

ADHERENCE TO THERAPY BY ELDERLY PATIENTS WITH DIABETES MELLITUS: AN INTEGRATIVE REVIEW*

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ABSTRACT: = The present study had the aim of identifying in the literature the factors that influence adherence to therapy by elderly individuals with diabetes mellitus. An integrative review with qualitative textual analysis was conducted. The search was conducted at the Portal of Periodicals of the Coordination for the Improvement of Higher Education Personnel and included Brazilian publications in eight databases between January 2002 and September 2016. A total of 12 studies was selected from the 187 that were found, generating two categories: factors that influence adherence to therapy by elderly individuals with diabetes mellitus positively; and factors that influence adherence to therapy by elderly individuals with diabetes mellitus negatively. The fact that only publications with low levels of evidence were found revealed the need for further studies on the theme and intensification of the awareness-raising dialogue with elderly individuals and their families in order to maximize and/or maintain their quality of life, autonomy, and independence.

DESCRIPTORS: Review; Aged; Diabetes Mellitus; Therapeutics; Nursing.

ADESÃO DE IDOSOS COM DIABETES MELLITUS À TERAPÊUTICA: REVISÃO INTEGRATIVA

RESUMO: Objetivou-se identificar na literatura os fatores que influenciam a adesão do idoso com Diabetes Mellitus à terapêutica. Realizou-se revisão integrativa, com análise textual qualitativa. A busca ocorreu no Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, por publicações brasileiras, em oito bases de dados, no período de janeiro de 2002 a setembro de 2016. Selecionou-se 12 estudos, dos 187 encontrados, originando duas categorias: Fatores que influenciam positivamente a adesão do idoso com Diabetes Mellitus à terapêutica, e Fatores que influenciam negativamente a adesão do idoso com Diabetes Mellitus à terapêutica. Conclui-se a necessidade de mais estudos sobre a temática, pois foram encontradas apenas publicações com baixos níveis de evidências e a premência da intensificação no diálogo conscientizador com os idosos e suas famílias, no intuito de maximizar e/ou manter sua qualidade de vida, autonomia e independência.

DESCRIPTORIOS: Revisão; Idoso; Diabetes Mellitus; Terapêutica; Enfermagem.

ADHESIÓN DE ANCIANOS CON DIABETES MELLITUS A LA TERAPÉUTICA: REVISIÓN INTEGRATIVA

RESUMEN: Se objetivó identificar en la literatura los factores que influyen en adhesión del anciano con Diabetes Mellitus a la terapéutica. Se realizó revisión integrativa, con análisis textual cualitativo. Búsqueda efectuada en Portal de Periódicos de la Coordinación de Perfeccionamiento de Personal de Nivel Superior, por publicaciones brasileñas, en ocho bases de datos, de enero de 2002 a setiembre de 2016. Doce estudios fueron seleccionados de 187 hallados, determinando dos categorías: Factores que influyen positivamente en adhesión del anciano con Diabetes Mellitus a la terapéutica; y Factores que influyen negativamente en adhesión del anciano con Diabetes Mellitus a la terapéutica. Se concluye en que son necesarios más estudios sobre la temática, pues solo fueron encontradas publicaciones con bajos niveles de evidencias, y la urgencia de la identificación del diálogo de concientización con los ancianos y sus familias, para maximizar y/o mantener su calidad de vida, autonomía e independencia.

DESCRIPTORIOS: Revisión; Anciano; Diabetes Mellitus; Terapéutica; Enfermería.

*Article extracted from the dissertation titled: "Gestão do regime terapêutico da pessoa idosa com diabetes mellitus tipo 2" Federal University of Rio Grande, 2015.

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● INTRODUCTION

Diabetes Mellitus (DM) affects more than 382 million people worldwide; of these, 11.9 million are Brazilians⁽¹⁾. The cities with the highest indexes in Brazil are Fortaleza/CE (7.3%); Vitória/ES (7.1%); and Porto Alegre/RS (6.3%)⁽²⁾. The study also indicated the increased number of cases of DM in individuals aged over 65 years, characterizing it as one of the most common chronic noncommunicable diseases (DCNT) in elderly individuals⁽³⁾.

