**Name of Journal**: ***World Journal of Diabetes***

**Manuscript NO: 46746**

**Manuscript Type: MINIREVIEWS**

**Competences for self-care and self-control in diabetes mellitus type 2 in primary health care**

Amorim MMA *et al.* Competences self-care diabetes mellitus type 2

**Maria Marta Amancio Amorim, Alessandra Hugo de Souza, Adriana Keller Coelho**

**Maria Marta Amancio Amorim,** Centro De Estudos Em Migrações E Relações Interculturais, Belo Horizonte 302240010, Brazil

**Alessandra Hugo de Souza,** Programa de Pós graduação em Biologia de Vertebrados,Pontificia Universidade Católica de Minas Gerais, Belo Horizonte 30535901, Brazil

**Adriana Keller Coelho,** Geriatric Unit, Hospital do Instituto de Previdência dos Servidores do Estado de Minas Gerais, Belo Horizonte 3010110, Brazil

**ORCID number:** Maria Marta Amancio Amorim (0000-0001-8268-2508); Alessandra Hugo de Souza ([0000-0001-8828-1019](https://orcid.org/0000-0001-8828-1019)); Adriana Keller Coelho (0000-0001-7559-7903).

**Author contributions:** Amorim MMA contributed to revision of bibliography and text formatting; de Souza AH contributed to translation of article with revision; Coelho AK contributed to text editing.

**Conflict-of-interest** **statement:** No potential conflicts of interest relevant to this article were reported.

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: http://creativecommons.org/licenses/by-nc/4.0/

**Manuscript source:** Invited Manuscript

**Corresponding author:** **Maria Marta Amancio Amorim,** Centro De Estudos Em Migrações E Relações Interculturais, Rua Herval 515, Belo Horizonte 302240010, Brazil. martamorim@hotmail.com

**Telephone:** +55-31-999576733

**Received:** February 21, 2019

**Peer-review started:** February 22, 2019

**First decision:** June 3, 2019

**Revised:** June 7, 2019

**Accepted:** July 20, 2019

**Article in press:**

**Published online:**

**Abstract**

The purpose of the guidelines of self-care and self-control of type 2 diabetes mellitus proposed by the Brazilian Ministry of Health is to strengthen and qualify users and health care professionals through the integrality and longitudinality of care with this disease. This article aims to present the self-care and self-control of people with type 2 diabetes mellitus in objective terms, taking into account the current recommendations based on scientific evidence and also from the subjective point of view, that is, emphasizing the aspects related to experience and subjectivity of these people. Next, we present the essential skills for self-care and self-control of users and professionals working in primary health care.

**Key words:** Diabetes mellitus type 2; Self-care; Primary health care

**© The Author(s) 2019.** Published by Baishideng Publishing Group Inc. All rights reserved.

**Core tip:** This article aims to present the self-care and self-control of people with type 2 diabetes mellitus under the objective point of view, taking into account the current recommendations based on scientific evidence, and also from the subjective point of view, emphasizing the aspects related to experience and the subjectivity of these people. Next, we present the essential skills for self-care and self-control of users and professionals working in primary health care.

Amorim MMA, de Souza AH, Coelho AK. Competences for self-care and self-control in diabetes mellitus type 2 in primary health care. *World J Diabetes* 2019; In press

**INTRODUCTION**

Type 2 diabetes mellitus (DM2) is currently a global epidemic. Incidence and prevalence are increasing in developing and newly industrialized countries. Its impact on public health worldwide consists of social problems, such as reduced quality of life and reduced survival of people with DM2, and economic problems, such as reduced productivity and high treatment costs[1].

Among the several types of diabetes, DM2 accounts for 90%-95% of cases. It is characterized by an imbalance of the metabolism of carbohydrates, lipids, and proteins and is associated with a deficiency in the secretion and/or action of the hormone insulin secreted by the pancreas. As a consequence, there is a decrease in tissue sensitivity or insulin responsiveness and an increase in blood glucose levels. As a way to combat the complications of hyperglycemia, the goal of treatment is to achieve normal blood glucose levels[2].

An individual with DM2, if not properly treated and controlled, may develop acute complications, such as hypoglycemia, hyperglycemia, and chronic progressive changes in the retina, kidneys, and peripheral nerves, and may trigger atherosclerotic lesions of the heart, brain, and peripheral members[2].

Due to the requirement of constant glycemic control, chronicity, and lack of cure, the person with DM2 remains linked to the health system for decades and needs continuous attention focused on the integral care provided by family health and family support nucleus in actions to promote, monitor, and prevent complications of DM2. The complexity of care for people with DM2 requires an interdisciplinary approach with health professionals open to dialogue and willing to plan appropriate consultations and interventions to the specific needs of people with DM2 that are centered on the actions of self-care and glycemic control[3].

