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Research Article

Assessment of Health-Related Quality of Life, in Type 2 Diabetic Patients with Poor Glycemic Control

Carmen Celada Roldan[1], Jaime Lopez Diez[2], Faustino Rider Garrido[2], Mª Angeles Cerezuela Abarca[2], Almudena Tarraga Marcos[3], Pedro J Tarraga López[4*]

[1]HealthCare Cartagena (Murcia), Spain

[2]Family Physician.- HealthCare Cartagena (Murcia), Spain

[3]Social Welfare Physician. Albacete. Castilla la Mancha, Spain

[4]Family Physician GAI Albacete, Spain

[*]**Corresponding author:** Pedro J. Tarraga López, Family Physician GAI Albacete, Spain

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Summary

Introduction: When analyzing the current situation in Spain, derived from our current lifestyles far from following a Mediterranean lifestyle, there is an alarming prevalence of diabesity, which increases the global risk of suffering from Cardiovascular Disease (CVD) and decreases the Quality of Life Related to Health (QLRH). In order to guarantee, beyond glycemic control of patients with type 2 diabetes (DM2), adequate control of Cardiovascular Risk Factors (CVRF) in DM2, it will be necessary to carry out a community intervention focused on the application of education programs focused on promoting the acquisition of healthy eating habits through the Mediterranean diet (DMED). This dietary pattern, together with physical exercise, has been shown to contribute to improving the QLRH of patients. **Objective:** To analyze the quality of life related to health, present in patients with poorly controlled type 2 diabetes, to determine the possible relationship between this and the degree of adherence to the Mediterranean diet and to examine whether there are differences between the sexes. **Material and methods:** Observational descriptive study in 93 patients diagnosed with DM2 with poor glycemic control (1Ac≥7%), carried out in various health centers in Albacete and Cuenca, in which the baseline relationship between adherence to DMed and the HRQoL. They were administered a data collection sheet that included a survey of the degree of adherence to the DMed (MEDAS-14) and QLRH (SF-12v2) in the Primary Care (PC) medical and nursing consultations. The variables were analyzed: age groups, sex, years of evolution of DM2, body mass index (BMI), as well as basal glycemia (GB) and glycosylated hemoglobin (HbA1c). The "MEDAS-14" (adherence to DMED) was the main variable and the "SF-12v2" (QLRH) was the secondary variable. **Results:** 60% of the diabetics were women with a mean age of 64 +/- 9 years, they presented grade I obesity and poor glycemic control (basal glycemia of 158mg/dl and a mean A1c of 7.88%. A poor glycemic control and a high BMI are related to low adherence to the Mediterranean diet and, in turn, to a low QLRH. Within the 12 items of the SF-12V2, highlighting a greater affectation in the physical sphere: regular general health, physical function I (limitation in making moderate efforts such as moving a table, vacuuming or walking for more than an hour), physical function II (limitation in climbing several flights of stairs), physical role (problems in work or daily activities doing less than dear), physical role II (they had to stop doing some tasks at work or daily activities) and regular bodily pain. Presenting less involvement in the mental sphere: emotional role (not limited by emotional problems), emotional role II (perform activities of daily living without having emotional problems), mental health I (they almost always felt calm and calm), vitality (they had energy only a few times) and mental health II (they felt discouraged and sad only a few times). Without affectation in the social

function since they consider that rarely the emotional or physical problems have made their social activities difficult. There are only significant differences ($p < 0.01$) between the sexes, in the ninth item SF-12v2 (mental health I), where women are less affected than men. When examining the rest of the responses to the 12 items, comparing between the sexes, at a global level it can be observed that both physical and mental dimensions affected men more, but with little social interference. **Conclusions:** Diabetic patients with poor glycemic control present low adherence to the MedMD (<9 points) and present a poor QLRH, with greater negative affectation in the physical than in the mental dimension, especially in men, with women expressing better health general.

Keywords: Mediterranean diet; Diabesity; MEDAS-14; QLRH; Physical dimension; Emotional dimension

Introduction

Changes in lifestyle have been modifying nutritional culture throughout history, transforming our traditional dietary habits since childhood [1]. Likewise, the state of confinement COVID-19 has implied changes in the life habits and dietary profiles of the population [2].

Health is the favorable result of the interaction between various determinants (biological, sociocultural, linked to lifestyle and health care system) according to the Lalonde [3] classification, whose harmony allows optimizing quality of life at the individual and collective level.

