



ORIGINALES

Health promotion measures in people with diabetes mellitus during covid-19: an integrative review

Medidas de promoção da saúde em pessoas com diabetes mellitus durante a covid-19: revisão integrativa

Medidas de promoción de la salud en personas con diabetes mellitus durante la covid-19: una revisión integradora

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ABSTRACT:

Objective: To map scientific evidence on health promotion measures to improve the quality of life of people living with Diabetes Mellitus during the COVID-19 pandemic.

Method: This is an integrative review, performed in MEDLINE databases via PubMed, CINAHL-Ebsco, Scopus, LILACS and IBECs, using the descriptors "diabetes mellitus", "coronavirus infections", "covid-19", "health promotion" and "quality of life". The sample counted 17 articles.

Results: Data were grouped into three dimensions: focusing on the individual; in the community and in government actions or public policies.

Conclusion: Individual measures were more prevalent in the studies, to the detriment of a limitation of collective and governmental measures.

Keywords: Diabetes Mellitus; Coronavirus Infections; Health Promotion.

RESUMO:

Objetivo: Mapear evidências científicas sobre medidas de promoção da saúde para melhoria da qualidade de vida em pessoas que vivem com Diabetes Mellitus durante a pandemia da COVID-19.

Método: Trata-se de revisão integrativa, realizada nas bases de dados MEDLINE via PubMed, CINAHL-Ebsco, Scopus, LILACS e IBECs, através dos descritores "diabetes mellitus", "coronavirus infections", "covid-19", "health promotion" e "quality of life". A amostra contabilizou 17 artigos.

Resultados: Os dados foram agrupados em três dimensões: com foco no indivíduo; na coletividade e em ações governamentais ou políticas públicas.

Conclusão: As medidas individuais tiveram maior prevalência nos estudos, em detrimento de uma limitação de medidas coletivas e governamentais.

Palavras chaves: Diabetes Mellitus; Infecções por Coronavírus; Promoção da Saúde.

RESUMEN:

Objetivo: Mapear la evidencia científica sobre las medidas de promoción de la salud para mejorar la calidad de vida de las personas que viven con Diabetes Mellitus durante la pandemia de COVID-19.

Método: Se trata de una revisión integradora, realizada en bases de datos MEDLINE vía PubMed, CINAHL-Ebsco, Scopus, LILACS e IBECs, utilizando los descriptores "diabetes mellitus", "infecciones por coronavirus", "covid-19", "promoción de la salud y" calidad de la vida". La muestra contó 17 artículos.

Resultados: Los datos se agruparon en tres dimensiones: focalización en el individuo; en la comunidad y en acciones de gobierno o políticas públicas.

Conclusión: Las medidas individuales fueron más prevalentes en los estudios, en detrimento de una limitación de las medidas colectivas y gubernamentales.

Palabras clave: Diabetes Mellitus; Infecciones por Coronavirus; Promoción de la Salud.

INTRODUCTION

When configuring itself as a pandemic, the *Severe Acute Respiratory Syndrome Coronavirus 2* (SARS-CoV-2), represents a global public health emergency, causing collapse in health systems around the world and causing changes in people's lifestyles, especially among the most vulnerable groups and at high risk of mortality from the disease, with Diabetes Mellitus (DM) being a factor that includes subjects in that risk group^(1,2).

A review of the literature on the subject, pointed out in most of the results of studies, a prevalence of diabetes in patients with *Coronavirus Disease* (COVID-19), in order to conclude that DM was a prognostic factor for unfavorable outcomes, noting that the prevalence was higher in critically ill patients than in non-serious patients, although the pathophysiological relationship that lead to more serious complications is not clear among those affected by the disease⁽³⁾.

Therefore, there is evidence that relates to a state of chronic hyperglycemia, others suggest that it is related to inflammatory factors and others point to the use of antidiabetic drugs⁽⁴⁾.

In this context, differentiated attention between health policies for people with DM is essential, avoiding exposure to COVID-19 as much as possible, in addition to measures that culminate in a reduction in the risk of complications and mortality among those who will contract COVID 19. Despite this need, among the usual challenges for patients with DM in Latin America, the lack of measures, actions, guidelines and specific public policies is pointed out as a present reality even in the face of epidemiological data reflecting a greater risk of mortality from COVID-19 in these patients⁽²⁾.

