



## REVISIONES

### Self Care in Diabetes Mellitus: bibliometric study

Autocuidado em Diabetes Mellitus: estudo bibliométrico

Autocuidado en Diabetes Mellitus: estudio bibliométrico

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### ABSTRACT

**Objective:** To map the national and international scientific literature on self-care for people with diabetes mellitus.

**Method:** This is a bibliometric study, whose sample consisted of 85 articles published in the period 2005-2015, available in Scielo, Lilacs, Medline and Scopus.

**Results:** The studies focus on the last five years; They are published mainly in international journals, highlighting the The Diabetes Educator Journal. As for national, 20 (23.4%) work in magazines are distributed to nursing research; 51 (67.1%) authors are nurses and 53 (69.7%) are doctors; 78 (91.8%) studies are original articles, 55 (64.7%) cross, 60 (80.0%) quantitative, 37 (43.5%) are in English; 51 (64.6%) were performed in the clinic and 55 (64.7%) people with type 2 diabetes; the most used instrument was the generic, 26 (34.2%); followed by Summary of diabetes self-care activities, 24 (31.6%); the most discussed topic was the effect of education on self-care, 13 (15.3%); the largest number of studies was Brazil, with 33 (39.1%).

**Conclusion:** The research on self care in DM are led by nurses, with primary education focus. Emphasizes the lack of analytical and experimental studies showing the need for studies with this type of cut so that the cases that have emerged in observational studies can be tested and thus advance the research, contributing to adherence to self-care.

**Keywords:** Diabetes Mellitus; Self Care; Bibliometrics.

## RESUMO

**Objetivo:** Mapear a produção científica nacional e internacional sobre autocuidado em pessoas com diabetes mellitus.

**Método:** Trata-se de um estudo bibliométrico, cuja amostra foi constituída por 85 artigos, publicados no período de 2005 a 2015, disponibilizados na Scielo, Lilacs, Medline e Scopus.

**Resultados:** Os estudos concentram-se nos últimos cinco anos; estão publicados principalmente em periódicos internacionais, com destaque para o The Diabetes Educator Journal. Quanto aos nacionais, 20 (23,4%) trabalhos estão distribuídos em revistas para pesquisa em Enfermagem; 51 (67,1%) autores são enfermeiros e 53 (69,7%) são doutores; 78 (91,8%) estudos são artigos originais, 55 (64,7%) transversais, 60 (80,0%) quantitativos, 37 (43,5%) estão na língua inglesa; 51 (64,6%) foram realizados no ambulatório e 55 (64,7%) com pessoas com DM tipo 2; o instrumento mais utilizado foi o genérico, 26 (34,2%); seguido do Summary of Diabetes Self-care activities, 24 (31,6%); o tema mais abordado foi o efeito da educação no autocuidado, 13 (15,3%); o país com maior número de estudos foi o Brasil, com 33 (39,1%).

**Conclusão:** As pesquisas sobre autocuidado em DM são lideradas por enfermeiros, com foco principal a educação. Ressalta-se a escassez de estudos analíticos e experimentais, mostrando a necessidade de realização de estudos com este tipo de corte para que as hipóteses que surgiram nos estudos observacionais possam ser testadas e, assim, avançar nas pesquisas, contribuindo na adesão para o autocuidado.

**Palavras-chave:** Diabetes Mellitus; Autocuidado; Bibliometria.

## RESUMEN

**Objetivo:** Para asignar la literatura científica nacional e internacional sobre el auto-cuidado para las personas con diabetes mellitus.

**Método:** Se realizó un estudio bibliométrico, cuya muestra constaba de 85 artículos publicados en el periodo 2005-2015, disponible en Scielo, Lilacs, Medline y Scopus.

**Resultados:** Los estudios se centran en los últimos cinco años; Son publicados principalmente en revistas internacionales, destacando The Diabetes Educator Journal. En cuanto a los nacionales, 20 (23,4%) trabajos están distribuidos en revistas de investigación en enfermería; 51 (67,1%) autores son enfermeros y 53 (69,7%) son médicos; 78 (91,8%) estudios son artículos originales, 55 (64,7%) transversales, 60 (80,0%) cuantitativos, 37 (43,5%) están en Inglés; 51 (64,6%) se realizaron en ambulatorios y 55 (64,7%) con personas con diabetes tipo 2; el instrumento más utilizado fue el genérico, 26 (34,2%); seguido del Summary of Diabetes Self-care activities, 24 (31,6%); el tema más discutido fue el efecto de la educación en el autocuidado, 13 (15,3%); el país con mayor número de estudios fue Brasil, con 33 (39,1%).

**Conclusión:** Las investigaciones sobre el autocuidado de la DM son lideradas por enfermeras, con especial atención a la enseñanza. Se hace hincapié en la falta de estudios analíticos y experimentales que muestran la necesidad de estudios con este tipo de corte de manera que las hipótesis que han surgido en los estudios de observación puedan ser probadas y así avanzar en la investigación, contribuyendo a la adherencia para el auto-cuidado.

