 May 2020 [cited 27 Nov 2020]. Available from: https://elpais.com/sociedad/2020-05-04/la-pandemia-golpea-a-casi-2000-profesionales-de-la-salud-en-mexico.html
3. Pakpour AH, Griffiths MD. The fear of COVID-19 and its role in preventive behaviors. J. Concurr. Disord. [nternet]. 2020. [cited 20 Mar 2020]. Available from: http://irep.ntu.ac.uk/id/eprint/39561/
4. Harper CA, Satchell LP, Fido D, Latzman RD. Functional Fear Predicts Public Health Compliance in the COVID-19 Pandemic. Int. J. Ment. Health Addict. [Internet]. 2020 [cited 27 Nov 2020]. Available from: https://doi.org/10.1007/s11469-020-00281-5
5. Bohlken J, Schömig F, Lemke MR, Pumberger M R-HS. COVID-19 Pandemic: Stress Experience of Healthcare Workers - A Short Current Review. Psychiatr. Prax. 2020; 47(4):190-197.
6. Wu W, Zhang Y, Wang P, Zhang L, Wang G, Lei G, et al. Psychological stress of medical staffs during outbreak of COVID-19 and adjustment strategy. J. Med. Virol. [Internet] 2020 [cited 27 Nov 2020]. Available from: https://doi.org/10.1002/jmv.25914
7. Mo Y, Deng L, Zhang L, Lang Q, Liao C, Wang N, et al. Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. J. Nurs. Manag. 2020 [cited 27 Nov 2020]. Available from: https://doi.org/10.1111/jonm.13014
8. Khader Y, Al Nsour M, Al-Batayneh OB, Saadeh R, Bashier H, Alfaqih M, et al. Dentists' Awareness, Perception, and Attitude Regarding COVID-19 and Infection Control: Cross-Sectional Study Among Jordanian Dentists. JMIR Public Health Surveill. 2020; 6(2):e18798.
9. Moro M, Vigezzi G Pietro, Capraro M, Biancardi A, Nizzero P, Signorelli C, et al. 2019-novel coronavirus survey: Knowledge and attitudes of hospital staff of a large Italian teaching hospital. Acta Biomed. 2020; 91:29–34.
10. Taghrir MH, Borazjani R, Shiraly R. COVID-19 and Iranian Medical Students; A Survey on Their Related-Knowledge, Preventive Behaviors and Risk Perception. Arch. Iran Med. 2020; 23(4):249–54.
11. Carolan C, Davies C, Crookes P, McGhee S, Roxburgh M. COVID 19: Disruptive impacts and transformative opportunities in undergraduate nurse education. Nurse Educ. Pract. 2020; 46:102807
12. Kwasi D, Chung-Ying L, Imani V, Saffari M, Griffiths M, Pakpour A. The Fear of COVID-19 Scale: Development and Initial Validation. Int. J. Ment. Health Addict. 2020; 27:1–9.
13. Taylor S, Landry CA, Paluszek MM, Fergus TA, McKay D, Asmundson GJG. Development and initial validation of the COVID Stress Scales. J. Anxiety Disord. 2020; 72:102232.

14. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. Int. J. Biol. Sci. 2020; 16(10):1745–52.
15. Winter T, Riordan BC, Pakpour AH, Griffiths MD, Mason A, Poulgrain JW, et al. Evaluation of the English Version of the Fear of COVID-19 Scale and Its Relationship with Behavior Change and Political Beliefs. Int. J. Ment. Health Addict. 2020;1-11.
16. Sakib N, Bhuiyan AKMI, Hossain S, Al Mamun F, Hosen I, Abdullah AH, et al. Psychometric Validation of the Bangla Fear of COVID-19 Scale: Confirmatory Factor Analysis and Rasch Analysis. Int. J. Ment. Health Addict. 2020;1–12.
17. Huang L, Xu FM, Liu Hong. Emotional responses and coping strategies of nurses and nursing college students during COVID-19 outbreak. PLoS One. 2020; 15(8):e0237303.
18. Trinidad R, Lacaran K. Covid stress predicts depression, anxiety and stress symptoms of Filipino respondents Renz. Res. Bus. Soc. Sci. 2020; 9(4):78–103.
19. Asmundson G, Paluszek MM, Landry CA, Rachor GS, McKay D, Taylor S. Do pre-existing anxiety-related and mood disorders differentially impact COVID-19 stress responses and coping? J. Anxiety Disord. 2020; 74:1–6.
20. Azlan AA, Hamzah MR, Sern TJ, Ayub SH, Mohamad E. Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia. PLoS One. 2020; 15(5):e0233668.
21. Begum F. Knowledge, Attitudes, and Practices towards COVID-19 among B.Sc. Nursing Students in Selected Nursing Institution in Saudi Arabia during COVID-19 Outbreak: An Online Survey Knowledge, Attitudes, and Practices towards COVID-19 among B.Sc. Nursing. Saudi J. Nurs. Health Care. 2020; 3(7):194–8.
22. Afzal MS, Khan A, Qureshi UUR, Saleem S, Saqib MAN, Shabbir RMK, et al. Community-Based Assessment of Knowledge, Attitude, Practices and Risk Factors Regarding COVID-19 Among Pakistanis Residents During a Recent Outbreak: A Cross-Sectional Survey. J Community Health. 2020; 1-11.
23. Maarefvand M, Hosseinzadeh S, Farmani O, Farahani AS, Khubchandani J. Coronavirus outbreak and stress in iranians. Int. J. Environ. Res. Public. Health. 2020;17(12):4441.
24. Zhi X, Lu L, Pu Y, Meng Ai, Zhao Y, Cheng F, et al. Investigation and analysis of psychological stress and professional identity of nursing students during COVID-19 pandemic. Indian. J. Exp. Biol. 2020; 58:426–32.
25. Ali M, Uddin Z, Chanda P, Hegazy F, Zamman S, Mohammed A, et al. Knowledge, attitude, practice and fear of COVID-19: A cross-cultural study. medRxiv. 2020 [cited 27 Nov 2020]. Available from: https://doi.org/10.1101/2020.05.26.20113233
26. Hossain M, Hossarin A, Walton L, Uddin Z, Haque O, Kabir F, et al. Knowledge, Attitudes, and Fear of COVID-19 during the Rapid Rise Period in Bangladesh. medRxiv. 2020 [cited 27 Nov 2020]. Available from: https://doi.org/10.1101/2020.06.17.20133611
27. McEachan R, Taylor N, Harrison R, Lawton R, Gardner P, Conner M. Meta-Analysis of the Reasoned Action Approach (RAA) to Understanding Health Behaviors. Ann. Behav. Med. 2016; 50(4):592–612
28. Bakioğlu F, Korkmaz O, Ercan H. Fear of COVID-19 and Positivity: Mediating Role of Intolerance of Uncertainty, Depression, Anxiety, and Stress. Int. J. Ment. Health Addict. 20201-14.
29. Franco JA, Levi PA. Feelings, Stress, and Adaptation Strategies of Nurses against COVID-19 in Guayaquil. Invest. Educ. Enferm. 2020; 38(3):e07.

Interface between women's health and violence in the training of nurses in Brazil

Original article

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Interface between women's health and violence in the training of nurses in Brazil

Abstrat

Objective. To analyze the theoretical interfaces of violence against women in the nursing undergraduate curricula of public Higher Education Institutions in Brazil. **Methods.** Documentary and descriptive study with a qualitative approach. The documentary search happened through the access to the E-mec website for the identification of public Higher Education Institutions for undergraduate nursing degree in Brazil. The menus available online from educational institutions that contained the terms "woman" and "violence" were analyzed. Data processing took place using the IraMuTeQ software, and they were analyzed using the Descending Hierarchical Classification technique. **Results.** The analysis by the software resulted in an important degree of utilization (72.95%), since, of the 244 segments of texts from the menus, 178 were retained. The analysis by the Descending Hierarchical

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Classification resulted in four thematic categories: Violence against women as a pathological process linked to sexual and reproductive health; Women's Health: Care, epidemiological, social and cultural aspects; Gender as an analytical category; and Children's and Adolescents' Care. **Conclusion.** It was found a connection between the terms "woman" and "violence" to the sexual and reproductive aspects of women (physiological and pathological natures) susceptible to intervention; however, the gender approach is recognized as an analytical category for understanding the vulnerabilities of the female audience to illness and violence.

Descriptors: women's health; women; violence; nursing; nursing education.

Interfaz entre la salud de las mujeres y la violencia en la formación de enfermeros en Brasil

Resumen

Objetivo. Analizar las interfaces teóricas de la violencia contra la mujer en los planes de estudios de pregrado en enfermería de las instituciones públicas de educación superior en Brasil. **Métodos.** Estudio documental descriptivo con abordaje cualitativo. La búsqueda documental se realizó a través del acceso al sitio web E-mec para la identificación de instituciones públicas de educación superior para pregrado en enfermería en Brasil. Se analizaron los menús disponibles en línea de las instituciones educativas que contenían los términos "mujer" y "violencia". El procesamiento de los datos se llevó a cabo mediante el software IraMuTeQ y se analizó mediante la técnica de Clasificación Jerárquica Descendente. **Resultados.** El análisis por el software resultó en un grado importante de utilización (72.95%), ya que, de los 244 segmentos de textos de los menús, se retuvieron 178. El análisis por la Clasificación Jerárquica Descendente mostró cuatro categorías temáticas: violencia contra la mujer como proceso patológico vinculado a la salud sexual y reproductiva; salud de la mujer: aspectos asistenciales, epidemiológicos, sociales y culturales; género como categoría analítica y Atención a la Niñez y Adolescencia. **Conclusión.** Hubo una conexión entre los términos "mujer" y "violencia" con los aspectos sexuales y reproductivos de las mujeres (de naturaleza fisiológica y patológica) sujetas a intervención, sin embargo, el enfoque de género se reconoce

como una categoría analítica para comprender las vulnerabilidades de las mujeres a la enfermedad y la violencia.

Descriptores: salud de la mujer; mujer; violencia; enfermería; educación en enfermería.

Interface entre saúde das mulheres e violência na formação de enfermeiros no Brasil

Resumo

Objetivo. Analisar nos currículos de graduação em enfermagem de Instituições de Ensino Superior públicas no Brasil as interfaces teóricas do tema violência contra as mulheres**. Métodos.** Estudo de análise documental, descritivo, com abordagem qualitativa. A busca documental ocorreu por meio do acesso ao site E-mec para identificação de Instituições de Ensino Superior públicas de graduação em Enfermagem no Brasil. Foram analisadas as ementas disponíveis *online* das instituições de ensino que continham os termos "mulher" e "violência". O processamento dos dados se deu no *software* IraMuTeQ e foram analisados pela técnica de Classificação Hierárquica Descendente. **Resultados.** A análise pelo *software* resultou em importante grau de aproveitamento (72.95%), visto que, dos 244 segmentos de textos oriundos das ementas, foram retidos 178. A análise pela Classificação Hierárquica Descendente resultou em quatro categorias temáticas: Violência contra as mulheres como processo patológico vinculado à saúde sexual e reprodutiva; Saúde das Mulheres: Aspectos assistenciais, epidemiológicos, sociais e culturais; Gênero como categoria analítica e Atenção à Criança e Adolescentes. **Conclusão.** Constatou-se uma conexão dos termos "mulher" e "violência" aos aspectos sexuais e reprodutivos das mulheres (de cunho fisiológico e patológico) passíveis de intervenção, contudo, a abordagem de gênero é reconhecida como categoria analítica para a compreensão das vulnerabilidades do público feminino ao adoecimento e à violência.

Descritores: saúde da mulher; mulheres; violência; enfermagem; educação em enfermagem.

Introduction

The World Health Organization (WHO) conceptualizes violence as acts sparked off by the intentional use of force or power itself or threatening, against itself, another person or group that entails or results in injury, psychological damage, developmental disability, deprivation and death.[1]

This evil is expressed in different ways, especially in vulnerable individuals, who have their social rights limited or services hindered. In this setting, violence against women is inserted, considered a worrying and complex social and public health problem, taking into account the issue of feminicide, the physical disabilities left in women in situations of violence and the psychological problems with disabling potential. According to Law nº 11.340, known as the Maria da Penha Law, Brazil, domestic and family violence against women is configured as any action or omission based on gender that causes death, injury, physical, sexual or psychological suffering, as well as moral or patrimonial damage, within the scope of the domestic unit, within the family and in any intimate relationship of affection, where the perpetrator lives or has lived with the victim, regardless of cohabitation.[2]

This phenomenon is the result of constructs and gender inequalities established in the several institutions and social relationships between the subjects, who end up being responsible for reproducing patriarchal values, where men take up privileged spaces, thus legitimizing and naturalizing violence against women. Gender conceptions imply the superiority of one sex over the other, especially in private spaces, where the exercise of power by men over women is structured; and, although gender relationships have changed over the years, violence against women still persist in society based on this social dynamic of naturalizing sexual differences to justify the roles assigned to each sex.[3]

In the international setting, the indicators of violence against women are worrying. A study conducted by the WHO on estimates of the prevalence of intimate partner violence against women and sexual violence, with global data from 79 countries and two territories, revealed that almost one third (30%) of all women have suffered physical and/or sexual violence by an intimate partner around the world; and, in some regions, this percentage value reaches 38%; 7% of women have already been sexually assaulted by someone who was not their intimate partner and 38% of all murders of women were perpetrated by intimate partners.[4]

In this setting, it should be emphasized that Brazil occupies a worrying level. According to the Atlas of Violence (2020), in the year 2018, 4519 women were murdered in the country, which represents a rate of 4.3 homicides for every 100 thousand women.[5] The same survey points out that, between 2008

and 2018, there was a 4.2% increase in murders of women; and, in some states, the homicide rate in 2018 more than doubled compared to 2008. A survey held by the DataSenado Research Institute, in partnership with the Observatory of Women against Violence in 2017, with 1116 Brazilian women, showed an increase in the percentage of women who declared that they had been victims of some type of violence perpetrated by a man, and that this percentage went from 18% in 2015 to 29% in 2017, where physical violence was the most perpetrated (67%), followed by psychological (47%), moral (36%) and sexual (15%).[6]

In order to reduce this phenomenon and its impacts, important milestones have been consolidated in Brazil. It should be cited the promulgation of the Maria da Penha Law and the establishment of the National Policy to Combat Violence against Women, which aim to reduce the numbers and sequels of violent acts. The Maria da Penha Law establishes mechanisms to suppress domestic and family violence against women, discussing about its typology, integrated prevention measures, assistance to women in situations of domestic and family violence, assistance by police authorities, urgent protective measures, legal assistance and multidisciplinary team care.[2] The National Policy to Combat Violence against Women aims to establish concepts, principles, guidelines and actions to prevent and confront violence against women, as well as assistance and guarantee of rights, in accordance with international human rights standards and instruments and Brazilian legislation.[7] Nevertheless, in order to consolidate these provisions in the face of violence, intersectoral action is necessary, with an important emphasis on the health sector.[2,7]

The Brazilian Ministry of Health (MS, as per its Portuguese acronym), in a Technical Cooperation Agreement with the Ministry of Justice, reinforces that health professionals, being in a strategic position to detect and identify risk factors, should be able to diagnose, treat and contribute to the prevention of violence;[5] and, in this perspective, it is recommended that health professionals are trained to deal with the different forms of manifestation of this evil and the provision of assistance. Accordingly, the importance of having a training that addresses cross-cutting themes focused on the discussion of violence, health and gender in the undergraduate curricula of health professionals should be emphasized. This condition is necessary, since they feel unable to act in the face of the care towards women in situations of violence, with most of them medicalizing the consequences of this evil, neglect of care and breach of confidentiality.[8] This phenomenon is, in part, the result of the lack of a standardized approach to the theme in the training processes of professionals.

In this context, the nursing category is inserted, composed of nurses, nursing technicians and assistants who, together, constitute a high workforce working in the health field in Brazil and inserted in the Brazilian Unified Health System (SUS, as per its Portuguese acronym) and who are often not prepared to face violence against women. A study conducted with 21 primary health care professionals in Rio Grande do Sul, among them nurses, revealed that there are limitations for the identification of violence against women, among them, silencing, denial and non-recognition of the evil, absence of complaints on the part of women, failures and unpreparedness of the health team to act and fear for the presence of the perpetrator.[8] In another study, conducted with 17 nurses who worked in Primary Health Units in a city in the countryside of Rio Grande do Sul, revealed in a context of violence, the professionals point out limitations such as lack of professional training to face the evil, feeling of unpreparedness, lack of time due to the high workload, difficulties to recognize and deal with violence, low performance of the network care and professional powerlessness.[9]

Such data reveal the difficulty of nurses in assisting women in situations of violence and addressing

issues of violence in their daily practices. Thus, the study at stake starts from the following question: does academic training in undergraduate nursing courses in public higher education institutions in Brazil include aspects of the issue of violence against women in their curricular components, in order to recognize and face the problem?

Thus, the aforementioned study aimed to analyze the theoretical interfaces of the issue of violence against women in the nursing undergraduate curricula of public higher education institutions in Brazil. The achievement of this objective will enable the identification of possible gaps and/or strengths of nursing education in this perspective. It should be highlighted that, after identified and corrected possible gaps in this setting, it may contribute to the achievement of the sustainable development goal (SDG) nº 05 – achieving gender equality and empowering all women and girls, listed among the 17 SDGs of the proposed 2030 Agenda by the United Nations.[10] In this sense, actions to reduce/confront violence against women are foreseen, where the systematic integration of the gender perspective in the implementation of the Agenda is crucial. Accordingly, Higher Education Institutions (HEIs) should be committed to responding to the goals of this agenda, through teaching, extension and research actions, since these actions provide the development of qualified human resources for the effective transformation proposed by this agenda.

Methods

Descriptive study, with documentary design and qualitative approach, conducted in the months of September and October 2019, from the survey of public HEIs in Nursing in Brazil, through access to the E-mec website, an electronic system that makes it possible to follow-up the regulation process of HEIs.[11] The search on the aforementioned website happened through the identification of HEIs (and their amount) that included the nursing course and, later, with an online search on the websites of these educational institutions, seeking to identify the existence of Political-Pedagogical Projects (PPP), curricular matrices and course flowcharts. In the study, it was established as a criterion for the inclusion of HEIs the online availability of said materials on institutional websites, excluding HEIs that did not have them on their platforms. After the identification of these documents, those available online were analyzed for the search for subjects that presented the terms "woman" and "violence", and those with the presence of both terms were selected for analysis.

In order to extract data from these menus, the authors adopted an instrument that enabled the apprehension of information regarding the location of HEIs, subject, objectives and content covered. After data extraction, the information was organized in the *LibreOffice Writer* program, version 5.3, where the material was prepared through new readings, corrections and decoding of the fixed variable. The exposed encoding concerns the number of universities where the terms searched were found, as can be mentioned *UNE - 01 (...) (University of Nursing or *Universidade de Enfermagem*). The extracted data related to the characterization of HEIs were tabulated in *Microsoft Office Excel* 2010 spreadsheets and presented under simple descriptive analysis, in absolute and relative numerical values. The processing of the menus was performed using the *Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires* (IRaMuTeQ) program, version 0.7, alpha 2. This free software allows different forms of statistical analysis of texts, produced from documents, among others.[12]

For this study, the Descending Hierarchical Classification (DHC) was used, which divides the corpus into classes, grouping the words according to the greatest association with the class and presenting the percentage of representation in the studied corpus. To that end, the programmatic

content of the menus was processed in IRaMuTeQ. The processing in that program made it possible from the DHC dendrogram to design four thematic categories. With regard to research involving documents/files of institutions and/or secondary databases containing only available and public domain data, that do not identify research participants and the non-involvement of human beings, there is no need for approval from the Research Ethics Committee (CEP, as per its Portuguese acronym) and the National Research Ethics Commission (CONEP, as per its Portuguese acronym).

Results

In order to enable a better understanding, the data analyzed were organized in a table; and from this, the quantitative profile of public HEIs in nursing undergraduate courses was outlined. In this search, the nursing course was active in 87 public HEIs, distributed over 148 campuses; and, of these, 10 contained licentiate courses and 138 bachelor courses, with one course with both modalities, as displayed in Table 1.

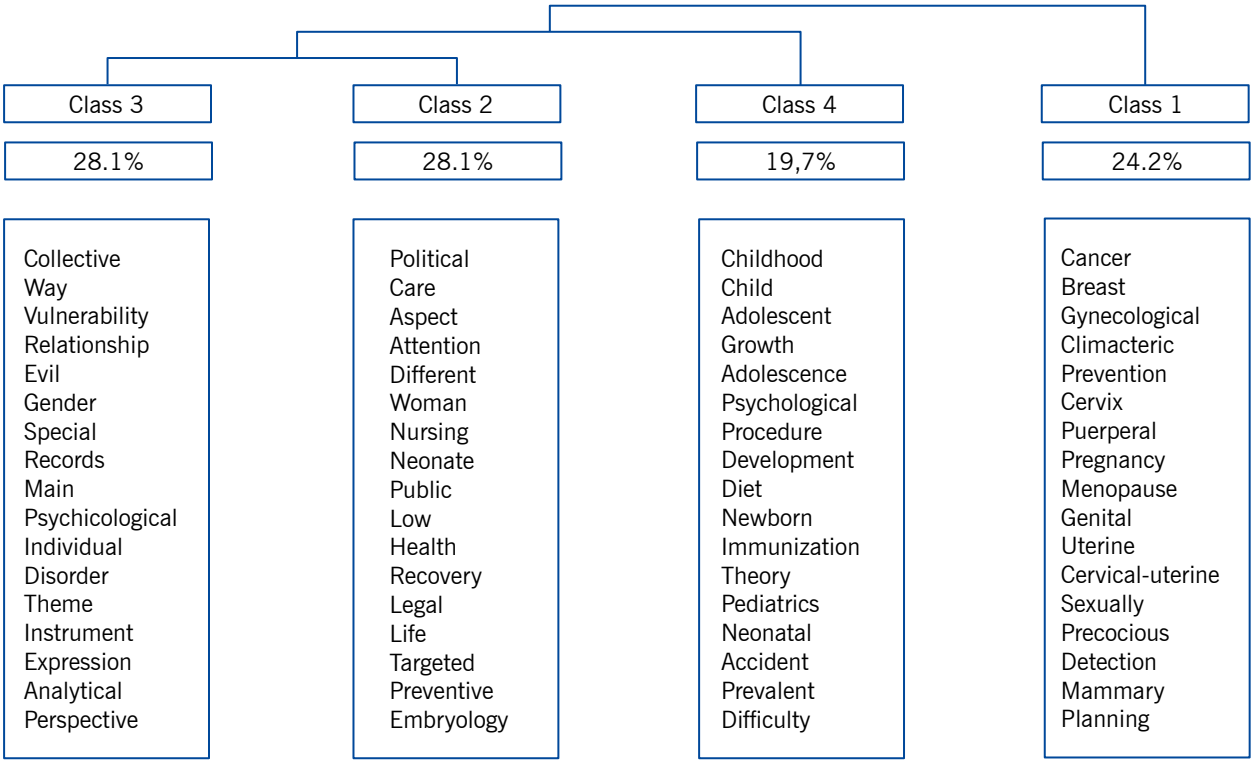
Table 1. HEIs with Nursing courses in available on the E-mec portal. Brazil, 2019

Region	nº HEIs	%	nº of campus	%
Northeast	27	31.0	60	40.5
North	11	12.6	19	12.8
Midwest	8	09.1	18	12.1
South	19	21.8	22	14.8
Southeast	22	25.2	29	19.5
Total	87	100	148	100

The Northeast region of the country has the largest number of public universities with a nursing course, which is also equivalent to the highest number of campuses. PPPs were available online in 73 courses, curriculum matrices in 57 and flowcharts in five. Of this total, 73 subjects were identified with the terms "woman" or "violence", with 63 available online. Of this amount, only 35 together contained the aforementioned terms in their content. At the end of the searches, no material available online was found in 18 institutions. Accordingly, the description of the results presented by IRaMuTeQ was only possible from the processing of the 35 menus of the nursing courses that contained the terms "woman" and "violence". The analysis through the software resulted in a considerable degree of utilization (72.95%); since, of the 244 text segments from the menus, 178 were retained.

The Descending Hierarchical Classification (DHC) for the nursing course divided the textual corpus into four classes, with the words from classes $p<0.0001$. Firstly, the corpus was divided into two subcorpora. In a second moment, there was a new subdivision, and class four was subdivided into classes two and three. The most expressive classes were classes two and three, with 28.2% representation, followed by class one (24.2%) and class four (19.7%), as displayed in Figure 1.

Figure 1. Descending Hierarchical Classification with partitions and corpus content of the research for the Nursing course in Brazil. E-mec, 2019



From the identification of the classes and their prominent words, the qualitative data processing enabled us to extract the way in which the teaching of the themes "women's health" and "violence" happens in the training processes of professional nurses in public HEIs in Brazil, which supported the development of four thematic categories.

Class 1 – Violence against women as a pathological process linked to sexual and reproductive health

In the menus analyzed that make up class 1, it is identified that the presence of the terms "violence" and "women's health" was associated with teaching about nursing care to pathological disorders linked to sexual and reproductive health, with emphasis on the gynecological problems, such as sexually transmitted infections: (...) **prevention** and **treatment** of STIs and **AIDS**, nursing in gynecology, **cervical and breast cancer**, **gynecological**, endocrine and genetic alterations, care towards **women** victims of violence, climacteric **care** (. ..) (UNE_03, Score: 331.46); (...) coping with violence against **women**, implications for **reproductive** health, **gynecological problems**, abdominal and **pelvic** pain, vulvar itching, **genital** discharge, **genital** bleeding, **breast** pain (***mastalgia***), **breast** lump, nipple discharge, dysmenorrhea, **pre-menstrual** and inter-menstrual syndrome, **pelvic** and abdominal tumors (...) (UNE_36, Score 182.02); (...) health-disease process, **gynecological** and **reproductive** health care, sexuality and gender, **climacteric** and **menopause**, **reproductive planning**, violence, nursing **care** systematization, nursing process,

nursing classification systems, **gynecological** consultation, diagnostic support, applied pharmacology (...) (UNE_16, Score: 153.40).

Class 2 – Women's Health: Care, epidemiological, social and cultural aspects

With greater representativeness in this study, class 2 reveals that the teaching of the themes "violence" and "women's health" was associated with the recognition of health determinants and epidemiological aspects related to assistance (care), care protocols and ethical and legal bases of nursing care in the health-disease process, especially sexual and reproductive ones: (...) sexual and **reproductive** rights, violence against **women**, epidemiology, legal **bases** and **assistance (care)**, **health care protocols for women**, **nursing care process** in prevention, promotion and **recovery of women's health** at **different stages of life** (...) **(UNE_09, Score 128: 32);** (...) **legal bases** of **nursing** practice in family planning for **women** and the collective space, emphasis on the social **role** of gender and work, sexual and **reproductive** rights, intra-family violence, **cultural** and **ethical** aspects of care for **women in Brazilian society** (...) **(UNE_31, Score 110.94)**; (...) study of the **epidemiological** and **determining** aspects of the **health-disease** process of women, violence against **women** and maternal mortality, **nursing** actions in the care of **women** in the **reproductive** process and **pre-conceptional** consultations and in gynecological disorders (...) (UNE_07 , Score 106.66); (...) **women's roles in society** and their repercussions on **life** and the **reproductive** process, **determinants** of maternal and perinatal morbidity and mortality, violence against **women**, **female reproductive cycle**, development and hormonal action, pathologies related to the female reproductive system (...) **(UNE_29, Score: 46.17)**.

Class 3 – Gender as an analytical category

Class 3 highlights that the approach between the themes "violence" and "women's health" happened from the recognition of the category related to gender as necessary for the analysis of health determinants. The historical and cultural perceptions of gender issues are outlined in nursing education, being assumed as an analytical category for understanding the vulnerabilities of the female population, with emphasis on violence: (...) **gender and collective health**, **critical** analysis of the **socio-historical construction of gender relationships** in society in **health** and nursing, **gender as an analytical category** for **understanding** power **relationships**, **violence, vulnerability, health needs** and the **health-disease** process (...) **(UNE_25, Score: 178.49);** (...) **vulnerability, gender and violence**, **themes** to talk about in **health**, aiming to **discuss** the **theoretical constructions** of **violence, vulnerability and gender**, thus seeking to dialogue with the **health field**, **especially** with the assumptions of family **health** (...) (**UNE_26, Score: 84.23);** (...) society, **health and violence**, human rights and **health**, **expressions** of **violence** in society, culture, gender, **race** and ethnicity, **repercussions** of **violence** on health in daily life, **needs** and possibilities for **professional intervention** in cases of **violence** (...) **(UNE_28, Score: 66.43).**

Class 4 – Children's and Adolescents' Care

In the last category, referring to class 4, with less representation in this study, it is clear that the teaching of the themes "violence" and "women's health" happened through discussions regarding vulnerabilities to evils, focusing on children and adolescents: (...) **growth** and **development**, **physical, biological** and **psychosocial characteristics**, sexual development, **psychological** approach of **children** and **adolescents**, nursing consultation for **children** and **adolescents**, **pregnancy during adolescence**, **accidents** and violence during **childhood** and **adolescence (...)** (UNE_05, Score: 331: 46); (...) nursing consultation for **children** and **adolescents**, **pregnancy during adolescence**, **accidents** and violence during **childhood** and **adolescence**, **illegal drugs**, **hospitalized children**

and adolescents, nursing **procedures**, **high-risk newborns** (...) (UNE_12, Score: 303.06); (...) process of caring for **newborns**, breastfeeding and **child nutrition**, domestic violence during **childhood** and **adolescence**, **child growth**, **child development**, aspects of vaccination in the health of **children** and **adolescents** (...) (UNE_34, Score: 284.67).

