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INTEGRATIVE REVIEW ARTICLE

NURSING CARE TO PEOPLE WITH TYPE 1 DIABETES IN INTENSIVE CARE: INTEGRATIVE REVIEW

CUIDADO DE ENFERMAGEM À PESSOA COM DIABETES TIPO 1 EM TRATAMENTO INTENSIVO: REVISÃO INTEGRATIVA

CUIDADO DE ENFERMERÍA A PERSONA CON DIABETES TIPO 1 EN TRATAMIENTO INTENSIVO: REVISIÓN INTEGRADORA

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ABSTRACT

Objective: to analyze the scientific evidence about nursing care to patients with type 1 diabetes mellitus in intensive care. ***Method:*** this is an integrative review, conducted by questioning << Which is the evidence available in the literature about nursing care in intensive care to people with type 1 diabetes mellitus? >>. Articles published between 1995-2015 were included, available in the PubMed/MEDLINE, LILACS and CINAHL databases, and the sample consisted of six articles. ***Results:*** the analysis enabled the presentation on two central themes: The glucose monitoring and diabetes mellitus education for disease self-management; Strategies for disease control and therapeutic targets reach. ***Conclusion:*** efforts are needed to develop research with designs that produce a greater amount of evidence related to the subject. ***Descriptors:*** Nursing; Type 1 Diabetes Mellitus; Intensive Care.

RESUMO

Objetivo: analisar as evidências científicas acerca do cuidado de enfermagem ao paciente com diabetes mellitus tipo 1 em tratamento intensivo. ***Método:*** revisão integrativa, conduzida pelo questionamento << Quais as evidências disponíveis na literatura acerca dos cuidados de enfermagem no tratamento intensivo à pessoa com diabetes mellitus tipo 1? >>. Incluíram-se artigos publicados entre 1995-2015, disponíveis nas bases de dados PUBMED/MEDLINE, LILACS e CINAHL, sendo a amostra constituída por seis artigos. ***Resultados:*** a análise possibilitou que a apresentação fosse dividida em duas temáticas centrais: A monitorização glicêmica e a educação em diabetes mellitus para o autogerenciamento da doença; Estratégias para o controle da doença e alcance dos alvos terapêuticos. ***Conclusão:*** são necessários esforços para o desenvolvimento de pesquisas com delineamentos que produzam um maior número de evidências relacionadas ao assunto. ***Descritores:*** Enfermagem; Diabetes Mellitus Tipo 1; Terapia Intensiva.

RESUMEN

Objetivo: analizar las evidencias científicas acerca del cuidado de enfermería al paciente con diabetes mellitus tipo 1 en tratamiento intensivo. *Método:* revisión integradora, conducida por el cuestionamiento << ¿Cuáles son las evidencias disponibles en la literatura acerca de los cuidados de enfermería en el tratamiento intensivo a la persona con diabetes mellitus tipo 1? >>. Se incluyeron artículos publicados entre 1995-2015, disponibles en las bases de datos PUBMED/MEDLINE, LILACS y CINAHL, siendo la muestra constituida por seis artículos. ***Resultados:*** el análisis posibilitó la presentación en dos temáticas centrales: La monitorización glicémica y la educación en diabetes mellitus para la auto gestión de la enfermedad; Estrategias para el control de la enfermedad y alcance de los objetivos terapéuticos. ***Conclusión:*** son necesarios esfuerzos para el desarrollo de investigaciones con delineamientos que produzcan un mayor número de evidencias relacionadas al asunto. ***Descriptores:*** Enfermería; Diabetes Mellitus Tipo 1; Terapia Intensiva.

