



Journal of Nursing

Revista de Enfermagem

UFPE On Line

ISSN: 1981-8963

ORIGINAL ARTICLE

FACTORS ASSOCIATED WITH QUALITY OF LIFE OF ELDERLY PEOPLE WITH DIABETES MELLITUS

FATORES ASSOCIADOS À QUALIDADE DE VIDA DOS IDOSOS COM DIABETES MELLITUS FACTORES ASOCIADOS A LA CALIDAD DE VIDA DE LAS PERSONAS MAYORES CON DIABETES MELLITUS

Darlene Mara dos Santos Tavares¹, Érica Aparecida dos Santos², Flavia Aparecida Dias³, Pollyana Cristina dos Santos Ferreira⁴, Paula Beatriz de Oliveira⁵

ABSTRACT

Objectives: describing the socio-demographic, health and quality of life (QoL) characteristics in diabetic elderly; verify factors associated with lower QoL scores of diabetic elderlies. **Method:** analytical and cross-sectional study performed with 104 older adults who self-reported diabetes, in the countryside. It was used the WHOQOL-BREF and WHOQOL-OLD. A descriptive analysis and a multiple linear regression ($p < 0,05$) were performed. The research project was approved by the Research Ethics Committee, Protocol in 1477. **Results:** predominated females, 60-70 years old, married, with low education and income. In the physical domain, the number of morbidities and the habit of not drinking alcohol contributed to the lower QoL scores. In the facet 'functioning of the senses', the lowest scores were associated with lack of income and autonomy, schooling and the time of diagnosis. **Conclusion:** the largest number of morbidities, the lack of income, less education, and delayed diagnosis proved impacting factors on the QoL of the elderly. **Descriptors:** Aged; Quality of Life; Diabetes Mellitus; Geriatric Nursing.

RESUMO

Objetivos: descrever as características sociodemográficas, de saúde e a qualidade de vida (QV) de idosos diabéticos; verificar os fatores associados aos menores escores de QV de idosos diabéticos. **Método:** estudo analítico e transversal realizado com 104 idosos que autorreferiram diabetes, na zona rural. Utilizaram-se o WHOQOL-BREF e WHOQOL-OLD. Realizou-se análise descritiva e regressão linear múltipla ($p < 0,05$). O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, Protocolo 1477. **Resultados:** predominaram as mulheres, de 60 a 70 anos, casadas, com escolaridade e renda baixas. No domínio físico, o número de morbidades e o hábito de não ingerir álcool contribuíram para os menores escores de QV. Na faceta 'funcionamento dos sentidos', os menores escores associaram-se à ausência de renda e na autonomia, à escolaridade e ao tempo de diagnóstico. **Conclusão:** o maior número de morbidades, ausência de renda, menor escolaridade e maior tempo de diagnóstico se mostraram fatores impactantes na QV do idoso. **Descritores:** Idoso; Qualidade de Vida; Diabetes Mellitus; Enfermagem Geriátrica.

RESUMEN

Objetivos: describir las características socio-demográficas, de salud y de la calidad de vida (CDV) de ancianos diabéticos; revisar los factores asociados con las puntuaciones más bajas de la CDV de ancianos diabéticos. **Método:** estudio analítico y transversal realizado con 104 mayores que autorreferiram diabetes, en la zona rural. Utilizarán se el WHOQOL-BREF y el WHOQOL-OLD. Se realizó el análisis descriptivo y la regresión lineal múltiple ($p < 0,05$). El proyecto de investigación ha sido aprobado por el Comité de ética de la investigación, protocolo de 1477. **Resultados:** las mujeres predominaban, de 60 hasta 70 años de edad, casadas, con ingresos y educación baja. En el ámbito físico, el número de morbilidades y el hábito de no ingerir alcohol contribuyeron a las puntuaciones más bajas de la CDV. En la faceta 'funcionamiento de los sentidos', las puntuaciones más bajas asociaron se a la ausencia de ingresos y autonomía, a la educación y al tiempo del diagnóstico. **Conclusión:** el mayor número de morbilidad, la ausencia de ingresos, menos educación y mayor tiempo de diagnóstico fueron factores que inciden sobre la CDV de los ancianos. **Descriptor:** Adultos Mayores; Calidad de Vida; Diabetes Mellitus; Enfermería Geriátrica.