Discussion

The acquisition of skills/abilities by students in the health area during academic training is reflected in qualified professional profiles and sensitive to the population's health-disease process. Thus, students in this area need to be trained to deal with the specificities and demands of different social segments, among which the female audience stands out. National Health Survey held by the Brazilian Institute of Geography and Statistics in 2013, in Brazil, revealed that, in view of the demand for health services, women are the majority,[13] in part, as a result of the historical and cultural socialization of care for the other and yourself due to gender issues.

Given this reality, which demonstrates that women constitute the largest number of users of health services, as well as being more susceptible to certain evils, such as violence, due to gender issues, it should be emphasized the university's commitment and responsibility to provide an academic education contemplating the specificities of this audience and the approach of transversal themes, among them, violence, gender and sexuality in health courses, such as nursing. Thus, in view of the analysis of the menus available online that contained the terms together "woman" and "violence", the low amount of available materials stands out, although regulatory guidelines reinforce just the contrary. In Brazil, Decree nº 9.235, dated December 25th, 2017, provides for the exercise of the functions of regulation, supervision and evaluation of higher education institutions;[14] and, in its sole paragraph, establishes that it will be up to HEIs to disseminate their institutional acts, courses and pedagogical documents to students, under the terms of article 47 of Law nº 9.394, dated 1996.

Although in view of the difficulty of providing educational materials by HEIs, compared to the material analyzed, there is an approach to violence against women in association with the pathological conditions of the sexual and reproductive system and its implications on this, signalizing a type of nursing care directed to the resolution of problems susceptible to a specific and biologicist intervention, as shown in class 1 of this study. As for class 2, the approach of aspects related to the determinants of the health-disease process is highlighted, which increase vulnerabilities to illness in women, especially those associated with sexual and reproductive health, with the inclusion of the term "violence against women" presented as a topic resulting from cultural aspects (gender) and responsible for illness, mainly in the sexual and reproductive dimension. In this sense, nursing care is directed in order to avoid further complications; and, for this purpose, in addition to teaching care protocols, cultural, ethical and legal aspects should be addressed.

With regard to class 3, the menus discuss gender from a historical and social perspective, associating the concept as a factor responsible for female vulnerability to illness and forms of discrimination, oppression and violence, both symbolic and material, thus providing a new reading scheme of social phenomena, which implies greater possibilities of professional intervention in the health field, with greater emphasis on the fields of collective health/family health. Finally, in class 4, it is noted that aspects referring to nursing care for children and adolescents stand out, especially focused on the milestones of biopsychosocial growth and development and its most frequent evils, considering the adolescent's health, the approach, in most cases, aimed at the female audience, which is more susceptible to violations

of sexual and reproductive rights and, therefore, more susceptible to complications, such as violence and pregnancies.

Accordingly, in general, nursing approaches stand out in the issues related to women's sexual/reproductive health, followed by the performance of nursing professionals in the face of physiological and pathological aspects in life cycles. It is noteworthy that this evidence is also found in other pertinent literature. A review study, complemented by interviews with health professionals, revealed that the care for women is still reduced to narratives guided by biological-clinical and technical-scientific aspects, thus legitimating the health professional as the authority in guiding and directing care over the female body and establishing its conception as true by disregarding women's autonomy and knowledge.[15]

Despite the approach directed to physiological and pathological aspects, the teaching of ethical and legal aspects of nursing professionals and the duties of nurses in the care of women also stand out with a focus on social determinants for understanding the health-disease process. In this sense, in order to enable future professionals to provide nursing care including the guidelines of the National Policy for Comprehensive Care for Women's Health[16] (PNAISM, as per its Portuguese acronym), it appears that the nursing courses that have been analyzed seek to guarantee qualification of future nurses through the approach/teaching of themes that corroborate with the policy guidelines, with the epidemiological profile of the evils, as well as with the responses to the 2030 Agenda – of the Sustainable Development Goals.

PNAISM consolidates the fields of women's sexual and reproductive rights, with emphasis on improving obstetric care, family planning, care for unsafe abortion and fight against domestic and sexual violence. This policy was formulated based on the evaluation and gaps of the predecessors as assistance (care) to women in climacteric/menopause; gynecological complaints; infertility and assisted reproduction; women's health during adolescence; chronic-degenerative diseases; occupational health; mental health; infectious-contagious diseases and care towards rural, disabled, black, indigenous, prisoners and lesbian women.[16] Taking into consideration PNAISM care objectives, it can be noticed that, although teaching and assistance to women's health in higher nursing courses are mostly focused on sexual and reproductive physiological and pathological processes, when the approach to the "violence against women" is analyzed, the discussion on gender issues in the sexual and reproductive care of this audience is inferred. Addressing gender issues in PNAISM implies taking as a reference the patterns of life through which men and women relate in their daily lives as a result of a social/cultural determination, which affects the health-disease-care process of women.[16]

This approach stands out in class 3 of this study, by understanding gender as an analytical category that implies the determination of worsening and vulnerabilities of women to illness. Recognizing gender, class and race/ethnicity inequalities as social determinants of feminine illness and vulnerability to violence, allows us to think about public policies in the dimension of collective health, as well as promotion and quality of life. In the face of nursing education, the recognition of gender issues implies the training of professionals capable of understanding that power relationships and their social manifestations interfere with the health-disease process of the female audience, thus exacerbating social inequities and increasing the susceptibility of this population to physical and mental illness and other evils, such as violence.

Gender-based violence is present in the culture of all countries, regardless of their degree of development, and is expressed to a greater or lesser extent. Culturally, it is reproduced through ill-considered, historically and socially learned behaviors in social institutions such as the

Church, school, family and the State, which directly contribute to male sovereignty and female oppression.[17] Historically, it can be argued that women have been socially oppressed according to the impositions of gender[3] that are maintained by social institutions contributing to disseminate the idea that the female gender is inferior and endowed only with protective instincts. Addressing gender issues in curricula still implies a potential reduction in the number of cases of institutional violence in health services targeted at women, often perpetrated by health professionals and materialized in the face of disregarded and medicalized complaints from women who suffer domestic/inter-personal violence and obstetric violence.

It is known that cases of institutional violence can drive women away from the health services in violent situations, which makes it difficult to intervene early in the face of the phenomenon and reduce its sequels. In most cases, when seeking assistance in health services, women in violent situations go to hospital institutions, due to their physical impairments; however, this service is often considered a gateway to the health system for meeting cases resulting from the evil in question.

In a study[18] that evaluated the low number of reported cases of violence by the Family Health Strategy (ESF, as per its Portuguese acronym), it was noted that these rates are justified by the unpreparedness of professionals in the recognition of the evil. In Greater São Paulo, a study conducted in 19 health services revealed that only 3.8% showed records of the situation of violence suffered by women in a total of 3,193 medical records analyzed. This absence of records demonstrates the invisibility and non-recognition of violence as an object of intervention in the health field.[19] Corroborating this reality, another study[20] with 42 professionals (nursing technicians, nurses and physicians) conducted in a municipality of the state of Santa Catarina, Brazil, revealed that the deficit of professional preparation, either during undergraduate courses or in health services, leads, many times, to a superficial reception with unqualified assistance (care) to women in situations of violence. Moreover, the absence of holistic attention in the care of women in situations of violence implies the non-recognition of factors associated with the occurrence of violence and its consequences, with capillarization to the family, following the example of the offspring. Nonetheless, despite its weaknesses, the health sector has great potential for addressing violence, since, in these services, the performance of professionals is decisive and can contribute to the identification of this evil, as well as offering prevention, attention and development of studies in face of the problem.

In fact, the sequels of violence against women are not restricted only to women, but they gain capillarity within the family scope, and perhaps this condition can justify the identification of the approach of the term "violence" associated with other phases of the life cycle, with emphasis on children's and adolescent's health. A study[21] conducted with 239 adolescents from a public school in a peripheral neighborhood of the city of Salvador, Bahia, when analyzing the prevalence and factors associated with violence in this audience, pointed out that the prevalence of intra-family violence among students was 60.67%.

In this age group, another factor that justifies addressing the term "violence" is the greater susceptibility that children and adolescents have in relation to victimization. Given its peculiar stage of development, this audience is pointed out as more vulnerable to the evil, especially in the face of lower socioeconomic levels and when individuals are female.[22] In face of the latter, about 40 million children and adolescents, mainly girls, suffer sexual abuse annually.[23]

In Brazil, sexual violence occupies the second highest type of violence among individuals in the 10-14 age group, with physical violence in first place.[24] This is a form of violence that is not fully

recognized as a public health problem and requires strategies by governments for identification and reporting, since most abused adolescents within families are at high risk of developing a series of disorders[24] Thus, in face of the complexity of violence and its implications, a discussion and reflection on this issue is required in the training of future health professionals; and, in face of nursing, the need to sensitize this group to an ethical, moral and legal performance. Especially in the face of adolescence, the recognition of the approach of this phenomenon in the menus directs the future nursing professionals for early interventions, with high potential for reduction of sequels and consequences of violence both now and in the future. It is reinforced that the precocious contact with professionals and health services is indispensable for an agile and efficient approach in the reception and management of this demand and technical standards of MS and of the board councils that orient professionals and regulate ethical, legal and moral standards for nursing performance in the face of this evil.

In addition to the guaranteed care, the legal conducts indicate that it is the duty of the health professional to notify confirmed or suspected cases of violence. The pertinent literature has attributed the underreporting of violence to the lack of knowledge on the part of health professionals about their legal responsibility. Although it is a compulsory notification event, a study[25] points out that, even in face of the obligation to register the phenomenon, such procedure is still invisible in the routine of health professionals, where under-notification is correlated to the absence of technical and scientific information on the subject, as well as factors such as lack of knowledge about the obligation of notification, fear of reprisals from the perpetrator, embarrassment to question details of the violence or trivialization of facts.

Facing this scenario and the obligation of all health services to provide qualified care to women in situations of violence, the context imposes broad debates on the proposal to institute the nurse's role in the curricula, in order to cope with the phenomenon. Therefore, it is crucial for HEIs to insert aspects aimed at teaching violence against women in their training processes, for its recognition and confrontation with the purpose of its prevention, fostered by the collaboration among academic communities and practices among university students, teachers and professionals.

As final considerations, violence against women is a public health issue and, therefore, it is necessary to work on this issue during professional training in health, with emphasis on nursing staff, the largest health professional body in Brazil, so that the confrontation of this evil can imply the prevention and reduction of its indicators. Thus, during the analysis of the presence of the terms "woman" and "violence" on the menus obtained from nursing undergraduate courses, it was found, in most cases, a connection between these terms and the sexual and reproductive aspects of women (physiological and pathological) that can be addressed, although the gender approach is recognized as an analytical category for understanding the vulnerabilities of the female audience to illness and violence.

Furthermore, the study allowed the identification of gaps in nursing education in the face of violence perpetrated against the feminine audience, since it was not identified the approach of themes related to the network of confrontation of the violence against women, itineraries in search of assistance and critical routes of women in situations of violence, for example, in the material analyzed. These are important contributions of the research, which may be discussed and analyzed by the academic community with the purpose of changing this scenario.

Although important, this study has shown limitations, where the lack of online material from HEIs is the main one. It is clear that the limitation of full access to documents that support teaching in undergraduate nursing courses make it difficult to conduct research that seeks, in documents of

these institutions, responses to social questions. Although we are aware of this limitation, this work was intended to raise awareness for the promotion of discussions that may corroborate with a humanized practice in health services and promote qualified assistance (care) to women in situations of violence. Moreover, it is suggested the importance of going ahead in this research *in locus* in HEIs, as well as deepening the study and the information provided by students and teachers.

References

1. Organização Mundial da Saúde. Relatório mundial sobre violência e saúde [Internet]. Genebra: OMS. 2002 [cited 07 Jan 2020]. Available from: https://opas.org.br/wp-content/uploads/2015/09/relatorio-mundial-violencia-saude.pdf.
2. Brasil. Lei 11.340 de 07 de Agosto de 2006 [Internet]. 2016 [cited 02 Dec 2020]. Available from: http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2006/lei/l11340.htm
3. Oliveira RNG, Fonseca RMGS. Violence as a research object and intervention in the health Feld: an analysis from the production of the Research Group on Gender, Health and Nursing. Rev. Esc. Enferm. USP. 2014; 48(2):31-8.
4. World Health Organization. Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence [Internet]. Geneve: WHO; 2013 [cited 04 Dec 2020]. Available from: https://apps.who.int/iris/bitstream/handle/10665/85239/9789241564625_eng.pdf;jsessionid=F0B2F121FE991C1A6B0124218AC6686B?sequence=1
5. Cerqueira D, Bueno S, Alves PP, Lima RS, Silva ERA, Ferreira H, et al. Atlas da Violência 2020 [Internet]. IPEA, 2020 [cited 03 Dec 2020]. Available from: https://forumseguranca.org.br/wp-content/uploads/2020/08/atlas-da-violencia-2020.pdf
6. Brasil. Senado Federal. Instituto de Pesquisa DataSenado. Observatório da Mulher contra a Violência. Secretaria da Transparência. Violência doméstica e familiar contra a mulher. Pesquisa DataSenado. Senado Federal, 2017; 01-80.
7. Brasil. Política Nacional de Enfrentamento a violência contra as mulheres [Internte]. Brasília, 2011 [cited 05 Dec 2019]. Available from: https://www12.senado.leg.br/institucional/omv/entenda-a-violencia/pdfs/politica-nacional-de-enfrentamento-a-violencia-contra-as-mulheres
8. Arboit J, Padoin SML. Violência contra a mulher na Atenção Básica à Saúde: potencialidades e limitações à identificação. Rev. Atención Primária. 2020; 52(1):14-21.
9. Visentin F, Vieira LB, Trevisan I, Lorenzini E, Silva EF. Enfermagem na atenção primária à mulher em situação de violência de gênero. Invest. Educ. Enferm. 2015; 33 3):556-64.
10. Brasil. Ministério das Relações Exteriores do Brasil. Transformando Nosso Mundo: a Agenda 2030 para o Desenvolvimento Sustentável [Internet]. Brasília, 2016 [cited 02 Dec 2020]. Available from: https://brasilnaagenda2030.files.wordpress.com/2015/08/odstraduzidos.pdf
11. Brasil. Cadastro Nacional de Cursos e Instituições de Ensino Superior Cadastro e- MEC [Internet]. 2019. [cited 20 Feb 2019]. Available from: https://emec.mec.gov.br/emec/nova
12. Camargo BV, Justo AM. IRAMUTEQ: um software gratuito para análise de dados textuais. Temas Psicol. 2013; 21(2):513-18.
13. Pesquisa Nacional de Saúde: acesso e utilização dos serviços de saúde, acidentes e violências: Brasil, grandes regiões e unidades da federação [Internet]. Rio de Janeiro; 2015 [cited 28 Nov 2019]. Available from: https://biblioteca.ibge.gov.br/visualizacao/livros/liv94074.pdf
14. Lei do exercício das funções de regulação, supervisão e avaliação das instituições de educação superior e dos cursos superiores de graduação e de pós-graduação no sistema federal de ensino/Decreto Nº 9.235, de 15 de dezembro de 2017 [Internet]; 2017 [cited 15 Nov 2019]. Available from: http://www.planalto.gov.br/ccivil_03/_Ato2015-2018/2017/Decreto/D9235.htm

15. Silva EA, Urasaki MBM, Flores QRS. Concepções de cuidado e relações de poder na saúde da mulher. Rev. Família, Ciclos de Vida e Saúde no Contexto Social. 2018; 6(1):63-71.
16. Ministério da Saúde. Política Nacional de Atenção Integral à Saúde da Mulher: Princípios e diretrizes [Internet]. Brasília; 2004 [cited 02 Nov 2019]. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/politica_nac_atencao_mulher.pdf
17. Balestero GS, Gomes RN. Violência de gênero: uma análise crítica da dominação masculina. Ver. CEJ. 2015; 66:44-49.
18. Cordeiro KCC, Santos RM, Gomes NP, Melo DS, Mota RS, Couto TM et al. Formação Profissional e Notificação da Violência contra a Mulher. Rev. Baiana Enferm. 2015; 29(3):209-17.
19. Schraiber LB, D'Oliveira AFPL, Couto MT, Hanada H, Kiss LB, Durand JG et al. Violência contra mulheres entre usuárias de serviços públicos de saúde da Grande São Paulo. Rev. Saúde Pública. 2007; 41(3):359-67.
20. Gomes NP, Erdmann AL, Bettinelli LA, Higashi GDC, Carneiro JB, Diniz NMF et al. Significado da capacitação profissional para o cuidado da mulher vítima de violência conjugal. Esc. Anna Nery. 2013; 17(4):683-9.
21. Mota RS, Gomes NP, Estrela FM, Silva MA, Santana JD, Campos LM, Cordeiro KCC et al. Prevalência e fatores associados à violência intrafamiliar por adolescentes escolares**.** Rev. Bras. Enferm. 2018; 71(3):1086-91.
22. Moreira KFA, Oliveira DM, Oliveira CAB, Alencar LN, Orfão NH, Farias ES et al. Perfil das crianças e adolescentes vítimas de violência. Rev. Enfermagem UFPE. 2017; 11(11):4410-7.
23. Santos MJ, Mascarenhas MDM, Rodrigues MTP, Monteiro RA. Caracterização da violência sexual contra crianças e adolescentes na escola – Brasil, 2010-2014. Epidemiol. Serv. Saúde. 2018; 27(2):1-10.
24. Fontes LFC, Conceição OC, MAchado S. Violência sexual na adolescência, perfil da vítima e impactos sobre a saúde mental. Ciênc. Saúde Coletiva. 2018; 22(9):2919-28.
25. Garbin CAS, Dias IA, Rovida TAS, Garbin AJI. Desafios do profissional de saúde na notificação da violência: obrigatoriedade, efetivação e encaminhamento. Ciênc. Saúde Coletiva. 2015; 20(6):1879-90.

Institutionalized elderly: vulnerabilities and strategies to cope with Covid-19 in Brazil

Reflection Article

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Institutionalized elderly: vulnerabilities and strategies to cope with Covid-19 in Brazil

Abstract

This article presents a systematized reflection and discussion around two guiding axes: the first discusses aging and vulnerabilities to biological, physical, cognitive, social and affective losses that require specific attention, as well as vulnerabilities to COVID-19 to which institutionalized elderly people are exposed; the second, we reflect on the adoption of restrictive and protective measures to prevent the spread of the virus, aiming to keep the elder health and mitigate the effects of the pandemic. The conclusion is that the pandemic has increased the many vulnerabilities to which institutionalized older people were already exposed, adding vulnerability to a new disease, such as COVID-19, due to its high lethality and comorbidity, aggravated by precariousness of long-term Brazilian institutions due to the negligence of public authorities, civil society, the

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management of the institution and the families of the patients. The post-pandemic scenario will require collective efforts to protect and ensure the survival of the elderly living in those residences.

Descriptors: coronavirus infections; institutionalization; elderly.

Ancianos institucionalizados: vulnerabilidades y estrategias de enfrentamiento al COVID-19 en Brasil

Resumen

Este artículo presenta una reflexión y discusión sistematizada en torno a dos ejes orientadores: en el primero, se habla sobre el envejecimiento y las vulnerabilidades a las pérdidas biológicas, físicas, cognitivas, sociales y afectivas que requieren atención específica, y, así mismo, sobre las vulnerabilidades a COVID-19 a las que están expuestos los ancianos institucionalizados; en el segundo eje, se reflexiona sobre la adopción de medidas restrictivas y de protección para prevenir la propagación del virus con el objetivo de mantener la salud del anciano y mitigar los efectos de la pandemia. La conclusión es que esta ha incrementado las numerosas vulnerabilidades a las que ya estaban expuestas las personas mayores institucionalizadas, agregando, además, la vulnerabilidad a una enfermedad nueva como es el COVID-19, debido a la alta letalidad y comorbilidad que representa, la cual, es agravada por la precariedad de las instituciones brasileñas de larga estancia debido a la negligencia de las autoridades públicas, la sociedad civil, la gerencia de la institución y las familias de los pacientes. El escenario post-pandemia requerirá esfuerzos colectivos

para proteger y garantizar la supervivencia de los ancianos que viven en estas residencias.

Descriptores: infecciones por coronavirus; institucionalización; anciano.

Idosos institucionalizados: vulnerabilidades e estratégias de enfrentamento à COVID-19 em Brasil

Resumo

Este artigo apresenta uma reflexão sistematizada e discussão em torno de dois eixos orientadores: o primeiro discute o envelhecimento e vulnerabilidades a perdas biológicas, físicas, cognitivas, sociais e afetivas que requerem atenção específica, bem como vulnerabilidades à COVID-19 a que os idosos institucionalizados são expostos; e na segunda, refletimos sobre a adoção de medidas restritivas e protetivas para prevenir a propagação do vírus, com o objetivo de manter a saúde dos idosos e mitigar os efeitos da pandemia. A conclusão é que a pandemia aumentou as muitas vulnerabilidades às quais os idosos institucionalizados já estavam expostos, agregando vulnerabilidade a uma nova doença, como a COVID-19, devido à alta letalidade e comorbidade que representa, agravada pela precariedade das instituições brasileiras de longo prazo devido à negligência do poder público, da sociedade civil, da gestão da instituição e das famílias dos pacientes. O cenário pós-pandemia exigirá esforços coletivos para proteger e garantir a sobrevivência dos idosos que vivem nessas residências.

Descritores: infecções por coronavírus; institucionalização; idoso.

Introduction

Since the new coronavirus, named SARS-CoV-2, appeared and spread on all continents, the world has started a race to know and control the disease that causes COVID-19 and that has caused widespread fear in people and crises in several segments, especially sanitary. This disease has a wide clinical spectrum ranging from asymptomatic infections to severe conditions, as it is rapidly spread and potentially fatal, it represents the most important worldwide public health problem in the last 100 years.[1] The risk of dying from COVID-19 increases with age and the presence of comorbidities, since most deaths occur in the elderly, especially those with chronic diseases.

Until September 5, 2020, at the end of Epidemiological Week number 36, 4,123,000 cases and 126,203 deaths in the general population were confirmed in Brazil, of which 75% of the victims were elderly, thus showing that the risk of death from the disease increases with advancing age.[2,3] Elderly people affected by COVID-19, who have geriatric syndromes and/or other diseases, may suffer a weakening process that leads to physical-cognitive dependence. Consequently, there is a need for these elderly people to be cared for by third parties, who may be partners, children or another family member and, at this moment, difficulties may arise due to the lack of financial or environmental conditions to subsidize care. Thus, the Long Term Care Facilities (LTCF) appear, as an alternative to guarantee basic care to this population.[4]

LTCF in the Brazilian context are governmental or non-governmental institutions, of a residential nature, intended for the collective home of elderly people with or without family support, under conditions of freedom, dignity and citizenship.[5] The main advantages are to protect elderly people who suffer abuse or other violence at home, supporting them in a safe place, with basic health care and providing conditions to keep them alive, with food, housing and a hygienic environment.[6] As disadvantage, institutionalization generates social exclusion for the elderly and creates barriers for the establishment of strengthened human relationships, which promotes consequences for the organism as a whole, such as the development or enhancement of muscle weakness, cognitive impairment, aggravation of non-communicable disease, excessive sadness that can lead to depression, loss of communication skills, among others[7] Thus, this process of losses and gains affects the elderly in different ways and depends on culture, socioeconomic factors, family and social support networks, as well as the facilities and difficulties that the elderly person faced throughout of life.[6]

In Brazil, a census conducted by the Institute of Applied Economic Research (IPEA) in 2011, indicated the existence of about 90 thousand elderly

people living in 3,600 institutions in Brazil, corresponding, at the time, to almost 1% of the country's elderly population, being that the majority of these ILPIs (65%) were philanthropic.[8] Then there are the private ones, which represent 28.2% of the total of institutions.[9] In a national survey conducted between 2016 and 2018, it was identified that approximately 51 thousand elderly people lived in public and philanthropic institutions in the country, 65% of which were semi-dependent or dependent and, therefore, fragile; In 2020, that number seems to be around 78 thousand elderly people.[2]

Most elderly people living in these places have basic conditions for survival, access to health services/resources and a place to live until finitude arrives. Thus, given the peculiarities surrounding the institutionalization process, the repercussions of this process on the physical and mental health of the elderly, the pandemic of the new coronavirus and the high lethality of COVID-19 in this population, it is important to reflect on the vulnerability to which institutionalized elderly are subjected, as well as to discuss the coping strategies of COVID-19 that will become necessary during and after the pandemic. The objective is to reflect on the various vulnerabilities to which institutionalized elderly people are exposed, as well as on strategies for coping with COVID-19.

Institutionalized elderly people and the vulnerabilities enhanced by the COVID-19 pandemic

The aging process occurs in an individual and heterogeneous way, however with the approach of old age, the tendency is for the human organism to become more vulnerable to aggressions from the internal and external environment, occurring biological, physical, cognitive, social, affective losses. The symbolic, social and cultural dimensions that one has about this stage of life and that are linked to the chosen paths and the determinants of aging will influence the ability to have an autonomous and independent old age, that is, with a maintained functionality.[10] In addition, previous illnesses, comorbidities, lifestyle, access to health services also influence the elderly person's ability to manage their own lives.

Many elderly people need to resort to LTCF for survival; it is known, however, that rich, remedied, or poor elderly people who are in a state of chronic pathologies or dementia, whose care offer has become impossible at home, also seek these institutions.[11] To have the assistance of workers who work at these institutions can be considered a good thing or not, depending on the perspective, individual characteristics,[6] life history and resilience of the elderly. The vast majority of institutionalized people have chronic illnesses that make them fragile and unable to perform self-care and personal hygiene practices. In addition, they share the same sources of air, food, water, caregivers and medical care among themselves and, in addition to the turnover of caregivers and workers in the same environment, become more susceptible to infections.[12] This intersection intrinsic and extrinsic factors predispose them to contamination by SARS-CoV-2 and other infectious agents that cause respiratory, dermatological and other diseases.

It is noteworthy that many elderly people are unable to live independently, which demands the need for continuous and daily supplementary care by caregivers (which increases the chance of contracting COVID-19) and the mobilization of resources, often inadequate due to the lack of financial and professional qualifications.[13] With this, elderly people enjoy a minimum health care offer, in which, in reality in public or philanthropic institutions in Brazil, health professionals perform punctual and prioritize the most serious cases of illness, as a consequence of the biomedical model that still persists as the most adopted in Brazil. Nursing care is performed with a focus on attendance the basic human needs of Wanda Horta, such as nourishing, hydrating and sanitizing.[14]

In turn, the atypical clinical course of COVID-19 as the possibility of absence of fever, and which, combined with the challenge or impossibility of conducting an interview, in the case of elderly people with neurocognitive disorder, and the presence of comorbidities, can delay diagnosis and treatment of the disease. Consequently, it impairs health status surveillance, facilitates viral dissemination within the institution and provides clinical complications.[15] In addition, the signs and symptoms manifested by elderly people can be understood by workers as "things of age", the which generates trivialization of complaints or discredit due to episodes of delirium, cognitive disorders and others.

On the other hand, the circulation of visitors and workers in the LTCF favors the transmission of pathogens from the community to the institution.[16] In the current period of the pandemic, in which the elderly are assisted by caregivers and workers who have wide circulation whether in other institutions or in the community in general, the risk becomes more evident, which motivated managers to carry out strict screening of COVID-19 in these spaces and to temporarily prohibit visits to the LTCF. This decision led to the interruption of group activities that are mostly carried out by religious visitors, groups of students or even volunteers who carried out different activities at the LTCF and who, with the pandemic, suffered an abrupt rupture. These measures, despite being the most effective to guarantee social isolation and, therefore, reduce the chances of becoming ill, generate in elderly people more and more feelings of loneliness, abandonment and discouragement, which can worsen the clinical stage of pre-existing diseases, increasing the risk of depression, weight loss and disturbing behavior.[6] In addition, family members are important agents to monitor the quality of care provided at LTCFs. With their limitation and staff absenteeism due to contagion and the need for quarantine, the quality of care, already considered low in many institutions, probably decreased further in this pandemic period.[12]

As most LTCF have few workers and there is a need to adopt quarantine, there may be a deficit in the workforce for the provision of care and for the supervision that the team does to the semi-dependent and independent elderly when performing self-care. Therefore, one of the greatest challenges to be overcome in these pandemic times is to guarantee the quality of the services provided, since their discontinuity, such as food, medication, hygiene, dressings, can compromise the survival of institutionalized elderly people. A worker or elderly person infected with SARS-CoV-2 in a long-term institution also means a high chance of transmission to others, as caregivers work very close to the elderly. These factors contribute to the outbreak of COVID-19 in these locations, being associated with high rates of morbidity and mortality, due to the clinical characteristics of people and the routine of institutions.[16]

But there are other aspects that increase the vulnerability of the elderly to infection by COVID-19, such as the LTCF infrastructure and the scarcity of resources. The first factor is related to the fact that LTCF are not designed or equipped to deal with deaths from COVID-19, as they do not have adequate space for the isolation of dead bodies. This occurs, not through negligence, but because these places are not hospitals, but homes for the elderly[12] and, as such, solutions need to be thought out for possible needs. In addition, many LTCF has an excess of residents, which makes it difficult to establish the necessary distance. The scarcity of resources is related to the adequacy and sufficiency of Personal Protective Equipment (PPE) for workers at the LTCF, insufficient rapid tests even for elderly people recently admitted for diagnostic screening, which should be done regularly,[17] as well as hygiene materials of adequate quality and quantity and few resources for infection control and prevention.

Given the above, it is clear that the challenge of reducing the vulnerabilities of institutionalized elderly people and protecting them from COVID-19 is not small. This is partly because, in Brazil, LTCF are neglected by the government,

which invests very little in these units, leaving philanthropy to protect the elderly people who live there: abandoned elderly people; victims of negligence or ill-treatment; or with weakened family ties and who depend exclusively on the care provided by workers at the LTCF.