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INTRODUCTION

The Diabetes Mellitus (DM) is a heterogeneous group of metabolic disorders that have in common, the hyperglycemia. This hyperglycemia is the result of defects in insulin action, on its secretion or both.[1]

The classification proposed by the World Health Organization (WHO) and by the American Diabetes Association (ADA) includes four clinical classes: type 1 DM, type 2 DM, other specific types of DM and gestational DM. There are also two categories referred to as pre-diabetes, which are the changed fasting blood glucose and the impaired glucose tolerance. These categories are considered risk factors for the development of DM and cardiovascular disease (CVD). [1]

The figures show the importance and severity of this disease. The DM is responsible for deaths four times greater than AIDS and exceeds the number of traffic victims. In 2010, 54,000 Brazilians died from diabetes, while the HIV caused 12,000 deaths and 42,000 deaths were recorded by traffic accidents across the country. This number would be even greater if considered that diabetes acts as a risk factor for many other diseases - such as cancer and cardiovascular disease.[2] In Brazil, the death rate caused by the disease "increased from 24.1 deaths per 100,000 population in 2006 to 28.7 deaths per 100,000 population in 2010. Since 2000, this index rose 38%."[3]

The DM can lead to the development of vascular diseases that causes serious consequences for different target organs such as the heart, brain, kidneys and peripheral circulation of the lower limbs.[1] In a performed study it was reported that most people with DM are hypertensive, and about half have hypercholesterolemia.[4]

This research will be focused on type 1 DM, although is not the more present in the world population, representing about 5% to 10% of DM cases, is one of the most prevalent diseases in childhood and adolescence.[1-5] It results from the destruction of pancreatic beta cells with consequent insulin deficiency, such condition has an incidence of approximately 0.5 new cases/100,000 population/year with a peak incidence in adolescence, however, with a high incidence of increased bias in children < 5 years.[1]

The monitoring of the patient with type 1 DM is differentiated. Due to the specificities of their condition, this group of patients needs an intensive treatment, which consists in the administration of multiple insulin doses with frequent monitoring of blood glucose levels and changes in the scheme according to the results.[1]

The *Diabetes Control and Complications Trial* (DCCT), considered the most important longitudinal study about the subject, proved that intensive treatment with blood glucose monitoring, multiple daily doses of insulin, diet, physical exercises and follow up with multidisciplinary team expert in diabetes could reduce the incidence and progression of chronic complications related to the disease.[5]

Maintaining blood sugar close to normal levels is essential to prevent complications emerging. Behaviors related to adherence to drug therapy, nutritional therapy, physical exercises and monitoring of home blood glucose comprehend factors related to care and therefore, to the glycemic control of people with DM.[6]

Given the above, this study aims to analyze the scientific evidence about nursing care to patients with type 1 diabetes mellitus in intensive care. It is believed that the knowledge generated from the results of this study could be a support for the clinical reasoning of nurses to perform assistance to people with type 1 DM.

METHOD

Integrative review meeting the six stages of development: issue identification and research question; establishment of criteria for inclusion and exclusion of studies; extraction of data from primary studies; evaluation of studies to be included in the review; results interpretation; review presentation/knowledge synthesis.[7]

1st Phase - Issue identification and research question:

The question formulation was made from the PICO strategy, thus defined: the population corresponds to "people with type 1 Diabetes mellitus"; "nursing care" was designed as an intervention; there was no descriptor to describe a benchmark, and as expected result "DM intensive treatment." Thus, the central question for conducting this review was: "Which is the evidence available in the literature about nursing care in intensive care to people with type 1 diabetes mellitus?"

The selected search strategy should reduce the loss of studies and objectify efficiency. When well delimited the guiding question of the review, the descriptors are clearly identified.[7]

2nd Phase - Establishment of criteria for inclusion and exclusion of studies:

The literature search in the databases selected for the identification of studies that will be analyzed begins after choosing the theme.

Articles selection criteria

The inclusion criteria of the selected articles in the integrative review were: articles published in English, Spanish and Portuguese; scientific articles published in the period from January 1995 to January 2015 and full articles. The exclusion criteria were: reports of simple cases, book chapters, monographs, dissertations or theses; newspapers reports, editorials and not scientific texts.