The term Quality of Life (QOL) arose in the mid-seventies, as a concept that refers to the perception of well-being by the individual, collecting objective and subjective aspects [4]. Health-related quality of life (QLRH), or perceived health, integrates those aspects of life directly related to physical, mental, emotional, social functioning and the state of well-being. It is used to assess the impact of chronic diseases and the effectiveness of individual medical treatments on health. Therefore, the conceptual model of HRQOL4 is multidimensional and can be considered as one of the determinants of the level of health that adds the value of quantifying the perception (of the subject) of illness and health, as well as its consequences. Achieving a better quality of life in old age depends on aspects related to lifestyles [1].

The SF-12v2 is a reduced version of the SF-36 questionnaire, adapted for Spain by Alonso, et al. [5], unlike version 1, it is applicable to the general population and to patients with a minimum age of 14 years. This is a self-administered questionnaire, whose completion time is less than 2 minutes, unlike the SF-36 (between 5 and 10 min). It consists of 12 items from the 8 dimensions of the SF-36 that provide a profile of health status: Physical Function (2), Social Function (1), Physical Role (2), Emotional Role (2), Mental Health (2), Vitality (1), Body Pain (1) and General Health (1) (Figure 1) [5].

Figure 1: Content of the Spanish version SF-12 adapted by J. Alonso et al. et al.

The Mediterranean diet (DMed) is classically defined as the eating pattern typical of the early sixties in the countries of the Mediterranean area (Greece, southern Italy and Spain)6, characterized by containing a high content of monounsaturated fats and low in fatty acids.

In Spain, derived from current lifestyles far from a Mediterranean lifestyle, there is a high prevalence of DM2 together with obesity (diabesity) [7,8], two of the great epidemics of the 21st century that increase CVD and decrease the (QLRH) [9,10]. Therefore, it was proposed to assess the effects of MedDM on the quality of life of diabetics.

Method

This is a multicenter study in which adult type 2 diabetic patients with poor glycemic control (A1c greater than 7%) from various health centers in Albacete and Cuenca participated during the period between 2018 and 2019. A study is carried out Descriptive observational study to know the usual eating habit and the QLRH. To this end, it is proposed to use it due to its ease of use and after having demonstrated how effective it is to use tools such as the MEDAS-1411 questionnaire to quantify adherence to the MedD and the SF-12v25 to determine the psychological effect that the disease has on their individual and social context.

The MEDAS-1411 questionnaire (Figure 2), consisting of the assessment of adherence to the MedD based on the 14-point score also validated in the British population. A score greater than or equal to 9 points is a good level of adherence, values less than or equal to 8 are considered poor adherence.

1. ¿Usa usted el aceite de oliva como principal grasa para cocinar?	Sí = 1 punto	☐
2. ¿Cuanto aceite de oliva consume en total al día (incluyendo el usado para freir, comidas fuera de casa, ensaladas, etc.)?	4 o más cucharadas = 1 punto	☐
3. ¿Cuantas raciones de verdura u hortalizas consume al día? (las guarniciones o acompañamientos = 1/2 ración) 1 ración = 200g.	2 o más (al menos una de ellas en ensalada o crudas) = 1 punto	☐
4. ¿Cuantas piezas de fruta (incluyendo zumo natural) consume al día?	3 o más al día = 1 punto	☐
5. ¿Cuantas raciones de carnes rojas, hamburguesas, salchichas o embutidos consume al día? (ración: 100 - 150 g)	menos de 1 al día = 1 punto	☐
6. ¿Cuantas raciones de mantequilla, margarina o nata consume al día? (porción individual: 12 g)	menos de 1 al día = 1 punto	☐
7. ¿Cuantas bebidas carbonatadas y/o azucaradas (refrescos, colas, tónicas, bitter) consume al día?	menos de 1 al día = 1 punto	☐
8. ¿Bebe usted vino? ¿Cuánto consume a la semana?	7 o más vasos a la semana = 1 punto	☐
9. ¿Cuantas raciones de legumbres consume a la semana? (1 plato o ración de 150 g)	3 o más a la semana = 1 punto	☐
10. ¿Cuantas raciones de pescado-mariscos consume a la semana? (1 plato pieza o ración: 100 - 150 de pescado o 4-5 piezas o 200 g de marisco)	3 o más a la semana = 1 punto	☐
11. ¿Cuantas veces consume reposteria comercial (no casera) como galletas, flanes, dulce o pasteles a la semana?	menos de 2 a la semana = 1 punto	☐
12. ¿Cuantas veces consume frutos secos a la semana? (ración 30 g)	3 o más a la semana = 1 punto	☐
13. ¿Consume usted preferentemente carne de pollo, pavo o conejo en vez de ternera, cerdo, hamburguesas o salchichas? (carne de pollo: 1 pieza o ración de 100 - 150 g)	Sí = 1 punto	☐
14. ¿Cuantas veces a la semana consume los vegetales cocinados, la pasta, arroz u otros platos aderezados con salsa de tomate, ajo, cebolla o puerro elaborada a fuego lento con aceite de oliva (sofrito)?	2 o más a la semana = 1 punto	☐