The State has a duty to implement laws and public policies for all citizens regardless of age, color and ethnicity and which must be followed and executed successfully. Sometimes, people's fundamental rights are not being respected, such as: dignity, access to decent housing, food and security. Elderly people, as they are more vulnerable to aggressions from the external and internal environment, suffer more from the denial of these rights and resort to family members and they, in turn, seek the LTCF as a viable option for each type of situation. The reflections that arise during the development of this work lead us to realize the importance of the State to guarantee the social protection to which every Brazilian citizen is entitled, whether him is inside or outside an LTCF. Currently, the protection of institutionalized elderly people in COVID-19 is evident and urgent, since an outbreak of the disease in an LTCF means a considerable increase in infected people and even an abbreviation of life span, therefore requiring of special attention regarding investment in coping strategies, which will be the topic discussed below.

COVID-19 coping strategies in Long-Term Care Facilities for the Elderly

Since the beginning of the pandemic, the World Health Organization[18] has developed protocols for the prevention of COVID-19 in institutions for the elderly. Among the measures, include the training of caregivers; guidance on preventive practices; promoting hand hygiene and respiratory etiquette; ensuring availability of supplies available to prevent COVID-19; early recognition of symptomatic cases; social isolation; and adequate specialized assistance, when necessary. The United States' Center for Disease Control and Prevention has also suggested that LTCF develop a comprehensive response plan, providing for restricted visits, removing unnecessary health care and canceling group activities, including community meals.[15,19]

A study carried out in Taiwan, Republic of China, summarized the infection control measures to be used in the context of care for the elderly: 1) Designate a director responsible for training the team, as well as for the communication, planning and monitoring of prevention activities and combating COVID-19; 2) keep updated vaccination cards, routine exams and identification of flu-like symptoms, both in the elderly and in workers; 3) discourage workers from working in more than one institution to prevent the spread of disease; 4) provide sufficient PPE; 5) cleaning and disinfecting environments as a routine practice followed by two steps, the first with ordinary detergent and the second with bleach for hospital use; 6) develop a traffic control package at the LTCF in order to minimize the risk of COVID-19.[15]

Of the measures listed above, that of discouraging workers from working in more than one institution can be considered a measure of unfeasible applicability, since there is a precarious salary and lack of appreciation for occupations of this nature. At the Catalan Center Geriàtric, in Lleida, an important way of preventing COVID-19 in the institutionalized elderly population was that 24 workers agreed to isolate themselves with their 89 residents.[20] Obviously, this is a different reality from that found in Brazilian institutions, in which workers must work in two or even three different locations to supplement family income. This measure to discourage multiple bonds requires a wide appreciation for working hours and wages compatible for the subsistence of workers. In addition, the spread of the virus promotes illness and implies absenteeism in teams that require a resizing of personnel in these scenarios. Consequently, when it is not possible to replace the sick worker, there is an overload of the others and a deficit in the quality of care.

Another recommendation to avoid community meals requires a reorganization of sufficient and adequate physical space for a distance of 1.5 m among the elderly or the reorganization of food supply schedules with alteration of the routine in the LTCF. Traffic control aims to limit the movement of people who have been exposed to contacts with foreigners, sick people and others. In the reality of community transmission in which we live in Brazil, such control refers to anyone who is not a resident of the LTCF and requires adequate materials to carry out a detailed screening of the people who circulate in the institution, as well as adequate physical space for the organization of the transit of people.

For this traffic control to take place, it is necessary to carry out a detailed anamnesis of those who enter the facilities and categorize them as follows: belonging to the transition zones, which are regions destined for people who come from other hospitals; and clean areas where there is no transit of health workers. Those who work in the clean zone should not attend cafeterias and meetings; the place must be disinfected before and after the work shift; keep social distance and, in case of need to be in a group, keep at least two meters away and always use masks. In case of the need for a meeting with the residents, in addition to maintaining distance and use of PPE, time should be used at an average of 30 minutes.[15] It is important to reflect that in addition to the adequate material conditions for the implementation of these measures, there is also a need for education of all those involved in the process (workers and elderly people) so that they understand the importance of it and strictly comply with the determinations. In the case of elderly people with cognitive impairment, supervision is required in case of non-compliance with the regulations. That is, there is no point in organizing the COVID-19 coping protocol within the LTCF if workers and elderly people do not understand the importance of it. There needs to be a permanent education process so that people have the clarity that the circulation of the virus will continue for a long time in Brazil and, consequently, the coping measures as well.

Thus, there are measures that will take a while to be implemented and perhaps they should be permanently incorporated, such as: installing hand disinfection sites in various points of the LTCF; in the case of specialized assistance, one should avoid going out with the elderly as much as possible; avoid daytime programming for non-resident elderly people; if there is a need to leave the LTCF, hand hygiene measures must be used, masks should be worn by all occupants of the vehicle, prevent the driver from passing through more than one health institution, take care of the driver's health and history of contacts. Any resident who leaves the facility must be quarantined for two weeks after returning to the facility, which requires space and additional staff, and it is not always possible in the Brazilian reality that LTCF have only one driver on the workforce (as) and small physical spaces that hinder isolation.[15]

If elderly people need to buy drugs or need up-to-date medical prescriptions, they must be provided by staff, so that they do not have to leave the institution. These measures are the gold standard and it is known that most LTCF cannot meet these recommendations. But one must try to get closer and closer to the ideal for the prevention of COVID-19 in LTCF with feasible measures, reaffirming respect for human beings in situations of fragility.

When COVID-19 occurs in elderly people at the LTCF, it is necessary to offer psychological support to workers who are in direct care for sick people; strengthening communication between workers and family members, being essential to minimize the deleterious effects of family leave during the period of stay at the LTCF; The implementation of a palliative approach to the necessary cases must be taken into account, following ethical principles to guarantee quality of life, comfort and dignity for the resident.[21] Regarding the elderly in a situation of palliative care and their families, one must

offer the possibility to decide on how to proceed regarding the care plan in situations of finitude. The individual decision should be discussed with close people who visit the elderly and needs to be documented and always accessible, for example, in emergency situations. If a resident decides not to go to the hospital, palliative care should be planned in the institution's environment.[22] In view of the difficulties of the LTCF to maintain continuous and quality work in non-pandemic times, this shortage is exacerbated in pandemic times. So, it is necessary to use recreational activities that provide entertainment and distraction, as well as support with financial help from civil society and local companies, in order to meet basic demands that contribute to coping with COVID-19. Local action aimed at maintaining health for the institutionalized population should be advocated, with a view to mitigating the effects of the pandemic.[23] To mitigate the deleterious effects of social isolation, it is also necessary to integrate technological advances, such as videoconferences. , chat apps, among others that promote the socialization of the elderly with family members and visitors, and others that improve health perception and promote physical activity.[24]

Conclusions. Reflection on elderly people living in long-term institutions, whether philanthropic or public, allows us to state that they experience, from a very early age, the harmful effects of social isolation, the absence of affectivity and family contact, of idleness and sedentary lifestyle that end up for generating fear, deep sadness, depression, decompensation and worsening of heart disease, muscular and skeletal problems, neurological, among others. In other words, institutionalized elderly people were always more vulnerable to the factors listed above, but with the pandemic, the vulnerability to illness by COVID-19 became more intense and worrying. This is due to the high lethality of this disease at older ages, the presence of comorbidities and the precarious situation that many Brazilian LTCF undergo, due to the negligence of the public authorities, civil society, the management of these units and families. The threat of coronavirus contamination and the impossibility of implementing effective measures to prevent and cope with COVID-19 within institutions make control options quite limited and, consequently, penalize elderly people who need to become even more socially isolated for protect yourself from contamination. Furthermore, we need to reflect on the post-pandemic scenario and recognize that measures to combat COVID-19 will need to be implemented in Brazil for a long time, which will require efforts by the government, maintainers, family members and caregivers to protect and guarantee survival. elderly people who depend on LTCF.

References

1. Medeiros EAS. Desafios para o enfrentamento da pandemia Covid-19 em hospitais universitários. Rev. Paul. Pediatr. 2020; 38:(e2020086).
2. Sociedade Brasileira de Geriatria e Gerontologia. Brasil ultrapassa 100 mil óbitos por Covid-19 Idosos são 75% das vítimas. 10 Aug 2020 [cited 30 Nov 2020]. Available from: https://sbgg.org.br/brasil-ultrapassa-100-mil-obitos-por-covid-19-idosos-sao-75-das-vitimas/.
3. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Boletim epidemiológico especial. Doença pelo Coronavírus COVID-19. Brasilia (DF); 2020 [cited 30 Nov 2020]. Available from: https://www.gov.br/saude/pt-br/assuntos/boletins-epidemiologicos-1/set/boletim-epidemiologico-covid-30.pdf
4. Cavalcanti AD. Envelhecimento e institucionalização: uma revisão bibliográfica à luz da promoção da saúde. Rev. Kairos Gerontol. 2013; 16(4):159-74.
5. Agência Nacional de Vigilância Sanitária. Resolução - RDC nº 283, de 26 de setembro de 2005. [cited 30 Nov 2020]. Available from: http://bvsms.saude.gov.br/bvs/saudelegis/anvisa/2005/res0283_26_09_2005 .html
6. Oliveira JM; Rozendo CA. Instituição de longa permanência para idosos: um lugar de cuidado para quem não tem opção? Rev. Bras. Enferm. 2014; 67(5):773-9.
7. Lini EV, Portella MR, Doring M. Fatores associados à institucionalização de idosos: estudo caso-controle. Rev. Bras. Geriatr. Gerontol. 2016; 19(6):1004-14.
8. Brasil. Secretaria de Assuntos Estratégicos da Presidência da República. Comunicados do IPEA. Série Eixos de Desenvolvimento Brasileiro nº93. Maio de 2011 [cited 30 Nov 2020]. Available from: https://www.ipea.gov.br/portal/images/stories/PDFs/comunicado/110524_ comunicadoipea93.pdf
9. Alcântara AO, Camarano AA, Giacomin KC. Política nacional do idoso: velhas e novas questões. Rio de Janeiro: Ipea; 2016 [cited 30 Nov 2020]. Available from: https://www.ipea.gov.br/portal/images /stories/PDFs/livros/livros/161006_livro_politica_nacional_idosos.PDF
10. Pereira DS, Nogueira JAD, Silva CAB. Qualidade de vida e situação de saúde de idosos: um estudo de base populacional no Sertão Central do Ceará. Rev. Bras. Geriatr. Gerontol. 2015; 18(4):893-908.
11. Duarte LMN. O processo de institucionalização dos idosos e as territorialidades: espaço como lugar? Estudios Interdisciplinares sobre o Envelhecimento. 2014; 19(1):201-17.
12. Gardner W, States D, Bagley N. The Coronavirus and the Risks to the Elderly in Long-Term Care. J. Aging. Soc. Policy. 2020; 32(4-5):310-15.
13. Utsumi M, Makimoto K, Quroshi N, Ashida N. Types of infectious outbreaks and their impact in elderly care facilities: a review of the literature. Age Ageing. 2010; 39(3):299-305.
14. Horta WA. Enfermagem: teoria, conceitos, princípios e processo. Rev. Esc. Enf. 1974; 5(1):7-15. _
15. Yen MY, Schwartz J, King CC, Lee CM, Hsueh PR. Recommendations for protecting against and mitigating the COVID-19 pandemic in longterm care facilities. J. Microbiol. Immunolog. Infect. 2020; 53(3):447-53.
16. Lai CC, Wang JH, Ko WC, Yen MY, Lu MC, Lee CM, et al. COVID-19 in long-term care facilities: An upcoming threat that cannot be ignored. J. Microbiol. Immunolog. Infect. 2020; 53(3):444-6.
17. Iacobucci G. Covid-19: Lack of PPE in care homes is risking spread of virus, leaders warn. BMJ. 2020; 368:m1280.
18. World Health Organization. Infection prevention and control guidance for long-term care facilities in the context of COVID-19 interim guidance. Geneve: WHO; 2020 [cited 30 Nov 2020]. Available from: https://apps.who.int/iris/handle/10665/331508
19. Centers for Disease Control and Prevention [internet]. Preparing for COVID-19 in Nursing Homes. 2020 [cited 12 Sep 2020]. Available from: https://www.cdc.gov/coronavirus/2019-ncov/hcp/long-term-care.html
20. Oliver D, David Oliver. Let's not forget care homes when covid-19 is over. BMJ. 2020; 369: m1629.
21. Etard JF, Vanhems P, Atlani-Duault L, Ecochard R. Potential lethal outbreak of coronavirus disease (COVID-19) among the elderly in retirement homes and long-term facilities. Euro Surveill. 2020; 25(15):2000448.

22. Kunz R, Minder M. COVID-19 pandemic: palliative care for elderly and frail patients at home and in residential and nursing homes. Swiss Med. Wkly. 2020; 150:w20235
23. Xiao Y, Torok ME. Taking the right measures to control COVID-19. Lancet Infect. Dis. 2020; 20(5):523-4.
24. Eghtesadi M. Breaking Social Isolation Amidst COVID-19: A Viewpoint on Improving Access to Technology in Long-Term Care Facilities. J. Am. Geriatr. Soc. 2020; 68(5**):**949-50.

Original article

Clinical Education Stressors in Operating Room Students: A Qualitative Study

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Clinical Education Stressors in Operating Room Students: A Qualitative Study

Abstract

Objective. The aim of this study is to explain the stressors of the clinical environment from the perspective of operating room undergraduate students. **Methods.** The present study is a qualitative study of contractual content analysis type that was conducted in 2019 at Hamadan University of Medical Sciences. In this study, 10 undergraduate operating room students were selected by purposive sampling. Semi-structured interviews were used to collect data. **Results.** From the analysis of interviews, 4 main categories were extracted as the stressors of operating room students of Hamadan Paramedical School in clinical learning environment: the need to receive support from the clinical environment (Insufficient students' skills in communicating with staff, Discrimination between paramedical students and residents, and Facilities available for training), lack of practical prerequisite skills (Contradiction between training

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and performance, and Lack of prerequisite knowledge for clinical practice), poor supportive and communication performance related to the instructor (Insufficient support of the instructor to the students against the medical staff, Evaluation criteria for instructors, and Treatment of instructor with students in presence of others), and psychological needs (Concerns about career prospects, Lack of motivational factors, and Lack of supportive counseling).**Conclusion.** The results of this study showed that Operating room students are faced with many stressors in the clinical learning environment. All stressors identified in this study affected the students' learning in the clinical setting. Lack of support for students in the clinical environment, poor practical skills training, poor support and communication performance related to the instructor, and poor psychological support of students are the factors that cause operating room student stress in the clinical environment.

Descriptors: knowledge; communication; learning; students; clinical clerkship; qualitative research

Estresores de la educación clínica de los estudiantes en el quirófano: un estudio cualitativo

Resumen

Objetivo. El objetivo de este estudio es explicar los factores estresantes del entorno clínico desde la perspectiva de los estudiantes de pregrado que hacen prácticas en el quirófano. **Métodos.** Es un estudio cualitativo del tipo de análisis de contenido contractual que se realizó en 2019 en la Universidad de Ciencias Médicas de Hamadan (Irán). En esta investigación, se seleccionaron 10 estudiantes de pregrado mediante muestreo intencional y se utilizaron entrevistas semiestructuradas para recopilar datos. **Resultados.** A partir del análisis de las entrevistas, se extrajeron cuatro categorías principales como factores estresantes de los estudiantes en entornos de aprendizaje clínico en el quirófano: 1) la necesidad de recibir apoyo del entorno clínico —habilidades insuficientes de los estudiantes para comunicarse con el personal, discriminación entre estudiantes y residentes, e disponibilidad de instalaciones para la capacitación—; 2) falta de habilidades prácticas —contradicción entre capacitación y desempeño, y falta de prerrequisitos de conocimientos para la práctica clínica—; 3) pobre apoyo y comunicación con el instructor —apoyo insuficiente del instructor a los estudiantes, falta de criterios de evaluación para los instructores y de la forma como este debe tratar a los estudiantes en presencia de otros—, y 4) necesidades psicológicas —preocupación por las perspectivas

de la carrera, falta de factores motivacionales y de apoyo en el asesoramiento—. **Conclusión.** Los resultados de este estudio indican que la falta de apoyo en el ambiente clínico, las pobres destrezas prácticas, el insuficiente apoyo del instructor y sicológico que se brinda a los estudiantes son los factores causantes de estrés en el ambiente de prácticas clínicas en el quirófano.

Descriptores: conocimiento; comunicación; aprendizaje; estudiantes; prácticas clínicas; investigación cualitativa.

Fatores de estresse da educação clínica de alunos em sala de cirurgia: um estudo qualitativo

Resumo

Objetivo. O objetivo deste estudo é explicar os fatores de estresse do ambiente clínico na perspectiva de alunos de graduação em centro cirúrgico. **Métodos.** Trata-se de um estudo qualitativo do tipo análise de conteúdo contratual, realizado em 2019 na Hamadan University of Medical Sciences (Irã). Nesta pesquisa, 10 alunos de graduação foram selecionados por meio de amostragem intencional. Entrevistas semiestruturadas foram utilizadas para a coleta de dados. O método de análise de conteúdo contratual foi utilizado para determinar as questões relevantes. **Resultados.** A partir da análise das entrevistas, quatro categorias principais foram extraídas como fatores de estresse de alunos em ambientes de aprendizagem clínica em sala de cirurgia: 1) a necessidade de apoio do ambiente clínico - habilidades insuficientes dos alunos para se comunicarem com a equipe, discriminação entre alunos e residentes, e disponibilidade de instalações de treinamento-, 2) falta de habilidades práticas -contradição entre treinamento e desempenho, e falta de pré-requisitos de conhecimento para a prática clínica-, 3) suporte e sua comunicação do relacionado com o instrutor - suporte insuficiente do instrutor para alunos, critérios de avaliação para instrutores e como que o instrutor trata os alunos na presença de outras pessoas - e 4) necessidades psicológicas - preocupação com as perspectivas de carreira, falta de fatores motivacionais e falta de apoio na assessoria. **Conclusão.** Os fatores de estresse são importantes na educação clínica desses alunos, mas, reconhecendo as causas subjacentes, se pode tomar decisões necessárias para modificar as mesmas.

Descritores: conhecimento; comunicação; aprendizagem; estudantes; estágio clínico; pesquisa cualitativa.

Introduction

The clinical environment is widely accepted as a key place for nursing and paramedical students to learn.[1] Clinical learning environment is an integral part of education program, accounting for half of the curriculum; because in these conditions, the student can combine and use a large volume of learned content.[2] The operating room ward is one of the medical wards of the hospital, which is known as one of the riskiest wards of the hospital due to organizational, educational, environmental, and technological needs, where the most dangerous procedures are performed.[3] Researchers have argued that the operating room environment is an important area for educating surgical technologists,[4] where the student must learn to maintain patient safety, develop clinical skills related to pre-, intra- and post-operative care create coordination and integration between their theoretical and practical knowledge, and teamwork skills in all critical and non-critical situations in such a stressful environment.[5]

Learning and adapting to different types of skills and work roles in the operating room environment is difficult; since students have to be trained in many interventions in the surgical process before, during and after surgery. However, studies show that graduates lack the skills needed to perform clinical skills.[6] In addition, there seem to be issues that prevent students from learning effectively; because students cannot perform what they learn in practice. Even students who are fully aware of the theory are likely to have problems at the client's bedside and are unable to provide care and perform skills independently.[7] On the other hand, stress is an integral part of human life that human beings face frequently today.[8] Stress is a force and a stressor is something that applies stress to an individual. Many studies have shown that stressors have a negative effect on individual's performance and health. There are at least three distinct stressors in the field of education; the learning expected, learning environment, and the instructor.[9]

Operating room students are also affected by various stresses of clinical education, that mostly contextual and environmental factors cause this stress.[10] Experience of stress and tension can have negative effects on students' learning and clinical success and overshadow on academic performance and lead to physical and psychological disorders.[11] Undoubtedly, recognizing stressors is the first step to reduce them, and one of the best and most reliable sources to study these factors are the students themselves since they have a direct presence and interaction with the clinical education process. Awareness of stressful sources, limiting them, or raising the level of scientific and professional awareness of students makes it possible to increase their adaptation to different situations and provide a suitable environment for clinical training.[12]

Since the mental and physical health of individual students significantly influences the construction and growth of the country, the need for research on stress and identifying related factors among student communities is of particular importance. Thus, the researcher, based on her clinical and educational experiences, decided to conduct the present study to get a deeper and more comprehensive view on operating room students' perception of clinical education with a qualitative approach aimed at explaining the stressors of clinical education from the perspective of undergraduate students in the operating room of Hamadan University of Medical Sciences in 2019.

Methods

Study setting. The present study was a qualitative study using a contractual content analysis approach performed at Hamadan University of Medical Sciences, Hamadan, Iran.

Participants. Purposive sampling method was used for sampling students. 10 undergraduate operating room students were selected to review the data. In order to obtain a wide range of experiences and perspectives, both sexes were selected, 5 of which were male and 5 female and the age of the participants in the present study was between 19 and 25 years. Inclusion criteria included students who had at least one semester of clinical work experience and also were willing to participate in the study. Exclusion criteria were unwillingness to continue the participation in research for any reason.

Ethical considerations. The present study was conducted after receiving permission (IR.UMSHA.REC.1398.860) from the ethics committee of Hamadan University of Medical Sciences, Hamadan, Iran. Written informed consent was obtained from the participants to participate in the study. Anonymity, confidentiality of information, and the right to withdraw were considered during the study.

Data collection. Semi-structured interviews were used for data collection. The interviews were conducted individually and in the student internship area, in a quiet and peaceful place, which was desired by the participants, in a period of 20-40 minutes. The interview was recorded with the permission of the participants. To guide the interview direction toward the phenomenon under study, the researcher asked questions such as: What comes to your mind when you hear the word stress in the clinical environment? Have you ever had an unpleasant experience of stress in a clinical setting? In addition, exploration questions were used, such: Can you explain more? What do you mean? The interviews were transcribed with Microsoft Word software and prepared for analysis. During the study, numbers (P1, P2, P3, etc.) were used instead of the names of the participants. Interviews were conducted with 10 participants until data saturation.

Data analysis. In this study, the data were analyzed by the methodology of Granheim and Landman. In the first step, the text of the interviews was transcribed and used as the main research data. In the second step, the text was divided into semantic units. In the third step, abstract semantic units design and code selection were performed. According to the participants' experiences, overt and covert concepts were identified in the form of sentences or paragraphs of their words and signifying codes, followed by coding and summarizing. In the fourth step, based on the constant comparison of similarities, differences and proportions, the codes that indicated a single subject were placed in a category and subcategories and categories were classified and key codes were formed. Ambiguous points were reviewed by participants in subsequent interviews, in such a way that the points of ambiguity were removed and the position of the codes in each category was completely determined. In the fifth step at the interpretive level, the summary and central themes of each category were identified and the primary and abstract concepts were extracted.

Rigor. Four criteria of validity, credibility, reliability and transferability were used for the research rigor of Lincoln & Guba. For reliability of research, the researcher used Triangulation methods, prolong data engagement, member check, and persistent observation. For validity, the researcher tried to guarantee the validity of this research by preserving the documents related to different stages of research and reviewed by the supervisor. The research credibility was provided by such measures as participants review. For transferability, sufficient and detailed descriptions as well as the maximum variety were used.

Results

The contractual content analysis of data revealed four main themes: Need to receive support from the clinical environment, Lack of practical prerequisite skills, Poor supportive and communication performance related to the instructor, Psychological needs.

Theme 1. Need to receive support from the clinical environment

According to the students, having a suitable environment in which they can use all their mental and physical strength to gain new experiences is a prerequisite for effective education. This theme is very general and covers a wide range of dimensions, such as students' inadequate skills in communicating with staff in the internship environment, facilities available for training in the operating room environment, discrimination between paramedical students and surgical residents

Insufficient students' skills in communicating with staff. Students need communication and learning from staff to gain positive learning experiences. Lack of proper communication with staff is one of the main obstacles to clinical learning and inappropriate cooperation, and communication between staff and students is one of the problematic issues in clinical education. In this regard, a participant stated the following: *... Operating room staff are not justified in how to treat the student; the student is the one who is there to learn and is not going to take their place, and if they teach something to us, it will be added to our knowledge and this field. They do not teach the student anything for any reason and establishing communication with them is not easy...* (Male student / 4th semester).

Discrimination between paramedical students and surgical residents. Lack of equipment and facilities in line with the acquisition of clinical skills in teaching centers for different groups of students were expressed in the form of phrases like: *undesirable dressing rooms and wardrobes for students in hospitals, lack of a place for conference and scientific discussion with clinical instructors, the need to communicate the same on the part of the personnel of departments with all students, whether medical or non-medical, not treating medical and non-medical students equally concerning the requirement to observe appearance criteria and differences in the quality of welfare and educational services, and respected in interactions. These are the most common form of discrimination between nursing and medical students. In this regard, a participant stated the following: ... When a surgical resident unsterilized several pairs of gloves, no one warns him, but if the operating room students do this, the whole operating room will ruin him/her, telling: you do not know, don't come to the operation in such embargo conditions when we do not have extra gloves for you. Why do they discriminate between us??* ..." (Male student / 8th semester).

Facilities available for clinical training. Clinical education status of students requires the provision of facilities and equipment in the clinical environment and the development of educational space, which can be useful in improving the clinical education situation. For learning the

minimum requirements, resources and facilities such as reference books, moulage, and student conferences during internships should be provided for the students. In this regard, a participant stated the following: ...*We do not have a conference hall in internship site, in the mornings when we come, our instructor gathers us in the room to give a brief explanation about the surgery and we have to stand for half an hour until the conference is over and we only understand the first 10 minutes. In the remaining of the sessions, we are under pressure, we are thinking of finding a place to sit, or our legs are tired* ... (Female student / 6th semester).

Theme 2. Lack of practical prerequisite skills

This theme also includes sub-themes including lack of prerequisite practical knowledge and contradiction between theory training and performance and routine in hospital.

Lack of prerequisite knowledge. Inference from the participants' experiences shows that the existence of theoretical knowledge, in addition to providing a learning environment, acts as a determining factor in students' attitudes toward instructors, and the lack of prerequisite practical knowledge slows down the teaching-learning process and leads to formation of conflict between the instructor and the student. In this regard, a participant stated the following: *The gap between theory and practice should be small; when we read a surgical technique in the 3rd semester and now, we practically learn it in to the 5th semester in our internship, we do not remember anything*. (Male student / 6th semester).

Contradiction between theory training and performance and routine in the hospital. The gap between theory and practice has side effects on students; they cannot adapt to the situation due to the conflicts between the expectations of professors and the realities of the workplace, and undesirable physical and psychological problems occur, including feelings of disability, depression, anxiety, lack of security due to inefficiency in the workplace and eventually leaving the profession. In this regard, a participant stated the following: *What we read in the textbooks are very different from what we see in the internship, and that makes us unaware of doing something, and when something is assigned to us, we get a lot of stress to do it, and the staff thinks that we do not know how to work* (Female student / 8th semester).

Lack of prerequisite knowledge. Inference from the participants' experiences shows that the existence of theoretical knowledge, in addition to providing a learning environment, acts as a determining factor in students' attitudes toward instructors, and the lack of prerequisite practical knowledge slows down the teaching-learning process and leads to formation of conflict between the instructor and the student. In this regard, a participant stated the following: *The gap between theory and practice should be small; when we read a surgical technique in the 3rd semester and now, we practically learn it in to the 5th semester in our internship, we do not remember anything*. (Male student / 6th semester).

Theme 3. Poor supportive and communication performance related to the instructor

According to this theme, some instructors convey confidence and support to students and others convey stress and tension. This means that in addition to environmental factors and factors related to student readiness, factors related to the instructor significantly and even more than the previous two items affect the effectiveness of clinical education and student stress. This theme covers several sub-themes such as insufficient support of instructors to students against the medical staff, Evaluation criteria for instructors, Treatment of instructor with students in presence of others.

Insufficient support of instructors to students against the medical staff. When students are engaged in clinical work, they are confronted

with operating room staff and other members of the health team who evaluate or critique their work. In this atmosphere, the friendly and supportive behavior of the clinical instructor is of special importance for the student. The received support from the instructor for student against the treatment staff increases the student's self-confidence, learning motivation, professional development, and positive outcomes. In this regard, a participant stated the following: *If we have a problem here, the instructor cannot support. The instructor is just someone who tells us a series of things but has no power in the operating room and cannot support us in front of the staff* (Male Student/ 8th semester).

Evaluation criteria for instructors. Judging students' achievement of internship goals has been a challenging issue. Students have considered evaluation by clinical instructors as one of the most important problems experienced in working with clinical instructors. Problems in the field of clinical evaluation manifest in the form of student complaints, reported differences in clinical evaluation, and numerous meetings between students and nursing instructors to discuss the issue. In this regard, a participant stated the following: *The instructor only cares about washing hands. He says in the room: Did you scrub or not? But in an operation room where there are several residents and assistants and there is no place for us, what the value of washing our hands and standing on the corner is? If we are circulator, it would be much useful. However, the evaluation criterion is scrubbing. Quality is not important for the university*" (Male student / 8th semester).

Treatment of instructor with students in presence of others. The friendly and respectful relationship between the instructor and the student makes the student interested in clinical learning and attending the clinic. While the ill-tempered instructor, disrespect, forcing the student to do unpleasant deeds, and unnecessary objections of the student disrupt the relationship between the instructor and the student, and the student feels that his biggest supporter is standing against him. In this regard, a participant stated the following: ... *When the instructor comes to us and commands us in presence of others, telling doing that and not doing this, this is bad, this is good, this is stressful for us*... (Female student/ 8th semester).

Theme 4. Psychological needs

The present study shows that operating room students experience various tensions in their training course that may be accompanied by psychological reactions such as depression, anxiety and stress. This theme covers 3 sub-themes includes: Concerns about career prospects, Lack of motivational factors, Lack of supportive counseling.