**Palabras clave:** diabetes mellitus; autocuidado; bibliometría.

## INTRODUCTION

Currently, diabetes mellitus (DM) is considered to be one of the major epidemics of the 21st century and is the leading cause of death in most countries, with estimates of reaching 415 million adults worldwide and reaching 318 million who are intolerant to glucose - which increases the risk of developing the disease in the future - with projections of 624 million by 2040, in which one in ten people will have DM <sup>(1)</sup>.

The increasing incidence and prevalence of DM can be attributed to increased life expectancy, advanced industrialization and urbanization, and changes in lifestyle that lead to an increase in the number of sedentary and overweight / obese people <sup>(2-3)</sup>. In this scenario, said chronic disease is considered to be one of the main public health problems due to the high morbidity and mortality resulting from its chronic complications, causing high expenses of the health services for the control and treatment of these diseases, as well as the reduction of work force and impact Biopsychosocial status in people affected <sup>(4-5)</sup>.

Associated with the epidemiological and pathophysiological factors of DM, this chronic condition has complex treatment, which demands adherence of the affected person - responsible for more than 95% of the treatment <sup>(6)</sup> - through self-care behaviors that include healthy eating, practice of physical activity, blood glucose monitoring and correct medication use <sup>(7-8)</sup>.

Self-care can be defined as the practice of the person to develop actions for their own benefit in the maintenance of life, health and well-being, not being passive in relation to the care and guidelines pointed out by health professionals, being directly related to the social aspects, economic and cultural contexts in which the subject is inserted <sup>(9)</sup>.

Self-care is considered to be one of the main components of the complex treatment that the person with DM must take, requiring that they have the knowledge and skills to develop the self-care behaviors that are essential for treatment and maintain the quality of metabolic control, reducing associated morbidities to the complications of DM <sup>(10-11)</sup>.

In this sense, self-care education is recommended by the World Health Organization because it is a tool that makes the person with DM protagonist of their treatment, allowing greater adherence to the therapeutic scheme and, thus, prevention of the complications resulting from this chronic problem <sup>(12)</sup>.

In view of the increasing number of people with DM and the importance of self-care in the prevention of their complications, with a consequent positive impact on the reduction of morbidity and mortality, the following question arose: What studies exist in the national and international literature on self-care in people with Diabetes Mellitus? Thus, the following objective was drawn: map the national and international scientific production on self-care in people with diabetes mellitus.

## **MATERIAL AND METHOD**

This is a bibliometric study with a quantitative approach. Bibliometrics, previously known as statistical bibliography, has the objective of quantifying the indexes of scientific production and dissemination of scientific knowledge, which makes it possible to analyze and evaluate the sources that disseminate the works, the chronological evolution of production, the productivity of Authors and their affiliations, the propagation of publications, the growth of specific fields of science and the impact of publications <sup>(13-14)</sup>.

For the selection of publications that addressed self-care in people with DM, searches were conducted in the following databases: Scientific Electronic Library Online (SCIELO), Latin American and Caribbean Literature in Health Sciences (LILACS), Medical Literature Analysis and Retrieval System Online (MEDLINE) and Scopus. The

search of journals in the mentioned databases was performed using the health terminology found in the Health Sciences Descriptors (DeCS) and the Medical Subject Headings (MeSH), which have a vocabulary that allows standard and unified language for the indexing of Studies and scientific journals, enabling the research of specific themes.

Thus, the terms "Self Care" and "Diabetes Mellitus" have been identified. These descriptors were combined with the boolean operator "and", conditioning their presentation in the title of the work, in order to refine the studies that only addressed the selected theme. In this way, it was possible to identify 288 publications.

Data were collected from September to November 2015. In order to select the sample, the following inclusion criteria were adopted: full-text article publications that addressed self-care in people with Diabetes Mellitus, published from 2005 to 2015, available in Portuguese, Spanish and English. Publications such as dissertations, theses and manuals were excluded. Thus, 112 studies were excluded because they did not address the chosen theme; 48 because they are repeated in the selected bases; 33 for failing to provide the full text; 2 because they do not belong to the selected time limit and 9 because they are dissertations and theses. Thus, the study sample consisted of 85 articles that were organized and archived in folders and named according to the database in which they were located.

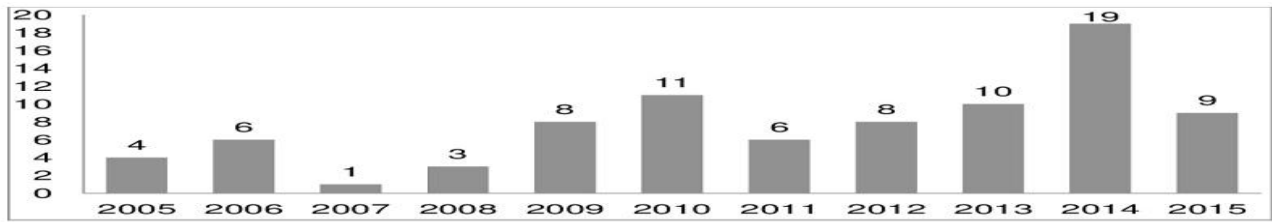
To facilitate the analysis of the selected publications, a data collection form developed by the researcher was used, including items pertinent to the study, such as: year of publication; periodic and impact factor / qualis; country of origin; language in which it was published; professional training, degree and affiliation of the authors, research modality; kind of study; approach; Study group; Thematic approach; Instrument and descriptors used. The data obtained were analyzed quantitatively with the help of SPSS (Statistical Package for the Social Sciences) - version 20.0, using the resources of descriptive statistics, with absolute and relative frequency distribution.