¹Nurse, Professor of Nursing, Department of Nursing in Education and Communitarian Health; Graduate in Nursing, Federal University of Triângulo Mineiro/UFTM. Uberaba (MG), Brazil. Email: darlenetavares@enfermagem.uftm.edu.br; ²Nurse, Master's Student in Health Attention at the Department of Social Medicine, Federal University of Triângulo Mineiro/UFTM. Uberaba (MG), Brazil. Email: ericasfx@gmail.com; ³Nurse, Master Teacher in Health Attention at the Department of Social Medicine, Federal University of Triângulo Mineiro/UFTM. Uberaba (MG), Brazil. Email: flaviadias_ura@yahoo.com.br; ⁴Nurse, Master Teacher in Health Attention at the Department of Social Medicine, Federal University of Triângulo Mineiro/UFTM. Uberaba (MG), Brazil. Email: pollycris21@bol.com.br; ⁵Nurse, Master in Health Attention at Hospital de Clínicas, Federal University of Triângulo Mineiro/UFTM. Uberaba (MG), Brasil. Email: paulabeatrizde@yahoo.com.br

INTRODUCTION

Among the chronic diseases that affect the elderly, diabetes mellitus (DM) set to *"multiple etiology, resulting from the lack of insulin and/or the inability of insulin to exercise adequately its effects. It is characterized by chronic hyperglycemia with disorders of the metabolism of carbohydrates, lipids and proteins."*^{1:56}

Investigation on Sweden noted DM prevalence among the elderly in the rural area (16.1%) compared to those who reside in urban space (6.3%).² However, a research conducted in Minas Gerais obtained that seniors living in rural areas have lower chances of having the disease and reinforce the necessity of conducting other studies to understand such facts.³

Despite Brazil being a country primarily agricultural and having many of its municipalities framed as the research on rural ageing has been developed, mainly in urban areas, generating a gap on the real needs of these populations.⁴ The aging process is also experienced in rural areas; however, with greater evidence of poverty, social isolation, low educational level, presence of residences in precarious conditions, restriction of access to transport and distance of social resources and healthcare institutions.⁵

Such factors may underestimate the prevalence of chronic diseases such as DM, among the elderly, restrict attention to their health. Added to these factors, the negative impact of diabetes on quality of life (QoL) of the elderly, due to the presence of possible chronic complications, such as retinopathy, nephropathy, heart disease, brain damage and cardiovascular diseases.⁶⁻⁷

Recognizing that QoL encompasses subjectivity and multidimensionality bipolarity, the concept adopted in this study was prepared by researchers from the World Health Organization that define it as: *"an individual's perception regarding his life in a cultural context within the system they are inserted, and in relation to their goals, expectations, standards and concerns"*.^{8:1405}

Based on these considerations, this study questioned << **Which aspects are more impacted on QoL of the elderly with DM in rural places? What are the factors associated with their QoL?** >>.

The present study had as objectives:

- Describing the socio-demographic characteristics, the health and the quality of life (QoL) of diabetic elderly.

METHOD

An analytical, cross-sectional and observational study conducted in the rural municipality of Uberaba. This location has 100% of coverage, attended by four units of the Family Health Strategy (FHS).

The total elderly population living in rural areas, according to a list supplied by the FHS in June 2010 was of 1,297 inhabitants. Of these 850 respondents were seniors, 447 were excluded, of which: 117 had changed their address, 105 had cognitive decline, 75 refused to participate, 57 were not found after three attempts of the interviewer, 11 had died, 3 were hospitalized and 79 had other reasons.

In the present investigation 104 seniors who met the criteria were included: age 60 years old or older; reside in the rural municipality of Uberaba; not having cognitive decline; self-refer diagnosis of DM and agree to participate.

Cognitive assessment was performed using the Mini-Mental State Examination (MMSE), translated and validated in Brazil.⁹ MMSE assesses cognitive functions related to: time orientation and location, immediate memory, attention and calculation, memory recall, language and visual construction capacity. The score ranges from zero to 30 points, considering the cutoff points: 13 for illiterates, 18 for low / medium education (1-11 years) and 26 for high schooling (over 11 years).⁹

To describe the characteristics of the elderly used the structured instrument based on the questionnaire Older Americans Resources and Services (OARS), adapted to Brazilian reality.¹⁰ QoL was assessed through generic tool World Health Organization Quality of Life - BREF (WHOQOL-BREF) and specific to the elderly, World Health Organization Quality of Life Assessment for Older Adults (WHOQOL-OLD), both validated in Brazil.¹¹⁻¹²

The variables studied were: socio-demographic and economic characteristics (gender, age, marital status, education, individual income, origin of financial resources, reason for retirement, housing and domiciliary arrangement); health conditions (time of illness, complications, regular use of medications, problem for medicine, medication, smoking, smoking time, number of cigarettes/day, alcoholism, alcohol consumption frequency, type of drink and morbidities number); QoL evaluation by

WHOQOL-BREF (domains: physical, psychological and social affairs; environment and QoL evaluation by WHOQOL-OLD (facets: functioning of senses; autonomy; past, present and future activities; social participation, death and dying and intimacy.