In this sense, knowing the measures and strategies that aim to promote the health of these subjects during the COVID 19 pandemic, which are being used in different regions of the world, is a relevant and essential factor for rethinking actions with the potential for improvement in living conditions, life and health of this public for the continuous confrontation of the two diseases. Therefore, this study aims to map

scientific evidence on health promotion measures to improve the quality of life of people living with DM during the COVID-19 pandemic, with the theoretical perspective of the expanded Health Promotion concept listed in Letter from Ottawa, which brings, in its pillars and potential strategies to address health problems⁽⁵⁾.

METHODS

This is an integrative review that was developed following the steps: elaboration of the research question; establishment of inclusion and exclusion criteria; search for primary studies; evaluation of included studies; categorization of studies; interpretation of results and synthesis of evidenced results⁽⁶⁾.

A search was carried out to identify reviews with similar themes, ensuring data exclusivity. The search was guided by the following research question: “What health promotion measures to improve the quality of life of people living with Diabetes Mellitus during the Covid-19 pandemic?”, based on the PICO strategy, whose P refers to the population (people with DM), i intervention/exposure (health promotion practice to improve quality of life) and Co to the outcome/results/context (COVID-19 pandemic).

To operationalize the search, controlled descriptors were selected, after consulting the Descriptors in Health Sciences (DeCS) and *Medical Subject Headings* (MESH) vocabularies. Table 1 presents the descriptors, as well as the strategy adopted in each database.

Table 1. Electronic search strategy. João Pessoa, PB, Brazil, 2021

DATA BASE	DESCRIPTORS / SEARCH STRATEGY
MEDLINE by PubMed®	((("diabetes mellitus"[MeSH Terms]) AND ("coronavirus infections"[MeSH Terms])) OR ("covid-19"[MeSH Terms])) AND ("health promotion"[MeSH Terms]) OR ("quality of life"[MeSH Terms])
CINAHL-Ebsco	MH "diabetes mellitus" AND MH "coronavirus infections" OR MH "covid-19" AND MH "health promotion" OR MH "quality of life"
Scopus	(TITLE-ABS-KEY ("diabetes mellitus") AND TITLE-ABS-KEY ("coronavirus infections") OR TITLE-ABS-KEY ("covid-19") AND TITLE-ABS-KEY ("health promotion") OR TITLE-ABS-KEY ("quality of life"))
LILACS	("diabetes mellitus") AND ("coronavirus infections") OR ("covid-19") AND ("health promotion") OR ("quality of life")
IBECS	("diabetes mellitus") AND ("coronavirus infections") OR ("covid-19") AND ("health promotion") OR ("quality of life")

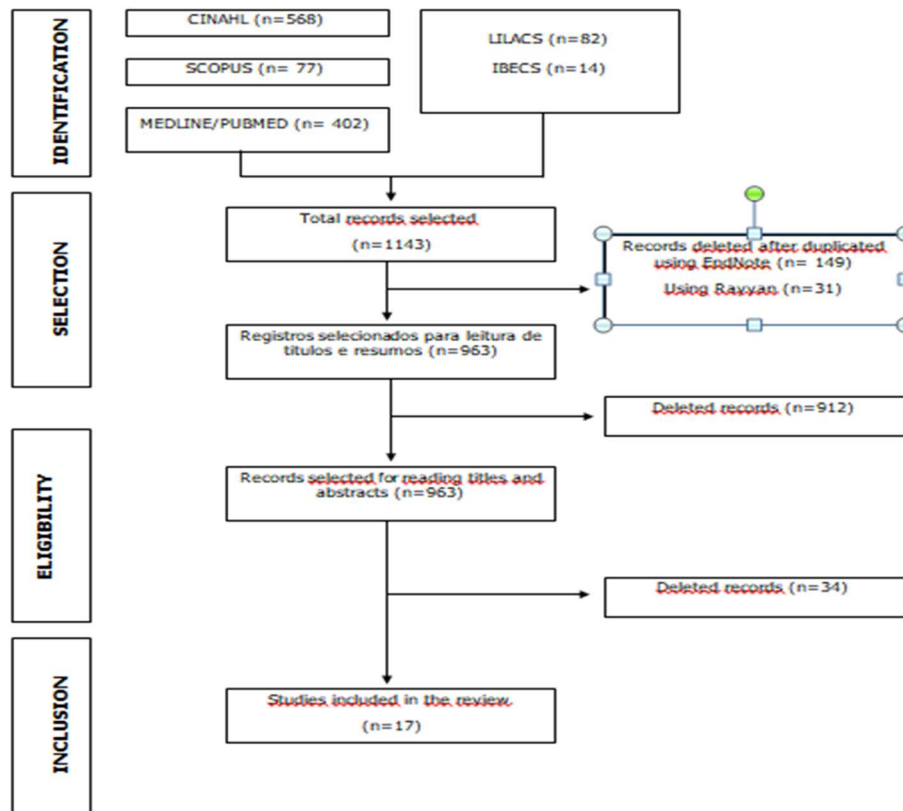
Source: Prepared by the authors, 2021.