Figure 2: MedD adherence test (MEDAS-14) in Spanish from the PREDIMED study.

The SF-12v25 questionnaire (Figure 3) is a qualitative variable to assess the initial HRQoL of DM2, using 12 items to provide a profile of the state of general health, well-being, and functional capacity. The version includes two dimensions (physical and mental) through eight health concepts such as general health (personal assessment of health), physical function (extent to which health limits physical activities), physical role (extent to which physical health interferes with work and daily activities), emotional role (extent to which emotional problems interfere with work or other activities), bodily pain (intensity of pain), mental health (general), vitality (feeling of energy and vitality) and social function (degree of physical and emotional health that affect normal social life).

	Items	Basal
1	In general, would you say that your health is	
2	Moderate efforts such as moving a table, vacuuming, bowling, or walking for more than 1 hour	
3	Climb several floors up the stairs	
4	Did you do less than you wanted to during the last 4 weeks?	
5	Did you have to stop doing some tasks at work or in your daily activities?	
6	Did you do less than you would have liked to do because of a family problem?	
7	Did you not do your work or your daily activities as carefully as usual, due to some emotional problem?	
8	During the past 4 weeks, to what extent has pain interfered with your usual work (including work outside the home and household chores)?	
9	During the past 4 weeks, how much time did you feel calm and peaceful?	
10	During the last 4 weeks, how much time did you have a lot of energy?	
11	During the past 4 weeks, how much time have you felt down and sad?	
12	During the past 4 weeks, how often have physical health or emotional problems made it difficult for you to do social activities (such as visiting friends or family)?	
Total Score SF-12V2		

Figure 3: HRQoL test (SF-12V2). Own elaboration.

According to the consulted bibliography, if the condition was not met, it is recorded with 0 points. If the condition was met, it is recorded with 1 point; If there are several options, it is recorded with 1,2,3,4 or 5 (from worst to best option) points for the category. However, there is no defined score range to classify HRQoL as good or bad.

Statistical analysis

The statistical analysis was performed with the statistical package SPSS® (Statistical Package for Social Sciences) in its version 24.0. A descriptive analysis of the variables of interest was carried out, in which their distribution was observed in order to define cut-off points. To measure adherence to MedDM, the MEDAS-14 was assessed, classifying the participants into two categories: high adherence for a score ≥9, and low adherence if <9. The qualitative variables were presented through the frequency distribution of the percentages of each category while in the quantitative variables it was explored whether or not they followed a normal distribution using the Kolmogorov-Smirnov test, and indicators of central tendency (mean or median) and dispersion (standard deviation or percentiles) were given. The association between these factors was investigated using hypothesis contrast tests, with comparison of proportions when both were qualitative (Chi square, Fisher's exact test); comparisons of means when one of them was quantitative (Student's t test, ANOVA), and if they did not follow a normal distribution, the Mann-Whitney U test, Kruskall-Wallis and Friedman in the case of repeated measures. Linear regression tests were performed when the dependent variable was quantitative. In the case of qualitative variables, the Relative Risk (RR) was calculated for the different proportions and their CIs. The analysis was complemented with graphic representations. The statistical significance level for this study was $p \leq 0.05$.

Ethical aspects

The study was carried out following the recognized Ethics Standards and the Standards of Good Clinical Practice. The data was protected from uses not permitted by persons unrelated to the investigation and confidentiality was respected regarding the Protection of Personal Data and Law 41/2002, of November 14, the basic law regulating patient autonomy and rights and obligations regarding information and clinical documentation. Therefore, the information generated in this study has been considered strictly confidential, between the participating parties.