The data were collected in the elderly homes in the period of June 2010 to March 2011. The collected data were processed in microcomputer, for two people in double-entry, in an electronic data sheet in Excel® Program. We proceeded to the consistency between the two databases when necessary returned to original interview for correction. The database was transported to the Statistical Package for Social Sciences (SPSS) version 17.0 to perform the analysis.

Each domain of the WHOQOL-BREF and facet of the WHOQOL-OLD were analyzed separately, with their respective syntaxes. The scores range from zero to 100, with the biggest match the better QoL. The data were analyzed through simple frequency distribution for categorical variables, and measures of centrality (mean, median) and dispersion (standard deviation) for numeric variables.

To check the factors associated with the QoL bivariate analysis was performed by means of preliminary Student's T-test for numeric variables, depending on the normality of data and homogeneity of variances. Nominal variables were recategorized in order to become marital state: dichotomous (without or with companion), income (with or without), housing (or not), presence of complications (yes or no), alcoholism (yes or no), smoking

(yes, no). Regarding age, educational level, number of morbidities and time disease was used Pearson's correlation according to data normality and homogeneity of variances. The tests were considered significant when $p < 0.10$.

It was included in the multiple linear regression model, with reverse escalation (Backward method), the variables that attended the above criterion ($p < 0.10$). Considered as dependent variables the scores of each domain and facet of QoL, individually, and as predictors: gender; age; marital status; schooling; income; domiciliary arrangement; number of morbidities; time of the disease; use of medication; complications, smoking and alcoholism. The tests were considered significant when $p < 0.05$.

The study had the research project approved by the Research Ethics Committee of the Federal University of Triângulo Mineiro, Protocol No. 1477. The interview was made after the elder sign an informed consent.

RESULTS

In table 1 there are found socio-demographic and economic characteristics of the elderly with DM. Predominated the elderly female (65.4%), between the ages of 60 to 70 years old (61.5%), with 4 to 8 years of study (44.2%), married/had companions (64.4%) and shared the residence only with the spouse (45.2%). Most received a minimum wage (41.3%), from retirement (72.1%) by age (30.8%), owned their own home (72.1%).

Table 1. Distribution of frequency of socio-demographic and economic variables of the elderly with DM residents in the countryside. Uberaba, 2012.

Variables	n	%
Gender		
Female	68	65,4
Male	36	34,6
Age		
60 - 70	64	61,5
70 - 80	30	28,8
80 or older	10	9,6
Marital Status		
Never married/lived with companion	9	8,7
Married or living with a spouse or partner	67	64,4
Widower	26	25,0
Separated or divorced	2	1,9
Home arrangement		
Alone	14	13,5
Only with a partner	47	45,2
With others of its own generation (with or without a partner)	10	9,6
With children (with or without a partner)	26	25,0
With grandchildren (with or without a partner)	3	2,9
Other arrangements	4	3,8
Schooling (years)		
Without schooling	24	23,1
1 - 4	29	27,9
4 - 8	46	44,2
8	4	3,8
9 - 11	1	1,0
Individual income (minimum wages)*		
Without income	14	13,5
< 1	4	3,8
1	43	41,3
1 - 3	33	31,7
3 - 5	8	7,7
6 or more	2	1,9
Reason of retirement		
Time of service	28	37,3
Age	32	42,7
Health problem	15	20,0
Housing		
Own house	75	72,1
Rented	10	9,6
Given - without renting	19	18,3

* minimum wage in the period of collecting: R\$ 545,00
The Inter-Union Department of statistics and socioeconomic studies (DIEESE). Minimum wage. [access in 2012 June 27th]. Available in: <http://www.dieese.org.br/rel/rac/salminMenu09-05.xml> Access in 27th June, 2012.

The median time from diagnosis of DM corresponded to eight years, ranging from one to 40 years. In relation to health conditions, most of such complications were: heart problems (9.6%) and retinopathy (9.6%). However, most seniors don't alluded complications (64.4%). It is highlighted that 99% of the elderly regularly used medicines prescribed by doctors, with no problems to acquire them (55.7%). Meanwhile, 36.5% of seniors reported difficulty due to the high cost. The most widely used medication was metformin (64.4%); with dose of 850mg (50%) twice daily (30.7%). Highlights that 13.4% of seniors were using insulin and, of these, 45% made use above 30 IU insulin per day.

The smokers accounted for 7.6%, consuming an average of 31 cigarettes a day, having this habit for about 53 years. The alcohol intake was referred to by 19.2% of the

elderly, with higher frequency of 4 to 7 times a week (45%), followed by 1 to 4 times (30%), being the predominant drink beer (65%). The average number of morbidities associated with DM was 7.2 (SD = 3.1).

The highest percentage of elderly people considered their QoL good (60.9%) and was satisfied with their health (59%). The following table 2 shows the averages of the QOL scores. The biggest score of QV measured by the WHOQOL-BREF was for the domain social relationships (71.88; SD = 12.99) and the smallest in the environment (59.71; DP = 12.53). The QOL assessed by WHOQOL-OLD found higher score on facet intimacy (73.50; DP = 16.35) and less on autonomy (63.04; DP = 16.78), table 2.