Regarding the data related to the descriptors, the methodology of conceptual map was used to emphasize its relation with the thematic axes. The conceptual maps approach<sup>(15)</sup> allows the organization of knowledge, the processing of information and, consequently, favors learning.

## **RESULTS**

The study sample consisted of 85 studies on self-care in Diabetes Mellitus, of which 19 (22.3%) were published in 2014, 11 (12.9%) in 2010, 9 (10.5%) in 2015 and 8 (9.4%) in 2008, as shown in Figure 1.

**Figure 1** - Distribution of scientific production on self-care in Diabetes Mellitus according to year of publication. João Pessoa, Paraíba, Brazil, 2005-2015.



Regarding the distribution of the published journals of the studies, it was found that 50 (58.8%) are international, with emphasis on Science and Nursing and The Diabetes Educator Journal with 3 (3.5%) papers each. It is noteworthy that of the 50 international journals analyzed, six are exclusively intended for publications on Diabetes. As for Qualis, only 13 international journals presented this stratification, being: 3 - A1, 2 - A2, 6 - B1, 2 - B2; the largest impact factor was attributed to the British Medical Journal, with 13.66, as shown in Table I.

**Table I** - Distribution of scientific production about self-care in Diabetes Mellitus, according to the journal, impact factor and qualis. João Pessoa, Paraíba, Brazil.

International Journals	n	%	Qualis	Impact factor
Ciencia y Enfermería	3	3,5	B1	-
The Diabetes Educator Journal	3	3,5	-	1.79
BMC Public Health	2	2,4	-	2.26
Global Journal of Health Science	2	2,4	-	-
International Journal of Diabetes in Developing Countries	2	2,4	-	0.16
Journal of Clinical Nursing	2	2,4	A1	0.65
Journal of Diabetes & Metabolic Disorder	2	2,4	-	0.38
Aquichan	1	1,2	B1	-
Asian Nursing Research	1	1,2	-	0.21
Medical Archives	1	1,2	-	-
Advances in Nursing	1	1,2	B1	-
BMC Medical Informatics and Decision Making	1	1,2	-	1.83
BMC Research Notes	1	1,2	B2	0.55
British Medical Journal	1	1,2	-	13.66
Clinical Nursing Research	1	1,2	-	1.25
Chronic Illness	1	1,2	-	0.81
Diabetes Research and Clinical Practice	1	1,2	A2	2.53
Diabetes Therapy	1	1,2	-	0.75
Enfermería Global	1	1,2	B1	-
Gaceta Médica de México	1	1,2	-	-
General Hospital Psychiatry	1	1,2	-	2.60
Health and quality of life outcomes	1	1,2	-	2.1
Health Psychol	1	1,2	-	1,74

International Journal of Nursing Practice	1	1,2	A1	0.59
Journal of Behavioral Medicine	1	1,2	-	2.95
Journal of Clinical Psychology in Medical Settings	1	1,2	A1	1.21
Journal of Community Health	1	1,2	B1	1.71
Journal of Diabetes and Its Complications	1	1,2	B1	3.00
Journal of General Internal Medicine	1	1,2	-	3.44
Journal of Health Care for the Poor and Underserved	1	1,2	-	0.92
Journal of Transcultural Nursing	1	1,2	-	0,65
Papeles de población	1	1,2	-	-
Patient Education and Counseling	1	1,2	-	2,19
Plos One	1	1,2	A2	3.23
Revista Argentina Salud Pública	1	1,2	-	-
Revista Enfermería Herediana	1	1,2	-	-
Revista Médica de Chile	1	1,2	B2	-
Revista Portuguesa de Saude Pública	1	1,2	-	0.12
West Indian Medical Journal	1	1,2	-	-
<b>Subtotal</b>	<b>50</b>	<b>58,8</b>		
<b>National Journals</b>	<b>n</b>	<b>%</b>	<b>Qualis</b>	<b>Impact factor</b>
Acta Paulista de Enfermagem	5	5,9	A2	0.29
Revista Brasileira de Enfermagem	4	4,7	A2	0.24
Revista Escola de Enfermagem USP	4	4,7	A1	0.45
Texto & Contexto en Enfermagem	4	4,7	A2	-
Revista Latino-Americana de Enfermagem	3	3,5	A1	0.53
Journal de Enfermagem UERJ	2	2,4	B1	-
Revista Gaúcha de Enfermagem	2	2,4	B1	-
Revista de Saúde Pública	2	2,4	A1	0.53
Arquivos brasileiros de Endocrinología & Metabologia	1	1,2	B2	0.84
Arquivos Catarinenses de Medicina	1	1,2	B2	-
Ciencia, Cuidado e Saúde	1	1,2	B2	-
Cogitare Enfermagem	1	1,2	B2	-
Diabetology & Metabolic Syndrome	1	1,2	A2	2.17
Escola Anna Nery Revista de Enfermagem	1	1,2	B1	-
Interface - Comunicação, saúde e educação	1	1,2	B1	-
Revista APS	1	1,2	B2	-
Revista de Associação Médica Brasileira	1	1,2	B1	-
<b>Subtotal</b>	<b>35</b>	<b>41,2</b>		
<b>TOTAL</b>	<b>85</b>	<b>100</b>		