Results

Throughout the study, 93 adult diabetic patients participated, of which 60% were women with a mean age of 64 +/- 9 years. The BMI at the beginning was 32 kg/m^2 (grade I obesity), with a basal glycemia of 158mg/dl and a mean glycosylated hemoglobin of 7.88% (poor glycemic control). That is, the patients presented diabesity with poor metabolic control.

Assessment of quality of life

Table 1 shows the results of the 12 items of the SF-12v2 questionnaire on initial HRQoL, compared between women and men:

	Men	Woman	Total	P
Items HRQoL SF-12v2				
1st General Health				
Excellent	0	1.1% (n=1)	1.1% (n=1)	NS
Very good	0	4.3% (n=4)	4.3% (n=4)	
Good	15.1% (n=14)	29% (n=27)	44.1% (n=41)	
Regular	22.6% (n=21)	23.7% (n=22)	46.2% (n=43)	
Bad	2.2% (n=2)	2.2% (n=2)	4.3% (n=4)	
2nd Physical Role I				
it limits me a lot	7.5% (n=7)	3.2% (n=3)	10.8% (n=10)	NS
limits me a bit	23.7% (n=22)	36.6% (n=34)	60.2% (n=56)	
nothing limits me	8.6% (n=8)	20.4% (n=19)	29% (n=27)	
3rd Physical Role II				
it limits me a lot	6.5% (n=6)	5,4% (n=5)	11,8% (n=11)	NS
limits me a bit	26.9% (n=25)	40,9% (n=38)	67,7% (n=63)	
nothing limits me	6.5% (n=6)	14% (n=13)	20,4% (n=19)	
4th Physical Function I				
Yeah	24.7% (n=23)	26.9% (n=25)	51.6% (n=48)	NS
No	15.1% (n=14)	33.3% (n=31)	48.4% (n=45)	
5th Physical Function II				
Yeah	23.7% (n=22)	24.7% (n=23)	48.4 (n=45)	NS
No	16.1% (n=15)	35.5% (n=33)	51.6% (n=48)	
6th Emotional Role I				
Yeah	15% (n=14)	23.7% (n=22)	38.7% (n=36)	NS
No	24.7% (n=23)	36.6% (n=34)	61.3% (n=57)	
7th Emotional Role II				
Yeah	17.2% (n=16)	26.9% (n=25)	44.1% (n=41)	NS
No	22.6% (n=21)	33.3% (n=31)	55.9% (n=52)	
8th Body Pain				
A lot	1.1% (n=1)	0	1.1% (n=1)	NS
Quite	4.3% (n=4)	5.4% (n=5)	9.7% (n=9)	
Regular	18.3% (n=17)	19.4% (n=18)	37.6% (n=35)	
A bit	14% (n=13)	21.5% (n=20)	35.5% (n=33)	
Nothing	2.2% (n=2)	14% (n=13)	16.1% (n=15)	
9th Mental Health I				

Always	2.2%(n=2)	1.1% (n=1)	3.3% (n=3)	<0.048
Almost always	15.1% (n=14)	21.5% (n=20)	36.6% (n=34)	
Many times	5.4% (n=5)	23.7% (n=22)	29% (n=27)	
Sometimes	16.1% (n=15)	11.8% (n=11)	28% (n=26)	
Just once	1.1% (n=1)	2.2% (n=2)	3.3% (n=2)	
Never	0	0	0	
10th Vitality				
Always	2.2% (n=2)	0	2.2% (n=2)	NS
Almost always	3.2% (n=3)	9.7% (n=9)	12.9% (n=12)	
Many times	9.7% (n=9)	16.1% (n=15)	25.8% (n=24)	
Sometimes	18.3% (n=17)	29% (n=27)	47.3% (n=44)	
Just once	3.2% (n=3)	5.4% (n=5)	8.6% (n=8)	
Never	3.2% (n=3)	0	3.2% (n=3)	
11th Mental Health II				
Always	1.1% (n=1)	0	1.1% (n=1)	NS
Almost always	0	1.1% (n=1)	1.1% (n=1)	
Many times	8.6% (n=8)	9.7% (n=9)	18.3% (n=17)	
Sometimes	17.2% (n=16)	26.9% (n=25)	44.1% (n=41)	
Just once	7.5% (n=7)	10.8% (n=10)	18.3% (n=17)	
Never	5.4% (n=5)	11.8% (n=11)	17.2% (n=16)	
12th Social Function				
Always	0	2.2% (n=2)	2.2% (n=2)	NS
Almost always	11.8% (n=11)	14% (n=13)	25.8% (n=24)	
Rarely	23.7% (n=22)	33.3% (n=31)	57% (n=53)	
Never	4.3% (n=4)	10.8% (n=10)	15.1% (n=14)	

Table 1: Items of the SF-12v2 questionnaire answered according to sex. **Source:** self-made.