♦ Studies search strategy

Important databases were used for the selection of studies in the context of health: PubMed/MEDLINE (*Medical Literature Analysis and Retrieval System Online*), LILACS (Latin American and Caribbean Literature in Health Sciences) and CINAHL (*Cumulative Index to Nursing Literature and Allied Heath*). The articles survey was conducted in February and March 2015. Thus, it sought to expand the scope of research, seeking thereby to minimize possible bias in this stage of development of the integrative review process.

Descriptors were used to perform a consistent analysis of the available articles to obtain a controlled wide literature search. They were selected through their respective vocabularies of databases chosen to this study performance, as follows: PUBMED/MEDLINE/MESH; CINAHL/BONDS; LILACS/DeCS.

Thus, the following descriptors were used to the study: Type 1 Diabetes Mellitus (*Diabetes mellitus, type 1*); nursing (*nursing*); and intensive care (*intensive care*). The descriptors crossing has been mediated by the Boolean operator "and".

3rd Phase – Data extraction of primary studies:

A previously developed tool and submitted to appearance and content validation was used as scientific support for extracting relevant data from the articles.[8] This instrument covers the following items: article identification data; study based institution; type of scientific magazine; methodological characteristics of the study; and assessment of the methodological rigor.[8]

4th Phase - Evaluation of the studies included in the review:

Similar phase to the data analysis from conventional surveys and to ensure the scientific integrity of the review, the selected studies should be analyzed in detail and analysis of the studies implies as valid the selection of some articles and the exclusion of others.[9-10]

Therefore, the researcher makes a critical judgment about the quality of the data, separately. Isolated data will be articulated in a unified and consistent group responding to the problem defined to the study question.[11]

5th Phase – Results interpretation:

At this phase, the researcher may make suggestions for nursing practice, discuss political or practical impact conditions, contest results related to theories and make recommendations for future reviewers.[9]

Thus, after the literature search, the articles selection and data organization began in their interpretation and results discussion to write an integrative review.[12]

6th Phase – Review presentation/Knowledge synthesis:

Finally, the results and discussion of the data were presented in a descriptive way to enable the reader to evaluate the applicability of the elaborate review to achieve the objective of this method and, therefore, positively impact the care nursing for patients with DM1 in intensive care and provide support to nurses in their decision-making in everyday practice.

RESULTS

Data are presented descriptively, aiming to capture the available evidence about nursing care to patients with type 1 DM in intensive care and to organize and gather knowledge about the investigated subject.

The process of article selection is described below, for which presents the process in a flow chart divided into four phases. (Figure 1)