Concerns about career prospects. The reasons for negative attitudes and unwillingness to work in the nursing and paramedical professions include lack of a clear job description, lack of specific criteria for promotion to higher positions, dominance of physicians everywhere, lack of professional independence, and low salaries. In this regard, a participant stated the following: ...*When we see the behavior of the surgical team with the operating room staff, how they are humiliated due to a small mistake, we think about our future as the operating room staff does not have a value, and this worries us about the future of our job* ... (Male student / 2nd semester).

Lack of motivational factors. In the educational program, in addition to scientific, practical and professional education, attention should be paid to improving the mental health of students so that they can play their professional roles well in the future. ...*When we see the top-down behavior of surgeons with the staff, our opinion about our field is changed, that we are always under control, and we think that we should take the entrance exam from the beginning and change our field of study...* (Female student/ 8th semester).

Lack of supportive counseling. Early recognition of stress and its factors as well as stress

management can reduce the incidence of psychological problems, and by expanding counseling programs and prioritizing the problems of operating room students at different levels of education, it is possible to help maintain and improve their health. In this regard, a participant stated: *... When we have a problem and we are not supported, we do not have the motivation to come or work in the internship for a few days and no one asks us what the problem is ...* (Male student/ 8th semester).

Discussion

The present study expresses the objective experiences of the research participants. In the qualitative research, the findings of the present study showed a lack of support for the clinical environment, (insufficient skills of students in communicating with staff - discrimination between paramedical students and residents - poor available facilities for education), lack of practical prerequisite skills (contradiction between theory training and performance - lack of knowledge required for clinical practice), poor supportive and communicative performance of instructors (insufficient support of the instructor to students against the treatment staff - evaluation criteria for instructors and the instructor treatment with students in presence of others) and psychological needs (concern about career prospect - lack of motivational factors and lack of supportive counseling) as the stressors of operating room students of Hamadan Paramedical School in clinical learning environment.

In the case of the first primary theme, the lack of support from the clinical environment, one of the main factors affecting the students' clinical learning environment was the students' relationship with the operating room staff. Students believe that practice along with the support of nursing staff and educators in their clinical education, leads to their better education.[13] The research findings indicate that misbehavior between staff and students negatively affects the process of clinical education.[14] Many students in this study complained of staff discrimination between them and surgical residents. The results of a study conducted by Mohebi et al. showed that a high percentage of nursing students reported discrimination between them and students in other fields.[15]

Regarding the second primary theme, the contradiction between teaching and practice, it is said that at present there is no connection between what is taught to students in the classroom and what happens in the clinical environment.[16] The gap between theory and practice has side effects on students; due to the conflicts between the expectations of professors and the realities of the workplace, they cannot adapt to the situation and undesirable problems occur in them physically and mentally.[17]. The studies carried out show that the disconnection of theory and practice, in addition to learning and educational problems, causes stress and do not received good support in students as well.[18] Regarding the third primary theme, the characteristics and skills of the instructor also largely determine the effectiveness of clinical training. Inappropriate interaction between instructor and student and lack of proper communication between them can probably affect all stressors in the clinical environment.[19] Given that the clinical instructors play the basic role in controlling stress, motivating and supporting students in the clinical learning environment, they should know that appropriate treatment and adequate support for the student is an important factor in creating his/her interest in the learning environment, promoting clinical skills and reducing stress, and making clinical experiences enjoyable for them.[20,22] Another controversial issue is student evaluation. Judging students' achievement of internship goals has been a challenging and stressful issue, and because this has always been one of the most important roles of nursing educators, they have always been concerned about whether their decision to evaluate a student is reflects the reality of the student's clinical performance or not.[19]

In relation to the fourth primary theme, motivation is one of the basic factors in teaching and learning that can affect students' performance in educational and research environments in different ways.[23] To have motivated and successful students in the field of education as well as graduates with appropriate skills for employment after graduation, it is necessary for decision makers through appropriate planning to reduce existing concerns about the career prospects and thus increase motivation. Consequently, wasting human and spiritual capital of the country is avoided. In particular, the goal of medical sciences universities is to train health care providers who will influence the growth and development of the country with committed and efficient activities in the health system and as a result, the promotion of public health.[24] In recent years, students' attitudes toward their future careers have become more negative, which can have many detrimental effects. Ribeiro et al., for example, cite poor future careers as a reason for elite students to emigrate; Therefore, creating suitable job opportunities, job security, teaching entrepreneurial skills by specialized professors in each field of study and creating a career counseling system in universities can make students' attitudes toward their future careers more positive.[25]

From the students' opinions, it can be concluded that education and health managers at higher levels should pay attention to weaknesses, because most of the problems and stressors raised can be modified by management measures. It is hoped that by addressing issues such as environmental problems and lack of facilities, poor performance of instructors, the gap between theoretical and clinical education, lack of supportive counseling, the roots of the problems will be identified so that students can act competently in the clinical environments in the field of effective patient care. It is suggested that the stressors are identified, the findings of the present study are taken into account, and planning is done to solve problems and improve the conditions of clinical education. These measures should be put at the top of paramedical educational programs in order to take steps towards community health. It is hoped that applying the results of this study by clinical teachers and students will help improve the clinical education process. Further studies in relation to each of the categories obtained in the present study are recommended.

Conclusion. The results showed that not supporting students in the clinical environment, poor practical skills training, poor supportive and communicative performance of the instructor, and not supporting the psychological needs of students are among the stressors of the students' clinical environment. The use of the main classes of stressors of the clinical educational environment designed in this study can help educators and educational administrators to use strategies to strengthen the clinical education of operating room students and subsequently improve their learning.

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References

1. Sajadi SK. Evaluation of laboratory sciences students' attitude toward their field of study and future career in Kurdistan University of Medical Sciences. Zanko J. Med. Sci. 2016; 16:52-60.
2. Poorheidari M, Delvarzian ZM, Yahyaee S, Montazeri AS. Study of the stressful experiences of midwifery students during clinical education in the labor room. Res. Med. Educ. 2018; 9(4):58-66.
3. Azarabad S, Zaman S S, Nouri B, Valiee S. Frequency, Causes and Reporting Barriers of Nursing Errors in the Operating Room Students. Res. Med. Educ. 2018; 10 (2):18-27.
4. Jafarzadeh S. Evaluation the Quality of Clinical Education from Perspectives of operating Room Students, in Fasa University 2016. J. Fasa Univ. Med. Sci. 2019; 8(4):1046-55.
5. Meyer R, Van Schalkwyk SC, Prakaschandra R. The operating room as a clinical learning environment: An exploratory study. Nurse Educ. Pract. 2016; 18(3): 60-72
6. Chevillotte J. Operating room nursing diploma soon to be accessible through competence validation. Revue de l'infirmiere. 2014; (199):10.
7. Farzi S, Haghani F, Farzi S. The challenges of nursing procedures training from the perspective of nursing students: A qualitative study. Strides Dev. Med. Educ. 2016; 12(5):745-52.
8. Chauhan E, Bali A, Singh N, Jaggi AS. Cross stress adaptation: phenomenon of interactions between homotypic and heterotypic stressors. Life Sci. 2015; 137:98-104.
9. Rudland JR, Wilkinson TJ. When I say … stress. Med. Educ. 2018; 52(7):692–3.
10. Geraghty S, Speelman C, Bayes S. Fighting a losing battle: midwives experiences of workplace stress. Women Birth. 2019; 32(3):e297–306.
11. He FX, Turnbull B, Kirshbaum MN, Phillips B, Klainin-Yobas P. Assessing stress, protective factors and psychological well-being among undergraduate nursing students. Nurse Educ. Today. 2018; 68:4–12.
12. Sajadi M, Mehrabi F. Relationship between Clinical Environment Stressors and Nursing Students Self-Efficacy in Clinical Performance. J. Nur. Educ. 2019; 8(2):44-50.
13. Bazrafkan L, Najafi Kalyani M. Nursing Students' Experiences of Clinical Education: A Qualitative Study. Invest. Educ. Enferm. 2018; 36(2):e04.
14. Al-Zayyat A S, Al-Gamal E. Perceived stress and coping strategies among Jordanian nursing students during clinical practice in psychiatric/mental health courses. Int. J. Ment. health nurs. 2014; 23(4), 326-35.
15. Mohebbi Noubandegani Z, Rambod M, Hashemi F, Mohammadi H, Najafi Dolatabad S, Setoudeh G. View point of the nursing students on challenges in clinical training, Shiraz, Iran. Hormozgan Medical Journal. 2012;16:415-421.
16. Khodaei A, Mansourain M, Ganjei S, Asgari H. Strategies for decreasing gap between theory & clinical performance from the viewpoints of nursing students in Tabriz university of medical sciences. Res. Med. Educ. 2016; 8(2):49-59.
17. Haghani F, Azarbarzin M. Active learning: An approach for reducing theory-practice gap in nursing. 2012. Iran. J. Med. Educ. 2012; 11(9):1179-90.
18. Saifan A, AbuRuz ME, Masa'deh R. Theory practice gaps in nursing education: A qualitative perspective. J. Soc. Sci. 2015; 11(1):20-29.
19. Labrague LJ, McEnroe-Petitte DM, Papathanasiou IV, Edet OB, Tsaras K, Leocadio MC, et al. Stress and coping strategies among nursing students: an international study. J. Ment. Health. 2018; 27(5):402–8.
20. Fathi M, Shafiean M, Gharibi F. Clinical education stressors from the perspective of students of nursing, midwifery, and operating room: a study in Kurdistan University of Medical Sciences. Iran. J. Med. Educ. 2012; 11:675-84.
21. Arkan B, Ordin Y, Yılmaz D. Undergraduate nursing students' experience related to their clinical learning environment and factors affecting to their clinical learning process. J. Nurs. Educ. Pract. 2018; 29:127–32.
22. Pazargadi M, Ashktorab T, Khosravi S. Multi-rater evaluation in the clinical evaluation of nursing students: Instructorsexperiences and viewpoints. J. Qual. Res. Health Sci. 2012; 1:102-11.
23. Roohi G, Asayesh H. Students' academic motivation in Golestan university of medical sciences. Iran. J. Med. Educ. 2012; 12:152-9.

24. Sharifi T, Ebrahim Bay SEB, Najafi Hodk F, Mohammadi A. Relationship between Academic Motivation and Students' Attitude towards Future Job in the Students of Torbat Heydariyeh University of Medical Sciences (Iran). Qom Univ. Med. Sci. J. 2020; 14:74-84.

25. Ribeiro JS, Conceição C, Pereira J, Leone C, Mendonça P, Temido M, et al. Health professionals moving to… and from Portugal. Health Policy. 2014; 114:97-108.

COVID-19 Pandemic: Experiences of People with Visual Impairment

Original article

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COVID-19 Pandemic: Experiences of People with Visual Impairment

Abstract

Objective. To understand changes in daily life emerging from the COVID-19 Pandemic in people with visual impairment from four cities of Colombia. **Methods.** Exploratory-type, descriptive qualitative study. The study conducted 26 semi-structured interviews via telephone. The analysis process used the methodological design from the approach proposed by Taylor and Bogdan: following the discovery process, coding and relativizing of data. **Results.** Three categories emerge: 1) Transformations in daily dynamics, 2) Barriers to mobility, and 3) Use of technology. **Conclusion.** People with visual impairment report barriers to mobility to take public transportation, which can affect maintenance of their autonomy and independence. Using technological tools is identified as facilitators for the continuity of educational and work activities; however, some did not

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have computer literacy or the basic inputs for connectivity. Difficulties were identified to continue work activities and maintain income.

Descriptors: pandemics; Coronavirus infections; disabled persons; visually impaired persons; Internet.

Pandemia por COVID-19: vivencias de las personas con discapacidad visual

Resumen

Objetivo. Comprender los cambios en la vida cotidiana de las personas con discapacidad visual de cuatro ciudades de Colombia debido a la pandemia del COVID-19. **Métodos.** Estudio cualitativo descriptivo de tipo exploratorio. Se realizaron 26 entrevistas semi-estructuradas vía telefónica. Para el proceso de análisis, se utilizó el diseño metodológico desde el enfoque propuesto por Taylor y Bogdan, siguiendo el proceso de descubrimiento, codificación y relativización de los datos. **Resultados.** Emergen tres categorías: 1) transformaciones en las dinámicas cotidianas; 2) barreras para la movilidad y 3) el uso de tecnología. **Conclusión.** Las personas con discapacidad visual manifiestan barreras para la movilidad y la toma del transporte público, lo cual afecta su autonomía e independencia. El uso de herramientas tecnológicas facilita la continuidad de actividades educativas y laborales, sin embargo, algunos no contaban con la alfabetización digital o con los insumos básicos para la conexión. Se identifican dificultades para la continuación de actividades laborales y el mantenimiento de ingresos.

Descriptores: pandemias; infecciones por Coronavirus; personas con discapacidad; personas con daño visual; Internet.

Pandemia de COVID-19: experiências de pessoas com deficiência visual

Resumo

Objetivo. Compreender as mudanças na vida diária decorrentes da pandemia COVID-19 em pessoas com deficiência visual em quatro cidades da Colômbia. **Métodos.** Estudo exploratório descritivo qualitativo. 26 entrevistas semiestruturadas foram realizadas por telefone. Para o processo de análise, o desenho metodológico foi utilizado a partir da abordagem proposta por Taylor e Bogdan: acompanhando o processo de descoberta, codificação e relativização dos dados. **Resultados.** Surgem três categorias: 1) Transformações na dinâmica diária, 2) Barreiras à mobilidade e 3) Uso de tecnologia. **Conclusão.** Pessoas com deficiência visual manifestam barreiras à mobilidade, para o uso do transporte público, que podem afetar a manutenção de sua autonomia e independência. A utilização de ferramentas tecnológicas é identificada como facilitadora para a continuidade das atividades educacionais e de trabalho; no entanto, alguns não tinham alfabetização digital ou as entradas básicas para conexão. São identificadas dificuldades para a continuidade das atividades laborais e a manutenção da sua renda.

Descritores: pandemias; infecções por Coronavirus; pessoas com deficiência; pessoas com deficiência visual; Internet

Introduction

The World Health Organization (WHO) estimates that 15% of the global population has a disability, that is, nearly 1-billion people.[1] In 2015 it was reported that close to 441.5-million people suffered visual impairment of which 36-million report blindness, 217-million had moderate to severe visual impairment (low vision), and another 188-million endured slight visual impairment.[2] In turn, it is calculated that the number of people with visual impairment could be triplicated by 2050, when there could be 115-million people.[3] Preliminary reports from the 2018 population census indicate a national prevalence of disability of 7.1% (3 065 361 people of which 1 784 372 report difficulties with levels of greater severity: serious or total disability); and type of difficulties, like low near or distance vision or around constitute 18.7%. According to these figures, visual impairment could occupy the second place in frequency among the population with disability in Colombia.[4]

In relation with the structural conditions, it is reported that visual impairment (includes low vision and blindness) affects disproportionately the vulnerable populations, given that low-income countries have higher prevalence than those with high income, found most commonly in women and older individuals in condition of poverty. In this sense, it is found that 90% of the global burden of visual impairment is concentrated in developing countries.[5] Hence, it is felt that poverty and visual impairment are cyclically linked, given that poverty increases the risk of visual impairment and such exacerbates poverty by limiting opportunities of participating in wage-earning activities.[6] For the specific case of visual impairment and bearing in mind the Location and Characterization Record of people with disability, it is identified that they are concentrated in socioeconomic levels one and two, which evidences their reduced opportunity of mobilization in the social structure and, in turn, only 5% of the people with disability reached the secondary level of education, suggesting poor opportunity of formation and with it a tight range of labor qualification.[7]

This is the context of exclusion and vulnerability lived by people with visual impairment, which has become even more complex since March 2020, when the WHO declared a global pandemic due to the COVID-19 outbreak, given that it is likely that the pandemic affects more those with disabilities because it has been reported that those people are more prone to being infected with SARS-Cov 2 and experience disproportionate effects of the confinement.[8] In this sense, the effects of the pandemic could have serious consequences on the health, wellbeing, and quality of life of people with visual impairment. According to the Center for Systems Science and Engineering at Johns Hopkins University, vulnerable people among which are included people with disability will be the most affected, besides having the highest probability of suffering devastating losses.[9]

For the specific case of Colombia, on 06 March 2020, the first case was confirmed, which was imported from Italy. Upon the drafting of this this text -28 October 2020- the country already had 1,033,218 cases and 30,565 deaths. The pandemic, followed by confinement throughout the country to stop the unprecedented propagation of the virus, will have a serious impact on people with visual impairment. Many restrictive and control measures, including the adoption of new behavioral changes (for example, social distancing during movement out in the open, limited contact or tactile contact) recommended by the World Health Organization, pose huge challenges for people with visual loss.[10] The health situation, added to the sudden change in routines and roles that comprise our identity and which grant sense to our daily doings, may have had consequences at physical, social, psychological, and – above all – emotional levels, independent of the moment of the current vital cycle.[11] However, to date, no information exists on the impact caused by COVID-19 upon this group in particular or on their vulnerability.[9] In this sense, this study sought to understand the changes in daily life arising from the pandemic due to COVID-19 in people with visual impairment from four cities of Colombia: Bogotá, Arauca, Bucaramanga, and Piedecuesta.

Methods

An exploratory-type, descriptive qualitative study was conducted to understand changes in daily life arising from the COVID-19 pandemic in people with visual impairment from four cities of Colombia: Bogotá, Bucaramanga, Piedecuesta and Arauca. Participant selection was intentional, using the special interview criterion, defined as those in a unique position in the community; to be considered in the research, the subjects had to be consenting adults and have low vision or blindness and reside in these geographic zones of the country, places prioritized by the National Institute for the Blind (*Instituto Nacional para Ciegos*) for accompaniment processes to organizations of people with visual impairment. A revision was carried out of the National Institute for the Blind database of people and organizations existing in said cities and an open invitation was made to participate via e-mail or mobile text messaging. People who manifested interest in participating were later contacted via telephone by two researchers. Each participant was explained the research objectives, methodology used, and the results expected from the study. They were requested a verbal informed consent to conduct the semi-structured interviews.

At all times, the study guaranteed ethical, anonymous, and confidential management of the information and names of the participants. This research was approved by the ethics committee at Universidad Santo Tomás, Bucaramanga branch, and adhered to that established in Resolution 008430 of 1993 by the Colombian Ministry of Health for norms in health research**.** Given the condition of isolation due to the pandemic, the tool used was the collection of information through a telephone semi-structured interview, which permitted approaching the experiences of people with visual impairment within the framework of the health emergency due to coronavirus. Prior to conducting the interviews, three group meetings were held in the Team platform to socialize with the individuals the research objectives and the process proposed, this permitted clearing doubts and uncertainties from the participants. Thereafter, the four researchers with experience in qualitative research and work with people with visual impairment interviewed each participant. Each telephone interview lasted an average of one hour. During the interviews, two researchers were always present; while one guided the interview, the other one took notes and included key aspects for analysis. All the interviews were magnetically recorded through a telephone application and were later identified by considering the city and assigning each of them an identification code. The interviews posed questions, like: how have the days of confinement been; how has confinement

affected your daily routines; and which aspects have been critical or – on the contrary - positive?

The analysis process used the methodological design from the approach by Taylor and Bogdan, who proposed a method to analyze information from the findings given in the interviews; hence, the study followed the discovery process, coding, and relativizing of data.[12] The discovery phase sought emerging themes by examining the data, repeatedly reading, elaborating typologies, and developing possible concepts. Then, the coding phase analyzed all the data referring to themes, ideas, concepts, interpretations, and propositions. Finally, the relativizing stage interpreted the information in the context. To support the analysis of the reports by the participants, the Atlas ti (v. 6.2) software was used. The research had 26 participants; 10 from the city of Bogotá, 3 from Bucaramanga, 5 from Piedecuesta, and 8 from Arauca. The mean age was 40 years, with a minimum age of 21 years and a maximum of 68 years. Of all the participants, 53.9% were males.

Results

Social isolation produced by the COVID-19 Pandemic has caused changes in the individual and family dynamics of the people interviewed. From the analysis of the results, three categories emerge: 1) Transformations in daily dynamics, 2) Barriers for mobility, and 3) Use of technology.

Transformations in daily dynamics

For some, it has been an opportunity to come close to family members and strengthen bonds among their support networks: *For me, these days of pandemic have been about learning, finding myself, and a new encounter with the family; it has been a very pleasant thing, we are in a very beautiful town and have a spectacular landscape and every day my wife would describe the sunsets that she found phenomenal and we had not done this exercise before because it demanded a lot of work [E1. Piedecuesta. Man]. This is an opportunity to open the mind to new opportunities that surely will come up in the future [E2. Bogotá. Woman].*

The pandemic has meant a rupture for everyone in relation with the development of their daily activities and, of course, people with visual impairment have also experienced it. Although the situation has affected in generalized manner the global population, its effects are experienced in differentiated form in the distinct population groups; given that this situation has further marked the gaps of inequality and inequities lived by some of the people with visual impairment in the country, which impede coverage of basic needs: *Unemployment and poverty are tenacious; now in the pandemic a food crisis is being experienced, we have sounded all the alarms, minimum aid is arriving and people normally – when they can – eat every day, so their lives are very hard [E6. Bogotá. Woman].*

Before the pandemic, some of the people interviewed were informally employed or through temporary contracts, which were interrupted by closings in different sectors: *I was working as a commercial consultant in a foundation on themes of inclusion, but due to what is happening, the contract was suspended [E3. Piedecuesta. Man]. I had not started to work, I was going to start just when the quarantine began and the contract was suspended because, obviously, we did not know what was going to happen [E2. Bucaramanga. Man].*

The reports by the people interviewed account for the labor fragility or for the type of employment to which people with visual impairment can have access, which implies the need to strengthen labor inclusion processes in this population group: *Because of the pandemic I had to give up the garden, I left it aside and for the moment and I had to come to my parent's house due to the situation, I am working independently in commercial sales from seven in the morning until eight at night [E1. Arauca. Woman]. I go*

to this lady and sometimes I help her with the cleaning in the miscellaneous store and she gives me some money, but that was before all this started. Sometimes I work in sales through catalogues, but with this quarantine I have not worked much in that because I have not been able to go out much. [E4. Bogotá. Woman]

Barriers for mobility

Barriers for mobility intensified due to COVID-19; a critical case has to do with the use of public transportation, given that this activity became an issue of greater difficulty for people with visual impairment. The norms related with social distancing, avoiding touching surfaces due to the risk, and not finding easily people willing to help in the street were aspects those interviewed identified as the biggest challenges, given that these are extremely difficult to comply, which leads people to feeling anxious and nervous: *You get scared, I say I can go out with all the protection and all, but fear one way or another affects because you will have much more contact with surfaces, the issue of taking the train, I have not taken the train again, since March I have not used mass transportation [E1. Piedecuesta. Man]. To use transportation require someone to help you, but people are distanced and many ignore you. I have had to scream to ask for a favor, but that is very difficult because people do not help. Because we are in a society in which we fear others, it does not help for people to understand that we are people who need support. They say there are protocols that people with disability have priority, that is not true, that is not complied [E2. Bogotá. Woman].*

This aspect has impacted negatively on autonomy and independence to carry out activities, given that most depend on touch to carry out their routine activities or movements out in the open, which can further increase the possibility of being infected by the virus: *Sometimes I have to seek other people, my neighbors, or my other sister to help me with certain things that sometimes I could go alone, but when you cannot go someplace alone, well you just can't, so you have to take a companion [E8. Bogotá. Woman]. Before, you could go out alone without having to depend on another person and this time one way or another I had to rely on the companion to run errands [E3. Piedecuesta. Man].*

Added to the aforementioned, people with visual impairment have identified how during the management of the pandemic they have not been recognized as subjects with rights, with capacity for self-management and to care for their own health, which accounts for the negative imaginaries that persist in Colombian society: *Someone stated that we should be special beings of care, when we are people with disability, but it does not imply we have to be extremely cared for and protected like objects. We are not objects, we are humans who need to learn and put into practice the recommendations to safeguard life. [E5. Piedecuesta. Man]. I don't like to be treated in special manner because I am not special [E3. Bucaramanga. Man].* This matter evidences the need to work to, especially in communication media and in community scenarios, avoid reinforcing negative stereotypes associated with visual impairment.

Use of technology

Use of technology has been a fundamental element for the continuity of educational, labor, and sports processes of people with visual impairment. The individuals interviewed manifested the importance of technology to continue performing their personal and professional tasks and, in some cases, find entertainment sources or leisure time activities during confinement. For some of the people interviewed, prior use of technological tools has been a vital aspect to continue their educational processes: *from that change from the classroom to the virtual, a very important change was noted, I would use the computer for my homework but never imagined I would use it in such long schedules; I use JAWS, I have low vision and it was not too difficult to locate myself*

in the application we use in the university, I could locate myself easily and attended all the classes assigned and complied with all assignments [E3. Bucaramanga. Man].

Likewise, for the participants, using technologies in this type of situation has been identified as a facilitator of social inclusion, given that such permit conducting diverse activities of adapted manner and without any barriers: *technology is our helping hand because screen readers allow us to interact with mobile phones, computers and, well, today everyone has to do it like that because that is the work and study modality, anyway, so let's say that facilitates things a lot [E1. Bogotá. Man].* Similarly, the technological skills of people with visual impairment are recognized as an aspect that can favor their labor inclusion, given the world's mass migration to digital scenarios: *if someone with a disability today is looking for work and requires using technology they have won a part, thus, it is a large contribution* [*E1. Piedecuesta. Man*].

The computer literacy of some people with visual impairment has permitted maintaining physical activity as a fundamental aspect not only of the physical wellbeing but of social inclusion: *Generally, I train; now it is through Zoom [E5. Piedecuesta. Man]. Exercise continues, we are also working from home with the topic of the foundation, encouraging the kids at home to also keep practicing tennis for the blind [E9. Bogotá. Woman].* However, the rapid and generalized change of the daily dynamics that led to using on-line platforms due to the pandemic evidenced the digital gaps experienced by the country that are reflected in the different barriers for their use related with issues of not knowing the platforms, limited access to technologies, accessibility difficulties due to connectivity and economy for connection to an internet service: *sometimes, due to the very economic situations, of perhaps not having a mobile phone or access to internet [E3. Arauca. Woman].* In this same sense, not all people with visual impairment have access to applications or have prior training that allows them to confront adequately the challenge of the virtual realm: *A friend who is completely blind tells me that with the virtual classes I've not had access to any, because he also uses Jaws and with total blindness he has to adjust the computer commands and many do not locate him as he would like, so it became somewhat tedious to enter a class because the professor had to silence him when his microphone got activated and that was like treating him as special [E3. Piedecuesta. Man].*

Likewise, lack of direct contact with other people, professors and study peers, is an aspect missed from the educational experience and in the social experience: *I refer to sharing with my classmates to being in front of a professor, having that visual and physical contact, sitting behind a computer and looking at a screen always gets a bit tedious [E2. Bucaramanga. Man]*. *If we were face to face, you perceive this person, their odor is pleasant, the voice is heard differently, possibly some brush, this person can be delicate, has long or short hair, many more things that from the virtual you do not perceive [E1. Arauca. Woman].*

Technology has permitted developing initiatives of cooperation among people with visual impairment to somehow solve difficulties generated by isolation, through virtual scenarios some groups have generated calls to provide basic food to people who have been affected directly by the pandemic situation: *the food grocery campaign that began after the first week of the quarantine has not stopped; we delivered 140 to people that really nobody remembers or to people who get groceries at least once per month, then this campaign, has been done in Bogotá and Cundinamarca, with a form sheet that was made accessible. Minimum aid has arrived and people normally eat every day when they can, so these are very hard lives, and these are small actions [E9. Bogotá. Woman]. Through calls and E-mails, a little while ago we collected humanitarian aid*

to deliver groceries to those with a higher degree of vulnerability and, well, everybody approved and supported me [E3. Arauca. Woman]. These dynamics are recognized by those interviewed as an opportunity to enhance support ties among members from groups of people with disability: *Regarding the pandemic, there is something beautiful that says that resilience processes are fundamental and those support networks and creating bonds and, for me, that has been important [E4. Bogotá. Woman].*

Discussion

Life experiences of people with visual impairment are unique and diverse, but also have in common that, to a greater or lesser extent, they need supplementary guarantees to live with full rights or participate under equal conditions with the rest of citizens in economic, social, and cultural life.[13] This study permitted understanding the changes in daily life emerging from the COVID-19 Pandemic in people with visual impairment from four cities in Colombia: Bogotá, Arauca, Bucaramanga, and Piedecuesta. In spite of the differences of context, no differentiating findings were identified where cultural or city issues could be identified as important aspects of the transformations. The situation of confinement has triggered a series of transformations in the dynamics of the individuals interviewed, identifying – among other things – how difficulties for mobility in autonomous and independent manner have increased due to the epidemiological measures and because of the hostile scenario experienced in the means of transport and in the interaction with others. People with visual impairment require, in some cases, support or orientation and they have run into very difficult panoramas in terms of the scant aid they find in the citizenry, given that they cannot get up close to request guidance or support due to the obligatory social distancing. These matters of mobility have been reported by the World Blind Union, which state that aspects, like using masks, not touching surfaces, not finding pedestrians willing to help, ignorance of guide dogs with respect to keeping physical distance, and changes regarding the level of noise in the streets originated additional challenges for orientation.[14]

According to the study on people with disability regarding COVID-19 in Latin America and the Caribbean, with the arrival of this health crisis and its devastating social and economic impacts, people with disability will be among the most affected, together with their families, which will worsen their situation of exclusion and marginalization.[15] In this study, testimonies from individuals interviewed account for the difficulties they are experiencing as a result of the poor opportunities they have to maintain their daily income or work contracts, given that the country still has a very large gap with relation to the effective labor inclusion of people with visual impairment, an issue that within the context of the pandemic has become even more evident. These matters had already been reported in a study by Moreno, which mentions that in Colombia although participation in the labor market is low for the total population in Colombia, this situation is even more precarious for people with who are visually limited, of which 38.1% work, 2.5% are looking for work, and 19.3% perform unpaid household chores.[16] These situations of precariousness explain, among others, the initiatives identified in this research in which people with disability have mobilized to provide basic food to families struck harder by the situation.