The purpose of the guidelines of self-care and self-control of DM2 proposed by the Brazilian Ministry of Health is to strengthen and qualify care to users and to health professionals through the integrality and longitudinality of care with this disease. Thus, users with DM2 and health professionals who work in primary care should have competencies for self-care and self-control in this pathology. According to Cyrino[4], competence is a person's ability to mobilize different knowledge to master specific problematic situations faced in daily life and to develop attitudes and practices.

To achieve the goals detailed by the Strategy for the Care of People with Diabetes Mellitus published in the Basic Care Book number 36 of the Ministry of Health[5], it is proposed that primary care professionals adopt the approach of person-centered health with DM2[6,7]. This approach allows primary care professionals to use objective methods such as anamnesis, physical examination, and laboratory tests as well as subjective methods for analyzing and understanding feelings and ideas, the effects of DM2 on one's life, and expectations of treatment[8]. Thus, health professionals, in addition to the epidemiological and pathophysiological knowledge of DM2, must understand the psychosocial aspects of people; have pedagogical skills, communication skills, listening, understanding, and negotiating with the interdisciplinary health team[9]. On the other hand, people with DM2 must have the skills and autonomy to assume self-care and self-control.

In this way, this article aims to present the self-care and self-control of people with DM2 under the objective point of view, taking into account the current recommendations based on scientific evidence, and also from the subjective point of view, emphasizing the aspects related to experience and the subjectivity of these people. Next, we present the essential skills for self-care and self-control of users and professionals working in primary health care.

**SELF-CARE AND SELF-CONTROL OF PEOPLE WITH DM2 UNDER THE OBJECTIVE POINT OF VIEW**

Self-care and self-control are shown as possibilities for the person with DM2 to reduce the repercussions caused by the disease. Self-care is understood as the set of activities that involve dietary, corporal, drug, and glucose monitoring practices performed by the patient to promote his health, minimizing hypoglycemia and excessive weight gain. Self-control is the monitoring of the conditions of health and disease by the subject himself, according to objective parameters obtained by biochemical tests of blood glucose and glycohemoglobin[4].

The main goal of self-management and self-control of people with DM2 is metabolic control and includes tests for fasting blood glucose and glycated hemoglobin[10]. Glycated hemoglobin is the gold standard that provides an index of glycemic control for 6 to 12 wk[11], dosed quarterly until reaching control and then every 6 mo [3]. In order not to increase the risk of hypoglycemia or other complications of treatment, the patient aims to reach values lower than or equal to 6.5 a 7.0[1,10] .

The monitoring of the annual lipid profile (triglycerides, total cholesterol and its fractions) is of fundamental importance for the control of DM2, since this indicator is associated with cardiovascular diseases, obesity, and arterial hypertension, which may favor the development of insulin resistance and metabolic syndrome[10].

Blood pressure should be measured query, with ideal targets for systolic pressure < 130 mmHg and diastolic blood pressure of < 80 mmHg. In addition, ophthalmologic evaluations, urinary albumin excretion, and comprehensive examination of feet should be made after the diagnosis in order to avoid retinopathies, nephropathies, ulcers, and amputations, respectively[10].

For self-care and self-management of DM2 in order to maintain glycemic control, to avoid acute complications, and to reduce the risk of long-term complications, it is recommended that people with D2M regularly participate in medical appointments and care health monitoring of biochemical and blood pressure tests, weight and abdominal circumference measurements, as well as evaluation of drug treatment, diet, and physical activity[10]. But not enough people attend consultations regularly, making necessary adherence to self-care and self-control, which begins with the incorporation of dietary practices and physical activity prescribed by professionals in primary health care.

Behavioral modification related to dietary practices is a requirement imposed by the disease, and the selection of foods and fractionation of meals, energy consumption for the purpose of reducing or avoiding weight gain, and decreased consumption of trans and saturated fats, cholesterol, and sodium should be reviewed. These modifications improve insulin resistance and decrease plasma glucose, abdominal circumference, and visceral fat levels by improving the metabolic profile with reduced levels of low-density lipoprotein, triglycerides and increased high-density lipoprotein[12,13].

As for the body practices, 150 min per week of aerobic physical activity of moderate intensity is recommended. These activities include walking, cycling, running, swimming, and dancing, preferably three times a week, provided that there is no medical contraindication. Exercise improves glycemic control, reduces glycated hemoglobin and cardiovascular risk, contributes to weight reduction, and improves self-esteem[1]. When associated with changes in eating habits, important components of maintenance of glycemic control and weight loss programs are important[10].

When the desired glycemic levels have not been reached after the use of dietary measures and exercise, antidiabetic medicinal products should be used. Some people with DM2 will require insulin therapy soon after the diagnosis and many throughout the treatment[1].