The searches resulted in 1,143 articles. For each database, an export file was generated for the *EndNote* reference manager, to remove duplications. The selection of the material was made by reading the titles and abstracts, by two independent researchers and blindly, through the free web review program *Rayyan Qatar Computing Research Institute* (Rayyan QCRI), which resulted in 963 articles for the 1st stage of analysis. After this stage, 39 (4.1%) conflicts were identified, therefore, there was a meeting between the two researchers with a third researcher experienced in the area, for their resolution and consensus. Then, in the 2nd stage of analysis, a critical analysis of the articles in their entirety was performed by two independent researchers and blindly, again using the *Rayyan QCRI*. As for the criteria for choosing the articles, experimental, quasi-experimental, observational studies, theoretical reflection, guides and studies published between 2020 and 2021 were included, this time interval was chosen due to the update of evidence on the investigated theme. Experience reports, reports, commentary, integrative and systematic reviews, as well as monographs, dissertations, theses and those articles that did not answer the research question, considering the Covid-19 pandemic context and people with DM and duplicate articles were excluded. The entire process of identification, selection, eligibility and inclusion is shown in Figure 2. It should be noted that the script used for extraction contained information considering the theoretical framework of Dahlgren and Whitehead⁽⁷⁾, categorizing into individual measures (individuals' lifestyle), collective measures (social and community networks) and governmental measures (living conditions and work).

RESULTS

From the searches carried out in the consulted sources and according to the inclusion and exclusion criteria, a total of 17 articles were included, as shown in Figure 1.

Figure 1. Review flowchart. João Pessoa, PB, Brazil, 2021



Source: Prepared by the authors, 2021.

The synthesis of the 17 selected articles is presented in Table 1, which consists of information related to the methodological characteristics and countries of affiliation of the studies researchers.

Table 1. Synthesis of studies. João Pessoa, PB, Brazil, 2021.

Article	Methodological characteristics	Countries of affiliation of the studies researchers	Quality of scientific evidence Agency for Healthcare Research and Quality (AHRQ)
A1 ⁽⁸⁾	Descriptive study of a quantitative approach	Saudi Arabia	Level 4
A2 ⁽⁹⁾	Theoretical reflection	Australia	Level 6
A3 ⁽¹⁰⁾	Theoretical reflection	Italy	Level 6
A4 ⁽¹⁾	Descriptive study of a quantitative approach	Brazil and Belgium	Level 4
A5 ⁽¹¹⁾	Theoretical reflection	India	Level 6