General health: Almost half of the patients (46%) consider that they have fair health (22% of men), 44% consider that they have good health (29% of women), and only 5% of women consider 1% of them have very good health and excellent health (Figure 4).

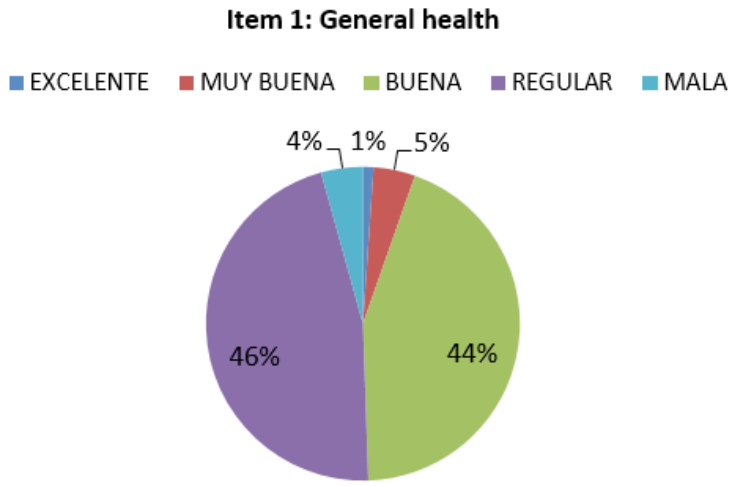

Figure 4: Item 1. General health, percentage of responses. **Source:** self-made.

Physical function I: 60% of the patients (36% of women and 24% of men) considering that their current health limits them a little in making moderate efforts such as moving a table, vacuuming, playing bowling or walk more than an hour. 29% of the total considering that they have no physical limitation and only 11% a lot of limitation (Figure 5).

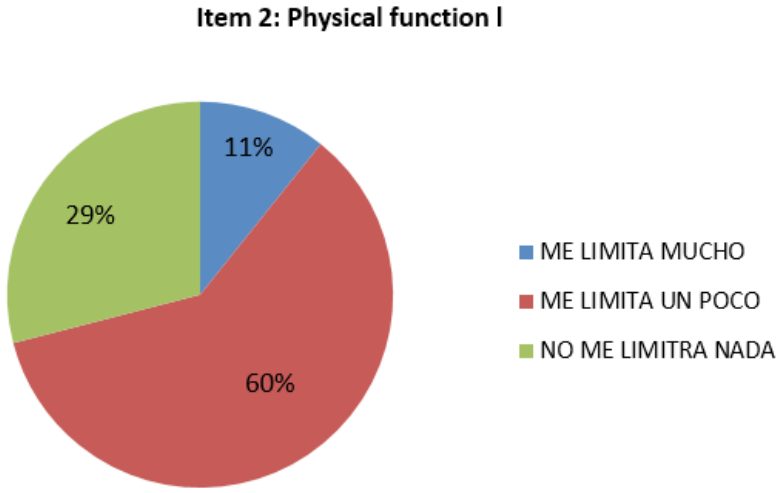

Figure 5: Item 2. Physical function I, percentage of responses. Source: self-made.

Physical function II: 68% of the patients (41% of women and 27% of men) consider that their current health limits them a little to climb several flights of stairs. 20% consider that they have no physical limitation (14% of women) and only 12% have a lot of physical limitation (6.5% in men) (Figure 6).