Table I also shows that 35 (41.2%) journals are national, 5 (5.8%) of which are from the Acta Paulista de Enfermagem, followed by 4 (4.7%) from the Revista Brasileira de Enfermagem, 4 (4.7%) from the USP Nursing School Magazine, 4 (4.7%) from the Nursing Text & Context and 3 (3.5%) from the Latin American Journal of Nursing. From the total of national journals, two are focused on the publication of topics on endocrinology / metabolism - Brazilian Archives of Endocrinology & Metabolism and diabetes / metabolic syndrome - Diabetology & Metabolic Syndrome. The latter being the one with the greatest impact factor among nationals: 2.17. As for Qualis, it was identified that of the 35, 17 have this stratification, being distributed as follows: 3 - A1, 4 - A2, 5 - B1, 5 - B2.

Table II shows that, in relation to the authors, 51 (67.1%) are nurses and 53 (69.7%) are doctors. Regarding the characteristics of the study, 78 (91.8%) are original articles; 55 (64.7%) are cross-sectional studies; 60 (80.0%) are quantitative; 37 (43.5%) are in English and 34 (40.0%) are in Portuguese; 51 (64.6%) were performed at the outpatient clinic; 55 (64.7%) were performed only with people with DM2; as a tool for data collection, the most used was the generic instrument - 26 (34.2%), followed by the Summary of Diabetes Self-care activities - 24 (31.6%); 13 (15.3%) addressed the effect of education on self-care, 12 (14.1%) the barriers to self-care and the relationship with quality of life and behavior.

**Table II** - Distribution of the scientific production about self-care in Diabetes Mellitus, according to the characteristics of the authors and published articles. João Pessoa, Paraíba, Brazil, 2005 - 2015.

<b>VARIABLES</b>			Outpatient	51	64,6
<b>Authors' degree fields</b>	<b>n</b>	<b>%</b>	Hospital	2	2,5
Nurse	51	67,1	Family Health and Ambulatory Care	4	5,1
Doctor	16	21,1	<b>Total</b>	<b>79</b>	<b>100</b>
Psychologist	4	5,3	<b>Participating group</b>	<b>n</b>	<b>%</b>
Others	5	6,5	Only people with DM 2	55	64,7
<b>Total</b>	<b>76</b>	<b>100</b>	People with DM 1 and DM2	28	32,9
<b>Authors' scientific degree</b>	<b>n</b>	<b>%</b>	Only people with DM1	1	1,2
Doctorate	53	69,7	Only pregnant women with gestational DM	1	1,2
Master's degree	18	23,7	<b>Total</b>	<b>85</b>	<b>100</b>
Graduation	3	3,9	<b>Instrument Used</b>	<b>n</b>	<b>%</b>
Post doctoral	2	2,6	Generic instrument	26	34,2
<b>Total</b>	<b>76</b>	<b>100</b>	Summary of Diabetes Self-care activities	24	31,6
<b>Research Mode</b>	<b>n</b>	<b>%</b>	Appraisal of self-care agency scale-revised	6	7,9
Original article	78	91,8	Diabetes Knowledge Questionnaire and Diabetes Attitude Questionnaire	6	7,9

Review	6	7,1	Others	14	18,4
Editorial	1	1,2	<b>Total</b>	<b>76</b>	<b>100</b>
<b>Total</b>	<b>85</b>	<b>100</b>	<b>Topic approached</b>	<b>n</b>	<b>%</b>
<b>Kind of study</b>	<b>n</b>	<b>%</b>	Effect of education on self-care	13	15,3
Cross-cut	55	64,7	Barriers to self-care and the relationship with quality of life and behavior	12	14,1
Intervention	12	14,1	Interventions that impact self-care development	10	11,8
Others	6	7,2	Self-care and the relationship with sociodemographic and clinical characteristics	7	8,2
<b>Total</b>	<b>85</b>	<b>100</b>	Instrument Validation	6	7,0
<b>Type of Approach</b>	<b>n</b>	<b>%</b>	Use of self-care technologies	4	4,7
Quantitative	60	81,0	Self-care capacity	4	4,7
Qualitative	13	17,6	Self-care and treatment efficacy	3	3,5
Quantiquality	1	1,4	Self-care activities	2	2,4
<b>Total</b>	<b>74</b>	<b>100</b>	Professional-patient communication and self-care	2	2,4
<b>Language</b>	<b>n</b>	<b>%</b>	Knowledge and attitude	2	2,4
Portuguese	34	40,0	Self-care deficits	2	2,4
English	37	43,5	Differences in self-care activities by race / ethnicity	2	2,4
Español	14	16,5	Effects of gender on self-care	2	2,4
<b>Total</b>	<b>85</b>	<b>100</b>	Motivation for self-care	2	2,4
<b>Search Location</b>	<b>n</b>	<b>%</b>	Others	12	13,9
Family Health	22	27,8	<b>Total</b>	<b>85</b>	<b>100</b>

Regarding the country where the authors' affiliation institution was located, the country with the highest number of studies was Brazil, with 33 (39.1%) studies on self-care in DM, with emphasis on the Nursing School of Ribeirão Preto of the University of São Paulo with 14 (16.5%) works, followed by the Federal University of Minas Gerais with 8 (9.4%) works, as shown in Table III.