Table 2. QoL scores according to WHOQOL-BREF and WHOQOL-OLD of the elderly of the countryside with diabetes mellitus. Uberaba, 2012.

Variables of QoL	Average	SD
WHOQOL-BREF		
Physicist	60,34	16,09
Psychologist	66,86	13,96
Social relationships	71,88	12,99
Environment	59,71	12,53
WHOQOL-OLD		
Functioning of the senses	66,23	23,23
Autonomy	63,04	16,78
Past, present and future activities	68,93	12,96
Social participation	64,48	13,91
Death or dying	66,65	26,12
Intimacy	73,50	16,35

The variables, per domains, which attended the established criterion in the bivariate analysis ($p < 0.1$), and composed the regression model were: physical (gender, $p = 0.044$; schooling, $p = 0.087$; presence of chronic complications, $p < 0.001$; alcoholism, $p = 0.007$; age, $p = 0.064$; number of morbidities, $p < 0.001$ and time diagnosis, $p = 0.062$); psychological (gender, $p = 0.007$; presence of chronic complications, $p = 0.007$ and number of morbidities, $p = 0.005$); environment (housing, $p = 0.008$; complications, $p = 0.041$ and number of morbidities, $p = 0.028$).

Regarding the variables, by facets, that composed the regression model were: functioning of senses (income, $p = 0.035$; complications, $p = 0.093$; alcoholism, $p = 0.06$; smoking, $p = 0.071$ and number of morbidities, $p = 0.088$); social participation (presence of chronic complications, $p =$

0.035); death and dying (income, $p = 0.075$; alcoholism, $p = 0.075$); intimacy (smoking, $p = 0.034$).

In the table 3 presents the regression model of QoL scores on WHOQOL-BREF and WHOQOL-OLD. In multivariate analysis, the physical domain QoL scores minors presented associated with absence of alcoholism ($p = 0.021$) and the largest number of morbidities ($p < 0.001$), the latter being the Predictor that most contributed to the lower QoL scores ($\beta = -0.48$), table 3.

In the facet ‘operation of the senses’ the absence of income contributed to the lower QoL scores ($p = 0.041$). Whereas in the absence of autonomy educational level ($p = 0.004$) and the shortest time of diagnosis ($p = 0.002$) associated to the QoL scores minor, remained as the largest Predictor of lower QoL scores the time of diagnosis ($\beta = 0.302$), table 3.

Table 3. Regression model of QoL scores of WHOQOL-BREF and WHOQOL-OLD of the population studied. Uberaba, 2012.

Initial model			Final model	
	B standardized*	p	B standardized*	p
WHOQOL-BREF				
Physical				
Gender	0,098	0,327	-	-
Schooling	0,127	0,174	-	-
Presence of complications	-0,149	0,138	-	-
Alcoholism	0,25	0,005	0,198	0,021
Age	-0,116	0,205	-	-
Morbidities	-0,411	<0,001	-0,48	<0,001
Time of diagnosis	-0,065	0,46	-	-
Psychologist				
Sex	-0,172	0,094	-	-
Presence of complications	-0,169	0,115	-	-
Morbidities	-0,149	0,189	-	-
Environment				
Housing	0,18	0,068	-	-
Presence of complications	-0,153	0,166	-	-
Morbidities	-0,144	0,189	-	-
WHOQOL-OLD				
Functioning of the senses				
Income	0,195	0,049	0,201	0,041
Presence of complications	-0,111	0,322	-	-
Alcoholism	0,155	0,113	-	-
Smoking	-0,182	0,069	-	-
Morbidities	-0,068	0,537	-	-
Autonomy				
Schooling	0,237	0,01	0,276	0,004
Income	0,174	0,057	-	-
Alcoholism	0,169	0,066	-	-
Morbidities	-0,18	0,054	-	-
Time of diagnosis	0,341	<0,001	0,302	0,002
Death and dying				
Income	0,166	0,092	-	-
Alcoholism	0,078	0,425	-	-

* regression coefficient.

DISCUSSION

The demographic characteristics related to gender, age group, education and retirement obtained in this study, corroborated with the results of research conducted among elderly people with DM, residents in urban and rural areas of the State of Minas Gerais, Brazil. However, diverges as to income, since in this research received a 92.26% minimum wage.³ A survey conducted in the United States among elderly people with DM also obtained a higher percentage in women (49.1%).¹³

It is noteworthy that the diagnosis of DM at younger ages, among the elderly, allows the FHS follow this population in order to postpone the complications arising from the disease, since the location of the present investigation has 100% coverage. However, the low level of schooling and income can hamper treatment adherence. The development of educational activities for self-care, guided by effective communication and consistent with the need of the group can be a strategy to ease this situation. In addition, the elderly are monitoring by the FHS and registered in the Registration system and monitoring of Hypertensive and diabetic

(HIPERDIA), which offers certain medicines for the treatment of DM and can refer to other higher-density technology services, when necessary.