DM is caused by disorders in the metabolism of glucose, fats, and proteins, resulting in hyperglycemia. It has emotional/psychological, financial, and social impacts, and may lead to complications that may cause ocular, renal, neurological, cardiac, and vascular dysfunction and/or failure⁽²⁾.

The impairments resulting from DM associated with the aging process greatly affect the quality of life, autonomy, and independence of elderly individuals. In order to avoid the complications related to this condition, it is necessary to change harmful behaviors in daily life, review eating habits, practice physical activities, visit health professionals on a regular basis, and make use of prescribed drugs. To this end it is necessary to accept and raise awareness of the condition, effectively coping with the disease to maintain quality of life, promote health, and prevent subsequent complications.

In this context, quality of life may be understood as satisfaction in the family, love, social, and environmental spheres, as well as the very existential aesthetics encompassing elements such as comfort and well-being, among others. In addition, it includes a series of meanings that include knowledge, experiences, and individual and collective values⁽⁴⁾.

In health promotion and disease prevention, nurses are the professionals that spend more time following up individuals affected by chronic noncommunicable diseases. Given this fact, they need to remain attentive to the actual needs of individuals with diabetes and their experiences, taking into account the social and individual context of each individual, as well as their lifestyle, and cultural, emotional, psychological, and economic aspects.

It is through interventions—diagnoses, treatments, and follow-up—that professionals affect the complications that may generate dependency and discomfort. Therefore they contribute to the reduction of damages and consequences caused by the disease⁽⁴⁾.

It is essential to observe the possible consequences of an inadequate adherence or non-adherence to a treatment in order to reduce the financial burden of advanced treatments and improve the quality of life of elderly individuals. Several factors may influence this decision.

The present study is justified by the high rates of morbimortality due to DM in elderly individuals; the reduced quality of life, autonomy, and independence; and the high costs of treatments for complications resulted from the disease. This context may be mitigated/reversed through educational actions in health based on the early identification of the factors that influence elderly individuals to adhere or not adhere to the proposed therapy. Therefore this study is expected to contribute to health professionals, facilitating the identification of factors that influence the adherence of elderly individuals to the therapy in their practical activities, thus favoring an early and effective intervention.

In view of this, the present study had the aim of identifying in the literature the factors that influence adherence to therapy by elderly individuals with diabetes mellitus.

● METHOD

This study consisted of an integrative review with the following stages: 1) elaboration of the research question; 2) establishment of criteria for inclusion and exclusion of studies and a search in the literature; 3) definition of the information to be extracted from the studies and data collection in order to extract and organize relevant information from the selected articles; 4) assessment of studies included in the integrative review; 5) interpretation of results; and 6) presentation of the review/synthesis⁽⁵⁾.

The PICO strategy was used to define the research question; it consisted of four elements necessary

so that the research question supports the bibliographical search: the patient, population, or problem (P); the intervention or independent variable (I); the comparison (C); and the dependent variables or outcome(s) of interest (O)⁽⁶⁾. Thus the guiding question was: What are the factors identified in the literature that influence the adherence of elderly individuals with diabetes mellitus to the recommended therapy?

The search was conducted on the Portal of Periodicals of the Coordination for the Improvement of Higher Education Personnel (CAPES) in October 2016. The Health Sciences Descriptors (DeCS) “*Idoso*” and “*Diabetes Mellitus*,” in Portuguese, were used. They were grouped by the Boolean operator “AND” in eight databases, considering the articles published between January 2002 and September 2016.

Studies conducted in the Brazilian territory were selected, as they specifically evidence the health conditions of the elderly population in Brazil; this period of time was selected with the aim of understanding the previous year and the whole period subsequent to the promulgation of Law 10,741 dated October 1st 2003⁽⁷⁾, which regulates the rights granted to elderly individuals.

The database search revealed 54 studies on the Directory of Open Access Journals, 41 articles on the Scientific Electronic Library Online (SciELO Brazil), 37 on SciELO (CrossRef), 32 on Scopus (Elsevier), nine on Medical Literature Analysis and Retrieval System Online (Medline), six on the Science Citation Index Expanded, four on the Social Sciences Citation Index and four on OneFile, totaling 187 articles. Of these, 128 studies were excluded due to repetition, 45 were excluded after reading the titles, abstracts, and descriptors, as not being consistent with the theme and/or not meeting the inclusion and exclusion criteria, and two after reading in full; thus 12 articles pertinent to the research were maintained.