**SELF-CARE AND SELF-CONTROL OF PEOPLE WITH DM2 FROM THE POINT OF VIEW OF THEIR EXPERIENCE AND SUBJECTIVITY**

The subjects should be prepared and motivated from diagnosis to take the treatment. Although people are adaptable to the realization of self-care and self-control, compliance with these practices is not so easy for most people with DM2. At the moment the disease is discovered, the structure of daily life and the forms that sustain it are interrupted. First, ruptures occur with the new limits of normal daily life, as behaviors performed before being sick must be changed, potentially leading to deep breaks in one’s biography and self-concept. Finally, in the various segments of daily life, due to the care they need, people with DM2 must mobilize resources to face the changed situation[14].

At this stage, the person may be faced with the obstacle of food (one of the most difficult to overcome), the non-acceptance of DM2, fear of insulin, a lack of knowledge about the disease and self-care, the need for commitment and discipline, unfavorable financial situation, and the emotional component involved with feeding[4,15].

Thus, living with the limits imposed by a diagnosis of DM2 is full of conflicts, ruptures, questioning, and nonconformity. Knowing the experience and the subjectivity of these people, of the meanings attributed to them by the disease, favor the identification of limiting aspects and the way in which they articulate different aspects that interact in the production of self-care and consequently in self-control.

Some studies seek to approach the subject and his experience with the disease, taking into account the vision and participation in the management of care[16] treatment adherence[17], the involvement of friends and family in the treatment[18], as well as support or self-help groups and social networks[19].

The experiences of individuals with the disease are socially shared, and their analysis is possible when expressed as subjective narration, that is, the conscious or unconscious mind of people. Thus, one approach to the subjective questions is the social representations, understood as complex subjective productions, because they have an impersonal aspect, in the sense of belonging to all; they are the representation of others, belonging to other people or to another group and are also a personal representation, perceived effectively as belonging to the ego[20].

Social representations play a fundamental role in the dynamics of social relations by understanding and explaining reality, guiding behaviors and practices, explaining and justifying behaviors in a situation or with partners, and defining identity[21]. The author emphasizes a clear relationship between social representation, identity, and the behavior of people.

It is necessary, then, to understand the social representations in which people with DM2 are anchored and the social identities that underlie them. With this intention, Amorim *et al*[22,23] investigated the identity representations of users with DM2 of a basic health unit, located in Belo Horizonte, Brazil. From the guiding question: "what comes to mind when I speak, I am diabetic", the speeches were categorized and interpreted by the technique of content analysis and theories of social representation and social identity. As a result of this research, some people with DM2 studied are considered normal, others accept the disease, there are those who are dissatisfied, and others lead a life with difficulty. The "normal" participants coexist with illness in a positive way and minimize the impact of DM2 on their identity when they experience the process of normalization of illness and care, in which the changes and adaptations required to the treatment become routine and are incorporated into daily life. Participants who "accept the disease" do not ideally accept their chronic illness. The ideal acceptance of a disease consists of a psychological state in which the illness is part of the perception of reality and is not perceived as a factor that limits the person. The unfavorable attitudes of the "non-conforming" participants, the information about the risks of the disease and the image of danger that they elaborate on the illness, help to understand the sense that the participants attribute to the "diabetic being". Participants who think that they "have a life fraught with difficulties" face obstacles in taking care of themselves, culminating in negative feelings and attitudes about the disease. It is possible that people with "distressed" DM2, not feeling confident about the future and facing adversity, do not make sustained efforts to achieve their goals, neglecting self-control and self-care. Thus, the obstacles faced by participants who think they are "accepting the disease, think they are "discontented" and “have difficulties" when they put into practice self-care, especially in relation to food, should be understood by the team that works in primary health care, biomedical logic[22,23].

The social representations about the feeding of these people with DM2 were investigated. Some respondents indicated that the person with DM2 should eat healthy. Others relied on the quality of food, representing it as "eating vegetables and fruits" and "avoiding sweets." There are still those whose speech was based on eating little, worrying about the quantities of food eaten. There are those who represented eating as not eating too much, focusing on the frequency of feeding, as they consider that breaking down the food in many meals is not appropriate. Others focused their speech on selective food intake, specifically those that do not harm the body. Finally, others considered that food does not imply following a specific diet[24,25].

In analyzing the social representations of the diet of people with DM2 as they represent their identity and its implications for glycemic control, it was found that adequate HbA1c values of the participants considered to be "normal" are adequate and are related to the actions of self-care, allowing to infer about the effectiveness of feeding. Proper nutrition improves insulin resistance, decreases the levels of plasma glucose and waist circumference, and improves metabolic visceral fat profile of triglycerides and cholesterol. People who think they have a normal life represent eating in the categories eating healthy, eating reduced, eating vegetables and fruits, and divert from sweets[26].

The particular way in which the participants who judge "accepting the disease", "having difficulties", and "nonconformists" perform the self-care related to the alimentary practice is derived from the different processes of subjectivation in which each one of them relies on to construct its social representations on the identity and feeding and consequently have mean values of HbA1c above normal values. Participants who "accept the disease" are based on "no" to represent their diet: do not eat too much and do not eat at all. Participants who "have a life with difficulties" represent their eating in the negative categories: do not eat too much, do not eat at all, and do not follow the diet. A participant who represents eating in eating vegetables and fruits, unlike normal people, has difficulty putting their thinking into practice. "Nonconformists" represent their food in the negative categories: not eating much and not eating at all. Two participants represented their diet in eating vegetables, but in practice they eat the forbidden foods[26].