Regarding the marital status and housing arrangement, a research in the countryside of the United States found lower percentage of seniors with diabetes married (52.1%)¹⁴ and research conducted in Turkey observed larger percentage of rural elderly living only with the spouse (65%).¹⁵ The type of family arrangement in which the elderly are inserted can influence on the treatment of DM. Highlights the need to address not only the person with diabetes, but also their relatives, so that adherence to the care concerning the disease are encouraged, better monitored and enabling more support for the continuity of treatment by health professionals. Considering the results of this research,¹⁶ health professionals should direct its attention to encouraging and maintaining the support of the spouse in treatment.

The fact that most of the subjects of the present study may reside in their own home over the benefits, especially the rural population, guaranteed by the 1988

Constitution and the housing finance system of the National Bank of Housing.¹⁷

Concerning the time of diagnosis, another study among adults and elderly with DM was above the result of this research, with a median of 12 years, and at least one and at most 40 years.¹⁸ It is noteworthy that the delayed diagnosis can adversely affect learning of people with DM as found on an outpatient in San Paulo¹⁹ and favor the onset of chronic complications.

A study conducted in Greece got different results as the prevalence of complications among elderly patients with DM; 23.6% reported microvascular complications such as retinopathy and angiopathy macrovascular and 31.4%, mainly cardiovascular diseases.²⁰ Thus, it is important to monitor the health conditions of the elderly, the nurse, assisting in the improvement of their treatment with a view that complications can be delayed if held control and self-care.¹⁹

In relation to drug use, financial difficulties in obtaining it may be related to these income of the elderly, whereas in this study, the highest percentage receiving a minimum wage, which prevents the purchase of medicines not provided by the health service.²¹ However, the delivery of drugs in health units during the consultations in HIPERDIA with the distribution of drugs by the public through the FHS, which covers 100 % of the elderly, may favor the acquisition of these medicines. In an analysis on free access to medications for diabetes and hypertension, it is noted that, currently, with the FHS, obtaining these drugs is made easier when compared with other forms of access.²¹

Regarding the type of medication, consistent results were observed in a survey in a rural area in the U.S. with diabetic elderly who found that the most used oral hypoglycemic agents (60.2%). However, 28 % made use of insulin.¹⁴ Notwithstanding this research, North Americans found among older adults with diabetes found that insulin (27.6 %) was the second type of medicine most used.¹³

The nurse plays a key role in guiding the proper use of medications by older adults with DM. It is known that the success of the membership is related to the monitoring of individuals from the start of treatment. Sufficient guidance on the functionality of medication, its side effects, frequency of use, the daily amount and possible interactions should be provided clinically.²² Furthermore; the elderly should be guided and accompanied, where necessary, the preparation and administration of insulin.

Must consider its limitations, such as decreased visual acuity, for example, emphasizing the correct application sites, the way of handling and storage of the medication.

Regarding smoking and alcohol consumption, a survey conducted in a general population of smokers with DM was observed that 34.3% and 73.3% had macrovascular, microvascular complications, and among those who drank alcohol, 32.6% and 66.7%, respectively.²³ In this context, it is necessary that the nurse adds the elderly with diabetes and their families to discuss and reflect on the effects of tobacco and alcohol in the body, aiming at reducing energy consumption in the community.

The average number of comorbidities obtained in a survey in diabetic elderly residents in rural areas of the United States was lower than that of this study, five morbidities crônicas.²⁴ These data reinforce the need for systematic monitoring of elderly patients with DM, whereas the association of comorbidities can contribute to the establishment of branches and functional disabilities.

Referring to positive self-assessment of QoL, a consistent result was obtained in a study conducted with elderly people in rural Paraíba.⁴ Have satisfaction with health, may be related in the present study, the majority of elderly without chronic complications.

The highest score in the domain of social relations is similar to that found among the elderly in rural Paraíba and northern Thailand (65.40, SD = 22.06).⁴⁻²⁵

The greatest impact of QoL on the environment was conducive to that obtained among the elderly in rural Paraíba and divergent research with elderly people from rural Thailand, where the lowest score was in the physical domain (54.93, SD = 19.98).⁴⁻²⁵ This fact may be related to difficulties in access to health services, which is among the aspects measured in this domínio.¹¹ Moreover, it can be inferred that due to the distance between neighboring clusters and possible, there are few options leisure becoming scarcer socialization.