Inclusion criteria were: articles available online in full; in Portuguese, English, or Spanish; in national and international databases; and approaching the theme of the study. Exclusion criteria were: publications not related to adherence to therapy by elderly individuals with diabetes mellitus; conducted outside of the national territory; and in other languages and periods of time than those specified in the inclusion criteria.

Selection/categorization of the studies was conducted by means of an analysis protocol and information synthesis covering authorship, academic training of the authors, title of the article, periodical, year, results, and level of evidence in order to enable data assessment and interpretation.

The classification of the studies was performed through the Rating System for the Hierarchy of Evidence defined by Melnyk and Fineout-Overholt⁽⁸⁾, inserted into evidence-based medicine to classify the evidence according to the research design—that is, the methodological approach—and included quantitative and qualitative research.

Thus, the classification consists of: Level 1, evidence from systematic review or meta-analysis of relevant controlled randomized trials or from clinical guidelines based on systematic reviews of controlled randomized clinical trials; Level 2, evidence resulted from at least one well-designed controlled randomized clinical trial; Level 3, evidence obtained from well-designed clinical trials with no randomization; Level 4, evidence resulted from well-designed case-control and cohort studies; Level 5, evidence from the systematic review of descriptive and qualitative studies; Level 6, evidence from a single descriptive or qualitative study; and Level 7, evidence from opinions of authorities and/or reports of experts committees⁽⁸⁾.

The analysis was textual, a method that enables the identification and isolation of content statements, categorizing them and producing texts to integrate description and interpretation⁽⁹⁾. The synthesis of information were presented analytically⁽⁵⁾.

● RESULTS

Data obtained in the selected studies are presented in Tables 1 and 2, consisting of: Table 1 – Identification, Title, Authorship/Year/Professional area, Periodical/Type of study; Table 2 – Identification and Results.

Table 1 – Presentation of publications selected according to the Title, Authorship/Year/Professional area, Periodical/Type of study. Rio Grande, RS, Brazil, 2016

Study	Title	Authorship/Year/ Professional Area	Periodical/Type of study
E1	Awareness-raising education for diabetic elderly individuals: a nursing intervention proposal	Tavares DMS, Rodrigues RAP ⁽¹⁰⁾ . 2002. Nursing	Rev. esc. enferm. USP. Descriptive/Quantitative
E2	Survival study of a cohort of people aged 60 years or more in the city of Botucatu (SP)–Brazil	Ruiz T, Chalita LVAS, Barros MBA ⁽¹¹⁾ . 2003. Medical and Statistics	Rev. Bras. Epidemiol. Inq. Populac.
E3	Use of drugs by elderly individuals in a Basic Family Health Unit of Fortaleza–CE	Vasconcelos FF, Victor JF, Moreira TMM, de Araújo TL ⁽¹²⁾ . 2005. Nursing	Acta Paul. Enferm. Descriptive/Cross-sectional
E4	Factors associated with the prevalence of self-reported diabetes in elderly individuals of Minas Gerais, 2003	Viegas-Pereira APF, Rodrigues RN, Machado CJ ⁽¹³⁾ . 2008. Economic Sciences	Rev. Bras. Estud. Popul. Sectional study
E5	Factors associated with functional balance and mobility in diabetic elderly outpatients	Cordeiro RC, Jardim JR, Perracini MR, Ramos LR ⁽¹⁴⁾ . 2009. Physiotherapy, Medical, and Electronic Engineering	Arq Bras Endocrinol Metab. Exploratory/Cross-sectional.
E6	Self-reported diabetes in elderly individuals: prevalence, associated factors, and control practices	Francisco PMSB, Belon AP, Barros MBA, Carandina L, Alves MCGP, Goldbaum M, et al ⁽¹⁵⁾ . 2010. Statistics, Social Sciences, and Medical	Cad. Saúde Pública. Population-based Cross-sectional Study
E7	Understanding the meaning of quality of life according to elderly individuals with diabetes mellitus type II	Ribeiro JP, Rocha AS, Popim RC ⁽¹⁶⁾ . 2010. Nursing	Esc. Anna Nery. Qualitative
E8	Diabetes mellitus: factors associated with the prevalence in elderly individuals, measures and practices for control and use of health services in São Paulo, Brazil	Mendes TAB, Goldbaum M, Segri NJ, Barros MBA, Cesar CLG, Alves MCGP ⁽¹⁷⁾ . 2011. Medical and Statistics	Cad. Saúde Pública. Population-based Cross-sectional Study
E9	Effect of an educational program on the level of knowledge and on the behaviors related to diabetes mellitus	Gandra FPP, Silva KC, Castro CF, Esteves EA, Nobre LN ⁽¹⁸⁾ . 2011. Nutrition	Rev Bras Promoç Saúde. Intervention
E10	Worldview, cultural care, and environmental concept: care for elderly individuals with diabetes mellitus	Souza NMG, Honorato SMA, Xavier ATF, Pereira FGF, de Ataíde MBC ⁽¹⁹⁾ . 2012. Nursing	Rev. Gaúcha Enferm. Descriptive/Qualitative
E11	Assessment of the self-care ability of diabetic elderly individuals	Marques MB, da Silva MJ, Coutinho JFV, Lopes MVO ⁽²⁰⁾ . 2013. Nursing	Rev. Esc. Enferm. USP. Exploratory/Cross-sectional.
E12	Correlation of quality of life with knowledge and behavior of diabetic elderly individuals	de Sousa MC, Dias FA, Nascimento JS, Tavares DMS ⁽²¹⁾ . 2016. Nursing and Occupational Therapy	Invest. Educ. Enferm. Quantitative/Cross-sectional