Moreover, the context of the pandemic has evidenced the need to strengthen processes of accessibility to information and of computer literacy of people with visual impairment as a mechanism to favor their educational and labor inclusion. During the development of this research, it was possible to identify that technological tools become facilitators in the individuals interviewed for the continuity of their daily activities; however, it is important to reflect on the technological gap

that persists in the country, given that in some cases those interviewed did not have the minimum materials to guarantee their connectivity, like mobile phones, computers, or connection to the internet or with prior formation processes that permit their adequately manipulating the devices. This issue has been reported in another study, which shows that digital gaps exist in access to computers, the internet and skills in the use of these devices and virtual platforms by people with disability. The impacts of COVID-19 will broaden disparities for these individuals in access to virtual learning through the use of technological media, hence, it is necessary to prioritize reasonable adjustments, like modifications or adaptations to these digital environments in function of the diverse social peculiarity of these individuals toward quality and inclusive education.[17]

For the specific case of education, the situation experienced as a consequence of COVID-19 has obligated adapting the educational system, designed for classroom teaching, to a "remote" modality. Within this context, it becomes more important to advance toward the creation of different guidelines of the universal design of learning that favors the teaching-learning process and, consequently, permits students with visual impairment to exert their right of access to an educational environment designed to help them reach their maximum potential.[11] Finally, the epidemiological measures to contain the virus have affected the autonomy and independence of those interviewed, which was already reported by other organizations in which people describe repeatedly feelings of frustration, anxiety, anger, low self-esteem, and discouragement caused by the loss of autonomy and independence, without having the same access and opportunities as the rest.[14]

All societies in the world are in a learning process that has implied assuming new practices for self-care and collective care of health. Restrictions that obligate staying at home that do not keep in mind the needs of people with disability create disturbances and new risks for their autonomy, health, and lives. As already reported, COVID-19 threatens with exacerbating these disparities, particularly in low- and middle-income countries.[9] Due to this, the country is obligated to offer guarantees for the measures taken during the pandemic to not affect disproportionately people with visual impairment and attempt against the compliance of their rights. It is necessary to establish clear intervention mechanisms that permit the effects and serious impacts due to COVID-19 to be minimized.[10]

This work permitted understanding changes in daily life emerging from the COVID-19 pandemic in people with visual impairment from four cities in Colombia: Bogotá, Arauca, Bucaramanga, and Piedecuesta. People with visual impairment participating in this study report transformations related with barriers for their mobility, as well as for using public transportation, which is a critical aspect that can affect maintenance of their autonomy and independence. Another key aspect identified in the research has to do with using technological tools as facilitators for the continuity of their educational and work activities; however, this is an aspect that was not homogeneous in all the participants, given that some of them had no computer literacy required or the basic inputs for connectivity. They also state difficulties in continuing their work activities and maintain wages. Even within the universality of the pandemic, all our experiences and individual contexts are unique, thereby, it is important to propose the need to initiate inclusive approaches when planning responses to the pandemic and post-pandemic management. It is necessary, among other things, to advocate for the development of an effective implementation of accessibility standards with principles of universal development to favor the right to education and work of people with visual impairment. Likewise, establishing articulation points with educational institutions to monitor the accessibility conditions of students and, thus, take measures that permit the permanence of the student body and thus avoid their desertion.

With the purpose of identifying who are the people with visual impairment most affected in the country, especially those who experience multiple interweaved forms of discrimination, it is necessary to promote the collection of data that includes in their research, information broken down about people with visual impairment, which will permit prioritizing intervention actions during the post-pandemic phase. Finally, the current situation may be seen as an opportunity for decision makers to establish a reform on how care has been provided to people with visual impairment, thus, it is necessary to work closely with representatives from organizations of people with disability to identify priority lines of post-pandemic work, given that it is likely that the challenges will be greater.

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References

1. Bourne R, Price H, Taylor H, Leasher J, Keeffe, Glanville J, J et al. New systematic review methodology for visual impairment and blindness for the 2010 Global Burden of Disease study. Ophthalmic. Epidemiol. 2013; 20:33–9.
2. Flaxman SR, Bourne RRA, Resnikoff S, Ackland P, Tasanee B, Cicinelli M, et al. Global causes of blindness and distance vision impairment 1990–2020: a systematic review and meta-analysis. Lancet Glob. Health. 2017; 5:e1221–e1234.
3. Bourne RRA, Flaxman SR, Braithwaite T, Cicinelli M, Adidi D, Jonas J, et al. Magnitude, temporal trends, and projections of the global prevalence of blindness and distance and near vision impairment: a systematic review and meta-analysis. Lancet Glob. Health. 2017; 5:e888–e897.
4. Instituto Nacional para Ciegos. Los ciegos en el Censo 2018 [Internet]. 2020 [cited 19 Jan 2021]. Available from: https://www.inci.gov.co/blog/los-ciegos-en-el-censo-2018
5. Organización Mundial de la Salud. Ceguera y discapacidad visual 2018 [Internet]. [cited 19 Jan 2021]. Available from: http://www.who.int/es/news-room/fact-sheets/detail/blindness-and-visual-impairment
6. Cockburn N, Steven D, Lecuona K, Joubert F, Rogers G, Cook C, et al. Prevalence, causes and socio-economic determinants of vision loss in Cape Town, South Africa. PloS One. 2012; 7:e30718.
7. Hernández-Jaramillo J, Hernández-Umaña I. Una aproximación a los costos indirectos de la discapacidad en Colombia. Rev. Salud Pública. 2005; 7:130–44.
8. Armitage R, Nellums LB. The COVID-19 response must be disability inclusive. Lancet Public Health. 2020; 5:e257.
9. Aquino-Canchari CR, Quispe-Arrieta R, Huaman KM. COVID-19 y su relación con poblaciones vulnerables. Rev. Habanera Cienc. Méd. 2020; 19 (suppl 1):e3341.
10. Senjam SS. Impact of COVID-19 pandemic on people living with visual disability. Indian J. Ophthalmol. 2020; 68:1367.
11. Moreno-Rodríguez, R, Tejada-Cruz, A, Díaz-Vega, M. COVID-19. Educación Inclusiva y Personas con Discapacidad: Fortalezas y Debilidades de la Teleeducación [Internet]. 2020 [cited 19 Jan 2021]. Available from: http://riberdis.cedd.net/bitstream/handle/11181/6127/Educaci%c3%b3n_inclusiva_y_personas_con_discapacidad.pdf?sequence=1&rd=0031475645818591
12. Taylor SJ. Introducción a los métodos de investigación cualitativos. España: Paidós Básica; 1987.
13. Orús M, Vived E. Discapacidad, edad adulta y vida independiente. Un estudio de casos. Educ. Divers. 2010; 4:101-24.

14. World Blind Union. Potenciar las voces: nuestras vidas, nuestra decisión [Internet]. 2020 [cited 19 Jan 2021]. Available from: https://worldblindunion.org/es/covid-19-amplifying-voices-our-lives-our-say/

15. CEPAL. Personas con discapacidad ante la enfermedad por coronavirus (COVID-19) en América Latina y el Caribe [Internet]. 2020 [cited 19 Jan 2021]. Available from: https://www.cepal.org/es/publicaciones/45491-personas-discapacidad-la-enfermedad-coronavirus-covid-19-america-latina-caribe

16. Moreno M. Realidad y contexto situacional de la población con limitación visual en Colombia. Una aproximación desde la justicia y el desarrollo humano. 1st Ed. Bogotá: Instituto Nacional para Ciegos; 2012.

17. Peña-Estrada CC, Vaillant-Delis M, Soler-Nariño O, Bring-Pérez Y, Domínguez-Ruiz YI. Personas con Discapacidad y Aprendizaje Virtual: Retos para las TIC en Tiempos de Covid-19. Rev. Int. Tecnol. Educ. Docentes 2.0. 2020; 9(2):204–11.

Caregiver overload and factors associated with care provided to patients under palliative care

Original article

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Caregiver overload and factors associated with care provided to patients under palliative care

Abstract

Objective. To identify overload and associated factors among caregivers of adult patients receiving palliative care. **Methods.** Descriptive, quantitative, and cross-sectional study addressing 40 adults under palliative care and their respective caregivers enrolled in the Home Care System in Ribeirão Preto, Brazil. Data concerning the patients included demographic profile and Mini-Mental State Examination. A form was used to collect the caregivers' demographic data along with the Zarit Burden Interview Scale, Self-Reporting Questionnaire, Beck Depression Inventory, and Coping Strategies Inventory. **Results.** Regarding the patients, 84.2% were women, 52.6% were over 80, 65.8% had no partner, and 76.3% presented cognitive impairment. The caregivers were mostly women (84.5%), aged 56.67 years old on average, were the patients' children (42.5%); had no

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partner (55%), and lived with the patient (77.5%). The mean score obtained in the burden scale was 28.78 points, 32.5% had stress, and 42.5% depression. Regarding coping strategies, the ones most frequently used were positive reappraisal (12.8), withdrawal (10.2), and problem solution (9.7). A positive and statistically significant correlation was found between time spent with care (days and hours) and escape/avoidance with overload. Linear regression analysis revealed an association between being a woman ($p=0.002$), number of days spent with care ($p=0.004$), and depression ($p<0.001$) with overload. **Conclusion.** Being a woman, spending more days providing care, and depressive symptoms were associated with caregiver overload.

Descriptors: caregivers; palliative care; home care service.

Sobrecarga y factores relacionados en el cuidador de pacientes en cuidados paliativos

Resumen

Objetivo. Identificar la sobrecarga y los factores relacionados en el cuidador de pacientes adultos en cuidados paliativos. **Métodos.** Estudio descriptivo, cuantitativo y transversal que contó con la participación de 40 adultos en cuidados paliativos atendidos en el Sistema de Atención Domiciliaria, Ribeirão Preto, Brasil y sus respectivos cuidadores principales. La recolección de la información consistió en el perfil demográfico y en el *Mini Mental State Examination*. Para el cuidador, se utilizó el perfil demográfico, la Escala de Sobrecarga de Zarit, *Self-Reporting Questionnaire*, el Inventario de Depresión de Beck y el Inventario de Estrategias de Coping. **Resultados.** Con relación a los pacientes, 84.2% eran mujeres, 52.6% cuentan con una edad superior a los 80 años, 65.8% no tienen pareja y 76.3% sufren de déficit cognitivo. Los cuidadores fueron predominantemente del sexo femenino (84.5%), con una edad promedio de 56.67 años, eran hijos (42.5%), sin compañero (55%) y vivían con el paciente (77.5%). El promedio de sobrecarga fue 28.78 puntos. Además, 32.5% presentaron estrés y 42.5% depresión. Con relación al *Coping*, las estrategias más utilizadas identificadas por la media fueron reevaluación positiva (12.8), alejamiento (10.2) y resolución de problemas (9.7). Hubo correlación significativa positiva entre el tiempo de cuidado (días y horas) y la estrategia de Escape, y entre la fuga y la sobrecarga. En el análisis de regresión

lineal, se identificó asociación de la sobrecarga con: sexo femenino (p=0.02), número de días de cuidado (p=0.04) y depresión (p<0.001). **Conclusión.** Fue evidenciado que factores como ser mujer, un mayor número de días cuidando del paciente y presentar síntomas depresivos están asociados con la sobrecarga en el cuidador.

Descriptores: cuidadores; cuidados paliativos; serviço de assistência domiciliar.

Sobrecarga e fatores relacionados no cuidador de pacientes em cuidados paliativos

Resumo

Objetivo. Identificar a sobrecarga e os fatores relacionados no cuidador de pacientes adultos em cuidados paliativos. **Métodos.** Estudo descritivo, quantitativo e transversal com 40 adultos em cuidados paliativos e seus respectivos cuidadores principais atendidos pelo Sistema de Atenção Domiciliar, Ribeirão Preto, Brasil. A coleta das informações sobre os pacientes foram o perfil demográfico e Mini Exame do Estado Mental. Para o cuidador foi utilizado o perfil demográfico, Escala de sobrecarga de Zarit, Self-Reporting Questionnaire, Inventário de Depressão de Beck e Inventario de Estratégias de Coping. **Resultados.** Quanto aos pacientes, 84.2% eram mulheres, 52.6% com idade superior de 80 anos, 65.8% sem companheiro e 76.3% com deterioro cognitivo. Os cuidadores foram predominantemente do sexo feminino (84.5%), média de idade de 56.67 anos; eram filhos (42.5%); não tinham companheiro (55%) e viviam com o paciente (77.5%). A média de sobrecarga foi de 28.78 pontos. Ademais, 32.5% apresentaram estresse e 42.5% depressão. Quanto ao Coping, as estratégias mais utilizadas identificadas pelas médias foram reavaliação positiva (12.8), afastamento (10.2) e resolução de problemas (9.7). Houve correlação significativa positiva entre o tempo do cuidado (dias e horas) e a estratégia de esquiva e fuga com a sobrecarga. Na análise de regressão linear identificou-se associação entre o sexo feminino (p=0.002), número de dias do cuidado (p=0.004) e depressão (p<0.001) com a sobrecarga. **Conclusão.** Foi evidenciado que fatores como ser mulher, maior número de dias cuidando do paciente e apresentar sintomas depressivos estão associados com a sobrecarga do cuidador.

Descritores: cuidadores; cuidados paliativos; servicio de atención domiciliaria.

Introduction

An estimated 40 million people require palliative care (PC) every year; 78% of these individuals live in developing countries. With epidemiological and demographic changes, Non-communicable Chronic Diseases (NCDs) are the leading cause of a condition in which PC is required that exposes the finitude of life while promoting autonomy during the dying process.[1] PC is defined as holistic care provided to individuals at any age, suffering from a severe illness, especially those experiencing the end of life. The objective of which is to improve the quality of life of patients and their families.[2] A patient receiving PC may present physical, psychopathological, social, or spiritual changes. These changes are even more apparent when a patient is at home, which may require changes in the family environment to accommodate care actions, emotionally affecting family members and mainly caregivers, potentially causing overload and decreased quality of life.[3] PC takes into account the patient-family pair, that is, the provider and recipient of care,[4] considered the first and most important health alliance, as this pair shares particularities and familiarity that favor the monitoring of the health-disease process.[5]

An informal caregiver is generally an individual who provides unpaid care and possibly experiences restrictions arising from the responsibility of providing care, which may lead to a condition called caregiver overload.[6] Caregiver overload is a psychological situation that results from a combination of physical strain, emotional pressure, restricted social life, and financial/economic demands determined by the process of providing care to an ill individual. Overload may become more intense when the patient is diagnosed with an incurable disease.[7] Overload may result from various factors, but it is mainly influenced by the health condition of individuals under PC. The phase causing the most intense overload is the end of life, when patients may experience pain, insufficient respiratory distress, mental confusion, anxiety, or depression, requiring caregivers to deal with these demands and bring balance into the care process.[8]

A patient receiving PC demands time from caregivers, who need to adapt their lives to the patient's routine and needs, which may cause physical changes (back pain and loss of sleep), compromise domestic chores, lead to psychological (depression and stress) and social changes (isolation, unemployment, breaking ties) causing caregivers to experience health problems.[5] The increased number of patients requiring PC due to NCDs, or aging and increased life expectancy, has led more families to deal with the difficulties of taking care of a family member. This study is relevant because it sheds light on health demands and gives a direction to the care plan devised to the patient-family/caregiver. From this perspective, this study's objective

was to analyze caregiver overload and associated factors among the caregivers of adult or elderly patients receiving palliative care.

Methods

Descriptive, quantitative, and cross-sectional study conducted in the Home Care Service of the City Health Department in Ribeirão Preto, Brazil. The study's population was recruited from the Home Care Service database, which included 150 patients, 96 of whom were receiving palliative care. Fifteen of these patients refused to participate, 12 had moved to another city, 15 had died, eight changed their phone numbers, and six were hospitalized at the time of data collection, so that 40 patients and their respective caregivers, enrolled in the Home Care Service from January to April 2019 composed the final sample. Inclusion criteria used for adult/elderly patients were: being enrolled in the Home Care Service, 18 years old or older, capable of answering the instruments or being accompanied by an informal caregiver, and receiving PC. Inclusion criteria for caregivers were: being the primary caregiver and aged 18 years old or older.

A meeting was scheduled at the patient's home, and undergraduate and graduate students previously trained by the study's coordinator held a 30-minute interview to collect data from both participants, using the following instruments:

For patients

- Sociodemographic profile: information regarding the patients' sex (male/female), age (complete years), marital status (with or without a partner), education (years of schooling), number of children, number of people living with the adult-elderly patient, and the patient's and family's monthly income.

- Mini-Mental State Examination (MMSE): instrument addressing cognitive function. It was translated and validated to Portuguese,[9] and its questions are grouped into seven categories. The total score ranges from zero to 30, and the cutoff points validated for the Brazilian population are: 20 points for illiterate individuals, 24 for individuals from 1 to 4 years of education, 26.5 points for individuals from 5 to 8 years of schooling, 28 for individuals from 9 to 11 years of schooling, and 29 for individuals with more than 11 years of schooling.[9]

For caregivers

- Sociodemographic profile: addressing information such as sex (male/female), age (full years), marital status (with or without a partner), kinship, how long the caregiver has provided care to the patient, how many hours and days are spent in the care provided to the patient, and knowledge regarding the patient's disease.

- Zarit Burden Interview Scale: translated and validated for the Brazilian culture,[10] this scale assesses perceived impact on physical and emotional health, social activities, and financial conditions. The instrument is composed of 22 questions, and its score ranges from zero to 88. There is no cutoff point; the higher the score, the greater the caregiver's perceived overload.

- Self-Reporting Questionnaire (SRQ): developed and validated in Brazil,[11] the objective of which is to detect emotional distress in the general population. It is composed of 20 close-ended questions (yes/no answers). The higher the frequency of positive answers, the more intense the emotional stress. Its score ranges from 0 to 20, with a cutoff point equal to eight.[8]

- Beck Depression Inventory: developed by the American Psychiatric Association to detect depressive symptoms and later validated to Portuguese.[12] It consists of 21 items composed of four statements addressing the intensity of depressive symptoms rated on a scale ranging from 0 to 3. The total score is classified as no depression (score from 0 to 10); mild to moderate depression

(11 to 18), moderate to severe depression (19 to 29), and severe depression (30 to 63).

- Coping Strategies Inventory (CSI): validated to Portuguese[13] it encompasses thoughts and actions people adopt to cope with internal and external demands arising from specific stressful situations. It contains 66 questions rated on a four-point Likert scale, ranging from 0: never; 1: seldom; 2: often; 3: almost always. The items are assessed through mean scores obtained within each factor. There are eight factors: confrontation, withdrawal, self-control, social support, responsibility acceptance, escape/avoidance, problem-solving, and positive reappraisal. These factors were classified into two categories: (1) functional strategies, composed of self-control, social support, problem-solving, positive reappraisal, and responsibility acceptance, and (2) dysfunctional strategies, which correspond to confrontation, withdrawal, and escape/avoidance. Data analysis included the sum of the scores assigned to each item of the same factor, divided by the factor's total number of items. Hence, the factors with the highest means, considered to be the most frequently used, were identified along with the items (strategies) with the highest means, that is, the strategies the study's participants used the most.

Microsoft Excel® was used to tabulate data, which were later imported to the IBM SPSS, version 25. Descriptive statistics were used along with central tendency (mean and median) and dispersion measures (standard deviation) for quantitative variables, and frequency and percentages were used for categorical variables. Additionally, the Spearman's correlation was used to compare the means between Coping strategies and caregiver overload. The Mann-Whitney test was used to identify associations between the different factors with overload. Linear regression was used in the final analysis, with caregiver overload being the outcome variable. The significance level was established at $p<0.05$ with a 95% confidence interval for all the statistical tests.

The study was approved by the City Health Department at Ribeirão Preto and the Institutional Review Board at the University of São Paulo at Ribeirão Preto, College of Nursing (No. CAE 90111018.8.0000.5393). All the participants (patients and caregivers) signed two copies of free and informed consent forms and kept one copy.

Results

Most of the 40 patients participating in the study were women (84.2%), aged over 80 (52.6%) with a mean of 76.5±13.8, had no partners (65.8%), lived with other family members (68.4%), and presented cognitive deficit (76.3%). The patients lived with 3.11 people on average, had 5.5 children, and a monthly income of R$1,850.63 (1 U$=R$ 4.06), while the family's income was 3.75 times the minimum wage. Regarding the caregivers, most were women (84.5%), aged 56.7 years old on average. The caregivers were the patients' children (42.5%), did not have a partner (55%), lived with the patient (77.5%), and had a monthly income of R$1,299.02 on average. The caregivers had provided care for an average of 82.66 months and spent 6.73 days and 20.62 hours/day providing care to patients.

Regarding caregiver overload, a mean of 28.78 points was found. Additionally, 32.5% of the caregivers experienced stress, and 42.5% presented some depressive symptoms. Regarding coping strategies, the caregivers most frequently used positive reappraisal (mean=12.88), withdrawal (10.25), and problem-solving (9.78) (Table 1).

Table 1. Caregiver assessment according to the Zarit Burden Interview Scale, Self-Reporting Questionnaire, Beck Depression Scale, and Coping Strategies Inventory

Variable	Descriptive statistics
Overload; mean±SD	28.8 ± 19.7
Self-Reporting Questionnaire; number (%)	
No stress	27 (67.5)
With stress	13 (32.5)
Beck Scale; number (%)	
No Depression	23 (57.5)
Mild to moderate Depression	6 (15)
Moderate to severe Depression	6 (15)
Severe Depression	5 (12.5)
Coping Strategies; Mean±SD	
Positive reappraisal	12.9±6.3
Withdrawal	10.3±4,6
Problem-solving	9.78±5.2
Self-control; Mean±SD	9.77±4.4
Social support	8.15±4.6
Confrontation	6.58±3.8
Escape and avoidance	6.48±4.6
Acceptance responsability	4.97±3.3

Analysis of the correlation between the patients' and caregivers' variables, relationship with care, and coping strategies with overload scale, revealed that the time spent providing care and the number of days and hours providing care presented a low positive correlation. The escape/avoidance strategy presented a statistically significant moderate positive correlation (Table 2).

Table 2. Correlation between the patients' variables, caregivers' variables, and coping strategies with caregiver overload

Variable	Correlation	*p*-value
Patient's age	-0.007	0.96
Caregiver's age	0.192	0.23
Caregiver's schooling	-0.068	0.67
How long caregiver provides care	0.310	0.05
How many days/week	0.343	0.03
How many hours/day	0.318	0.04
Coping strategies		
Confrontation	0.087	0.59
Withdrawal	0.201	0.21
Self-control	-0.110	0.50
Social support	-0.201	0.21
Responsibility acceptance	0.102	0.53
Escape and avoidance	0.421	<0.001
Problem-solving	-0.070	0.66
Positive reappraisal	-0.067	0.68

Some variables were associated with the score obtained in caregiver overload, such as the patient's marital status (patients without a partner lead to more significant overload), caregiver's sex (women experience more overload than men), and caregivers experiencing stress or depressive symptoms (Table 3).

Table 3. Comparison of the means between the patients' and caregivers' variables, Self-Reporting Questionnaire, and Depression with overload among caregivers of adult and elderly patients receiving palliative care

Variable	Category	Mean	*p*-value
Patient's sex	Male	21.6	0.60
	Female	19.6	
Patient's marital status	Without partner	15.5	0.04
	With partner	23.1	
Cognitive status	Without deficit	25.3	0.13
	With deficit	18.9	
Caregiver's sex	Male	11.0	0.01
	Female	22.5	
Caregiver's marital status	Without partner	19.8	0.74
	With partner	21.0	
Self-Reporting Questionnaire	Without stress	16.5	<0.001
	With stress	28.6	
Depression	Without depression	16.5	0.01
	With depression	25.8	

The model's goodness of fit revealed that the variables being a woman, number of days providing care to patients, and depressive symptoms are factors related with caregiver overload (Table 4).

Table 4. Association between the study's variables and caregiver overload

Variables	β	CI 95% do b	*p*-value
Constant	-60.81	-117.89 - -3.73	0.03
Female caregiver (vs. male caregiver)	15.56	2.27 – 28.84	0.02
Number of days providing care	7.47	1.36 – 14.58	0.04
Total Beck depression inventory	1.91	1.43 – 1.99	<0.001

Discussion

The progression of the illness of a patient under PC, even with long-term treatment for chronic disease, requires health care for life. Thus, the family of a patient receiving PC needs to adapt its daily routine to meet this patient's health needs, especially the primary caregivers who provide care for most of the time. This study shows that most caregivers were women, had children, had no partner, lived with the elderly individual, and obtained a mean overload score of 28.78 points. Additionally, caregiver overload was associated with being a female caregiver, the number of days providing care, and depressive symptoms.

The demographic profile of caregivers is similar to that presented by other studies addressing this topic,[14,15] in which results are related to the caregivers' sex and kinship to the patient, though different studies found that caregivers had a partner/spouse.[3,15] In a still sexist society, families experiencing the need to provide care usually assign this responsibility to daughters, who, in addition to meet the needs of a patient, also assume other responsibilities within the family. Even though daughters assume the responsibility to provide care, many caregivers are older women taking care of other elderly individuals.[16] Nonetheless, being the patient's child, caregivers play an essential role within the family, and in most cases, need to assume this responsibility as they are the only child, single, and have no one else to share this duty.[17]

The mean score obtained in the Zarit Burden Interview Scale[14] was 28.78 points. Brazilian authors verified a lower mean (17.88) among caregivers located in São Paulo, Brazil.[14] Another study conducted in the Home Care Service located in Porto Alegre, Brazil, addressing 80 caregivers of adult patients, verified a mean overload score of 41.04 points.[18]

Caregiver overload cause changes in the relationship established with the family, at work, income, leisure, and in the caregiver's mental and physical health.[3] This overload is linked to the patient's illness.[15] Primary caregivers are seldom prepared to assume all the responsibilities that are placed on them and often have to face unexpected situations and tasks that require health workers to provide proper guidance.[19]

Overload was correlated with the escape/avoidance strategy. In one study conducted with 225 caregivers, the authors identified that the three most frequently used strategies were self-control, positive reappraisal, and planned

problem-solving, which alleviated caregiver overload and improved the care plan of patients undergoing hemodialysis, while confrontation and escape/avoidance were the least used strategies.[20] The escape/avoidance strategy is related with an attempt of caregivers to deny the current situation of their family member, not being able to overcome the challenging situation, and experiencing negative feelings, especially regarding the patient's death.[21]

Data analysis showed an association between caregiver stress and overload. The long-term disease of a patient receiving care at home is a situation that leads to stress, threatening an individual's personal, familiar, and social balance. Lack of balance leads caregivers to experience problems, as they no longer have a problem-solving mechanism, experiencing disorganization and negative feelings such as fear, guilt, and anxiety.[22]

Women also experienced more intense overload compared to male caregivers. The hypothesis is that family care dynamics changed after women entered the job market. In addition to working outside the home, women assume the role of mothers, wives, and homemakers; that is, women assume an excess of responsibilities, which, combined with the caregiver role, can lead to overload.[23]

An association was found between the number of days providing care and caregiver overload. Delalibera *et al.*[14] report that caregivers provided care for an average of 24 months, and 38.3% presented moderate overload. In this context, in which caregivers spend many hours providing care to patients and often relegate the care of their home, self-care is compromised, and their health may be harmed.[5,8] Additionally, when caregivers cannot perform daily tasks due to a lack of time, they break family bonds and spend less time socializing with friends, at work, or enjoying leisure time. This change in routine, which is adapted to provide care to someone else, generates frustration and potential physical and emotional overload, that is, caregivers abdicate their own needs and interests to provide care, even though no psychological or material support is provided, which in turn, may lead to depression and stress.[24]

The relationship between depression and caregiver overload may be influenced by various sociocultural factors such as sex, age, race, lack of social support, which may influence how caregivers respond to overload,[25] harming the family's functioning. Hence, this study identified that depressive symptoms are associated with caregiver overload.

This study has two limitations: 1. The participants were recruited from a database provided by a Home Care Service, which presented inconsistent data, hindering the identification and retrieval of information; 2. The sample's small size may be related to the population's particular characteristics so that inferences concerning this study's results cannot be generalized to other populations. Data analysis revealed that the factors associated with caregiver overload were being a woman, number of days providing care to patients, and depressive symptoms.

This study contributes to scientific knowledge concerning overload among the caregivers of patients receiving palliative care and monitored by a Home Care Service at home. Attention should be paid to the cultural, historical context in which this responsibility is assigned to female caregivers, to the fact that the mental health of caregivers is often neglected, and on how nurses have aided these caregivers to manage their health. Therefore, future studies are recommended to address a larger sample of caregivers of patients under palliative care and implement follow-up to devise strategies, care plans, and interventions intended to decrease caregiver overload and later become part of palliative care protocols. It is crucial that nursing workers are attentive to the health needs of patients and caregivers, heeding the needs of caregivers and enabling them to provide quality and effective care to patients receiving PC.