**Table III** - Distribution of the scientific production about self-care in Diabetes Mellitus, according to the country of the institutions of affiliation of the authors. João Pessoa, Paraíba, Brazil, 2005 - 2015.

<b>Country / Institution of affiliation of authors</b>	<b>n</b>	<b>%</b>
<b>GERMANY</b>		
University Hospital Heidelberg	1	1,2
<b>ARGENTINA</b>		
University of Buenos Aires	1	1,2
<b>BANGLADESH</b>		
Bangladesh University of Health Sciences	1	1,2
<b>BRAZIL</b>		
School of Nursing of Ribeirão Preto, University of São Paulo	14	16,5
Federal University of Minas Gerais	8	9,4
Anna Nery Nursing School	2	2,4
Faculty of Medicine of Botucatu, UNESP	1	1,2
Federal University of Alfnas	1	1,2
Federal University of Ceara	1	1,2
University of Fortaleza	1	1,2
Federal University of Piaui	1	1,2
Federal University of Rio Grande do Sul	1	1,2
Federal University of Santa Catarina	1	1,2
University of Southern Santa Catarina	1	1,2
Federal University of the Triângulo Mineiro	1	1,2
<b>CANADA</b>		
University of Toronto	1	1,2
<b>CHILE</b>		
Pontifical Catholic University of Chile	1	1,2
<b>COLOMBIA</b>		
University Pontifical Bolivariana	1	1,2
University of Cartagena	1	1,2
<b>SOUTH KOREA</b>		
Pusan National University	1	1,2
<b>SPAIN</b>		
University of Malaga	1	1,2
<b>U.S</b>		
The Pennsylvania State University	2	2,4
Medical University of South Carolina	2	2,4
Baylor College of Medicine	1	1,2
California State University Fullerton	1	1,2
David Geffen School of Medicine at UCLA	1	1,2
Havard Medical School	1	1,2
University of Colorado at Denver and Health Sciences Center	1	1,2
University of California	1	1,2
University of Illinois at Chicago	1	1,2

University of Kansas Medical Center	1	1,2
University of Louisville	1	1,2
University of Minnesota	1	1,2
University of Wisconsin-Milwaukee	1	1,2
Vanderbilt University Medical Center	1	1,2
<b>GREECE</b>		
Aristotle University of Thessaloniki	1	1,2
<b>NETHERLANDS</b>		
Maastricht University	1	1,2
<b>INDIA</b>		
American Mission Hospital	1	1,2
Sultan Qaboos University	1	1,2
Shri Sathya Sai Medical College & Research Institute	1	1,2
<b>INDONESIA</b>		
Faculty of Pharmacy Sanata Dharma University	1	1,2
<b>IRAN</b>		
University of Medical Sciences	1	1,2
Tehran University of Medical Sciences	1	1,2
<b>JAMAICA</b>		
The University of the West Indies School of Nursing	1	1,2
<b>MEXICO</b>		
Autonomous University of Tamaulipas	2	2,4
Faculty of Nursing of the Autonomous University of Nuevo León	1	1,2
Faculty of Nursing and Obstetrics Autonomous University of the State of Mexico	1	1,2
National Institute of Medical Sciences and Nutrition Salvador Zubirán	1	1,2
Autonomous University of Carmen	1	1,2
Autonomous University of the State of Mexico	1	1,2
<b>PAKISTAN</b>		
Civil Hospital Karach	1	1,2
The Aga Khan University	1	1,2
<b>PERU</b>		
Peruvian University Cayetano Heredia	1	1,2
<b>PORTUGAL</b>		
School of Coimbra	1	1,2
<b>UNITED KINGDOM</b>		
University of Leicester	1	1,2
<b>TURKEY</b>		
Baskent University Faculty of Health Sciences	1	1,2
Erzincan University School of Health	1	1,2
Istanbul University	1	1,2
<b>VENEZUELA</b>		
University of Carabobo	2	2,4
<b>TOTAL</b>	<b>84</b>	<b>100</b>

According to Table III, the United States also stood out in a number of studies on the subject, with 16 (19.2%) works; Followed by Mexico with 7 (8.4%) works.

Regarding the keywords, which are presented in alphabetical order, it is evident that the predominant descriptors in the studies analyzed were Diabetes Mellitus, found in 59 studies, followed by Self-Care, cited in 57 papers, as presented in Table IV.