Table 2 - Presentation of Results of the Selected Studies. Rio Grande, RS, Brazil, 2016

Study	Results
E1	The Diabetes Association aims for education in health for its participants.
E2	Socio-economic level affects the risks of mortality. Men who ceased to be the head of their household presented higher levels of risk of mortality than those who maintained the function.
E3	In relation to the use of drugs, under-dosing was observed in some elderly individuals; some did not know the reason why they took 1-4 tablets/day, and reported side effects. Others have no family support when taking the medication; they live alone, and are illiterate.
E4	The chance of having diabetes was found to be higher for: elderly individuals living in urban areas; women; hypertensives; those with heart disease; pensioners; and those with no formal education or a low educational level.
E5	Diabetic elderly individuals presented mobility-related limitations associated with functional fragilities or impairments. A high number of chronic comorbidities was reported. Low adaptive performance was observed.
E6	Differences between diabetic and non-diabetic individuals were observed in relation to health self-assessment, self-reported morbidity in the last 15 days, and reports of the following diseases: hypertension; anemia; and renal and cardiovascular diseases.
E7	Dietary restriction had the greatest impact on the quality of life of diabetic elderly individuals.
E8	The highest rates of diabetes in elderly individuals were associated with poor or very poor health self-assessment, never having consumed alcohol or having quit drinking, widowhood, and those who had had one or more hospitalizations in the last 12 months.
E9	There was an increase in the number of correct answers about the symptoms and complications related to diabetes, and in the recognition of the importance of physical activities and self-application of insulin.
E10	Elderly individuals with DM2 feel their lives under constant fragility in a world of restrictions. However they seek to guarantee their health through their religious faith, the use of medicinal plants, and the support of health professionals.
E11	Only 6% of the diabetic elderly individuals demonstrated an ability for self-care; they were influenced by low educational level and decreased visual acuity.
E12	The higher the level of knowledge and attitude the higher the scores of quality of life in the physical, psychological, social relations, and environmental domains, as well as facets of the functioning of the senses, autonomy, and intimacy.

Database analysis revealed a predominance of studies indexed in the Directory of Open Access Journals (n=11, 91%), followed by SciELO Brazil with eight (68%), SciELO (CrossRef) with eight (68%), and Scopus (Elsevier) with five (41%), evidencing the high number of national publications indexed in international databases.

Regarding the year of publication of the studies, three studies were published within 2002 and 2006, six studies between 2007 and 2011, and three between 2012 and 2016.

In relation to the field of action of the professional authors, five (41%) studies were written by nurses, one (8.3%) by a nutritionist, and six (50%) were jointly developed by professionals in other areas.

The analysis of results and levels of evidence showed that 11 articles presented a level of evidence 6 (91%) and one presented level 2 (8%); that is, there was a predominance of articles involving qualitative, descriptive, and cross-sectional studies. Only one study presented a high level of evidence.