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References

1. Organización Mundial de la Salud. Cuidados paliativos: datos y cifras, 2018 [Internet]. 2019 [cited 28 Jan 2021]. Available from: http://www.who.int/es/news-room/fact-sheets/detail/palliative-care.
2. International Association for Hospice Palliative Care. Global Consensus-based palliative care definition, 2018[Internet]. 2019 [cited 28 Jan 2021]. Available from: https://hospicecare.com/what-we-do/projects/consensus-based-definition-of-palliative-care/definition/
3. Fhon JRS, Gonzales JJT, Huaman T, Marques S, Rodrigues RAP. Overburden and quality of life of the primary elderly caregiver. Av. Enferm. 2016; 34(3):251-8.
4. Gomes B, Calanzani N, Curiale V, McCrone P, Higginson IJ., Brito M. Effectiveness and cost-effectiveness of home palliative care services for adults with advanced illness and their caregivers. Sao Paulo Med. J. 2016; 134(1):93-4.
5. Schimtz, GA. Síndrome de Burnout: uma proposta de análise sob enfoque analítico-comportamental. Dissertação (mestrado) Universidade Estadual de Londrina. 2015.
6. Jesus ITM, Orlandi AAS, Zazzetta MS. Burden, profile and cere: caregivers of socially vulnerable elderly persons. Rev. Bras. Geriatr. Gerontol. 2018; 21(2):194-204.
7. Rezende G, Gomes C, Rugno F, Carvalho R, De Carlo M. Caregivers burden in people in palliative care: an integrative literature review. Medicina. 2016; 49(4):344-5.
8. Araújo J, Leitão EM. O cuidador do paciente em cuidados paliativos: sobrecarga e desafios. HUPE. 2012; 11(2):77-81.
9. Brucki SMD, Nitrini R, Caramelli P, Bertolucci PHF, Okamoto IH. Suggestions for utilization of the mini-mental state examination in Brazil. Arq. Neuro-Psiquiatr. 2003; 61(3B):777-81.
10. Scazufca M. Brazilian version of the Burden Interview scale for the assessment of burden of care in careers of people with mental illnesses. Rev. Bras. Psiquiatr. 2002; 24(1):12-7.
11. Mari JJ, Williams P. A validity study of a psychiatric screening questionnaire (SRQ-20) in primary care in the city of São Paulo. Br J Psychiatry. 1986:148:23-26.
12. Gorestein C, Andrade L. Beck depression inventory: psychometric properties of the portuguese version. Rev Psiq Clin. 1998; 25(5):245-250.
13. Savóia MG, Santana PR, Mejias NP. The adaptation of coping strategies inventory by Folkman and Lazarus into portuguese. Psicol. USP. 1996; 7(1-2):183-201.
14. Delalibera M, Barbosa A, Leal I. Circumstances and consequences of care: characterization of the family caregiver in palliative care. Ciênc. Saúde Colet. 2018; 23(4):2351-62.
15. Muniz EA, Freitas CASL, Oliveira EM, Lacerda MR. Overload degree of caregivers of elderly assisted at home by the family health strategy. Saúde Debate. 2016; 40(110):172-82.
16. Meira EC, Reis LA, Gonçalves LHT, Rodrigues VPP, Philipp RR. Women's experiences in terms of the care provided to dependent elderly: gender orientation for care. Esc. Anna Nery. 2017; 21(2):e20170046.
17. Augusto FM, Silva IP, Ventura MM. Child caregivers: choice, changes and challenge. Rev Kairos Gerontol. 2009;12(2):103-18.
18. Girardi-Paskulin LM, Kottwitz-Bierhals CCB, Santos NO, Baltar-Day C, Oliveira-Machado D, Morais EP, et al. Depressive symtptoms of the elderly people and caregiver´s burden in home care. Invest. Educ Enferm. 2017;35(2):210-220.
19. Jesus ITM, Orlandi AAS, Zazzeta MS. Burden, profile and care: caregivers of socailly vulnerable elderly persons. Rev Bras Geriatr Gerontol. 2018;21(2):194-204.

20. Alnazly E. Coping strategies and socio-demographic characteristics among Jordanian caregivers of patients receiving hemodialysis. Saudi J Kidney Dis Transpl. 2016;27(1):101-106.
21. Cunha AS, Pitombeira JS, Panzetti TMN. Oncological palliative care: perception of caregivers. J Health Biol Sci. 2018;6(4):383-390.
22. Souza LR, Silveira HJ, Bolzan DLL, Marques SVM, Meller ME, Waleska SP. Overload in care, stress and impacto n the quality of life of surveyed caregivers assisted in primary care. Cad Saúde Colet. 2015, 23(2):140-149.
23. Oliveira AMG, Machado DMO, Leite FCCS, Gomes GT, Stélio SF, Santos BR. Caring for the carer: quality of life and burden off emale caregivers. Rev. Bras. Enferm. 2019; 72(3): 728-736.
24. Ejem D, Bakitas MA, Bauldry S, Dentrea P. Caregiver burden, care recipient depressive symptomology and social exchange: does race matter? J Palliat Care. 2018;33(2):100-108
25. Dionne-Odom JN, Azuero A, Lyons K, Hull JG. Benefits of early versus delayed palliative care to informal family caregivers of patients with advanced cancer: outcomes from the ENABLE III randomized controlled trial. J Clin Oncol. 2015;33(13):1446-1452.

Original article

Barriers and facilitators to breastfeeding support practices in a neonatal intensive care unit in Colombia

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Barriers and facilitators to breastfeeding support practices in a neonatal intensive care unit in Colombia

Abstract

Objective. To assess breastfeeding support practices and related barriers and facilitators in a large Intensive Care Unit, Neonatal (NICU) in Medellín, Colombia, as part of a broader quality improvement initiative to enhance breastfeeding support. **Methods.** A mixed-methods descriptive design was used to collect data on care practices and outcomes related to NICU breastfeeding support. Data sources included the Neo-BFHI's self-assessment questionnaire of breastfeeding policies and practices, clinical observations, and a retrospective review of 51 patient charts. **Results.** Of the 51 charts reviewed, 98% of the infants received breastmilk during their hospitalization but the majority (84%) also received formula and only 8% of infants were exclusively breastfed

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at the time of NICU discharge. All NICU staff received education on mother and baby-friendly care, and the unit complied with the International Code of Marketing of Breast-milk substitutes. However, resources to support lactation (e.g., access to breastfeeding specialists, breast pumps, written teaching materials for parents) were limited, and infants were only allowed to consume milk expressed within the hospital. Mother-infant separation, as well as staff beliefs and care routines, also limited important breastfeeding support practices such as skin-to-skin care and early initiation of direct breastfeeding. **Conclusion.** The self-assessment questionnaire and observations revealed a high value for breastfeeding and a family-centered approach to care in the NICU. Key challenges to sustaining breastfeeding in the NICU included a lack of facilities for supporting parental presence, barriers to expression and provision of mother's milk, and a high rate of bottle-feeding with formula.

Descriptors: infant, newborn; breastfeeding; intensive care units, neonatal; milk, human; quality improvement.

Barreras y facilitadores de las prácticas de apoyo a la lactancia materna en una unidad de cuidados intensivos neonatales en Colombia

Resumen

Objetivo. Evaluar las prácticas de apoyo a la lactancia materna y las barreras y los facilitadores relacionados en una gran unidad de cuidados intensivos neonatal (UCIN) de Medellín, Colombia. **Métodos.** Se utilizó un diseño descriptivo de métodos mixtos para recopilar información sobre las prácticas de atención y los resultados relacionados con el apoyo a la lactancia materna en la UCIN. Las fuentes de datos incluyeron la encuesta de autoevaluación de las políticas y las prácticas de lactancia materna de Neo-BFHI, observaciones clínicas y una revisión retrospectiva de las historias clínicas de pacientes. **Resultados.** De las 51 historias clínicas revisadas, el 98% de los bebés recibieron leche materna durante su hospitalización, pero la mayoría (84%) también recibió fórmula y solo el 8% de los bebés fueron amamantados exclusivamente al momento del alta de la UCIN. Todo el personal recibió educación sobre cuidado amigable a las madres y sus bebés, y la unidad cumplió con el Código Internacional de Comercialización de Sustitutos de la Leche Materna. Sin embargo, los recursos para apoyar la lactancia (por ejemplo, el acceso a especialistas, extractores de leche, material didáctico escrito para los padres) fueron limitados y los bebés solo podían consumir leche extraída dentro del hospital. La separación madre-hijo, así como las creencias del personal y las rutinas de atención, también limitaron prácticas importantes de apoyo como el cuidado piel con piel y el inicio temprano de la lactancia materna directa. **Conclusión.** El

cuestionario de autoevaluación y las observaciones revelaron un alto valor de la lactancia materna y un enfoque de atención centrado en la familia en la UCIN. Los desafíos clave incluyeron la falta de instalaciones para apoyar la presencia de los padres, las barreras para la extracción y el suministro de leche y una alta tasa de alimentación con biberón con fórmula.

Descriptores: recién nacido; cuidado intensivo neonatal; lactancia materna; leche humana; mejoramiento de la calidad.

Barreiras e facilitadores das práticas de apoio à amamentação em uma Unidade de Terapia Intensiva Neonatal na Colômbia

Resumo

Objetivo. Avaliar as práticas de apoio à amamentação e as barreiras e facilitadores relacionados em uma grande Unidade de Terapia Intensiva Neonatal -UTIN- em Medellín, Colômbia. **Métodos.** Um desenho descritivo de métodos mistos foi usado para coletar informações sobre as práticas de cuidado e resultados relacionados ao apoio à amamentação na UTIN. As fontes de dados incluíram a Pesquisa de Autoavaliação de Políticas e Práticas de Amamentação da Neo-IHAC, observações clínicas e uma revisão retrospectiva dos registros dos pacientes. **Resultados.** Dos 51 prontuários analisados, 98% dos bebês receberam leite materno durante a internação, mas a maioria (84%) também recebeu fórmula e apenas 8% dos bebês foram amamentados exclusivamente na alta da UTIN. Todos os funcionários da UTIN receberam educação sobre cuidados amigáveis para mães e bebês, e a unidade estava em conformidade com o Código Internacional de Comercialização de Substitutos do Leite Materno. No entanto, os recursos para apoiar a amamentação (por exemplo, acesso a especialistas em amamentação, extratores de leite, materiais de treinamento escritos para os pais) eram limitados e os bebês só podiam consumir leite extraído dentro do hospital. As separações mães-bebês, bem como as crenças da equipe e rotinas de cuidado, também limitaram práticas importantes de apoio à amamentação, como cuidados pele a pele e início precoce da amamentação direta. **Conclusão.** O questionário de autoavaliação e as observações revelaram alto valor para a amamentação e uma abordagem centrada na família para o cuidado na UTIN. Os principais desafios para manter a amamentação na UTIN incluíram a falta de instalações para apoiar a presença dos pais, barreiras para extrair e fornecer leite materno e uma alta taxa de alimentação com mamadeira com fórmula.

Descritores: recém-nascido; terapia intensiva neonata; aleitamento materno; leite humano; melhoria de qualidade.

Introduction

Breastfeeding is a global public health priority. The World Health Organization's (WHO) *Global Strategy for Infant and Young Child Feeding* recommends exclusive breastfeeding for the first six months of life and continued breastfeeding for up to two years and beyond to support optimal infant growth and development.[1] In 2010, Colombia's Ministry of Social Protection, and Ministry of National Education, launched The Ten-Year Breastfeeding Plan (2010-2020) to address the fundamental importance of breastfeeding for the well-being and quality of life of children.[2] The plan outlined five key strategies (e.g., support, promotion, social mobilization) as well as three main objectives, including the development of institutional capacities that support, promote and protect breastfeeding.[2] However, breastfeeding rates in Colombia remain well below the WHO recommendations, with a median duration of exclusive breastfeeding of only 1.8 months and less than 60% of infants still breastfeeding at 1 year.[3]

The benefits of human milk for infants are well-documented and are especially important for ill or premature infants hospitalized in neonatal intensive care units (NICU).[4] Feeding breastmilk to premature or ill infants provides significant nutritional, gastrointestinal, immunological, developmental and psychological benefits. These include lower rates of nosocomial infections, sepsis, necrotizing enterocolitis, and severe retinopathy of prematurity; promotion of maternal-infant attachment; earlier NICU discharge and decreased rates of re-hospitalization for illness in the first year following NICU discharge.[4-6] The Baby-Friendly Hospital Initiative (BFHI) is a global strategy established by the WHO and UNICEF that provides healthcare facilities with a framework to improve practices that promote, protect and support breastfeeding.[7] A 2017 survey of 117 countries found that 86% had implemented the BFHI.[8] Colombia adapted the BFHI to create their own "breastfeeding-friendly" certification program – the IAMI (Women and Child Friendly Institutions).[9] In 2013, the BFHI was expanded into a new international program, the "Neo-BFHI", to address the special breastfeeding support needs of preterm and ill infants hospitalized in NICUs. In addition to adapting the original BFHI's "Ten Steps to Successful Breastfeeding" for healthy term birth infants, the Neo-BFHI added Three Guiding Principles.[10] These guiding principles include focusing on the mother's individualized needs; providing family-centered care and ensuring continuity of care from prenatal to post discharge. The Neo-BFHI's adapted Ten Steps address NICU practices and policies, staff education and organization of the physical environment and provide specific recommendations for supporting the initiation, continuation and exclusivity of breastfeeding.[10] The Neo-BFHI program also includes a self-assessment tool for hospitals to measure their compliance with the Neo-BFHI's Ten Steps and Three Guiding Principles. This tool was recently integrated into an online questionnaire and translated into multiple languages, as part of a large

international survey of breastfeeding policies and practices in neonatal wards.[11]

The busy, stressful NICU environment presents many challenges to successful implementation of Baby-friendly practices.[4] Rates of breastfeeding initiation and duration among infants in the NICU are lower than among healthy infants born full-term.[12] Studies from high-income countries have described numerous barriers to the establishment of breastfeeding in the NICU, including medical fragility and other physical challenges that may interfere with infant feeding, maternal distress related to the infant's hospitalization, physical separation of mothers and infants, lack of privacy, and inconsistent breastfeeding support.[13-16] Other common challenges to breastfeeding faced by mothers include rigid feeding schedules and strict monitoring of infant intake in the NICU, delayed initiation of milk expression or difficulties maintaining adequate milk volumes until the infant is capable of feeding at the breast, and difficulty transitioning the baby from gavage to breastfeeding.[13-16] Whereas similar obstacles to breastfeeding in the NICU have been reported in studies from Brazil,[17,18] no studies were found on breastfeeding practices and outcomes among ill or preterm infants hospitalized in neonatal units in Colombia.

Although not specifically focused on breastfeeding, a previous study exploring staff nurse perceptions of parental readiness for NICU discharge at the Hospital Universitario San Vicente Fundación (HUSVF) in Medellin (Colombia) identified breastfeeding challenges as an important concern related to infant discharge home.[19] Key obstacles to successful breastfeeding reported by the NICU staff included difficulties maintaining milk production, mother-infant separation, and hospital policies that did not allow infants to be fed mother's milk that was expressed outside of the hospital.[19] These findings led to a larger quality improvement initiative to enhance breastfeeding support, based by the Knowledge-to-Action framework.[20] The first step in the "knowledge to action cycle" involves identifying the gap between evidence-based recommendations and actual clinical practice.[20] Guided by the Neo-BFHI's new international guidelines for optimizing breastfeeding support in neonatal units, the objective of this study was to explore breastfeeding support practices and related barriers and facilitators in the NICU at HUSVP.

Methods

A multi-method descriptive design was used. Ethics approval for the study was obtained from all required institutional review boards. The NICU at HUSVF is a university-affiliated, tertiary-quaternary referral center in Medellin, Colombia with 14 intensive care, 24 intermediate care and 2 basic care beds. Members of the team involved in breastfeeding promotion and support included nurses, auxiliary nurses, physicians, physical therapists, social workers, and nutritionists. Data collection methods included:

Medical records review. To obtain preliminary baseline data on breastfeeding-related practices and outcomes in the HUSVP's NICU, a retrospective review of medical records was conducted. A chart review form was adapted and piloted by the unit's nurse managers and breastfeeding resource person to capture any breastfeeding-related data that were systematically documented in the infant's medical records. The medical records of all infants born at < 37 weeks and consecutively discharged live from the NICU between June and September 2017 were reviewed. In the case of multiple births, only the first infant's chart was reviewed, for a total of 51 infants. Data from the chart review were entered into an Excel spreadsheet and analyzed descriptively (means, ranges and/or proportions).

Survey of the unit's breastfeeding practices. A key informant group interview was held with the NICU's two nurse managers and breastfeeding

resource person (an auxiliary nurse with advanced training in breastfeeding support), to complete a Spanish version of the *International Self-Assessment survey of policies and practices to protect, promote and support breastfeeding in neonatal wards*[12] The questionnaire was originally translated from English and reviewed for face validity by a team of neonatal care professionals from four different Spanish-speaking countries (Argentina, Peru, Chile and Spain). The questionnaire contains 63 indicators to assesses compliance with implementation of the Neo-BFHI's Guiding Principles, Steps and Code, using three types of answer choices (Yes or No, and Likert scales ranging from "Never to Always", or "None to All"). The first author (HA) administered a paper copy of the questionnaire to the group, and made hand-written notes of any pertinent verbal comments made by the key informants related to implementation of the Neo-BFHI's indicators. The group interview took approximately two hours to complete.

Observations of NICU practices. To validate the questionnaire responses and collect more detailed information about the NICU's setting, HA conducted three visits to the NICU to complete an observational checklist adapted from the questionnaire questions. The checklist included comment boxes to record any relevant observations related to the Neo-BFHI indicators, including any discrepancies between the questionnaire responses from the group interview and direct observations of practice.

Analysis. To synthesize the different sources of data, a word table was created to integrate the study findings within the broader categories of the Three Guiding Principles and Ten Steps. For each Guiding Principle and Step, the KI's responses on the self-assessment survey and accompanying notes taken during the interviews were summarized in text by HA. Findings were then compared to data from the observational checklist and chart review to explore coherence between the different sources of data and identify any key discrepancies or contradictory findings. A summary text integrating information from all data sources was then created for each Guiding Principle and Step. All four authors participated in reviewing and validating the synthesized study findings.

Results

Chart review

Descriptive findings from the review of 51 infant charts are summarized in Table 1. The infant gestational age at birth ranged from 23.4 to 36.6 weeks, and a majority of infants (71%) were born via cesarean section. Of the 51 infant charts reviewed, almost all infants (98%) received their mother's milk at some point during their hospitalization, and 96% were fed directly at the breast at least once prior to hospital discharge. However, 65% of infants received formula rather than breastmilk for their first oral feed. During their last 24 hours in the NICU, 65% of the infants were fed both formula and breastmilk and only 10% of the mothers intended to exclusively breastfeed following hospital discharge.

Table 1. Sociodemographic data, infant characteristics and infant feeding

Variable	*n* (%)	Mean	Range
Multiple Birth			
Yes	12 (23.5)	-	-
No/not documented	39 (76.5)	-	-
Type of Birth			
Vaginal	15 (29.4)	-	-
Cesarean Section	36 (70.6)	-	-
Infant gestational age at birth (wks)	-	33.6	23.4-36.6
Infant weight at birth (gms)	-	1915	840-2960
Maternal age	-	24	14-44
Baby received mother's milk during NICU hospitalization:			
Yes	50 (98.0)	-	-
Infant gestational age at first oral feed (wks)	-	34.6	26.2-41.2
Route of first oral feed:			
Bottle	43 (84.3)	-	-
Breast	7 (13.7)	-	-
Other	1 (2.0)	-	-
Type of first oral feed:		-	-
Colostrum/Breastmilk	16 (31.2)	-	-
Formula	33 (64.7)	-	-
Other/not documented	2 (4.0)	-	-
Breastfeeding initiated before NICU discharge		-	-
Yes	49 (96.1)	-	-
Infant gestational age at first documented breastfeed (wks)			
Infant weight at first breastfeed (gms)	-	35.6	31.3-41.2
Type of feeding in last 24 hrs of hospitalization:	-	2045	1555-3490
Breastmilk only	4 (7.8)		
Formula only	13 (25.5)	-	-
Formula + Breastmilk	33 (64.7)	-	-
Other	1 (2.0)	-	-
Mother intends to breastfeed exclusively Post NICU discharge			
Yes	5 (8.8)	-	-
No	46 (90.2)	-	-

Compliance with the Neo-BFHI Recommendations

Findings from the self-assessment questionnaire, group interview and observations were integrated and summarized in descriptive notes related to implementation of each of the Neo-BFHI's Guiding Principles and Steps.

Guiding Principle 1: Staff attitudes must focus on the individual mother and her situation

According to the key informants (KIs), mothers on the unit were treated with sensitivity, empathy and respect for their maternal role by the clinical staff. However, due to lack of time and inadequate

staffing, nurses were not always available to support mothers in making informed decisions about milk production, breastfeeding and infant feeding practices. Individualized breastfeeding support was available from the unit's breastfeeding resource person (a nursing assistant who was responsible for the unit's lactation room five days/week); nutrition students from the University of Antioquia; as well as weekly visits by volunteers from a community-based breastfeeding peer support program.

Guiding Principle 2: The facility must provide family-centered care, supported by the environment

Although the term "family-centered care" was new for the KIs, they indicated that parents were always considered to be the most important persons in their infant's life and were encouraged and supported to act as their infant's primary caregiver. All staff were trained in IAMI (i.e., mother and baby-friendly care) principles and the organizational values promoted by the hospital staff included humanization of care and active participation of the patient and family in their health care experience. The KIs also responded that parents were encouraged to be involved in the care of their infant beginning within the first 24 hours of admission, and were kept informed frequently on their infant's progress if they were not able to be with their infant in the first 24 hours. Questions related to the unit's environment evaluated how the unit supported parental presence, as well as the level of light and noise in the NICU. Observations revealed that each incubator had only one plastic chair next to it (or no chair at all), limiting the ability of parents to rest comfortably together by their infant. Family members were not allowed to eat in the unit, but could eat within the same building. There were ten single rooms in the unit where staff were observed adjusting the lighting to the infant's needs, whereas lighting could not be individualized in the shared rooms with multiple cribs. Despite Neo-BFHI recommendations that NICU noise levels should be kept low, both the questionnaire responses and observations suggested this indicator was rarely met. Parental privacy was limited as all patient rooms faced the unit's central nursing station and had glass walls with no curtains, and there were not screens/dividers between incubators.

Guiding Principle 3: The healthcare system must ensure continuity of care from pregnancy to after the infant's discharge

The KIs reported that the NICU frequently worked with other units to coordinate breastfeeding support. For example, the unit's breastfeeding resource person visited other parts pediatric units to support breastfeeding mothers and infants. The KIs also reported that during shift changeover and upon transfer of infants from one unit to another, nurses were always familiar with the nutritional requirements of the infant, if the mother was expressing milk and the infant's clinical history, which was verified during observations of admissions and discharges on the unit. All parents received written information at hospital discharge that included guidance on breastfeeding at home, and when and where to seek medical attention if needed. As well, the chart review revealed that 94% of infants were registered at hospital discharge to receive follow-up care from community-based "Kangaroo Programs".

Step 1: Have a written breastfeeding policy that is routinely communicated to all staff. Although the NICU has a breastfeeding policy in the form of Ten Steps for their IAMI program, it was not specifically adapted for the preterm/sick infant. The IAMI's Ten Steps were available for staff and families on two visible posters in the unit. As part of their breastfeeding policy, the NICU followed the International Code of Marketing of Breast-Milk Substitutes.

Step 2: Educate and train all staff in the specific knowledge and skills necessary to implement this policy. According to the KIs, all staff working in the

NICU receive a 2-hour course on the background and policies of the IAMI, within 6 months of working on the unit. Course content included the IAMI's Ten Steps, the International Code of Marketing of Breast-milk Substitutes and how to support mothers who are not breastfeeding. However, contrary to the Neo-BFHI's recommendations, staff did not receive any supervised clinical training related to breastfeeding support, and it was observed that nurses frequently referred mothers to the breastfeeding resource person in the lactation room when breastfeeding support was needed.

Step 3: Inform hospitalized pregnant women at risk for preterm birth about breastfeeding. The HUSVF provided in-hospital antenatal care to pregnant women who are at risk for preterm delivery or birth of a sick infant. The KIs reported that all pregnant women hospitalized at HUSVF received information about lactation and breastfeeding from the nurses on the antenatal unit, including a pamphlet that described the IAMI's Ten Steps to successful breastfeeding.

Step 4: Encourage early, continuous and prolonged mother-infant skin-to-skin contact/ Kangaroo Mother Care. According to the KIs, skin-to-skin contact with the mother is always attempted in the first hour following delivery for stable infants (regardless of gestational age or delivery type), following a routine pediatric evaluation performed immediately after delivery. The KIs further reported that the parents in the NICU were strongly encouraged to be skin-to-skin with their infants whenever possible. However, observations revealed an informal policy on the unit that parents could only hold their infant skin-to-skin if they were prepared to do so for at least two hours, due to concerns that frequent position changes were stressful for the infant. Although the KIs estimated that infants were placed skin-to-skin an average of 4-6 hours per day if their parents were present in the NICU, this length of skin-to-skin contact was not observed, despite the frequent presence of parents during the day shift.

Step 5: Show mothers how to initiate and maintain lactation, and establish early breastfeeding with infant stability as the only criterion. Education on breastfeeding was provided primarily by the unit's breastfeeding resource person and the NICU nurses. The KIs reported that mothers who wish to breastfeed or give expressed breastmilk to their infants are instructed to initiate expression of milk within the first 6 hours following birth, and to express their milk at least 7 times in 24 hours. Although all mothers were shown how to manually express their milk, no written guidelines were available on the unit. Mothers were observed manually expressing milk or using the unit's only hospital-grade electric breast pump in the lactation room during all three observational visits. The breast pump was operated and cleaned by the breastfeeding resource nurse when she was on the unit Monday-Friday from 7:00-17:00. However, mothers were not allowed to use the pump on their own outside of these hours, due to concerns about the risk of contamination if the pump was not cleaned properly. When the lactation room was not available, mothers had the option to express their milk manually into a cup at their infant's bedside.

According to the KIs, infant stability (rather than gestational age or weight) was the only criteria used to determine the timing of initiation of feeding at the breast, as recommended by the Neo-BFHI. However, observations revealed a common belief among staff that infant sucking abilities were not developed enough for breastfeeding until 34 weeks of gestational age. The chart review confirmed that although 29% of infants received their first oral feeding before 34 weeks gestational age, the majority (84%) had their first oral feed via a bottle rather than at the breast. Although the chart review found that 96% of the infants initiated direct breastfeeding prior to hospital discharge, the mean age at first documented breastfeed ranged from 34.2-41.2 weeks gestational age, with a mean of 35.6 weeks.

Step 6: Give no food or drink other than breastmilk, unless medically indicated. The KIs

reported that all newborns in the NICU were fed solely with human milk (expressed or directly at the breast) unless there was a justified medical reason to use a breast-milk substitute; their mother's expressed milk was not available; or the mother chose not to breastfeed. However, the chart review revealed a high rate of formula use in the NICU, with only 8% of infants receiving nothing but breastmilk at the time of hospital discharge. Although mothers were encouraged to continue expressing their milk to maintain lactation, the NICU's policies prohibited the use of breastmilk expressed outside of the unit due to potential risks of milk contamination. The infant's supply of maternal milk was further restricted by limited access to the unit's sole breast pump, and barriers to maternal visiting during the infant's NICU hospitalization (e.g., having other children to care for at home).

Step 7: Enable mothers and infants to remain together 24h hours/ day. According to unit policies, parents were allowed to stay with their infant at all times day or night, except during sterile medical procedures. However, the unit did not have adequate facilities for mothers to rest comfortably in the unit, nor could they sleep elsewhere in the hospital once they were discharged home following childbirth. The KIs noted that due to the lack of rooming-in and comfort amenities in the NICU (such as a family lounge or eating area), family members rarely spent 24 hours a day on the unit. However, mothers and fathers were seen frequently on the unit between the hours of 7:00-17:00. Sleeping accommodations within a 10-minute walk from the hospital were also available for some parents of infants transferred from outside the city, upon referral by the social worker.

Step 8: Encourage Demand Breastfeeding or, When Needed, Semi-Demand Feeding as a Transitional Strategy for Preterm and Sick Infants. The KIs reported that the unit always followed recommended guidelines for transitioning infants from scheduled to demand feeding, including stopping routine supplementation and fixed feeding schedules once the infant is able to feed directly at the breast, and teaching parents how to recognize infant feeding cues. However, delaying the initiation of direct breastfeeding until 34 weeks gestational age and limited parental visiting were important barriers to complete transition to demand breastfeeding prior hospital discharge.

Step 9: Use alternatives to bottle feeding at least until breastfeeding is well established, and use pacifiers and nipple shields only for justifiable reasons. Questionnaire responses reported that expressed breast milk was always given to the infant by bottle or feeding tube, depending on the age and condition of the infant. The use of alternative oral feeding methods such as cup feeding, dropper, syringe, or spoon was not observed. Bottles were frequently used on the unit, since mothers were not present around-the-clock to breastfeed. However, pacifiers were not available and never used in the unit.

Step 10: Prepare parents continued breastfeeding and ensure access to support after hospital discharge. The KIs reported that since the NICU discharged all infants directly to their homes, discharges were always planned in collaboration with the family and the primary care services located in their neighborhood. The NICU discharge plan was supposed to include early post-discharge follow-up by community-based professionals trained in infant feeding, if the mothers' breastfeeding goals were not established prior to NICU discharge. However, the chart review found that only 10% of the mothers planned to exclusively breastfeed following discharge, although 73% were still providing their infant with some breastmilk at hospital discharge.

Compliance with the International Code of Marketing of Breast-milk Substitutes.

The KIs reported that the HUSVP (including the NICU) adhered to the International Code of

Marketing of Breast-milk Substitutes by refusing free or low-cost supplies of breast-milk substitutes, refraining from advertising or providing samples of breast-milk substitutes, bottles, and pacifiers in the unit, and by keeping infant formula and prepared bottles out of sight in the hospital's milk lab. Located in another building from the NICU, the milk lab was where all infant milk feedings were prepared, bottled, and labelled by the nutritionist and support staff, for distribution around the hospital. According to the KIs, most staff on the unit understand why it was important not to give any free samples or promotional materials from formula companies to mothers, and this practice was not observed on the unit.