The highest mean score on the facet intimacy differs from a research conducted in rural Sweden, which was obtained in social participation (70.29, SD = 17.92).²⁵

As for the lower scores, WHOQOL-OLD, discordant results were described in rural Thailand, where the lowest mean score was for death and dying (48.03, SD = 35.73).²⁵ However, the lowest score QoL autonomy

among the elderly of this study suggests awareness and stimulating family in the inclusion of the elderly in decision-making, contributing to the greater bond between the members, seeking to promote the right choice, guaranteeing and respecting the autonomy of elderly patients with DM.

It is noteworthy that the DM can negatively influence QoL, through the impact on physiological functions of the elderly, social life, mental health and freedom of choice, especially in regard to nourishment.²⁶ To minimize these injuries, the professional health should sensitize and guide caregivers and family members to maximize the autonomy and independence of the elderly, even in the presence of chronic diseases.²⁷

The greatest impact of the physical domain morbidities may be related to dependence on medication and treatments in health¹¹, whereas the highest percentage of senior citizens in this study made use of oral hypoglycemic.

Regarding alcoholism, it highlights that the consumption of alcohol in rural communities is regarded as a practice of recreation and socialization for the populations of these places. Another point to be emphasized is the ease of access to bars in which the main alcoholic beverage sale item.²⁸ It stands out that diabetics may not understand the alcoholism as habit of life detrimental to the DM.²⁹ in this way, the nurse perform elderly diabetic awareness with regard to the habits of life and the changes that may occur with the use of alcohol.

The absence of income as a predictor of lower scores on facet 'functioning of the senses' may be related to difficulties of corrective measures required for improving the functioning of this system, such as the use of glasses and hearing aids. It is important that the nurse is aware of sensory loss among the elderly with DM. Visual and sensory losses can impede the initial identification of lesions in the lower extremities. In a research conducted in the North of Minas Gerais State obtained relationship between low income and the presence of chronic complications of DM.³⁰

The increase in the time of diagnosis as main factor related to decreased autonomy may be related to the onset of complications such as retinopathy, decreased sensitivity peripheral, coronary artery disease and cerebrovascular.¹⁹⁻⁷ Once installed, these complications may result in prejudice on decision-making capacity, especially with regard to interference on the part of family members. Often, in order to meet the demand

of the diet and monitoring of the elderly health services other people at home deal with these activities³ and may compromise the decision-making power of the elderly.

Moreover, it is important to stress the need to sensitize family members in order to stimulate and maintain the autonomy of the elderly even though this presents limitations arising from the DM.

CONCLUSION

The biggest QoL scores were for the domain social relationships and intimacy facet, while the lowest were for environment and autonomy. The smallest QoL scores were associated in the physical domain: absence of alcoholism and the largest number of morbidities; in the facet 'operation of the senses' lack of income and autonomy to the absence of schooling and to increased diagnosis.

It stands out as limitations of the present study the self-reference of the DM and the transverse cohort does not allow establishing relations of causality. The presence of the nurse in the accompaniment of the elderly with DM is critical, considering that this population requires greater attention to your health and that this chronic disease specific care demand. Facing the difficulties that rural areas are for the development of these activities, it is up to this professional create options such as partnerships with popular entities (religious, typical parties, trades, among others) in order to develop campaigns and guidelines to mobilize collectively care for DM and its prevention.

FINANCING

The National Research Council – CNPq.

REFERENCES

1. American Diabetes Association (ADA). Diagnosis and classification of diabetes mellitus. Diabetes care [Internet]. 2008 [cited 2013 Feb 18];31(1):S55-S60. Available from: http://care.diabetesjournals.org/content/31/Supplement_1/S55.full
2. Sjolund BM, Nordberg G, Wimo A, Strauss EV. Morbidity and physical functioning in old age: differences according to living area. J am geriatr soc [Internet]. 2010 [cited 2013 Feb 18];58(10):1855-62. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/20929463>
3. Viegas-Pereira APF, Rodrigues RN, Machado CJ. Fatores associados à prevalência de diabetes auto-referido entre idosos de Minas Gerais. Rev bras estud popul [Internet].