The results were divided into two categories in order to allow the analysis, interpretation, and discussion of the collected information: factors that influence adherence to therapy by elderly individuals with diabetes mellitus positively; and factors that influence adherence to therapy by elderly individuals with diabetes mellitus negatively.

● DISCUSSION

Factors that influence adherence to therapy by elderly individuals with diabetes mellitus positively

Analysis of the results of the studies evidenced the importance of family support for elderly individuals with DM, as the coexistence with family and their influences become expressive in the relations of care, providing psychological, social, and financial support. One of the forms of support consisted of dietary changes, making the diet healthier and contributing to the adaptation of the elderly individual (E7)⁽¹⁶⁾. The family, by adapting to the new dietary habits with a view to supporting the elderly, prevents and/or retards the appearance of the disease, generating mutual benefits (E1)⁽¹⁰⁾. Rethinking a healthy dietary approach may support the elderly, encouraging them to adhere to the treatment and helping them with their needs in a non-controlling way (E7)⁽¹⁶⁾.

The family should know the therapeutic process in order to favor its implementation and the elderly individual's self-care⁽²²⁾, as negative feelings permeate the lives of those living with DM, as showed in research results from 60% of the patients; it may lead to depression as a result of the lack of formal and informal social support⁽²³⁾.

Religiosity/spirituality was also perceived as a condition that assists in confronting the disease. Faith redemption is used by elderly individuals in the search for healing and strength to fight the disease (E10)⁽¹⁹⁾.

The contributions of support groups are presented as a way of sharing experiences, desires, needs, denials, and other factors. Groups promote a reflexive process about living with diabetes and seek to maintain the autonomy of the elderly, making them aware of self-care procedures. Coexistence with others in a similar situation favors and facilitates the understanding that it is possible to live well with the disease⁽²⁴⁾.

Health professionals, in their work, are valued by the elderly to the extent that their interventions, approaches, and guidance help resolve issues. A study on the daily lives of eight elderly individuals with type 2 diabetes mellitus revealed that most of them adopted the guidance recommended during the medical visits, particularly in relation to the drug therapy. Regarding supplementary alternative therapies, the use of teas (as a result of popular beliefs) was observed. This practice, called phytotherapy, is one of the strategies found to preserve the well-being of elderly individuals (E10)⁽¹⁹⁾.

The expectations of elderly individuals with DM in relation to health professionals are not limited to receiving information on what to do or not to do, but also that they occupy a space of guidance and dialogue, with the development of mutual trust, supporting the maintenance of a care behavior aimed at living with quality⁽²⁴⁾. Education in health brings family, professional, and patient together, enabling an exchange of knowledge among the individuals in order to promote adherence to the therapeutic regimen and quality of life⁽²²⁾.

Factors that influence adherence to therapy by elderly individuals with diabetes mellitus negatively

Low income was identified as one of the most prevalent and harmful factors to the adherence to treatment. In the analyzed studies (E2, E3, E8, E11) the elderly received, on average, 2.4 minimum wages, evidencing a dependence on the family income to survive; therefore, financial reasons were presented as one of the reasons for not adhering to the treatment^(11,12,17,20). This fact leads elderly individuals to assume an inappropriate behavior, that is, "saving" medicines instead of following the prescribed therapy (E3)⁽¹²⁾.

Financial difficulties hinder the acquisition of drugs for glycemic control and the purchase of appropriate foods. Although some drugs are provided by the Unified Health System, they are not always available (E7). Expenses related to the disease are not limited to drugs and food, they also include technologies for glucose monitoring, such as hemo-glucose test strips, supplies, syringes, needles, costs of medical visits, and others. Thus the family has to use part of the monthly income to purchase these technological materials (E7)⁽¹⁶⁾.

Another aspect that affects adherence to therapy negatively is the limited knowledge about the disease. One of the investigations (E11) showed that only 6% of the interviewees were considered capable of administering their own medicines⁽²⁰⁾. In another study (E3), 76.9% of the elderly took between one and four tablets a day, but 23% did not know the reason for the daily use of the drug, pointing out that it was not related to the presence of hypertension and/or diabetes mellitus, nor to the symptoms and complications resulting from these diseases or the side effects of the use of the drugs⁽¹²⁾. A lower prevalence of diabetes was observed (E2, E4, E8, E10, E12) in the elderly with higher educational levels. Among the diabetic elderly individuals, 20.6% had “eight years or more” of formal education; this number reaches 30.5% in relation to non-diabetic elderly individuals^(11,13,17,19,25).