**Table IV** - Key words found in self-care work on Diabetes Mellitus. João Pessoa, Paraíba, Brazil, 2005 - 2015.

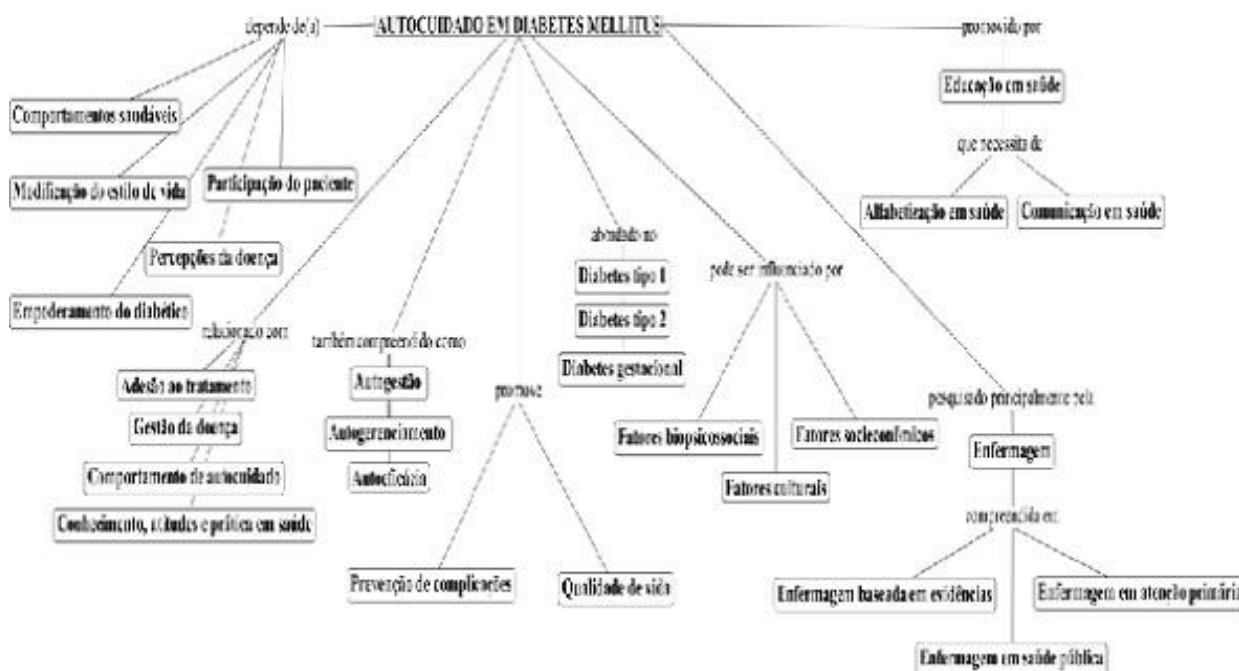
<b>Key words</b>	<b>n</b>	<b>Key words</b>	<b>n</b>
Access to Health Services	1	Patient Care Team	1
Accession	3	Scales	1
Adherence to medication	1	Schooling	1
Patient compliance	1	Lifestyle	1
Therapeutic adhesion / treatment	3	Educational Strategies	1
Literacy in health	2	Validation studies	4
Attitude towards health	2	Biopsychosocial Factors	1
Attitude	3	Cultural Factors	1
Physical activity	1	Risk factors	1
Self-management	2	Facilitating factors	1
Self Care	57	Predisposing factors	1
Self Care in Diabetes	1	Psychosocial factors	1
Self-efficacy	4	Socioeconomic factors	1
Self Management	2	Genre	1
Patient Self Management	1	Disease management	1
Self-monitoring of blood glucose	1	Self-care management	1
Evaluation of results of therapeutic interventions	1	Self Help Groups	1
Nursing assessment	2	Food habits	1
Neighborhood / community	1	Glycosylated hemoglobin	2
Language barriers	1	Hypoglycemic agents	1
Barriers to self-care	1	Elderly	4
Social Sciences	1	Epidemiological Surveys	1
Correlation coefficients	2	Insulin	1
Complication of diabetes mellitus	1	Educational intervention	1
Complications	1	Handbooks	1
Food behavior	1	Medication	1
Self-care behavior	5	Family's doctor	1
Healthy Behaviors	1	Glycemic control model	1
Communication	1	Model of belief in health	1
Self-care communication	1	Case management model	1
Communication in health	1	Nursing Models	1
Reliability	2	Modifying lifestyle	1

Knowledge	4	Change in behavior in diabetes	1
Knowledge and self-care	2	Non-adhesion	1
Knowledge, Attitudes and Practice in Health	4	Diabetic nephropathy	1
Glycemic control	2	Diabetic neuropathy	2
Patient cooperation	1	Nutrition	1
Foot Care	1	Obese	2
Nursing care	4	Patient	1
Personal cares	1	Patient Participation	1
Primary health care	3	Diabetic foot	7
Depression	1	Perception	1
Development of instruments	1	Perceptions of the disease	1
Social determinants	3	Feet	1
Diabetes Mellitus	59	Self-care practices	1
Gestational diabetes	4	Prevention	4
Type 1 Diabetes	1	Ulcer Prevention	1
Type 2 diabetes	32	Prevention and control	1
Nursing Diagnostics	2	Group processes	1
Gender differences	1	Health promotion	2
Discussion in small groups	1	Psychological	1
Health disparities	1	Psychometry	2
Chronic-degenerative diseases	2	Quality of life	1
Education	11	Health-related quality of life	1
Patient Education as Topic	1	Questionnaires	2
Self-Care Education	1	Doctor-patient relationship	1
Patient education	3	Diabetes results	1
Education in nursing	1	Health outcomes	1
Health Education	16	Mental health	1
Public education	1	Health services	1
Empowerment of perceptions	1	Emergency Medical Services	1
Diabetic Empowerment	1	Surveillance system by telephone inquiry	1
Nursing	26	Online systems	1
Evidence-based nursing	1	Socioeconomic	1
Nursing in primary care	1	Tele-nursing	1
Public Health Nursing	2	Translation	2
Nurses	1	Foot ulcers	1
Confrontation	1	Users	1
Epidemiology	1	Home visit	1