- 2008 [cited 2013 Feb 18];25(2):365-76. Available from: <http://www.scielo.br/pdf/rbepop/v25n2/v25n2a11.pdf>
4. Martins CR, Albuquerque FJB, Gouveia CNNA, Rodrigues CFF, Neves MTS. Avaliação da qualidade de vida subjetiva dos idosos: uma comparação entre os residentes em cidades rurais e urbanas. *Estud interdiscip envelhec* [Internet]. 2007 [cited 2013 Feb 18];11:135-54. Available from: <http://seer.ufrgs.br/RevEnvelhecer/article/view/4817>
5. Morais EP, Rodrigues RAP, Gerhardt TE. Os idosos mais velhos no meio rural: realidade de vida e saúde de uma população do interior gaúcho. *Texto contexto & enferm* [Internet]. 2008 [cited 2013 Feb 18];17(2):374-83. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-07072008000200021&lng=en&nrm=iso&tlng=pt
6. Lima MG, Barros MBA, César CLG, Goldbaum M, Carandina L, Ciconelli RM. Impact of chronic disease on quality of life among the elderly in the state of São Paulo, Brazil: a population-based study. *Rev panam salud publica* [Internet]. 2009 [cited 2013 Feb 18];25(4):314-21. Available from: http://www.scielosp.org/scielo.php?script=sci_arttext&pid=S1020-49892009000400005
7. Brasil. Ministério da Saúde. Cadernos da Atenção Básica. Diabetes Mellitus. Brasília: Ministério da Saúde; 2006. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/diabetes_mellitus.PDF
8. WHOQOL Group. The world health organization quality of life assessment (WHOQOL): position paper from the world health organization. *Soc Sci Med* [Internet]. 1995 [cited 2013 Feb 18];41(10):1403-9. Available from: http://ac.els-cdn.com/027795369500112K/1-s2.0-027795369500112K-main.pdf?_tid=8af57862-76d1-11e2-88ee-00000aab0f6c&acdnat=1360865492_ed3973531e0352904ee81e373c472ae3
9. Bertolucci PHF, Brucki SMD, Campacci SR, Juliano Y. O mini-exame do estado mental em uma população geral: impacto da escolaridade. *Arq neuropsiquiatria* [Internet]. 1994 [cited 2013 Jan 14];52:1-7. Available from: http://www.scielo.br/scielo.php?script=sci_pdf&pid=S0004-282X1994000100001&lng=en&nrm=iso&tlng=pt
10. Ramos LR. Growing old in São Paulo, Brazil. Assessment of Health status and family support of the elderly of different socio-

- economic strata living in the community [tese]. London, England: London School of Hygiene and Tropical Medicine; 1987
11. Fleck MPA, Louzada S, Xavier M, Chachamovich E, Vieira G, Santos L, et al. Aplicação da versão em português do instrumento abreviado de avaliação da qualidade de vida "WHOQOL-bref". *Rev saúde pública* [Internet]. 2000 [cited 2013 Feb 18];34(2):178-83. Available from: <http://www.scielo.br/pdf/rsp/v34n2/1954.pdf>
12. Fleck MPA, Chachamovich E, Trentini CM. Desenvolvimento e validação da versão em Português do módulo WHOQOL-OLD. *Rev saúde pública* [Internet]. 2006 [cited 2013 Feb 18];40(5):785-91. Available from: <http://www.scielosp.org/pdf/rsp/v40n5/07.pdf>
13. Arcury TA, Bell RA, Snively BM, Smith SL, Skelly AH, Wetmore LK et al. Complementary and alternative medicine use as health self-management: rural older adults with diabetes. *J gerontol b psychol sci soc sci* [Internet]. 2006 [cited 2013 Feb 18];61(2):68-70. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1622916/>
14. Bell RA, Andrews JS, Arcury TA, Snively BM, Golden SL, Quandt SA. Depressive symptoms and diabetes self-management among rural older adults. *Am j health behav* [Internet]. 2010 [cited 2013 Feb 18];34(1):36-44. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2726973/>
15. Arslantas D, Ünsal A, Metintas S, Arslantas A. Life quality and daily life activities of elderly people in rural areas, Eskişehir. *Arch gerontol geriatr* [Internet]. 2009 [cited 2013 Feb 18];48(2):127-31. Available from: <http://www.sciencedirect.com.ez33.periodicos.capes.gov.br/science/article/pii/S0167494307002403>
16. Silva LMCS, Palha PF, Barbosa GR, Protti ST, Ramos ASR. Aposentados com diabetes tipo 2 na Saúde da Família em Ribeirão Preto, São Paulo. *Rev esc enferm USP* [Internet]. 2010 [cited 2013 Feb 18];44(2):462-8. Available from: http://www.scielo.br/scielo.php?pid=S0080-62342010000200031&script=sci_arttext
17. Camarano AA. Mecanismos de proteção social para a população idosa brasileira. Texto para Discussão nº 1179. 2006 [cited 2012 Nov 15]. Available from: <http://cdi.mecon.gov.ar/biblio/doc/ipea/td/1179.pdf>