**USER ABILITIES REQUIRED FOR SELF-CARE AND SELF-CONTROL**

The adherence of people with DM2 to self-care and self-control therapies is still low in developed countries, with around 50%, and it is estimated that in developing countries this percentage is lower, compromising the effectiveness of the treatment[27].

Due to the complexity of self-care and self-control in DM2, Cyrino[4], based on the literature and the joint evaluation with specialists in the area, defined a list of competencies required by people with DM2 to conduct the treatment. A total of 47 skills classified in the fields of knowledge - technical dimension of illness and know-how-practical dimension were elaborated, contemplating the general notions about DM2 and its complications, glycemic self-control, self-care in acute complications, and self-care in drug treatment.

In addition to the knowledge and skills portrayed in the competency roll, it is necessary to consider the attitudes and the necessary awareness that influence the user's behavior and consequently the health improvement[28]. For Sousa *et al*[29] the increase in knowledge when correlated significantly with attitude is associated with the predisposition to assume self-care.

In order to verify the knowledge and attitudes of people with DM2 who participated in a self-care education program, Rodrigues *et al*[30] used the instruments validated for use in Brazil, the Diabetes Knowledge Questionnaire and the Diabetes Attitude Questionnaire. The Diabetes Knowledge Questionnaire covers issues related to knowledge about basic physiology, hypoglycemia, food groups and their substitutions, management of DM2 in the course of another disease, and general principles of care. The Diabetes Attitude Questionnaire presents issues that include stress associated with DM2, treatment receptivity, treatment confidence, personal efficacy, health perception, and social acceptance[30]. After applying these two instruments, Rodrigues *et al*[30] concluded that although participants had a good level of knowledge, they still did not change their attitude towards coping with the disease.

As knowledge does not always lead to a change in attitude towards the daily demands that treatment imposes on daily life, it is necessary to listen to the feelings, the hidden complaints of the person with DM2. In this line of reasoning, according to which the subjective perspective of the patient is considered and valued, Cyrino[4] developed a study with the objective of knowing the skills developed by users with DM2 of a health service for self-care and self-control in DM2, from their testimonials. A set consisting of 98 competences derived from the knowledge of the experience of those who live the disease was raised, distributed in the fields of knowledge, know-how and know how to be and know how to communicate. The competences related to psychological and social difficulties to self-care were expressed by people with DM2, showing differences in conceptions about the disease and care among health professionals and their patients[4].

To know the skills of people with DM2 for self-care, a scale containing 27 items was developed and validated, assessing physical abilities (vision, touch, dexterity, and manual ability), mental abilities (reading, attention, memory, discrimination and classification of knowledge within certain situations, judgment of certain situations, and conceptualization of a system of actions to act in certain situations), and motivational and emotional capacities[31,32]. This scale of identification of the competence of the person with DM2 for self-care (ECDAC) allows a qualitative and quantitative evaluation of the capacities of people with DM2 for the exercise of the self-care actions necessary for the maintenance of health[33]. The deficiencies in the physical, mental, and motivational capacities pointed out by the ladder provide subsidies for the planning and implementation of intervention methods based on the person-centered approach, favoring a global and individualized assistance practice.

**ABILITIES OF HEALTH PROFESSIONALS NECESSARY FOR SELF-CARE AND SELF-CONTROL**

The complexity involved in self-care and self-management of people with DM2 requires an approach of interdisciplinary care with family health strategy professionals and family health support nucleus open to dialogue, with the ability to communicate, employing person-centered care and valuing the objective and subjective aspects. In this sense, it is recommended that these professionals overcome the biomedical paradigm of being the experts responsible for curing diseases and help people achieve health and normality[34],through a systemic and comprehensive view of the individual, family, and community in the promotion, specific protection, rehabilitation, and care, working with creativity and critical thinking[35].

Within this context, Torres *et al*[36] developed a training program for primary health care professionals for DM2 education. The competency role required by people with DM2 to conduct the treatment developed by Cyrino[4] was adapted and applied, including questions related to pathophysiology, nutrition, physical exercise, and insulin therapy, to assess the knowledge of the professionals of basic health units concerning self-care. The difficulties identified by the professionals pointed out the need for continuing education and supported the planning and development of the educational program in DM2. For the professionals' training, the work workshops modality was used to motivate the exchange of experiences and knowledge and reflection on the obstacles they experienced in their daily lives when caring for people with DM2.

In order to overcome these obstacles, primary health care professionals should value the individual's own experience, his subjectivity, his conceptions of illness[17,37], as well as his beliefs[38,39]. By living the disease in their everyday experience, the subject mobilizes knowledge and attributes meanings to master specific problematic situations, developing the skills (*i.e.* attitudes and practices related to self-care and self-control in DM2)[4].