Discussion

As the first step in a quality improvement initiative, this project used the new Neo-BFHI recommendations to identify gaps in breastfeeding support in the NICU at the HUSVP in Medellin, Colombia. This is the first paper we are aware of to document NICU breastfeeding support practices in a NICU in Colombia, contributing to scant data on neonatal nursing care in Latin America. Completing the Neo-BFHI's self-assessment questionnaire was the NICU's first exposure to the Neo-BFHI's Guiding Principles and Ten Steps, and the unit's leaders were eager to examine their care practices in light of these new recommendations.

Several discrepancies were noted between the questionnaire responses provided by the unit's leaders, and infant feeding practices observed on the unit or documented in the infant's chart review. Collecting both qualitative and quantitative data during improvement projects is critical for evaluating care quality.[21] For example, the WHO's assessment process for Baby-Friendly accreditation recommend using multiple sources of data to assess compliance with the BHFI, including interviews with managers, staff, and patients; observations of local care practices; the facility's breastfeeding statistics and a review of documents and training curriculum related to BFHI policies.[22] Findings from the chart review also revealed a lack of systematic documentation of practices associated with breastfeeding exclusivity and duration, such as parent/infant skin-to-skin contact time, breastfeeding attempts, maternal pumping volumes and bottle use. Integrating such key clinical indicators into the unit's documentation systems would facilitate data collection for ongoing quality monitoring and benchmarking of breastfeeding support practices.[16]

The Neo-BFHI self-assessment questionnaire identified many local facilitators for breastfeeding success in the NICU, including a strong family-centered care philosophy, a full-time breastfeeding resource person dedicated to the unit, and an almost universal breast milk feeding initiation rate of 98%. However, findings revealed several potential barriers to breastfeeding support that could be targeted for quality improvement. For example, although parents had unlimited access to their infants, a lack of facilities to comfortably support parental presence at their infant's bedside limited the duration of parental visiting. Mother-infant separation in the NICU is well-recognized as a key barrier to the establishment of successful breastfeeding, limiting opportunities for mother-infant bonding (e.g., via skin-to-skin contact) and the transition to direct breastfeeding.[18] An international questionnaire of Neo-BFHI compliance in 917 neonatal units from 36 countries also revealed lower implementation of Step 7, highlighting the challenges of enabling mother-infant contact in the neonatal intensive care environment.[11] Small, low-cost improvements such as providing screens for privacy, having more comfortable (and preferably, reclining) chairs at the bedside or creating a space for parents in or near the NICU to rest and eat, may help prolong maternal visiting and facilitate breastfeeding.

The NICU's policy of not allowing mothers to transport breastmilk expressed outside of the hospital also limited their infant's access to

breast milk, and has been previously associated with maternal distress and decreased lactation in Brazil.[18] To comply with the Neo-BFHI's recommendation of feeding infants only breastmilk, NICUs that lack rooming-in facilities require the necessary teaching tools, policies and resources to support regular maternal expression and safe storage, handling and transport of milk (or access to donor milk).[15] Despite the critical importance of breastfeeding for the health and development of preterm and ill infants, application of the Neo-BFHI's evidence-based guidelines may be challenging in low-resourced settings where families may lack proper sanitation, milk expression equipment or the means to regularly visit their hospitalized infant.

Limitations. As this study only assessed breastfeeding support practices in one NICU, findings may not be generalizable to other settings. Another limitation is that the self-assessment questionnaire was completed by the unit's managers, who may have been subject to a positive response bias. However, this was addressed by collecting more objective data from observations and chart reviews. In future studies, bedside care providers may provide a more realistic assessment of local breastfeeding support practices than busy managers, who may be more removed from clinical activities. Additionally, parents' perceptions of unit compliance with the Neo-BFHI's Ten Steps and Guiding Principles would contribute to a more comprehensive understanding of barriers and facilitators to NCU breastfeeding support.

Conclusion. The Neo-BFHI self-assessment questionnaire combined with chart reviews and observations allowed for the comprehensive assessment of evidence-based practices to support breastfeeding in a Colombian NICU. Findings revealed a high value for breastfeeding and a family-centered approach to care in the NICU. Key challenges to sustaining breastfeeding in the NICU that could be prioritized for practice improvement included a lack of facilities for supporting parental presence, barriers to expression and provision of mother's milk, and a high rate of bottle-feeding with formula.

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References

1. World Health Organization. Guideline: Protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services. Geneve: World Health Organization; 2017.
2. Ministerio de la Protección Social. Plan decenal de lactancia materna: 2010-2020 [Internet]. Bogotá: Ministerio de la Protección Social; 2009.
3. The International Baby Food Action Network (IBFAN), World Breastfeeding Trends Initiative (WBTi). Informe de reevaluación WBTi, Colombia 2016 [Internet]. Bogotá; 2016. Available from: http://www.ibfan-alc.org/WBTi/inf_2016/Colombia%20WBTi%202016.pdf
4. WHO/UNICEF. Protecting, promoting and supporting breastfeeding: the Baby-friendly Hospital Initiative for small, sick and preterm newborns. Geneva: World Health Organization and the United Nations Children's Fund (UNICEF); 2020.
5. Cortez J, Makker K, Kraemer DF, Neu J, Sharma R, Hudak ML. Maternal milk feedings reduce sepsis, necrotizing enterocolitis and improve outcomes of premature infants. J. Perinatol. 2018; 38(1):71-4.
6. Lechner BE, Vohr BR. Neurodevelopmental outcomes of preterm infants fed human milk: A systematic review. Clin. Perinatol. 2017; 44(1): 69-83.
7. World Health Organization. Implementation guidance: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services – the revised Baby-friendly Hospital Initiative. Geneva: World Health Organization; 2018.
8. World Health Organization. National implementation of the Baby-Friendly Hospital Initiative 2017. Geneva: World Health Organization; 2017.
9. Farías-Jiménez P, Arocha-Zuluaga GP, Trujillo-Ramírez KM, Botero-Uribe I. Estrategia Instituciones Amigas de la Mujer y la Infancia (IAMI) con enfoque integral en Colombia. Gac. Sanit. 2014; 28(4):326-9.
10. Nyqvist KH, Maastrup R, Hansen MN, Haggkvist AP, Hannula I, Ezeonodo A, et al. Neo-BFHI: The Baby-friendly Hospital Initiative for Neonatal Wards. Core document with recommended standards and criteria. Nordic and Quebec Working Group. 2015 [cited 02 Feb 2021]. Available from: https://ilca.org/i4a/pages/index.cfm?pageid=4214
11. Maastrup R, Haiek LN, Neo-BFHI Questionnaire Group. Compliance with the Baby-friendly Hospital Initiative for Neonatal Wards (Neo-BFHI): A cross-sectional study in 36 countries. Matern. Child. Nutr. 2018; 15(2):e12690.
12. Campbell C, Miranda P.Breastfeeding trends among very low birth weight, low birth weight, and normal birth weight infants. J. Pediatr. 2018; 200:71-8.
13. Alves E, Rodrigues C, Fraga S, Barros H, Silva S. Parents' views on factors that help or hinder breast milk supply in neonatal care units: systematic review. Arch. Dis. Child. Fetal Neonatal Ed. 2013; 98(6):F511-57.
14. Ikonen R, Paavilainen E, Kaunonen M. Preterm infants' mothers' experiences with milk expression and breastfeeding: An integrative review. Adv Neonatal Care. 2015; 15(6):394-406.
15. Meier P, Johnson T, Patel A, Rossman B. Evidence-based methods that promote human milk feeding of preterm infants: An expert review. Clin. Perinatol. 2017; 44(1):1-22.
16. Parker M, Patel A. Using quality improvements to increase human milk use for preterm infants. Clin. Perinatol. 2017; 44(1):175-86.
17. Moreira Marques, G, Oliveira Pinho LM, de Abreu Rodrigues LS, Alves Martins C, Liégio Matão M E. Breastfeeding: Mothers' experiences who had hospitalized babies in Neonatal Intensive Care Unit. Rev. Enferm. UFPE Online. 2016;10(2):495-500.
18. Tronco C, de Mello Padoin S, Cardosso de Paula C, Peripolli Rodrigues A, Tatsch Neves E, Maciel Weinmann A. Maintenance of the lactation of preterm newborns: Health care routine, mother-child relationship and support. Esc Anna Nery - Rev. Enferm [online]. 2015; 19(4):635-40.
19. Raffray M, Semenic S, Osorio Galeano S, Ochoa Marín SC. Barriers and facilitators to preparing families with premature infants for discharge home from the neonatal unit. Perceptions of health care providers. Invest. Educ. Enferm. 2014; 32(3):379-92.

20. Straus S, Tetroe J, Graham I (Eds). Knowledge translation in health care: Moving from evidence into practice, 2nd edition. Oxford: John Wiley & Sons; 2013. P. 10.
21. Shah A. Using data for improvement [Internet]. BMJ. 2019; 364:e189.
22. Implementation guidance: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services – the revised Baby-friendly Hospital Initiative. Geneva: World Health Organization; 2018.

Nurses' knowledge, attitude and practices on use of restraints at State Mental health care setting: An impact of in-service education programme

Original article

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Nurses' knowledge, attitude and practices on use of restraints at State Mental health care setting: An impact of in-service education programme

Abstract

Objective. To evaluate the effectiveness of short-term in-service education program in improving nurse's knowledge, attitude and self-reported practices related to physical restraint use. **Methods.** A quasi-experimental one group pre-post study was conducted involving nurses working at a tertiary mental health care setting, Dharwad, India. We provided 3 consecutive days of intensive restraint management education (total 6 hours-two hours per day) with a follow-up assessment after one month. The standard questionnaires on knowledge, attitude and practice regarding physical restraints were used as tools for measuring the impact of in-service education program. The program was conducted for a group of five to six nurses at a time. Teaching was done using lecture method,

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group discussion and demonstrations. **Results.** Of the 52 nurses who participated in the study, 52% were male, 58.5% had a baccalaureate degree. The mean age of respondents was 33.3 years, the mean work experience was 6.7 years. The findings of the study revealed that the mean scores on the knowledge regarding physical restraints increased after the in-service education from 6.4 to 8.2 ($p<0.001$). The mean attitude scores improved from 18.5 to 23.1 ($p<0.001$). There was a significant difference in mean practice scores between pre and post-intervention phases (23.7 versus 25.4; $p<0.001$). There was a significant correlation between post-test knowledge, attitude and practice scores. **Conclusion.** The in-service education program improved nurse's knowledge, attitude and self-reported practice scores. This may lead to more effective restraints management by psychiatric nurses.

Descriptors: restraint, physical; psychiatric nursing; health knowledge, attitudes, practice.

Conocimientos, actitudes y prácticas de las enfermeras sobre el uso de medidas de contención física en el entorno público de atención de la salud mental: impacto de un programa de educación en el servicio

Resumen

Objetivo. Evaluar la efectividad a corto plazo de un programa de educación en servicio para enfermeros, el cual tenía como fin mejorar los conocimientos, las actitudes y las prácticas auto-informadas en relación al uso de medidas de contención física. **Métodos.** Se realizó un estudio cuasi-experimental con evaluación de pre y post-intervención de un grupo de enfermeros que trabajaban en un entorno de atención terciaria de salud mental en Dharwad (India). Durante tres días consecutivos, se hizo educación sobre el manejo de la contención física (un total de 6 horas, dos horas por día) con una evaluación de seguimiento después de un mes. Los cuestionarios estándar sobre conocimientos, actitudes y prácticas con respecto a la contención física se utilizaron como herramientas para medir el impacto del programa en servicio. Las sesiones se llevaron a cabo en grupos de cinco a seis enfermeras a la vez. La enseñanza se realizó mediante el método de conferencias, debates en grupo y demostraciones. **Resultados.** De los 52 enfermeros que participaron en el estudio, el 52% eran hombres, el 58.5% tenía un título de bachillerato en enfermería (formación profesional de 4 años). La edad media de los encuestados fue de 33.3 años, con una experiencia laboral media de 6.7 años. Los hallazgos del estudio revelaron que las puntuaciones medias en el conocimiento sobre restricciones físicas aumentaron después de la educación en el servicio de 6.4 a 8.2 ($p<0.001$). Las puntuaciones medias de actitud mejoraron de 18.5 a 23.1 ($p<0.001$). También se observó una diferencia significativa en las puntuaciones medias de práctica entre las fases pre y post-intervención (23.7 versus 25.4). Hubo una correlación significativa entre los puntajes de conocimientos, actitudes

y prácticas posterior a la prueba. **Conclusión.** El programa de educación en el servicio mejoró el conocimiento, las actitudes y las prácticas auto-reportadas de los enfermeros, lo que puede conducir a un manejo más efectivo de la contención física por parte de los enfermeros psiquiátricos.

Descriptores: restricción física; enfermería psiquiátrica; conocimientos, actitudes y práctica en salud.

Conhecimentos, atitudes e práticas de enfermeiros sobre a utilização de medidas de contenção física no ambiente público de atenção à saúde mental: impacto de um programa de educação no serviço

Resumo

Objetivo. Avaliar a eficácia em curto prazo de um programa de educação em serviço para enfermeiros que buscam aprimorar conhecimentos, atitudes e práticas autorreferidas em relação ao uso de medidas de contenção física. **Métodos.** Foi realizado um estudo quase experimental com avaliação pré e pós-intervenção de um grupo de enfermeiras trabalhando em um ambiente terciário de saúde mental em Dharwad (Índia). Educação sobre o manejo da contenção física (um total de 6 horas, duas horas por dia) foi dada por três dias consecutivos com uma avaliação de acompanhamento após um mês. Questionários padronizados sobre conhecimentos, atitudes e práticas em relação à contenção física foram usados como ferramentas para medir o impacto do programa em serviço. As sessões foram realizadas em grupos de cinco a seis enfermeiras de cada vez. O ensino era feito por meio de palestras, discussões em grupo e demonstrações. **Resultados.** Dos 52 enfermeiros que participaram do estudo, 52% eram homens, 58.5% tinham o título de bacharel em enfermagem (4 anos de formação profissional). A idade média dos entrevistados era de 33.3 anos, a experiência de trabalho média era de 6.7 anos. Se realizou o teste t pareado para encontrar a diferença média entre a educação pré e pós-formação em serviço. Os resultados do estudo revelaram que as pontuações médias no conhecimento sobre restrições físicas aumentaram após a educação em serviço de 6,4 para 8,2 ($p<0.001$). As pontuações médias de atitude melhoraram de 18.5 para 23.1 ($p<0.001$). Uma diferença significativa também foi observada nas pontuações médias de prática entre as fases pré e pós-intervenção (23.7 versus 25.4). Houve uma correlação significativa entre as pontuações de conhecimento, atitude e prática pós-teste. **Conclusão.** O programa de educação em serviço melhorou os conhecimentos, atitudes e práticas autorreferidas dos enfermeiros, o que pode levar a um gerenciamento mais eficaz das restrições físicas pelos enfermeiros psiquiátricos

Descritores: restrição física; enfermagem psiquiátrica; conhecimentos, atitudes e prática em saúde.

Introduction

Physical restraint is defined as the restriction of the patient's movements and prevention of his/her moving freely by connecting physical or mechanical devices to the patient's body or by means of a short term physical force applied by the healthcare personnel.[1] These are widely practiced in psychiatric care settings and at times this would be the last option available to reduce treatment interference and keep the patient safe.[2] Studies show that in many countries,>20% of psychiatric patients are restrained physically at some point during their hospitalization.[3] A study conducted in the Indian setting reported that restraint was used as a method of control for violent, suicidal, agitated and delirious patients.[4] In nursing home settings the prevalence rates of restraints use ranged from 19 to 84.6%, while it is reported at 34% in rehabilitation settings.[5] Previous study showed the relatively high prevalence rate of restraint use in local nursing homes and long-term care facilities, clinical observations by many health professionals endorse the widespread use of physical restraints.[6]

Although the restraint intervention is inherently designed to protect patients from harm to self or others, it is associated with many potential complications. Many studies have shown the negative effects of physical restraint on both patient and healthcare personnel.[7] A survey of 142 patients identified the frequency of potentially harmful events and associated psychological distress. This procedure further stimulates aggression among patients and damages the therapeutic relationship between the healthcare personnel and the patient.[8] It is also contrary to the treatment principles and patient dignity.[3] To ensure good quality care the teaching restraint use for nurses deserves better attention.[6] It is the nurse's professional responsibility to ensure the safety of the individual in the hospital environment. Therefore, nurses must know the possible complications of physical restraint and follow up patients who are physically restrained. Psychiatric nurses are responsible for establishing a safe and therapeutic environment for patients, maintaining it and ensuring optimal clinical restraint surveillance based on the restraint application standards.[9] In this context, psychiatric nurses should have adequate knowledge and skill in application of physical restraints.

Several studies have demonstrated that the knowledge of nurses regarding proper use of physical restraints is not satisfactory.[10] Furthermore, some studies showed that nurses have mixed-feelings about the use of physical restraints.[6] A study conducted in Turkey reported that a low percentage of nurses knew the complications of physical restraints.[11] A similar study conducted in Hong Kong determined the inadequate knowledge of nurses about physical restraint. They exhibited negative attitude towards restraint application.[12] In another study moderate knowledge and attitude with strong intension to use physical restraint was found among nurses.[13] Restraining is a

highly preferred practice in psychiatric wards and use of alternative procedures before restraining the patient is minimal.[14] Less than half of the nurses considered alternatives to physical restraint, while most of them did not understand the reasons for using them. A study among psychiatric nurses showed ambivalent attitude towards use of physical restraints among mental health consumers.[15] Another study highlighted some important misunderstandings among nurses regarding use of physical restraints.[16] Further, it was argued that views and attitudes of nurses' towards the use of physical restraints may create a conflict with patients' rights and their autonomy in taking decisions.[17] A recent study conducted in Indian context indicated moderate knowledge and poor attitude among nurses regarding restraint use. This study recommended development of nursing guidelines and training of nursing personnel for proper use of physical restraints.[18]

The knowledge, attitudes and intentions of nurses towards physical restraint use are essential factors that may contribute to effective physical restraint practice.[13] Finding from earlier studies serve as a supporting reason for recognizing the importance of educating nurses on physical restraints. The best approach to improve knowledge and attitudes towards the use of physical restraint is through educational interventions.[12] Providing accurate knowledge, imparting proper skills, cultivating positive attitude, and rectifying irregularities in physical restraint use are all necessary for nurses to improve patient care.[17]

There are some research studies that demonstrate the effectiveness of education interventions on the knowledge, attitude, and practice of nurses towards physical restraint and the frequency of physical restraint use in hospitals.[19, 20] In these studies the duration of education programs varied from 1 hour to 12 weeks.[20] A number of previous studies measured the knowledge, attitude and practices of nursing staff towards the use of restraints in acute, elderly and psychiatric care settings. However, not many studies examined the effectiveness of education program on improving knowledge attitude and practice skills among nurses on physical restraints. Further, there were no formal studies on this issue from India.[21] Hence, the present study was aimed to determine the effectiveness of short-term in-service education program in improving nurse's knowledge, attitude and self-reported practices related to physical restraint use among nurses working in mental health care setting.

Methods

Research design and settings. A quasi-experimental study with one group pre-post test design was carried out at a tertiary mental health care setting in Karnataka, India. It is a state government mental health care setting with 212 beds. Clinical services comprise of inpatient, out-patient, emergency and rehabilitative services. Both voluntary and involuntary admissions along with forensic cases are catered to.

Sampling and participants. The sample consists of 52 registered nurses working at mental health care setting, Dharwad, India. Convenience sampling technique was applied. Of the 59 staff nurses working in the mental health care setting while 3 were on long leave and4 refused to participate, the remaining 52 gave their consent to participate. The data was collected between August 2017andOctober 2017. Inclusion criteria were: (a) registered nurses (b) with minimum 6 months experience in psychiatric wards (c) willing to participate.

Instruments. Demographic information includes gender, age, education qualification and total years of experience in nursing. The standard questionnaire on knowledge, attitude and practice regarding physical restraints was used to collect data from participants. This scale was developed by Janelli et al 1994[22] in the USA for nursing homes. This scale was selected as it

was previously used in India and demonstrated acceptable levels of validity and reliability. The questionnaire consists of 37 items divided into three parts. Part **1**with 11 items deals with the nurse's level of knowledge towards the use of restraints. Each correct answer was scored as 1 and incorrect as 0 with the total possible score ranging from 0 to 11. Higher score denotes higher knowledge about physical restraint use. Part 2 with 14 items measures nursing practices. Participants were asked to respond on a 3-point Likert scale about whether they always, sometimes or never performed these practices. Each item was given a score of 2 for always, 1 for sometimes, 0 for never (potential range 0-28). Reverse scoring was done for negative items. The respondent's score correlated positively with his or her level of proficiency at using physical restraints properly. Part 3 with 12 items measure the attitudes of nurses toward the use of restraints. The participants were asked to respond on a 3-point Likert Scale about whether they strongly agree, agree, disagree or strongly disagree. Each item was given a score of 3 for strongly agree to 0 for strongly disagree. Higher scores thus reflected positive attitude while lower scores reflected negative attitude (potential range 0-36). Reverse scoring was done for negative items. The test-retest reliability coefficients for individual sections (section 1, 2 and 3) of the questionnaire were examined by administering the same instrument repeatedly to 15 nursing students at a 2-week interval. The reliability coefficients for the knowledge, attitudes and practice scales used in this study were 0.75, 0.81 and 0.94 respectively. Content validity for the intervention program was established by taking opinion from 7 experts.

Data collection. Tools were administered to participants on day one. After the pre-assessment participants were attended three consecutive days in-service educations. Post-test was conducted 1-month after the in-service education.

Intervention (In-service education). Participants were invited to the in-service education program for three consecutive days (total 6hrs - two hours per day). The program was conducted for a group of five to six nurses at a time. Total 10 groups completed in-service education.

A structured teaching plan for in-service education was developed in line with the institution policy, expert panel's opinions, and literature review regarding minimising physical restraints use in hospitals. The intervention focused on the myths and facts relating to physical restraints use, physical restraint alternatives, and ethical issues, use of de-escalating methods, handling psycho-social issues, proper application and imparting care during restraints use especially for patients with mental disorders. Teaching was done using lecture method, group discussion and demonstrations. Video teaching and case scenarios were used for group discussion. Demonstration mainly focused on application of physical restraints and safety precautions. A panel of 5 psychiatric nursing experts and psychiatrists verified and validated content of the educational intervention.

Data analysis. The data were analysed using the Statistical Package for Social Science version 22. Descriptive statistics were used to describe demographic variables. A paired t-test was used to compare pre-mean and post-mean knowledge, attitude and practice scores. Cronbach's alpha was used to establish reliability of the instruments. Pearson's correlation coefficient was used to correlate post-test knowledge, attitude and practice scores on physical restraints among nurses.

Ethical considerations. Ethical approval was obtained from the institutional ethics committee before conducting the study. Participation was voluntary and written informed consent was obtained from the participants. The study protocol was approved by the Institute's Ethics Committee.

Results

Nurses demographic and professional characteristics. A total of 25 (48%) female and 27 (52%) male nurses participated in this study, mean age being 33.29 years (SD=7.39). Nearly half of the participants (58.5%) were graduate nurses and the another 40.5% were diploma nurses. Mean work experience for participants was 6.71(SD=6.80).

Effect of training program on nurses' knowledge attitude and practice regarding physical restraints. A paired sample t-test demonstrated significant improvement in nurses' knowledge, attitude and self-report practice between pre and post-test scores. There was a significant increase in the mean knowledge scores, which increased from a mean of 6.42 (SD=1.56) in the pre intervention to a mean of 8.20 (SD=1.44) in the post intervention phase (t=-6.48, $p<0.001$). Mean attitude scores improved during the pre-intervention (mean=18.50, SD=3.48) to post intervention period (mean=23.12, SD=4.91) (t=-3.77, $p<0.001$). There was a significant difference in mean practice scores between pre intervention (mean=23.67, SD=2.41) and post intervention phase (mean=25.44, SD=2.21) (t=-5.72, $p<0.001$) (Table 1).

Effect of training program on nurses' knowledge attitude and practice regarding physical restraints. A paired sample t-test demonstrated significant improvement in nurses' knowledge, attitude and self-report practice between pre and post-test scores. (Table 1).

Table 1. Comparison of pre-test and post-test knowledge, practice and attitude scores regarding physical restraints use among 52 nurses

Parameter	Max. Score	Pre-test Mean (SD)	Post-test Mean (SD)	*t*-test	*p*-value
Knowledge towards use of restrains	11	6.42 (1.56)	8.20 (1.44)	-6.48	<0.001
Nursing practices towards use of restraints	28	23.67(2.41)	25.44 (2.21)	-3.77	<0.001
Attitude regarding use of re-straints	36	18.50(3.48)	23.12 (4.91)	-5.72	<0.001

Correlation between post-test knowledge, practice and attitude scores regarding physical restraints among nurses. Pearson's correlation coefficient test demonstrated significant positive correlation between post-test knowledge, practice and attitude scores on physical restraints among nurses (Table 2).

Table 2. Correlation between post-test knowledge, practice and attitude scores regarding physical restraints among 52 nurses

Variables	Knowledge	Practice	Attitude
Knowledge	1	0.290*	0.333**
Practice	0.290*	1	0.267*
Attitude	0.333*	0.267*	1

*$p<0.05$, **$p<0.01$

Discussion

Physical restraint is commonly used as a measure of protection for psychiatric patients. Long-term use of physical restraints can lead to multiple medical, psychological and functional problems. Thus, the nurses need to be educated and updated to anticipate and recognize risky problems like abrasion at restraint site, incontinence of urine and stool, dehydration and decrease in functional status. Results show that the 3 days in-service education program improved nurse's knowledge, attitude and self-reported practices on physical restraint use. Some studies have reported similar findings.[13]

This study reported significant improvement in knowledge scores among nurses post in-service educational program. The nurses participated in group discussion and lecture sessions which enabled them to differentiate between myths and facts of physical restraints. Present study results are in line with previous study results which showed a significant increase in mean knowledge, attitude and practice scores and a significant decrease in the mean intention scores of nurses in use physical restraint after educational intervention.[23] It is recommended that in-service training program should cover misconceptions regarding physical restraint use, ethical issues and how to cope with feelings while using physical restraints. The mean attitude scores of 18.50 at pre-intervention level improved to 23.12, after attending the in-service educational program and this improvement was statistically significant. In the present study case scenarios were used for group discussions to clarify participants' perceptions. Relevant education programs may need to include more problem-based case scenarios and discussions related to ethical issues to clarify nurse's perceptions.[24] Scores on self-reported practice of physical restraint use improved after intensive in-service educational program. Application of physical restraints was demonstrated to improve practice skills. One study emphasized that nurses recognized a need for continuing education on restraint to improve their practices.[24] In another study nurses who had received on-the-job training performed better than those who had received no training related to knowledge and practices regarding physical restraint use.[25] This educational program may assist nurses to consider alternative measures before using physical restraints.

In the present study, significant positive correlation was found between post-test knowledge, practice and attitude scores on physical restraints among nurses. This shows that knowledge, attitude and practice are interrelated. With an improvement in level of knowledge attitude and practice also improved. Similar findings were reported by previous studies,[25] wherein a significant positive correlation was found between nurse's practice score, knowledge and attitude scores. Similarly, in Eskandari *et al.* 2017[13] study a positive correlation was found between knowledge, attitude and practice of nurses towards application of physical restraints on patients.

Educational programs are easier ways to improve nurses practice skills. The care settings and government should support educational programs and impart knowledge and skills regarding use of physical restraints. Hospital administrators should plan in-service education for all nurses working in various wards of tertiary care hospitals. If physical restraint is to be practiced, staff nurses must not only understand their proper use but also their negative consequences.[25]

The present study has few limitations. Data were collected from only one hospital of Karnataka, India limiting the external validity of the results. Nurse's practices regarding the use of physical restraint were assessed by a self-administered questionnaire which might not reflect actual behavior of nurses. This study may contribute to filling the gaps in nursing knowledge, improve skills and practice knowledge in physical restraint use in psychiatric hospitals. It may also assist the

nurses in creating a supportive environment for use of alternative methods so as to reduce the use of physical restraints.

The conclusion of this study is that results showed a significant increase in the mean knowledge, attitude and self-reported practice scores among nurses in use of physical restraints after their participation in the in-service educational program. Findings highlight the need to provide a short-term in-service education program on physical restraint use in mental health care settings. Study recommends the regular participation of nursing staff and other health care personnel in in-service education programs with a focus on ensuring patient safety, consequences of restraint use, alternative methods to restraints, care of patient with restraints, ethical and legal implications involved in restraining procedure.