A6 ⁽¹²⁾	Theoretical reflection	Iran	Level 6
A7 ⁽¹³⁾	Theoretical reflection	United Kingdom	Level 6
A8 ⁽¹⁴⁾	Theoretical reflection	Italy	Level 6
A9 ⁽¹⁵⁾	Quasi-experimental study	Croatia	Level 3
A10 ⁽¹⁶⁾	Theoretical reflection	South Korea, Australia, Mongolia, China and Japan	Level 6
A11 ⁽¹⁷⁾	Descriptive study of a quantitative approach	India	Level 4
A12 ⁽¹⁸⁾	Guide	Canada	Level 6
A13 ⁽¹⁹⁾	Guide	Brazil	Level 6
A14 ⁽²⁰⁾	Theoretical reflection	United States	Level 6
A15 ⁽²¹⁾	Descriptive study of a quantitative approach	China	Level 4
A16 ⁽²²⁾	Theoretical reflection	United States	Level 6
A17 ⁽²³⁾	Theoretical reflection	Brazil	Level 6

Source: Prepared by the authors, 2021.

In Table 2, the health promotion measures to improve the quality of life suggested in the articles are presented, being subdivided into: individual measures, collective measures and governmental measures.

Table 2. Mapping of health promotion measures. João Pessoa, PB, Brazil, 2021

Health promotion measures	Number of articles	
	n	%
Individual measures		
Monitor blood glucose	05	29,4
Seek virtual consultations for follow-up treatment (teleconsultations)	02	12,0
Follow the diabetes-specific drug treatment regimen (oral medication and/or insulin)	02	12,0
Perform physical exercise	05	29,4
Maintain healthy eating	03	18,0
Seek psychological and/or family support to assist in the	01	6,0

treatment and management of anxiety		
Use of masks	04	23,5
Wash hands and maintain household hygiene measures	04	23,5
Maintain sleep pattern	01	6,0
Maintain water intake	01	6,0
Collective measures		
Participate in health education groups for diabetes mellitus and/or COVID-19 care in person or telehealth	07	41,1
Maintain social distancing	04	23,5
Government measures/public policies		
Develop guides, protocols, guidelines, videos, e-books, apps and web pages to guide the management of COVID-19 and/or guidance on Diabetes Mellitus	03	18,0
Promote adjustments in health systems, training for professionals in DM and construction of scientific committees to care for people with COVID-19	04	23,5
Develop surveillance measures, such as sanitary lockdown measures, closure of non-essential services and border monitoring	04	23,5
Ensure access to medicines, diagnosis, and essential supplies for the treatment of diabetes mellitus and for the treatment of COVID-19	06	35,2
Develop immunization programs against influenza and COVID-19	01	6,0

Source: Prepared by the authors, 2021.

DISCUSSION

The studies reveal that individual and collective care measures are being oriented in search of prevention of COVID 19 and injuries in the individual living with DM. With regard to government measures, it is observed that the political response to the pandemic varied according to the institutional design, the autonomy of the political actors involved, and according to the effective belief in the lethal power of the virus⁽²³⁻²⁴⁾.

In this sense, it appears that monitoring glycemic control^(8,16,19,21,23) is essential for people living with DM, since changes in blood glucose, especially hyperglycemia, can cause physiological and immunological disorders⁽²⁵⁾. In addition, hyperglycemia is identified as an aggravating factor of mortality for people with COVID-19^(4,23).

Given the restrictions of social distancing, teleconsultation was a measure used to assist users with DM^(16,23). This consists of care through the use of technology by the health professional, which allows care without leaving home, for which supplies such as cell phones or computers with the use of the internet are needed⁽²⁶⁾. However, there are potential barriers to be faced, ranging from internet connectivity and user preference for face-to-face meetings with the professional, to availability, technical training and accessibility of subjects to deal with this equipment⁽²⁰⁾.

On the other hand, the popularization of digital tools and the development of guides, protocols and guidelines have been identified as a self-care management strategy for people with DM in the face of the COVID-19 pandemic^(9-10,23). In view of the reduced access to primary care, diagnostic and hospital services for DM, combined with the fear of exposure to the virus in these places, led to a significant drop in access to usual care⁽⁹⁾.

Therefore, social distancing is a potential collective measure to prevent infection by Sars-Cov-2^(9,10,14,23). Although recommended by government policies, it seriously affects the treatment of DM, since home confinement limits access to essential services⁽²⁷⁾.