Thus, in practicing the person-centered approach, health professionals should have the ability to distinguish the disease from the experience of the disease, so that they find methods of health promotion and preventive care more appropriate to the world of the person, varying according to the person, the moment, and the question of health care. The use of qualitative methodologies provides an in-depth understanding of the broad context of understanding the subjective issues of the person being treated[40].

After this stage, health professionals and the person in care should work together on a joint problem management plan to define goals, care priorities, and care roles[40]. To apply problem solving requires the ability to recognize the problem, ability to generate alternative solutions, and insight to select an appropriate option[41].

This pathology requires a holistic view of the health-disease process by the health professional, with the apprehension of the subject in its biopsychosocial dimension, integrating preventive, promotional, and coordinated assistance actions, for a more comprehensive understanding of the disease and to favor more effective interventions and accession. A structured intervention in multidisciplinary teams for the effective development of programs of education and health promotion of these patients and relatives is fundamental[42].

The abilities for self-care and self-control in DM2 of users and health professionals are illustrated in Table 1.

**CONCLUSION**

People with diabetes face obstacles, often filled with social representations. The rules to be followed by these individuals should be adapted to deal with the restrictions, prohibitions, and difficulties that act as contingency to put into practices the desired behavior.

So, to ensure the effectiveness in meeting the people with DM2, the experience of listening, the ability to communicate and understand the subjective aspects of people and the context in which they operate, is a key skill to be developed by health professionals in primary health care. A change in the behavior of health professionals is possible to be motivated by the institution in which it is linked as well as by an internal involvement mediated by the self-conscience of its professional activity.

On the other hand, people with DM2 should have knowledge about the disease, motivation and positive attitude from diagnosis to self-control and self-care, and support from the social network and family. Participation in the educational process should be active, this essential condition to ensure effective results for better acceptance of the disease, treatment adherence, metabolic control, and quality of life.

**REFERENCES**

1 **Sociedade Brasileira de Diabetes.** Gomer BM, Leraio AC. Oliveria JEP, Montenegro Junior, RM, Venicio S. (Org.) Diretrizes da Sociedade Brasileira de Diabetes, 2017-2018 [Guidelines of the Brazilian Diabetes Society, 2017-2018]. [Accessed on 2 June 2019] Available from: https://www.diabetes.org.br/profissionais/images/2017/diretrizes/diretrizes-sbd-2017-2018.pdf

2 **Franz MJ.** Terapia clínica nutricional no diabetes melito e hipoglicemia de origem não diabética [Nutritional clinical therapy in diabetes mellitus and hypoglycemia of non-diabetic origin]. In: Mahan, L.K, Escott-Stump, S (Eds.). Krause alimentos, nutrição dietoterapia. 13. ed. São Paulo: Roca, 2002: 718-755 [Accessed on 2 June 2019] Available from: https://issuu.com/elsevier\_saude/docs/mahan\_sample

3 **Brasil.** Ministério da Saúde. Estratégia nacional para educação em saúde para o autocuidado em diabetes mellitus [National strategy for health education for self-care in diabetes mellitus]. Florianópolis: SEAD/UFSC, 2009; 127 [Accessed on 2 June 2019] Availble from: http://pesquisa.bvsalud.org/bvsms/resource/pt/mis-34528

4 **Cyrino APP.** As competências no cuidado com o diabetes mellitus: contribuições à educação e comunicação em saúde [Skills in diabetes mellitus care: contributions to health education and communication]. Tese (Doutorado em Ciências). São Paulo: Faculdade de Medicina de São Paulo, Universidade de São Paulo, 2005. [Accessed on 2 June 2019] Available from: http://www.teses.usp.br/teses/disponiveis/5/5137/tde-02022006-155115/pt-br.php

5 **Brasil.** Ministério da Saúde. Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Estratégia para o Cuidado da Pessoa com Diabetes Mellitus [Strategy for the Care of the Person with Diabetes Mellitus]. Brasília: Ministério da Saúde, 2013 [Accessed on 2 June] Available from: http://bvsms.saude.gov.br/bvs/publicacoes/estrategias\_cuidado\_pessoa\_diabetes\_mellitus\_cab36.pdf

6 **Brown JB,** Weston WW, Stewart M. O primeiro componente: explorando a doença e a experiência da doença [The first component: exploring disease and disease experience]. In: Stewart, M., Brown, JB., Weston, McWhinney, IR., McWilliam, CL., (Org). Medicina centrada na pessoa - transformando o método clínico, 2010: 53-70 [Accessed in 2 June 2019] Available from: file:///C:/Users/lenovo/Downloads/STEWART%20et%20al%202017\_Medicina%20Centrada%20na%20Pessoa\_%20Tr%20-%20Moira%20Stewart.pdf