This is corroborated by a research study comparing the health conditions of elderly individuals with DM according to the variables of gender and age group in the city of Uberaba/MG that evidenced that 63.4% of the elderly with DM were illiterate, a fact that made it difficult to comply with the medical prescriptions without support. This leads to limitations in the autonomy of the elderly and demands a higher level of care in prescription and professional guidance⁽²⁴⁾, and although the elderly presented some level of knowledge regarding DM and the care related to it, they just followed part of the guidance provided by the professionals⁽²⁶⁾.

Dietary restriction was highlighted as another factor that hinders the adherence to the regimen, representing an aspect of higher impact on the lifestyle (E7). In the opinion of the elderly, being able to eat what they want, according to their dietary culture and individual specificities, is essential to provide a feeling of autonomy and quality of life⁽¹⁶⁾. Therefore the diet becomes an obstacle⁽¹⁶⁾. The use of alcohol by the elderly (E12) was also pointed out as an aspect that hinders the diets, and only 3.3% followed a “weight-loss plan”⁽²⁵⁾.

In this scenario it is possible to perceive the importance of professional support and social groups in health institutions, as the dialogue and guidance taking into account the essence of the being may help them to change their life habits. The fact that individuals with diabetes do not understand the actual harm of not adhering to therapy and the need for professional support (E7)⁽¹⁶⁾ is pointed out.

Regarding health perception, it was evidenced (E6, E8) that the elderly considered it poor/very poor, bad, or very bad^(15,17). Their worldviews presented plenty of limitations and feelings of threats to their health, as their lives were tied to restricted conditions in relation to diet and lifestyle, revealing their belief in their diabetic condition as something bad, in a continuous fight against death, living in a universe of threat to life rather than in the search for quality of life. The determination of how they will perform their daily care practices depends on how they understand their realities (E10)⁽¹⁹⁾.

The most frequent complication found (E5, E11) was decreased visual acuity due to diabetic retinopathy^(14,20). The appearance of new complications and/or diseases demands the introduction of new drugs which, in turn, may lead to drug interactions and more side effects.

In view of the above, the study points out the existence of gaps in the education, promotion, and prevention of complications by health professionals (E9). These data evidence a concern in relation to the evolution of the disease that may endanger the autonomy and independence of elderly individuals for daily life activities and instrumental activities of daily living. It is important that elderly individuals with DM are aware of their health condition and informed about the severity of the therapeutic regimen⁽¹⁸⁾.

To this end, health professionals need an effective methodology focused on the development of an educational approach to the harms caused by DM to the elderly population. Effective dialogue with the elderly and their families is necessary to clarify and provide relevant information to ensure the safety of individuals with DM and their awareness of the importance of adhering to therapy.

● FINAL CONSIDERATIONS

The present study allowed the identification in the literature of the factors that influence the adherence of elderly individuals with diabetes mellitus to the prescribed treatment. The evidence-based research through integrative review with data collected and organized, and information classified

and analyzed through textual analysis, was found to be appropriate to form categories and achieve the proposed objectives.

Family support was evidenced as a facilitator of the adherence to therapy; it is presented as a psychological support, especially regarding the adaptation to a dietary plan. Along with the religiosity of the elderly, support from family members, social groups, and health professionals was found to be essential for the adherence to the treatment and maintenance of glycemic control.

Among the factors that influence the adherence to the treatment in a negative manner, the study pointed out the presence of complications and other comorbidities, the side effects of the drugs, and the lack of continuous and safe availability of drugs in Basic Health Units, thus hindering a proper implementation, in addition to low income and low educational levels of the elderly.

The need to intensify the care for elderly individuals with diabetes mellitus in Brazil is pointed out. Nurses, in particular, need to assume roles in the coordination, assistance, education, and research on this topic. This will generate an increase in educational actions and research that, in addition to generating information on life habits, also focuses on the best ways of approaching this population, taking into account their risk factors. In order to establish an awareness-raising dialogue consistent with the elderly's demands and needs, the maintenance of quality of life, autonomy, and independence is preserved, as well as a better elaboration of preventive actions.

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