In order to strengthen the distance, actions such as the online prescription of medicines and the delivery of medicines at home by pharmacies are pointed out⁽⁹⁾. Considering that the drug treatment of people with diabetes consists of the use of antidiabetics and/or insulin, thus, it is recommended to follow the guidelines of health professionals, in order to avoid complications related to DM^(16,23). In dealing with this problem, there are also recommendations for distributing medications for a prolonged period, in order to avoid going to services^(23,27).

Regarding the practice of physical exercise, studies point to its relevance in improving glycemic control, pulmonary function, the immune system, accelerating metabolic adaptations, improving cardiorespiratory conditions, decreasing the need for insulin and avoiding secondary complications of DM^(10,12,18,19,23). Places such as parks, gyms and clubs would be the most suitable and sought after in non-pandemic situations of COVID-19, but this practice became impossible, requiring other scenarios to carry out these activities⁽²⁷⁾.

In India, recommendations such as climbing stairs, performing domestic activities, gardening and stretching were identified by professionals as activities that can be performed at home and, therefore, easily implemented by people with DM⁽²⁶⁾. Another alternative is the use of online platforms for home exercises, with free classes and specialized instructors⁽¹⁰⁾. Regarding healthy eating, studies suggest a balanced diet, composed of proteins, fibers, vitamins, limited saturated fats and hydration^(18,19,23). A person with DM is more vulnerable to dehydration, so adequate fluid intake must be maintained, being responsible for improving immunity and good kidney function^(23,28). An unhealthy diet decreases vitamin intake, vitamin D hypovitaminosis is known as a risk factor for insulin resistance, causing endothelial dysfunction and increased platelet aggregation and activation, which predisposes the individual to the development of a hyper-regulable prothrombotic state, which makes them more susceptible to contracting new diseases⁽⁴⁾.

The use of masks is recommended as an important measure in the prevention of COVID-19, it protects the airways from contact with the virus, being a low-cost measure for the general population^(12,14,15,23). However, this measure is not enough to provide an adequate level of protection, and other non-pharmacological measures must be adopted, such as hand hygiene^(12,14,15,23) with the use of soap and water to remove dirt or use of 70% alcohol, when it is not possible to use soap and water⁽²⁹⁾.

The literature emphasizes that in the period of the COVID-19 pandemic, people with DM had their sleep pattern impaired, with less than 6 hours of sleep a day, indicating the concern about contracting COVID-19 as a reason, being essential a adequate sleep pattern to keep the body's vital functions stable⁽²²⁾.

Also noteworthy is the participation in health education groups for DM and/or COVID-19 care in person or via telehealth, and health professionals should encourage people living with DM to adhere to virtual means to consultations during the social blockage phase, avoiding exposing the diabetic user, performing only the essentials in person^(1,8,11,12,15,16,23).

Therefore, the management of DM, as a multifactorial chronic disease, requires access to professionals specialized in the area^(9,15-16,23). In addition, ensuring that people with the disease can continue to be regularly assisted by their specialized DM health care is essential⁽⁴⁾.

Considering this, some countries have made adjustments to their health systems^(1,9,12,23), such as the construction of specialized care centers for COVID-19^(9,23). As well as the remodeling of the healthcare system, with the reconfiguration of wards, separate facilities for those with COVID-19; suspension of non-urgent surgeries and procedures; contact tracing of people exposed to COVID-19⁽⁹⁾. In addition, the development of immunization programs to protect against Covid-19 and influenza⁽²³⁾.

In parallel with the aforementioned elements, resources were allocated to preventive, diagnostic and therapeutic regimens for users with DM^(1,9,12,15,16,23). And for health professionals, we sought to ensure adequate personal protective equipment^(2,9,23).

This study has as a limitation the exclusion of some articles that presented health promotion measures, but not directly related to people with DM.

CONCLUSION

Individual measures were more prevalent in the studies listed in this sample, to the detriment of a limitation of collective and governmental measures. This finding leads us to reflect on the importance of each individual being empowered about the actions they can take in search of their well-being and, consequently, the good of the collectivity. In the case of users with DM, they need to have clarifications and be sensitized about their risk situation in the pandemic, in such a way that they become able to act individually, as well as collectivities and governments must contribute through policies, programs or strategic actions.

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