7 **Brow JB,** Weston WW, McWilliam CL. O sexto componente: sendo realista [The sixth component: being realistic]. In: Stewart, M., Brown, JB., Weston, WW, McWhinney, IR., McWIilliam, CL, (Org). Medicina centrada na pessoa- transformando o método clínico, 2010: 151-168 [Accessed in 2 June 2019] Available from: file:///C:/Users/lenovo/Downloads/STEWART%20et%20al%202017\_Medicina%20Centrada%20na%20Pessoa\_%20Tr%20-%20Moira%20Stewart.pdf

8 **McWilliam CL,** Freeman TR. O quarto componente: incorporando prevenção e promoção da saúde [The fourth component: incorporating prevention and health promotion]. In: Stewart, M., Brown, JB., Weston, McWhinney, IR, McWilliam, C. L. (Org). Medicina centrada na pessoa - transformando o método clínico, 2010: 119-130 [Accessed in 2 June 2019] Available from: file:///C:/Users/lenovo/Downloads/STEWART%20et%20al%202017\_Medicina%20Centrada%20na%20Pessoa\_%20Tr%20-%20Moira%20Stewart.pdf

9 **Roter DL**, Hall JA, Merisca R, Nordstrom B, Cretin D, Svarstad B. Effectiveness of interventions to improve patient compliance: a meta-analysis. *Med Care* 1998; **36**: 1138-1161 [PMID: 9708588 DOI: 10.1097/00005650-199808000-00004]

10 **American Diabetes Association.** *Standards of Medical Care in Diabetes*-2019 Abridged for Primary Care Providers. *Clin Diabetes* 2019; **37**: 11-34 [PMID: 30705493 DOI: 10.2337/dc19-Sint01]

11 Brasil. Ministério da Saúde. Cadernos de Atenção Básica. Diabetes mellitus. 2016 [Accessed on 2 June 2019] Available from: http://bvsms.saude.gov.br/bvs/publicacoes/diabetes\_mellitus.PDF

12 **Klein S**, Sheard NF, Pi-Sunyer X, Daly A, Wylie-Rosett J, Kulkarni K, Clark NG; American Diabetes Association; North American Association for the Study of Obesity; American Society for Clinical Nutrition. Weight management through lifestyle modification for the prevention and management of type 2 diabetes: rationale and strategies. A statement of the American Diabetes Association, the North American Association for the Study of Obesity, and the American Society for Clinical Nutrition. *Am J Clin Nutr* 2004; **80**: 257-263 [PMID: 15277143 DOI: 10.1093/ajcn/80.2.257]

13 **Sartorelli DS**, Sciarra EC, Franco LJ, Cardoso MA. Primary prevention of type 2 diabetes through nutritional counseling. *Diabetes Care* 2004; **27**: 3019 [PMID: 15562232 DOI: 10.2337/diacare.27.12.3019]

14 **Bury M.** Chronic illness as biographical disruption. *Sociol Health* 1982; **4**: 167-182 [DOI: 10.1111/1467-9566.ep11339939]

15 **Motta DG.** Educação nutricional diabetes tipo 2 - compartilhando saberes, sabores e sentimentos [Nutrition Education Type 2 Diabetes - Sharing Knowledge, Flavors and Feelings]. Piracicaba: Jacinta Editores, 2009 [Accessed in 2 June 2019] Available from: https://www.google.com/search?q=Educa%C3%A7%C3%A3o+nutricional+%26+diabetes+tipo+2+%E2%80%93+compartilhando+saberes,+sabores+e+sentimentostbm=ischsource=iuictx=1fir=sGSQDrLQFiSFnM%253A%252C5mIUZyxqq3x0EM%252C\_vet=1usg=AI4\_-kQGq1vnGKngkhEgRSBlztEev1OT0Qsa=Xved=2ahUKEwik44i339fiAhW5H7kGHU\_sDrsQ9QEwCXoECAYQDg#imgrc=sGSQDrLQFiSFnM

16 **Holman H**, Lorig K. Patients as partners in managing chronic disease. Partnership is a prerequisite for effective and efficient health care. *BMJ* 2000; **320**: 526-527 [PMID: 10688539 DOI: 10.1136/bmj.320.7234.526]

17 **Rezende MFC.** Um estudo de caso sobre a experiência da doença de diabéticos tipo 2 usuários de uma unidade básica de saúde de Araguari/MG [A case study on the experience of the disease of type 2 diabetics users of a basic health unit of Araguari/MG]. Dissertação (mestrado profissional). Brasília: Fundação Oswaldo Cruz. Centro de Pesquisas Aggeu Magalhães, 2010. [Accessed in 2 June 2019] Available from: https://www.arca.fiocruz.br/bitstream/icict/13302/1/457.pdf

18 **Netteleton S.** The sociology of health and illness. Cambridge: Polity Press, 1995. [Accessed in 2 June 2019] Available from: https://www.researchgate.net/publication/260305985\_The\_Sociology\_of\_Health\_and\_Illness\_by\_Sarah\_Nettleton\_Cambridge\_Polity\_Press\_2013\_3rd\_edition\_ISBN\_978-0-74564-601-5\_1999\_pbk