According to Table IV, it was also verified the prevalence of the descriptors: Type 2 diabetes, 32 studies; Nursing, 26 works; Health education, 16 works; Education, 11 assignments.

Through the analysis of the descriptors and after grouping the similar terms, it was possible to construct a conceptual map, evidencing thematic groups related to self-care in Diabetes Mellitus, as shown in Figure 2.

**Figure 2** - Conceptual map drawn from the descriptors of the publications about self-care in Diabetes Mellitus. João Pessoa, Paraíba, Brazil, 2005 - 2015.



According to Figure 2, it is possible to detect that the thematic groups emerging from the descriptors of the publications are: dependent factors, related factors and factors that influence self-care in DM and the health benefits.

## DISCUSSION

The study identified that most publications are recent because they have been concentrated in the last five years. This can be explained by the translation and adaptation of specific instruments for the evaluation of self-care in DM as of 2010, as well as the greater interest of the researchers in exploring the aforementioned topic, for the evidence of being a primordial factor in the control of DM And thus in reducing the morbidity and mortality attributed to this chronic condition <sup>(7)</sup>.

In relation to the periodicals of publication, the predominance of the international ones, directed, mainly, for varied subjects. However, the journals focused on MD studies include The Diabetes Educator Journal, the official journal of the American Association of Diabetes Educators, peer-reviewed, with bi-monthly education of the patient and the professional, serving as a reference for the management of DM <sup>(16)</sup>.

As for Qualis, there is a reduced number of international journals with this classification, since Qualis is a stratification used by the Coordination for the Improvement of Higher Education Personnel - Capes to measure the quality of the

scientific production of Brazilian postgraduate programs, According to the journals used by those programs for the dissemination of their production <sup>(17)</sup>.

As regards the impact factor - calculated by the number of citations in articles published in two years, divided by the total number of articles published by the same periodic period <sup>(18)</sup> - the British Medical Journal Publications of the most varied themes and aimed mainly at the medical public, has the greatest impact factor and, consequently, greater scientific repercussion.

In relation to the national journals, the magazine with the largest number of publications was the Acta Paulista de Enfermagem, which belongs to the Paulista Nursing School of the Federal University of Nursing and aims to disseminate the results of the nursing practice in its various areas <sup>(19)</sup>.

The other journals that presented the greatest number of papers are also focused on Nursing research, which confirms the consolidation of nursing in the field of research as a producer of knowledge, a consequence of the changes in the curricula that started to prioritize critical-reflexive formation, As well as the constitution of research groups and the strengthening of Stricto Sensu Graduate Programs. It is also worth noting that state bodies such as Capes and the National Council for Scientific and Technological Development (CNPq) contribute to encourage the growing production, dissemination and exchange of new knowledge, making Brazil the Latin American leadership in Nursing research <sup>(20)</sup>. It is also evidenced that, among national journals, only Diabetology & Metabolic Syndrome has a significant impact factor. This can be justified by the absence of most national journals in the Science Citation Index (SCI) <sup>(18)</sup>, an index that makes it possible to identify the frequency of citation of articles; As well as by the requirement of national journals to contain in the references of international periodical manuscripts, together with the preference of researchers to cite studies from outside Brazil <sup>(21)</sup>.

As to the authorship of the work, it was verified the predominance of nurses as authors. One of the requirements for the patient to perform self-care practices is knowledge regarding their health-disease process, requiring education so that they can develop skills and thus take care of themselves, evidencing education as indispensable for the person to be empowered Of self-care capacity, justifying education as the thematic focus among the studies analyzed. Although the literature <sup>(22)</sup> recommends that education for self-care should be performed by an interprofessional team, nurses, because they have skills and abilities to act as educators, stand out in this performance. <sup>(2.23)</sup>

It should be highlighted that there was a predominance of nurses with a doctoral degree, reflecting the growth of Nursing graduate programs that aim at the development of global leaderships that enable the production of knowledge and the evolution of the profession. In Brazil, from 1983 to 2012, 2,049 PhDs in Nursing were graduated with prospects of increasing this number in the coming years, as a consequence of the goal established by the National Postgraduate Plan 2011-2020 to double the number of 1.4 doctor / 1000 inhabitants in Brazil by 2020 <sup>(24)</sup>.