18. Stacciarini TSG, Haas VJ, Pace AE. Fatores associados à auto-aplicação da insulina nos usuários com diabetes mellitus acompanhados pela Estratégia Saúde da Família. *Cad saúde pública* [Internet]. 2008 [cited 2013 Feb 18];24(6):1314-22. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2008000600012
19. Pace AE, Ochoa-Vigo K, Caliri MHL, Fernandes APM. O conhecimento sobre diabetes mellitus no processo de autocuidado. *Rev Lat Am Enfermagem* [Internet]. 2006 [cited 2013 Feb 18];14(5):728-34. Available from: http://www.scielo.br/pdf/rlae/v14n5/pt_v14n5a14.pdf
20. Papadopoulos AA, Kontodimopoulos N, Frydas A, Ikonomakis E, Niakas D. Predictors of health-related quality of life in type II diabetic patients in Greece. *BMC Public Health* [Internet]. 2007 [cited 2013 Feb 18];7(186). Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1973072/>
21. Paniz VMV, Fassa AG, Facchini LA, Piccini RX, Tomasi E, Thumé E et al. Acesso gratuito a medicamentos para hipertensão e diabetes em idosos: uma realidade a ser construída. *Cad saúde pública* [Internet]. 2010 [cited 2013 Feb 18];26(6):1163-74. Available from: <http://www.scielo.br/pdf/csp/v26n6/10.pdf>
22. Andrade DMC, Costa DMN, Valente GSC, César RF. Adesão ao tratamento do diabetes mellitus e hipertensão arterial sistêmica: um enfoque nas relações de gênero. *J nurs UFPE on line* [Internet]. 2011 [cited 2012 Nov 15];5(10):2359-67. Available from: <http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/1860/pdf/713>
23. Santos ICRV, Carvalho EF, Souza WV, Medeiros MCWC, Nóbrega MGL, Lima PMS. Complicações crônicas dos diabéticos tipo 2 atendidos nas Unidades de Saúde da Família, Recife, Pernambuco, Brasil. *Rev bras saúde matern infant* [Internet]. 2008 [cited 2013 Feb 18];8(4):427-33. Available from: http://www.scielo.br/scielo.php?pid=S1519-38292008000400008&script=sci_arttext
24. Bell RA, Arcury TA, Stafford JM, Golden SL, Snively BM, Quandt SA. Ethnic and sex differences in ownership of preventive health equipment among rural older adults with diabetes. *J rural health* [Internet]. 2007 [cited 2013 Feb 18];23(4):332-8. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2612629/>
25. Sudnongbua SL, Lagrow S, Boddy J. Feelings of abandonment and quality of life among older persons in rural Northeast Thailand. *J cross cult gerontol* [Internet]. 2010 [cited 2013 Feb 18];25(3):257-69. Available from: http://download.springer.com/static/pdf/787/art%253A10.1007%252Fs10823-010-9126-6.pdf?auth66=1362511203_d35a0da3f68850844012f12b32a48674&ext=.pdf
26. Aguiar CCT, Vieira APGF, Carvalho AF, Montenegro-Junior RM. Instrumentos de avaliação de qualidade de vida relacionada à saúde no diabetes melito. *Arq bras endocrinol metab* [Internet]. 2008 [cited 2013 Feb 18];52(6):931-9. Available from: <http://www.scielo.br/pdf/abem/v52n6/04.pdf>
27. Lima AP, Pereira DAG, Romano VF. Perfil sócio-demográfico e de saúde de idosos diabéticos atendidos na atenção primária. *Rev bras ciênc saúde* [Internet]. 2011;15(1):39-46. Available from: periodicos.ufpb.br/ojs/index.php/rbcs/article/download/9911/5813
28. Martins IS, Oliveira DC, Marinho SP, Araújo EAC. Hipertensão em segmentos sociais pauperizados da região do Vale do Paraíba São Paulo. *Cien saude colet* [Internet]. 2008 [cited 2013 Feb 18];13(2):477-86. Available from: <http://redalyc.uaemex.mx/pdf/630/63013219.pdf>
29. Mendes TAB, Goldbaum M, Segri NJ, Barros MBA, Cesar CLG, Carandini L et al. Diabetes mellitus: fatores associados à prevalência em idosos, medidas e práticas de controle e uso dos serviços de saúde em São Paulo, Brasil. *Cad saúde pública* [Internet]. 2011 [cited 2013 Feb 18];27(6):1233-43. Available from: <http://www.scielosp.org/pdf/csp/v27n6/20.pdf>
30. Coutinho WLM, Santos GA, Silva MP, Santos TA, Carreiro DL, Lafetá JC et al. Correlação do nível funcional e da qualidade de vida entre idosos não diabéticos, diabéticos e diabéticos neuropatas. *Rev digital* [Internet]. 2011 [cited 2013 Feb 18];16(156). Available from: <http://www.efdeportes.com/efd156/qualidade-de-vida-entre-idosos-diabeticos-neuropatas.htm>

Submission: 2013/12/06
Accepted: 2014/04/05
Publishing: 2014/06/01

Corresponding Address

Darlene Mara dos Santos Tavares
Rua Jonas de Carvalho, 420
Bairro Olinda
CEP 38055-440 — Uberaba (MG), Brazil