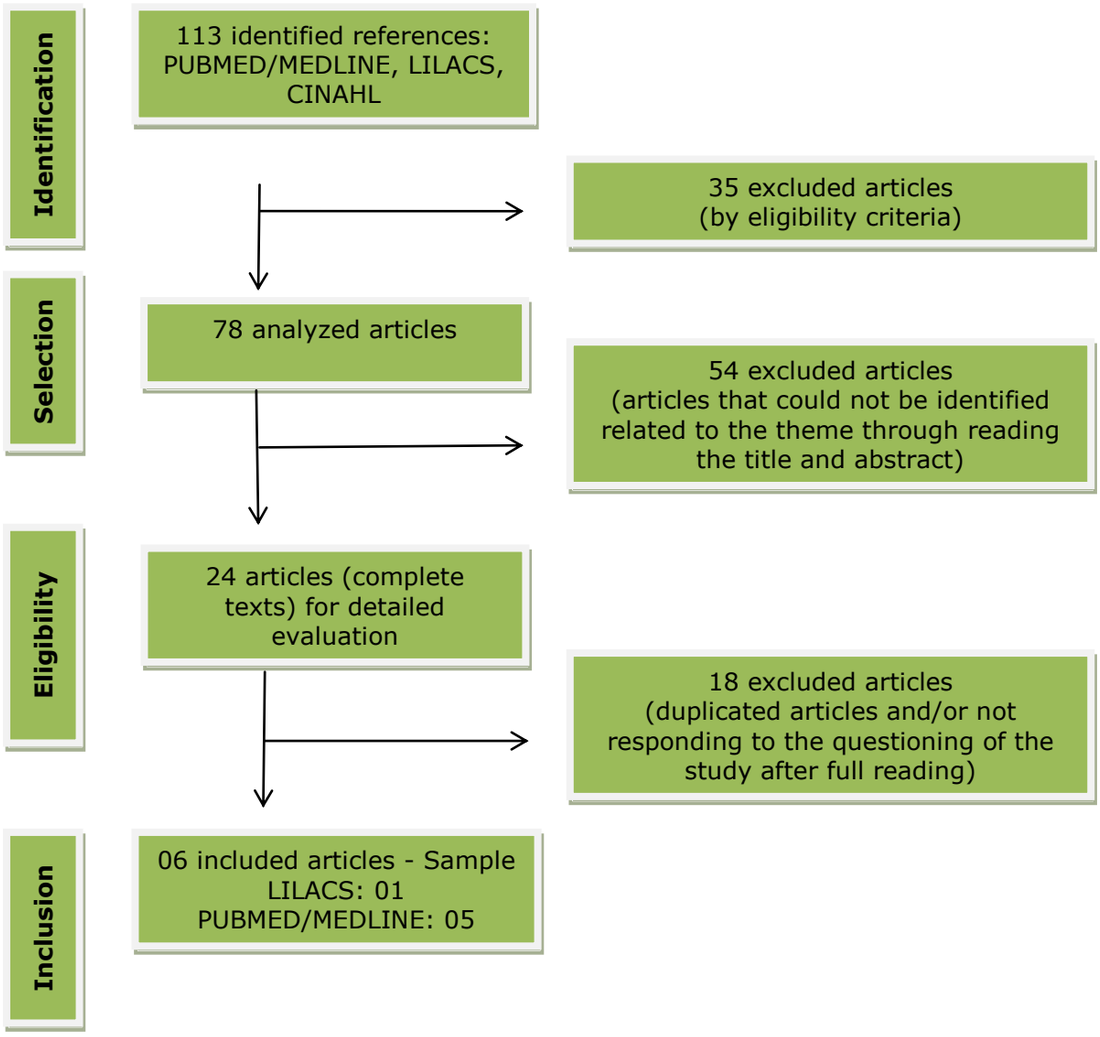

Figure 1. Article selection flowchart. Fortaleza (CE), Brazil, 2015.

The PubMed/MEDLINE database stands out as the base with a greater quantity of found indexed articles. It is also the database that had the highest number of selected articles according to the criteria established in this study.

Regarding the publication language, five articles were originally published in English and one in Portuguese. Concerning the publication year, although it has adopted a 20-year period (1995-2015) for research and articles inclusion, it is observed that the production related to the theme is recent, publishing three articles in 2014, one in 2012, one in 2011 and one in 2000.

Six articles were analyzed as a result of this integrative review, which met the established selection criteria. An overview of the analysis of the reviewed articles is presented in Table 2.

Article Title	Authors	Objective(s)	Methodology	Results
Randomized Clinical Trial of Clinic-Integrated, Low-Intensity Treatment to Prevent Deterioration of Disease Care in Adolescents With Type 1 Diabetes	Clarissa S. Holmes, Rusan Chen, Eleanor Mackey, Margaret Grey e Randi Streisand	To evaluate the efficacy of two treatments to prevent deterioration of glycemic control in young adolescent with type 1 diabetes in a randomized clinical trial	Quantitative Approach	Growth curve analysis showed that both treatment groups were successfully preventing deterioration disease. However, contrary to expectations, the education group was more effective than the coping group in improving adhesion and glucose monitoring disease during 3 follow-up years.
Nurse-led cardiovascular risk factor intervention leads to improvements in cardiovascular risk targets and glycemic control in people with Type 1 diabetes	M. E. Wallymahmed, C. Morgan, G. V. Gill and I. A. MacFarlane	To compare the clinical effects of a cardiovascular risk factor at the intervention managed by consultant nurse in diabetes achieving glycemic targets and cardiovascular risk in	Quantitative Approach	There were no differences between the groups at the beginning of the study. In 12 months, there were significant improvements in cardiovascular risk factor group conducted by a nurse. The