Regarding the characteristics of the studies, the prevalence of original studies shows that researchers are interested in disseminating unpublished results that contribute to the advancement of knowledge and improvement of professional practice <sup>(25)</sup>.



Cross-sectional studies were also predominant. This type of design is characterized by a single measure of the variables of interest, with no follow-up or control at the design stage of the predictor variables, which together with the response variables are measured simultaneously <sup>(26)</sup>. They are indicated for research that aims to identify aspects related to the etiology of the disease, especially regarding the risk factors of slow onset and chronic diseases such as DM <sup>(27)</sup>. This type of study is generally used to describe the health status of a given population and to guide the planning of health actions, in which its results serve as a basis for analytical and experimental studies, which have proved to be scarce for this theme.

The domain of studies published in the English language is explained as being the universal language of scientific communication and, therefore, adopted mainly by the journals indexed in the main databases. Portuguese has also been predominant among languages, which is associated with the growth of scientific production in Brazil and the decision of editors who choose to publish in English and Portuguese in order to provide broad access to scientific knowledge <sup>(25)</sup>.

Most of the studies took place in outpatient clinics, which are specialized services with intermediate technology, offering specialized medical services, diagnostic and therapeutic support, emergency and emergency care. In this context, there are, in most outpatient clinics, services exclusively for the care of people with DM, through a multiprofessional team, which makes it possible to carry out researches with this respective public <sup>(28)</sup>.

In relation to the participant group, people with type 2 DM (DM2) are the most studied. DM2 arises when insulin production is insufficient and / or there is resistance to its action in maintaining blood glucose levels. It accounts for 90 to 95% of DM cases in adults, with an estimated 4% increase in new cases by 2030, due to the growth of overweight / obese people and sedentary lifestyle <sup>(29)</sup>. DM2 has insidious onset and, although it may occur at any age, there is predominance after the age of 40, which makes it difficult to adhere to self-care practices due to the influence of deleterious health behaviors already ingrained <sup>(30)</sup>.

To evaluate adherence to the self-care practices of people with DM, researchers are using generic tools more frequently and the Summary of Diabetes Self-care Activities, which was developed to evaluate the self-care activities of diabetics with regard to diet (general and specific), physical activity, medication use, blood glucose monitoring, foot care and smoking. It should be emphasized that the use of specific, reliable and valid instruments is essential to verify self-care adherence in DM, which will allow professionals to plan health actions according to the actual needs of their patients <sup>(31)</sup>. It is worth noting that the largest number of studies with a quantitative approach is the result of the use of these instruments that seek to quantify adherence to self-care behaviors.

Regarding the institution of affiliation of the authors, Ribeirão Preto College of Nursing of the University of São Paulo (EERP-USP), Brazil, stood out in number of papers. EERP-USP is a prestigious institution in the field of research in Nursing in Brazil, with worldwide recognition; is designated as a Collaborating Center of the World Health Organization for the development of Nursing Research, in addition to having the Research Support Center that provides technical and scientific support to the researchers of this institution <sup>(32)</sup>.

It is also worth mentioning that the EERP-USP has research groups dedicated exclusively to the study of DM, which, together with the Graduate Programs in Nursing, encourage the progression of the scientific community, offering to the community and health services the exchange of knowledge for the purpose of improving social reality and to boost professional development<sup>(21)</sup>.

From the analysis of the descriptors and the elaboration of the conceptual map, an overview of the analyzed articles was possible, in which the thematic groups showed the dependent factors, the related ones and those that influence the self-care in DM, as well as the benefits that they provide for health.

Among these factors, we highlight the importance of health literacy that can be understood as the ability of an individual to obtain, process and understand the information necessary to make decisions regarding their health condition and, thus, influence adherence to behaviors of self-care<sup>(33)</sup>.

Since the complexity involved in DM treatment and the responsibility of the person involved in their management requires diabetics to change their lifestyle with adherence to pharmacological treatment, food plan and physical activity. For this, the DM patient needs to know the aspects that involve his illness and what is necessary to prevent its complications, besides understanding what may be a barrier to self-care and making positive decisions regarding treatment<sup>(10)</sup>.

## CONCLUSION

The bibliometric study of the productions about the self-care in DM of the last ten years showed that this theme is being increasingly approached by the researchers, with increased research in the last five years. However, it has been found that there is no substantial quantity of articles in a single periodical, both international and national, showing the absence of thematic numbers, although there are international and national journals exclusively intended for publications on DM.

International journals were predominant, with a small number of journals specifically for publication on DM, as well as national ones. However, the Brazilian journals that stand out are focused on Nursing research, confirming nurses as leaders in the studies that involve self-care in DM.

These two factors: growth of research in the last five years and nurses as the main authors are influenced by the translation and adaptation of specific instruments of adherence to self-care for the Portuguese language, making feasible studies that guide the education of diabetics to self-care.

The bibliometric analysis also allowed to identify that the tendency of work on self-care is concentrated in original articles, cross-sectional and quantitative approach. However, the scarcity of analytical and experimental studies shows the need to perform studies with this type of cut so that the hypotheses that have emerged in the observational studies can be tested and thus progress in the researches, contributing in the adhesion to the self care.

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