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References

1. Çelik S, Kavrazlı S, Demircan E, Güven N, Durmuş Ö, Duran S. Information, attitudes and practices of intensive care nurses on the use of physical restrain. Acıbadem Univ. J. Health Sci. 2012; 3(3):176-83.
2. Tel H, Tel H. Application of physical retrain and nursing approach in patient safety-II. J. Intensive Care Nurs. 2002; 6(2):69-74.
3. Hendryx M, Trusevich Y, Coyle F, Short R, Roll J. The distribution and frequency of seclusion and/or restraint amongpsychiatric inpatients. J. Behav. Health Serv. Res. 2010; 37:272-81.
4. Khastgir U, Kala A, Goswami U, Kumar S, Behera D. The nature and extent of the use of physical restraint and seclusion in psychiatric practice: Report of a survey. Indian J. Psychiatry. 2003; 45:155-7.
5. Steinert T, Lepping P, Bernhardsgrütter R, Conca A, Hatling T, Janssen W, et al. Incidence of seclusion and restraint inpsychiatric hospitals: A literature review and survey of international trends. Soc. Psychiatry Psychiatr. Epidemiol. 2010; 45(9):889-97.
6. Lai CK, Chow SK, Suen LK, Wong IY. The effect of a restraint reduction program on physical restraint rates in rehabilitation settings in Hong Kong. Rehabil. Res. Pract. 2011; 2011:284604.
7. Bowers L, Alexander J, Simpson A, Ryan C, Carr-Walker P. Cultures of psychiatry and the professional socialization process: The case of containment methods for disturbed patients. Nurse Educ. Today 2004; 24:435-42.
8. Almvik R, Rasmussen K, Woods P. Challenging behaviour in the elderly-monitoring violent incidents. Int. J. Geriatr. Psychiatry. 2006; 21:368-74.
9. Kane C. The 2014 Scope and Standards of Practice for Psychiatric Mental Health Nursing: Key Updates. Online J. Issues Nurs. 2015; 20(1):1.
10. Kalula SZ, Petros SG. Use of physical restraint in hospital patients: A descriptive study in a tertiary hospital in South Africa. Curationis. 2016;39(1):e1-e8. Published 2016 Nov 10. doi:10.4102/curationis.v39i1.1605
11. Karagözoğlu Ş., Özden D. Knowledge and practices of nurses working ata university hospital related to use of physical restraints. *Hemar-G Derg.* 2013;1:11–22.
12. Suen LK, Lai CK, Wong TK. Use of physical restraints in rehabilitation settings: staff knowledge, attitudes and predictors. J. Adv. Nurs. 2006; 55(1):20-8.
13. Eskandari F, Abdullah KL, Zainal NZ, Wong LP. Use of physical restraint: Nurses' knowledge, attitude, intention and practice and influencing factors. J. Clin. Nurs. 2017; 26(23-24):4479-88.
14. Rentala S, Thimmajja SG, Nanjegowda RB, Bevoor P. Restraints practices among psychiatric nurses in state mental health-care setting, Karnataka, India. Indian J. Psychiatr Nsg. 2019;16(2):98-104

15. Mahmoud AS. Psychiatric Nurses' Attitude and Practice toward Physical Restraint. Arch. Psychiatr. Nurs. 2017; 31(1):2-7.
16. Hasan AA, Abulattifah A. Psychiatric nurses' knowledge, attitudes, and practice towards the use of physical restraints. Perspect. Psychiatr. Care. 2019; 55(2):218-24.
17. Al-Khaled T, Zahran E, El-Soussi A. Nurses' related factors influencing the use of physical restraint in critical care units. J. Am. Sci. 2011; 7(8):13-22.
18. Mehrok S, Belsiyal CX, Kamboj P, Mery A. The use of physical restraints- knowledge and attitude of nurses of a tertiary care institute, Uttarakhand, India. J. Educ. Health Promoti. 2020; 9:77.
19. Koczy P, Becker C, Rapp K, et al. Effectiveness of a multifactorial intervention to reduce physical restraints in nursing home residents. J. Am. Geriatr. Soc. 2011; 59(2):333-9.
20. Lan SH, Lu LC, Lan SJ, et al. Educational intervention on physical restraint use in long-term care facilities - Systematic review and meta-analysis. Kaohsiung J. Med. Sci. 2017; 33(8):411-21.
21. Gandhi S, Poreddi V, Nagarajaiah, Palaniappan M, Reddy SSN, BadaMath S. Indian nurses' Knowledge, Attitude and Practice towards use of physical restraints in psychiatric patients. Invest. Educ. Enferm. 2018; 36(1):e10.
22. Janelli LM, Scherer YK, Kuhn MM. Acute/critical care nurses' knowledge of physical restraints--implications for staff development. J. Nurs. Staff Dev. 1994; 10(1):6-11.
23. Eskandari F, Abdullah KL, Zainal NZ, Wong LP. The effect of educational intervention on nurses' knowledge, attitude, intention, practice and incidence rate of physical restraint use. Nurse Educ. Pract. 2018; 32:52-7.
24. Pradhan N, Lama S, Mandal G, Shrestha E. Physical restraining: Nurses knowledge and practice in Tertiary Care Hospital of Eastern Nepal. Nurs. Open. 2019; 6:1029–37
25. Wang L, Zhu XP, Zeng XT, Xiong P. Nurses' knowledge, attitudes and practices related to physical restraint: a cross-sectional study. Int. Nurs. Rev. 2019; 66(1):122-9.

Original article

Fear of Falling among Community-dwelling Sedentary and Active Older People

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Fear of Falling among Community-dwelling Sedentary and Active Older People

Abstract

Objective. The study sought to compare community-dwelling older people with respect to their level of physical activity and to the fear of falls between a group of sedentary elderly and a group of active elderly. **Methods.** Cross-sectional descriptive study carried out with 113 community-dwelling older people (45 sedentary and 48 active), users of an outpatient care center of the private health system with a geriatric program in Santiago, Chile. The study measured socio-demographic variables, state of health, comprehensive geriatric assessment, exercise, depression with the Yesavage scale, and fear of falling with the *Short Falls Efficacy Scale - International* (Short FES-I). **Results.** Sedentary older people have significantly higher scores in the Yesavage depression scale compared with active older people (4.2 versus 0.8). No statistically significant differences were found when comparing both

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groups of sedentary and active participants in terms of socio-demographic variables along with health, and functional and cognitive capacity. Regarding the fear of falling, the sedentary had a slightly higher score than the active (12 versus 11), although not significant. **Conclusion.** This study showed that fear of falling was equal in sedentary and active older people who live in the community, although it was found that sedentary individuals had a higher risk of having a positive screening for geriatric depression in those participants who do not perform physical activity.

Descriptors: accidental falls; aged; geriatric assessment; depression; fear; exercise.

Temor a caer en personas mayores que viven en la comunidad: diferencias entre personas sedentarias y activas

Resumen

Objetivo. Comparar las personas mayores (PM) de un grupo de mayores sedentarios y otro no sedentario con respecto a su nivel de actividad física y al temor a las caídas. **Métodos.** Se trata de un estudio descriptivo de corte transversal, realizado en 113 personas mayores (45 sedentarios y 48 activos) que viven en la comunidad de usuarios de un centro de atención ambulatoria del sistema privado de salud, el cual disponía de un programa de geriatría en Santiago de Chile. Se midieron variables sociodemográficas, de estado de salud, de Valoración Geriátrica Integral, ejercicio, la depresión con escala de Yesavage y el temor a caer con el *Short Falls Efficacy Scale - International* (Short FES-I). **Resultados.** Las PM sedentarias presentan puntuaciones significativamente más altas en la escala de depresión Yesavage comparadas con las PM activas (4.2 versus 0.8). No se encontraron diferencias estadísticamente significativas al comparar ambos grupos en cuanto a variables sociodemográficas, de salud y de capacidad funcional y cognitiva. En cuanto al temor a caer, los sedentarios tuvieron un puntaje ligeramente mayor que los activos (12 versus 11), aunque sin ser significante. **Conclusión.** Este estudio mostró que el temor a caer fue igual en PM sedentarias y activas, aunque se encontró un

mayor riesgo de tener un tamizaje positivo para depresión geriátrica en aquellos participantes que no realizan actividad física.

Descriptores: accidentes por caídas; anciano; evaluación geriátrica; depresión; miedo; ejercicio.

Medo de cair em idosos sedentários e ativos que vivem na comunidade

Resumo

Objetivo. Comparar idosos (PM) que vivem na comunidade em relação ao nível de atividade física e medo de cair entre um grupo de idosos sedentários e outro. **Métodos.** Estudo descritivo transversal realizado com 113 idosos residentes na comunidade (45 sedentários e 48 ativos) usuários de um centro de atenção ambulatorial do sistema privado de saúde com programa geriátrico em Santiago, Chile. Variáveis sociodemográficas, estado de saúde, Avaliação Geriátrica Abrangente, exercício, depressão com a escala de Yesavage e medo de cair foram mensurados com a *Short Falls Efficacy Scale - International (Short FES-I).* **Resultados.** PMs sedentários têm pontuações significativamente mais altas na escala de depressão de Yesavage em comparação com PMs ativos (4.2 versus 0.8). Não foram encontradas diferenças estatisticamente significativas ao comparar os dois grupos de participantes sedentários e ativos em termos de variáveis sociodemográficas, saúde e capacidade funcional e cognitiva. Em relação ao medo de cair, os sedentários tiveram uma pontuação ligeiramente superior aos ativos (12 versus 11), embora não tenha sido significativa. **Conclusão.** Este estudo mostrou que o medo de cair era o mesmo em PM sedentários e ativos que viviam na comunidade, embora pessoas sedentárias tenham um risco maior de ter uma triagem positiva para depressão geriátrica naqueles participantes que não realizavam atividade física.

Descritores: acidentes por quedas; idoso; avaliação geriátrica; depressão, medo; exercício.

Introduction

Fear of falling is one of the biggest worries among older people and should not be underestimated. This term has been conceptualized as the confidence a person has to carry out activities, losing balance, or falling.[1] Fear of falling is one of the principal predictors of future falls among the elderly population.[2,3] It has been estimated that the prevalence of the fear of falling is close to 65% among the elderly without prior falls, rising to 90% in those with antecedents of falls.[4] A higher number of comorbidities, low level of physical activity, worse performance in activities of daily life, and restriction in mobility have been described as predictors of fear of falling among older people.[5]

Fear of falling is not only a frequent problem among community-dwelling older individuals but is also recognized as an important public health problem.[6] Falls and the fear of falling can cause critical physical and psychological changes, like physical self-limitation and dependence in the elderly.[5] This phenomenon can trigger diminished mobility and independence, as well as disability, leading to a loss of confidence, restriction of physical activities, and social participation.[1,6,7] Latin American studies have identified that being a woman, 75 years old or over, with alterations in static balance in standing position, dizziness or vertigo, poor or very poor self-perception of health, and movement alterations increase the risk of fear of falling significantly.[8,9] Upon being associated with restriction of activity, as well as worsened physical and cognitive functions, fear of falling contributes to an important decrease in quality of life among those with antecedents of prior falls, as well as among those without such antecedents.[10] Besides, fear of falling has been associated with increased care and costs related with health and institutionalization, leading – finally – to premature mortality.[1,6]

Physical exercise has proven to be an effective strategy to diminish the fear of falling and falls in the elderly population.[11,12] Kendrick *et al.,* indicate that physical exercise, as strategy to prevent falls, reduces the fear of falling after the intervention, without increasing the number of falls of the participants.[12] Given the importance of physical exercise and its implications in preventing the fear of falling, the aim of this study was to compare older people (OP) who live in the community with respect to their level of physical activity and the fear of falling between a group of sedentary elderly and a group of active elderly.

Methods

Design. Cross-sectional descriptive study, with a sample of 113 older adults who were users of an outpatient care center of the private health system, which had a geriatric program in Santiago, Chile. Inclusion criteria were: being

over 60 years of age and without prior history of fractured hip, and without medical diagnosis of cognitive impairment. The study excluded those with diagnosed dementia and who were unable to answer the survey. The study included all the individuals who attended medical control during the second semester of 2013 and complied with the criteria described. The categories of physical activity among the participants were established in accordance with the recommendations by the World Health Organization (WHO), defining as *active* person whomever dedicated over 150 min per week to performing moderate aerobic physical activities, and *sedentary* if they did not comply with the definition by the same organization.[13] Based on the aforementioned, two groups were defined: sedentary (n = 45) and active (n = 68).

Data collection. The participants were interviewed by research assistants trained in data collection. Application of the questionnaire took nearly 45 min. The questionnaire designed contained: (i) socio-demographic characteristics: sex, age, marital status, educational level, employment situation, if living accompanied, and if they had sons or daughters; (ii) characteristics of health status: having a chronic disease, taking medications regularly, perception of health, and satisfaction with life in the last six months; and (iii) comprehensive geriatric assessment: this measured variables of *Functional capacity* referring to the performance of activities of daily life (ADL) through Barthel's scale, with a score from 0 to100, with the highest score indicating greater independence.[14] To measure the instrumental activities of daily life (IADL), the study used Lawton's scale, where 0 points represents dependence and 8 points total independence;[15] *Cognitive and affective capacity*- for the cognitive state the work used the Mini-mental State Examination (MMSE) by Folstein to screen dementia in its version adapted by age and education level to identify cognitive impairment.[16] This scale has a total score range from 0 to 30, where the highest scores indicate better cognitive function. Depression symptoms were measured through the 15-item Yesavage scale (Yes/No), where a score of 6 or more indicates possible screening of depression.[17]

(iv) Fear of falling was measured through the *Short Falls Efficacy Scale - International* (Short FES-I). The short version FES-I has seven items with Likert scale with four categories, including the options "Not at all concerned = 1", "Somewhat concerned = 2", "Fairly concerned = 3", and "Very concerned = 4" of falling during activities of their daily life. The scoring system ranges from 7 to 28 points. The highest values indicate greater fear of falling.[18] The FES-I has shown to have adequate psychometric properties in different populations of OP [18] including Chilean population.[19]

Data analysis. A descriptive analysis of means, medians, percentiles, standard deviations, absolute and relative frequencies was carried out for quantitative variables; and percentages for the nominal variables. Comparisons were made between the active and sedentary groups with Student's t test for independent samples and Chi squared for dichotomous variables, considering a significance < 0.05. The IBM SPSS 25.0 program was used for data analysis.

Ethical Aspects. This research adhered to the ethical standards of the World Medical Association and the Helsinki declaration. This study was approved by the Ethics Committee of the School of Nursing at Pontificia Universidad Católica de Chile.

Results

For the population studied (n=113), the mean age was 70.8±6.9 years; 80.5% (n=91) were women, 56.6% (n=64) married, 76.1% were retired (n=86), and 82.3% (n=93) lived accompanied with a spouse and/or sons or daughters. No participant was reported as illiterate. Concerning the characteristics of health

status, most participants classified their health status as good and very good, represented by 59.2% (n=67); 80.5% (n=91) declare having at least one chronic disease and 71.7% (n=81) regularly takes at least one medication per day; 60.2% (n=68) report performing physical exercise according to recommendations by the WHO, while the rest define themselves as sedentary. Table 1 shows the socio-demographic characteristics and of the state of health according to study group. No significant differences existed between both study groups.

Table 1. Characterization of the socio-demographic and health status variables of the community-dwelling older people, according to study group

Variables	Group		*p*-value
	Sedentary (n=45)	Active (n=68)	
Socio-demographic characteristics			
Age; mean ± SD	70.6±6.9	70.9±6.9	0.573
Sex: Female; *n* (%)	40 (88.9)	51 (75.0)	0.068
Has children; *n* (%)	41 (9.1)	55 (80.9)	0.137
Lives accompanied; *n* (%)	37 (82.2)	56 (82.4)	0.978
Years of education; average ± SD	11.3±4.8	11.6±4.5	0.650
Characteristics of health status			
Self-perception of health *n* (%)			
Excellent/Very good	5 (11.2)	11 (16.2)	0.055
Good	20 (44.4	37 (54.4)	0.345
Poor/Very poor	20 (44.4)	20 (29.4)	
Satisfaction with life *n* (%)			
Very satisfied/Satisfied	30 (66.7)	53 (77.9)	
Poorly satisfied/Dissatisfied	15 (33.3)	15 (22.1)	

Table 2 presents the differences in the comprehensive geriatric assessment characteristics and fear of falling according to the physical exercise classification of the study sample. Regarding Barthel's index and the Lawton and Brody scale, most of the participants in this study are independent for activities of daily life (80%, n = 91) and instrumental activities (74.0%; n = 83), without cognitive impairment, with an average of 28±1.9 in the MMSE and with negative depression screening (73.0%; n = 82), with a mean of 3.5±3.2 in the Yesavage depression scale (maximum of 15 points). When comparing by groups, the group of sedentary individuals has significantly higher scores in the Yesavage depression scale compared with the group of active individuals. The rest of the variables studied do not show statistically significant differences. According to the short FES-I scale, sedentary individuals got 12 points versus 11 points for the active individuals, without this being a statistically significant difference between both study groups.

Table 2. Comprehensive geriatric assessment and fear of falling of the community-dwelling older people, according to study group

Measurement scales	Group		*p*-value
	Sedentary (*n*=45)	Active (*n*=68)	
Functional capacity			
Barthel's index; average ± SD	98.0±4.2	98.8±4.1	0.142
Lawton and Brody scale; average ± SD	7.5±0.9	7.6±0.8	0.205
Cognitive and affective capacity			
Yesavage scale (Depression); average ± SD	4.2±3.8	0.8±0.4	0.007
MMSE (Cognition); average ± SD	28.4±1.7	27.8±2.0	0.105
Fear of falling			
Short FES-I; average ± SD	12.0±5.1	11.0±4.0	0.275

Table 3 includes the frequency of each item characterized according to study group. Going up or down stairs, reaching for something above your head or on the ground, and walking up or down a slope are the activities that generate the most fear of falling, both in active and sedentary OP. No significant differences were found between both groups for the variables of this scale.

Table 3. Percentage of adults who are very concerned about falling, according to the items from the FES-S instrument according to study group

Variable	Group	
	Sedentary (*n*=45)	Active (*n*=68)
Getting dressed or undressed; *n* (%)	4 (8.9)	4 (5.9)
Taking a bath or shower; *n* (%)	8 (17.8)	10 (14.7)
Getting in or out of a chair	2 (4.0)	2 (2.9)
Going up or down stairs; *n* (%)	14 (31.1)	16 (23.5)
Reaching for something above your head or on the ground; *n* (%)	14 (31.1)	17 (25.0)
Walking up or down a slope; *n* (%)	13 (28.9)	19 (27.9)
Going out to a social event; *n* (%)	3 (6.7)	4 (5.9)

Discussion

The aim of this study was to compare indicators of comprehensive geriatric assessment (functional, cognitive, and affective capacity) and of fear of falling among older sedentary and active persons. Although the literature is robust in supporting that physical exercise is an effective strategy to diminish fear of falling,[11,12] this study found no statistically significant differences between sedentary and active people. Differences were only identified among the scores for geriatric depression screening, with greater risk of having a positive screening for depression in participants who do not engage in physical activity.

In accordance with the results of this study, it is fitting to wonder if fear of falling is one of the causes for the elderly to avoid practicing physical activity. Prior studies have described that fear of falling is an important barrier for older persons to perform physical activity.[20,21] However, Tam-Seto *et al*., identified a series of other factors that would discourage participation in physical activities, finding that lack of motivation, lack of companionship, and lack of access were relevant factors to consider.[22] It is important to reinforce recruitment aspects for older people to adhere to the type of physical exercise they choose to keep active. Moreover, this study considered the recommendations by the WHO to differentiate between sedentary and active people. However, the WHO defines as active person that older adult engaged in over 150 min per week to performing moderate aerobic physical activities and a series of recommendations that can vary according to the health status of those conducting them.[13]

This study showed that active participants had lower risk of positive screening for geriatric depression compared with those who are sedentary. The aforementioned agrees with that reported in the literature concerning exercise in high dosage is associated with improvement in the mental and physical domains of quality of life.[23-25] Given that geriatric depression has been associated with greater fear of falling,[20] future studies should focus on the relationship that exists among these three variables: fear of falling, depression, and performance of physical activity. Our study had a series of limitations. First, the participants in this study were users of a single health center, without functional impairment, dementia diagnosis or depression, which does not necessarily represent the health of older Chilean people. Additionally, this sample reported a high level of physical activity, unlike that reported nationally, where over 80% of the older adult population define themselves as sedentary in the last three months. Another important limitation is the sample size, which could cause differences between the groups of active and sedentary participants to not be statistically significant. It is recommended to perform studies contemplating a greater sample size per group and including differentiation among types of exercises and their frequency.

An explanation for not having found significant differences between active and sedentary groups with respect to fear of falling could be explained by the criteria used to define the distinct groups. This study used the definition by the WHO to classify older individuals between active or sedentary. That definition focuses on the number of minutes during which the older person engages in exercise and not on the type of exercise conducted. Further research should focus on evaluating the impact of fear of falling on performing physical exercise, discriminating by its type, frequency, and intensity.

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References

1. Gazibara T, Kurtagic I, Kisic-Tepavcevic D, Nurkovic S, Kovacevic N, Gazibara T *et al*. Falls, risk factors and fear of falling among persons older than 65 years of age. Psychogeriatrics. 2017; 17(4):215-23.
2. Lavedán A, Viladrosa M, Jürschik P, Botigué T, Nuín C, Masot C, *et al*. Fear of falling in community-dwelling older adults: A cause of falls, a consequence, or both? PLoS One. 2018;13(3):e0194967.
3. Greenberg SA. Analysis of measurement tools of fear of falling for high-risk, community-dwelling older adults. Clin. Nurs. Res. 2012; 21(1):113-30.
4. Jorstad EC, Hauer K, Becker C, Lamb SE. Measuring the psychological outcomes of falling: a systematic review. J. Am. Geriatr. Soc. 2005; 53: 501–10.
5. Lee J, Choi M, Kim CO. Falls, a fear of falling and related factors in older adults with complex chronic disease. J. Clin. Nurs. 2017;26(23-24):4964-72.
6. Rosen T, Mack KA, Noonan R. Slipping and tripping: Fall injuries in adults associated with rugs and carpets. J. Inj. Violence Res. 2012; 5:61–69.
7. Makino K, Makizako H, Doi T, Tsutsumimoto K, Hotta R, Nakakubo S, *et al*. Impact of fear of falling and fall history on disability incidence among older adults: Prospective cohort study. Int. J. Geriatr. Psychiatry. 2018; 33(4):658-62.
8. Curcio, CL, Gómez Montes, JF. Factores predictores de temor a caer. Rev. Asoc. Colomb. Gerontol. Geriatr. 2006; 20(4):965-70.
9. Auais M, Alvarado BE, Curcio CL, Garcia A, Ylli A, Deshpande N. Fear of falling as a risk factor of mobility disability in older people at five diverse sites of the IMIAS study. Arch. Gerontol. Geriatr. 2016; 66:147-53.
10. Schoene D, Heller C, Aung YN, Sieber C, Kemmler W, Freiberger El. A systematic review on the influence of fear of falling on quality of life in older people: Is there a role for falls?. Clin. Interv. Aging. 2019;14:701-719.
11. Huang TT, Yang LH, Liu CY. Reducing the fear of falling among community-dwelling elderly adults through cognitive-behavioural strategies and intense Tai Chi exercise: a randomized controlled trial. Journal of advanced nursing. 2011 May;67(5):961-71. PubMed PMID: 21214623.
12. Kendrick D, Kumar A, Carpenter H, Zijlstra GA, Skelton DA, Cook JR, et al. Exercise for reducing fear of falling in older people living in the community. Cochrane Database Syst. Rev. 2014; 2014(11):CD009848.
13. 13. Organización Mundial de la Salud. Recomendaciones mundiales sobre la actividad física para la salud [Internet]. 2020 [cited 4 Jul 2020]. Available from: https://apps.who.int/iris/bitstream/handle/10665/44441/9789243599977_spa.pdf
14. Mahoney FI, Barthel DW. Functional Evaluation: The Barthel Index. Md. State Med. J. 1965; 14:61-5.
15. 15. Lawton MP, Brody EM. Assessment of older people: self-maintaining and instrumental activities of daily living. Gerontologist. 1969; 9(3):179-86.
16. Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. J. Psychiatr. Res. 1975; 12(3):189-98.
17. Hoyl MT, Alessi CA, Harker JO, Josephson KR, Pietruszka FM, Koelfgen M, et al. Development and testing of a five-item version of the Geriatric Depression Scale. J. Am. Geriatr. Soc. 1999; 47(7):873-8.
18. Kempen GI, Yardley L, van Haastregt JC, Zijlstra GA, Beyer N, Hauer K, et al. The Short FES-I: a shortened version of the falls efficacy scale-international to assess fear of falling. Age Ageing. 2008; 37(1):45-50.
19. Araya AX, Valenzuela E, Padilla O, Iriarte E, Caro C. Preocupación a caer: Validación de un instrumento de medición en personas mayores chilenas que viven en la comunidad. Rev. Esp. Geriatr. Gerontol. 2017; 52(4):188–92.
20. Denkinger MD, Lukas A, Nikolaus T, Hauer K. Factors associated with fear of falling and associated activity restriction in community-dwelling older adults: A systematic review. Am. J. Geriatr. Psychiatry. 2015; 23(1):72-86.
21. Jefferis BJ, Iliffe S, Kendrick D, Kerse N, Trost S, Lennon LT, et al. How are falls and fear of falling associated with objectively measured physical activity in a cohort of community-dwelling older men? BMC Geriatr. 2014; 14:114.

22. Tam-Seto L, Weir P, Dogra S. Factors Influencing Sedentary Behaviour in Older Adults: An Ecological Approach. AIMS Public Health. 2016; 3(3):555-72.
23. Carta MG, Hardoy MC, Pilu A, Sorba M, Floros AL, Mannu FA, et al. Improving physical quality of life with group physical activity in the adjunctive treatment of major depressive disorder. Clin. Pract. Epidemiol. Ment. Health. 2008; 4:1.
24. Blake H. Physical activity and exercise in the treatment of depression. Front Psychiatry. 2012; 3:106.
25. Martin CK, Church TS, Thompson AM, Earnest CP, Blair SN. Exercise dose and quality of life: a randomized controlled trial. Arch. Intern. Med. 2009; 169(3):269–78.

Letter to the Editor

The Bayes Factor, a Suitable Complement beyond Values of p<0.05 in Nursing Research and Education

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Dear Madame Editor:

In accordance with a recent study in the current journal, significant differences are reported on burnout related with COVID-19 in two groups of nurses with and without experience with patients with COVID-19 infection in Iran, by using Student's statistical t test,(1) It reports that experienced frontline nurses exposed to treating COVID-19 patients indicate higher levels of job stress and burnout. This comparative analysis is among the most used in medical sciences based on the null hypothesis significance test (NHST) according to the "p <0.05" significance level that infers rejection of the null hypothesis (no difference) and provides greater likelihood confidence to researchers to assume the alternate hypothesis (difference) given the study sample.(2)

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Bayesian statistics also permits contrasting hypotheses through probabilities of credibility, being a suitable complement to reinforce statistical significance and, when having frequentist significant findings, it is also a methodological alternative of statistical replication.[3-5] From the Bayesian model, the Bayes factor is the inclusive method of *a priori* and *posteriori* credibility to evaluate beyond the level of significance, given that it estimates the degree to which the data support the statistical hypotheses, from Jeffreys' classification scheme for Student's t analysis[5,6] "weak", "moderate", "strong", and "very strong" (Table 1).

When having prior significant results, the only requirement is the t value (-2.86), as well as the sample sizes of both groups (151 and 94) reported by Hoseinabadi *et al.*[1] Regarding the Bayes factor, it permits inferring two interpretations: FB_{10} (in favor of the alternative hypothesis of significant difference) and BF_{01} (in favor of the null hypothesis from lack of significant difference) and the 95% confidence interval.[4] Upon the evidence of significant difference, this analysis focuses on estimating the degree of certainty of the alternate hypothesis. The results obtained through the Bayes factor are $BF_{10} = 6.529$ and $BF_{01} = 0.153$, with 95%CI [-0.388 to -0.068]. These findings report moderate evidence in favor of the statistical hypothesis of significant difference; this may be interpreted in that the alternate hypothesis is six times greater than the nullity of the data and it – in turn – is reduced proportionally for some possible interpretation. Likewise, the parameter is reported of the maximum Bayes factor ($maxBF_{10} = 8.444$) to determine the stability of the results, which indicates a greater support magnitude to the statistical differences, endorsing the reliability of the findings obtained.[4,7]

Table 1. Values of quantifiable interpretation of the Bayes factor*

Value	Interpretation	Evidence for the hypothesis
>30	Very strong	Alternative
10-30	Strong	Alternative
3.1-10	Moderate	Alternative
1.1-3	Weak	Alternative
1	0	No evidence available
0.3-0.9	Weak	Null
0.3-0.1	Moderate	Null
0.1-0.03	Strong	Null
	Very strong	Null

*Elaborated by the author

Likewise, this Bayesian approach is quite useful in other statistical analyses and re-analyses based on the significance value "p <0.05" (correlation, linear regression, logistic regression, ANOVA), which only has a pair of recent guides that permit disseminating the use and interpretation of the Bayes factor beyond nursing research, encompassing its relevance in the health sciences

in general.[5-7] Furthermore, it permits reinforcing systematic quantitative research that use said statistical tests, thus, providing greater inferential property to meta-analytical studies, and becoming an important methodological contribution inclusively for future articles in this journal.

References

1. Hoseinabadi TS, Kakhki S, Teimori G, Nayyeri S. Burnout and its influencing factors between frontline nurses and nurses from other wards during the outbreak of Coronavirus Disease (CO-VID-19) in Iran. Invest. Educ. Enferm. 2020; 38(2):e03.
2. Leppink J, O'Sullivan P, Winston K. Evidence against vs. in favour of a null hypothesis. Perspect. Med. Educ. 2017; 6:115–8.
3. Quatto P, Ripamonti E, Marasini D. Best uses of p-values and complementary measures in medical research: Recent developments in the frequentist and Bayesian frameworks. J. Biopharm. Stat. 2019; 19:227-46.
4. Ly A, Raj A, Etz A, Gronau QF, Wagenmakers EJ. Bayesian reanalyses from summary statistics: a guide for academic consumers. Adv. Methods Pract. Psychol. Sci. 2018; 1(3):367-74.
5. Kelter R. Bayesian alternatives to null hypothesis significance testing in biomedical research: a non-technical introduction to Bayesian inference with JASP. BMC Med. Res. Methodol. 2020; 20:1-12.
6. Kelter, R. Bayesian and frequentist testing for differences between two groups with parametric and nonparametric two-sample tests. WIREs Comput. Stat. 2020; e15235:393–419.
7. Quintana, DS, Williams DR. Bayesian alternatives for common null-hypothesis significance tests in psychiatry: a non-technical guide using JASP. BMC Psychiatr. 2018; 18(1):178.