19 **Heaney CA,** Israel, BA. Social Networks and social support. In: Glanz, K., Lewis, FM., Rimer, BK (Editors). Health behavior and health education: theory, research and practice, 2 ed. São Francisco: Jossey-Bass Publishers, **1996**: 179-205 [Accessed in 2 June 2019] Available from: http://fhc.sums.ac.ir/files/salamat/health\_education.pdf

20 **Moscovici S.** Representações sociais - investigações em psicologia social [Social representations - investigations in social psychology]. 2ª ed. Petrópolis: Vozes, 2004. [Accessed in 2 June 2019] Available from: https://www.amazon.com.br/Representa%C3%A7%C3%B5es-sociais-Investiga%C3%A7%C3%B5es-psicologia-social/dp/8532628966

21 **Abric JA.** Abordagem estrutural das representações sociais [Structural approach to social representations]. In: Moreira, ASP, Oliveira, DC. (Editores). Estudos interdisciplinares de representação social. Goiânia: Ed. AB, 1998; 27-38. [Accessed in 2 June 2019] Available from: https://www.worldcat.org/title/estudos-interdisciplinares-de-representacao-social/oclc/55904340

22 **Amorim MM**, Ramos N, Brito MJ, Gazzinelli MF. Identity Representations of People With Diabetes. *Qual Health Res* 2014; **24**: 913-922 [PMID: 24970248 DOI: 10.1177/1049732314539577]

23 **Amorim MMA,** Ramos N, Gazzinelli, MF. Representação identitária dos usuários com diabetes mellitus da atenção primária [Identity representation of users with diabetes mellitus in primary care]. *Psicologia, Saúde & Doenças* 2016; **17**: 45-51 [DOI: 10.15309/16psd170107]

24 **Amorim MMA,** Ramos N, Gazzinelli, MF. Social Representations of Feeding People with Type-2 Diabetes. *J Endocrinol Diab* 2016; **3**: 1-9 [DOI: 10.15226/2374-6890/3/2/00148]

25 **Amorim MMA,** Ramos N, Gazzinelli, MF. Alimentação na Visão das Pessoas com Diabetes Mellitus: Contributo das Representações Sociais [Food and Diet According to People With Diabetes Mellitus: Contribution of Social Representations]. Psychology, *Com Health*, 2018; **7**: 97-108 [DOI: 10.5964/pch.v7i1.197]

26 **Amorim MMA,** Ramos N, Gazzinelli, MF. Representações sociais das pessoas com Diabetes Mellitus: implicações no controle glicêmico [Identity representation of people with diabetes mellitus: implications for glycemic control]. Psicologia, *Saúde Doenças* 2018; **19**: 293-309 [DOI: d10.15309/18psd190211]

27 **Theme-Filha MM**, Szwarcwald CL, Souza-Júnior PR. Socio-demographic characteristics, treatment coverage, and self-rated health of individuals who reported six chronic diseases in Brazil, 2003. *Cad Saude Publica* 2005; **21** Suppl: 43-53 [PMID: 16462996 DOI: 10.1590/S0102-311X2005000700006]

28 **Funnell MM**, Anderson RM, Arnold MS, Barr PA, Donnelly M, Johnson PD, Taylor-Moon D, White NH. Empowerment: an idea whose time has come in diabetes education. *Diabetes Educ* 1991; **17**: 37-41 [PMID: 1986902 DOI: 10.1177/014572179101700108]

29 **Sousa VD,** Zauszniewski JA. Toward a theory of diabetes self-care management. J. Theory Construc Testing, 2005 9: 61-67 [Accessed in 2 June 2019] Avaible from: https://www.questia.com/read/1P3-1036335671/toward-a-theory-of-diabetes-self-care-management

30 **Rodrigues FF**, Zanetti ML, dos Santos MA, Martins TA, Sousa VD, de Sousa Teixeira CR. Knowledge and attitude: important components in diabetes education. *Rev Lat Am Enfermagem* 2009; **17**: 468-473 [PMID: 19820852 DOI: 10.1590/S0104-11692009000400006]

31 **Torres HC**, Virginia A H, Schall VT. [Validation of Diabetes Mellitus Knowledge (DKN-A) and Attitude (ATT-19) Questionnaires]. *Rev Saude Publica* 2005; **39**: 906-911 [PMID: 16341399 DOI: 10.1590/S0034-89102005000600006]

32 **Nunes AMP.** Desenvolvimento de um instrumento para identificação da competência do diabético para o autocuidado [Development of an instrument to identify the competence of the diabetic for self-care]. Dissertação (Mestrado). Florianópolis. Universidade Federal de Santa Catarina, 1982. Available on https://repositorio.ufsc.br/xmlui/bitstream/handle/123456789/74965/174906.pdf?sequence=1isAllowed=y. Accessed in 2 June 2019.