English/Portuguese

when compared with routine diabetes clinic attendance		patients with type 1 diabetes when compared to the clinical care diabetes routine.		improvements were maintained at all variables at 24 months, except for diastolic blood pressure. Only the total cholesterol significantly improved in the routine group.
Insulin self-administration in children with type 1 diabetes mellitus	Cristina Dall'Antonia, Maria Lúcia Zanetti	To characterize the type 1 diabetic child, according to socio-demographic variables and to identify the difficulties related to insulin self-administration and home control.	Quantitative Approach	The results indicated the need for a planned and integrated work of the multidisciplinary team to the child to meet the mentioned aspect, noting its independence to the success of care for type 1 diabetic children.
Poorer glycemic control in type 1 diabetes is associated with reduced self-management and poorer perceived health: A cross-sectional study	Seyda Ozcan et al.	To describe the socio-demographic and clinical characteristics of subjects admitted to UFTM Clinical Hospital who underwent amputation related to diabetes mellitus, from 2000 to 2005	Quantitative Approach	Biomedical results below the ideal in adults with type 1 diabetes. The data suggest the need for greater emphasis on the integration of self-management and psychological support to intensive medical management of type 1 diabetes.
Diabetes self-management, depressive symptoms, quality of life and metabolic control in youth with type 1 diabetes in China	Jia Guo, Robin Whittemore, Margaret Grey, Jing Wang, Zhi-Guang Zhou e Guo-Ping He	To evaluate self-management of diabetes, depressive symptoms, quality of life and metabolic monitoring in a young cohort with type 1 diabetes in mainland China.	Quantitative Approach	Metabolic control and QOL were low in Chinese youth with T1DM. There is a great need to improve metabolic control and psychosocial results. Living with DM1 has significant challenges for young people and families, such as poor self-management of diabetes and high depressive symptoms.
Evaluation of a 5-day education program in type 1 diabetes: achieving individual targets with a patient-centered approach	Halbron M, Sachon C, Simon D, Obadia T, Grimaldi A, Hartemann A.	To evaluate if a single education training program at inpatient settings can achieve individualized therapeutic targets	Quantitative Approach	In Group 1, the mean HbA1c concentration decreased, with 53% of patients who experience a decrease in HbA1c concentration, without weight increase or more frequent hypoglycemia. In Group 2, the patient's satisfaction improved significantly with treatment. In group 3, the lower hypoglycemia decreased significantly.

Figure 2. Presentation of the synthesis of the articles included in the review. Fortaleza (CE), Brazil, 2015.

Among the articles included in the review four are written by nurses, three in association with professionals from other categories, and it was not possible to identify the professional category of their authors in two articles.

When analyzing the research designs in the studied sample, it was found that all articles discriminate the used method, where all developed studies using quantitative methods.

Four articles published in specific scientific magazines about diabetes were found regarding the type of scientific magazine which was published, all international, and two articles published in nursing magazines – being general nursing, one national and the other international.

Concerning the methodology applied to the articles under consideration, it is observed that the studies included in this study had methodological designs of experimental and non-experimental research. Applying the recent classification that ranks the quality of evidence in seven levels[13-4], three items are randomized clinical trials whose level of evidence is 2; and three articles are presented

as descriptive studies whose level of evidence is 6.

The content analysis of the articles allowed the categorization in two central themes: The glucose monitoring and the education in DM for the disease self-management; Strategies for disease control and range of therapeutic targets.