33 **Witt RR.** Avaliação do grau de competência de diabéticos para o autocuidado [Evaluation of the degree of competence of diabetics for self-care]. In: Stewart M, Brown JB, Westton WW, McWhinney IR, McWilliam CL (Org). Medicina centrada na pessoa - transformando o método clínico, 2010: 251-266[Accessed in 2 June 2019] Avaible from: file:///C:/Users/lenovo/Downloads/STEWART%20et%20al%202017\_Medicina%20Centrada%20na%20Pessoa\_%20Tr%20-%20Moira%20Stewart.pdf

34 **Oliver M**. Theories in health care and research: theories of disability in health practice and research. *BMJ* 1998; **317**: 1446-1449 [PMID: 9822407 DOI: 10.1136/bmj.317.7170.1446]

35 Programa Saude da Familia. *Rev Saude Publica* 2000; **34**: 316-319 [PMID: 10920458 DOI: 10.1590/S0034-89102000000300018]

36 **Torres HC,** Amaral MA, Amorim MMA, Cyrino AP, Bodstein R. Capacitação de profissionais da atenção primária à saúde para a educação em diabetes mellitus [Training of primary health care professionals for diabetes mellitus education]. Acta Paul Enferm, 2010: 23: 751-756 [DOI: 10.1590/S0103-21002010000600006] DOI: 10.1590/S0103-21002010000600006

37 **Cyrino APP,** Teixeira RRA. Educação para o autocuidado no diabetes mellitus tipo 2: da adesão ao "empoderamento" [Education for self-care in type 2 diabetes mellitus: from adherence to "empowerment"]. *Interface Comunicação Saúde Educação* 2009; **13**: 93-106 [DOI: 10.1590/S1414-32832009000300009]

38 **Ribas CRP.** Representações sociais dos alimentos para pessoas com diabetes mellitus tipo 2 [Social representations of foods for people with type 2 diabetes mellitus]. Dissertação (Mestrado). Ribeirão Preto: Escola de Enfermagem, Universidade de São Paulo, 2009 [Accessed in 2 June 2019] Available from: file:///C:/Users/lenovo/Downloads/CamilaRezendePimentelRibas%20(2).pdf

39 **PontieriI FM,** Bachion MM. Crenças de pacientes diabéticos acerca da terapia nutricional e sua influência na adesão ao tratamento [Beliefs of diabetic patients about nutritional therapy and its influence on treatment adherence]. *Ciência Saúde Coletiva* 2010; **15**: 151-160. [DOI: 10.1590/S1413-81232010000100021]

40 **McWilliam CL,** Brown JB. Usando metodologias qualitativas para entender o atendimento centrado na pessoa [Using qualitative methodologies to understand person-centered care]. In: Stewart, M, Brown, JB, Weston, McWhinney, IR, McWilliam, CL (Org). Medicina centrada na pessoa - transformando o método clínico, 2010: 273-290[Accessed in 2 June 2019] Available from: file:///C:/Users/lenovo/Downloads/STEWART%20et%20al%202017\_Medicina%20Centrada%20na%20Pessoa\_%20Tr%20-%20Moira%20Stewart.pdf

41 **Weston WW,** Brown JB. Desenvolvendo um currículo centrado na pessoa [Developing a person-centered curriculum]. In: Stewart M, Brown JB, Weston WW, McWhinney IR, McWilliam CL (Org). Medicina centrada na pessoa - transformando o método clínico, 2010: 251-266 [Accessed in 2 June 2019] Available from: file:///C:/Users/lenovo/Downloads/STEWART%20et%20al%202017\_Medicina%20Centrada%20na%20Pessoa\_%20Tr%20-%20Moira%20Stewart.pdf

42 **Amorim MMA,** Ramos N, Bento IC, Gazzinelli, MF. Intervenção Educativa na Diabetes Mellitus [Educational intervention in diabetes mellitus]. *Psicologia, Saúde Doenças* 2013 **14**: 168-184 [Accessed in 2 June 2019] Available from http://www.scielo.mec.pt/scielo.php?script=sci\_arttext&pid=S1645-00862013000100011&lng=pt&nrm=iso

**P-Reviewer:** Sahoo J **S-Editor:** Cui LJ **L-Editor:** Filipodia **E-Editor:**

**Specialty type:** Endocrinology and Metabolism

**Country of origin:** Brazil

**Peer-review report classification**

Grade A (Excellent): 0

Grade B (Very good): B

Grade C (Good): 0

Grade D (Fair): 0

Grade E (Poor): 0

**Table 1 Abilities for self-care and self-control in diabetes mellitus type 2**

|  |  |  |
| --- | --- | --- |
| **Abilities for self-care and self-control in diabetes mellitus type 2** | **User**  | **Health professionals** |
|  | Physical abilities Mental abilities Motivational abilitiesEmotional abilities | Interdisciplinary approachPerson-centered approach |