DISCUSSION

♦ The glucose monitoring and education in DM for the self-management of the disease

Blood glucose monitoring appears as an important parameter for diabetes self-management because it allows observation of glucose fluctuations during daily activities of people with Type 1 Diabetes, favoring the educational process.[15]

It is essential the multidisciplinary team propose a capillary self-monitoring scheme for the educational process, to be able to teach the patient with diabetes to monitor their blood glucose profile and the interaction with other aspects of therapeutic preparing them for their self-care.[15]

A study of 480 patients with DM1 found that most patients frequently underwent blood glucose testing at home, with an overall average of 4.9 tests per day. The testing rate was significantly higher in patients with controlled optimal blood glucose levels.[16]

However, there are factors associated with the completion and control of blood glucose by patients. The pain appears as one of the mentioned factors, especially by children, not achieving the blood glucose test.[17] It was also observed that the disease self-management varies according to socio-demographic characteristics. According to a performed study, the girls showed better self-care than boys, as well as young people who left school reported less diabetes self-management than those who were still at school. Young at intensive treatment regimens with insulin had significantly better self-management compared with those who were in intensive insulin treatment.[18]

The need to improve the provision of materials and build an effective family involvement in treatment were found as measures aiming to achieve a good metabolic control of diabetes as an important factor in reducing complications for the child and having a healthier life.[15]

♦Strategies for disease control and range of therapeutic targets

In a study with patient-centered approach, and inpatient, to evaluate if an education program can achieve individualized therapeutic targets, patients were divided into three groups according to their therapeutic needs: Group 1 (to decrease HbA1c concentration); Group 2 (to improve the quality of life and treatment satisfaction); Group 3 (to decrease the frequency of hypoglycemic episodes in patients with severe or frequent episodes of hypoglycemia). From the results, it was found that: in Group 1, the mean HbA1c concentration decreased; in Group 2, patient satisfaction with treatment significantly improved; and in Group 3, the lower hypoglycemia significantly decreased.[19]

Thus, it is concluded that patients with different needs who attended the same flexible intensive therapy program with a patient-centered approach were able to achieve their individual therapeutic targets.

In another interventional study performed to assess the efficacy of two treatments to prevent deterioration of glycemic control in young adolescents with type 1 diabetes, a more intensive and individualized program working family coping skills was compared with a diabetes Education treatment.[20]

The analysis of this study showed that both treatment groups were successful in diabetes management behaviors and showed improvements in quality of life over the time. Moreover, the parents of both groups maintained their initial positive beliefs about the importance of parental monitoring, although monitoring has decreased throughout the study, maybe reflecting the improved quality of life that occurred during the study or natural straitening of parental monitoring that occurs with age adolescent.[20]

The only study that deals specifically with nursing intervention showed that the intervention conducted by nurses might have a beneficial effect on cardiovascular risk targets. It was concluded that a comprehensive approach conducted by nursing for cardiovascular risk factor management is more beneficial in achieving cardiovascular factor targets (HbA1c, lipids, blood pressure) than a standard clinical diabetes system.[21]

However, this same study points to limitations about its results, as the clinical approach was performed by a single nurse specialist in diabetes and cannot assume that the results are generalizable. Furthermore, the frequent contact with a health professional may have resulted in a positive effect on blood glucose, although improvements have been maintained for two years.[21]

CONCLUSION

From this review, it was possible to identify relevant aspects for the development and future of nursing scientific production. Evaluating the initial purpose of this review, gaps in the research were observed related to existing scientific literature.

The found analysis production leads us to conclude about the low production of existing nursing related to patients with type 1 DM in intensive care, where only one article presented the nursing practice with these patients as the main object of its research. The other publications were presented as multidisciplinary productions without specific nursing interventions.

Faced with the found limitations and the results presented from the articles included in this integrative review, apprehend the need to intensify efforts to develop research with designs producing a greater amount of evidence related to the research theme. To provide a quality care is essential to link the scientific knowledge to clinical practice, highlighting the importance of conducting research directly related to care/nursing interventions.

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