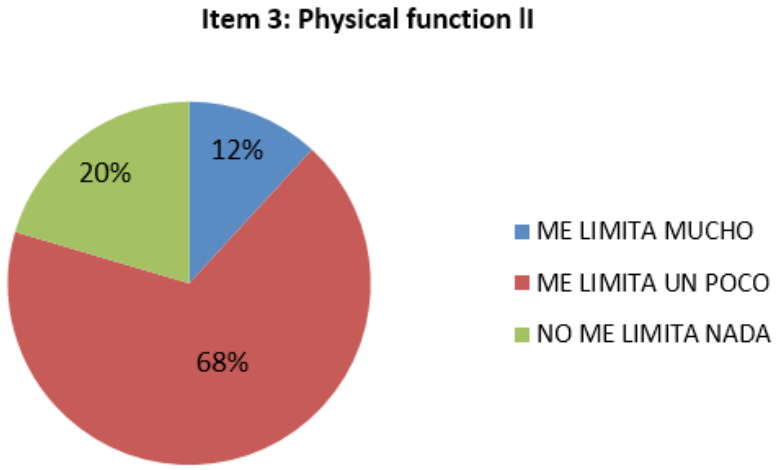

Figure 6: Item 3. Physical function II, percentage of responses. Source: self-made.

Physical Role I: During the last 4 weeks, due to their physical health, 52% of the total have had problems at work or in their daily activities, doing less than they would have wanted to do. The majority of women (33%) do not consider having had a physical limitation, but the majority of men (25%) considered that they did less than they wanted (Figure 7).

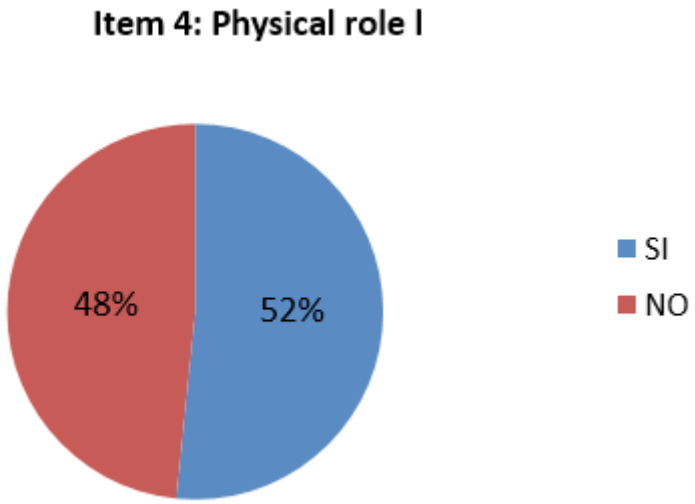

Figure 7: Item 4. Physical role I, percentage of responses. Source: self-made.

Physical Role II: During the last 4 weeks, 52% of diabetics (36% of women) did not have to stop doing some tasks at work or in their daily activities. However, 48% of the total (24% of men) did have to stop doing some tasks due to physical limitations (Figure 8).

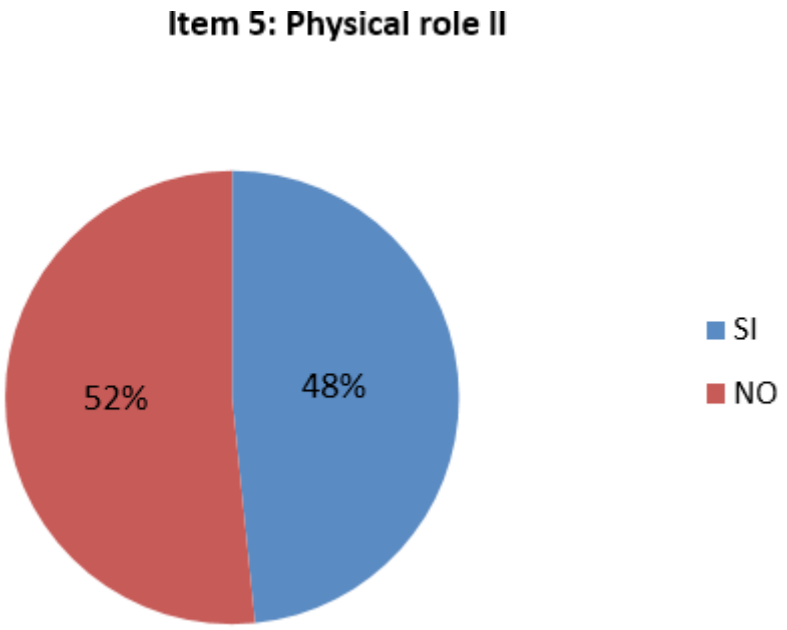

Figure 8: Item 5. Physical role II, percentage of responses. Source: self-made.

Emotional Role I: During the last 4 weeks, 61% of all diabetics (36% of women and 25% of men) had no limitation in their daily activities due to emotional problems (Figure 9).

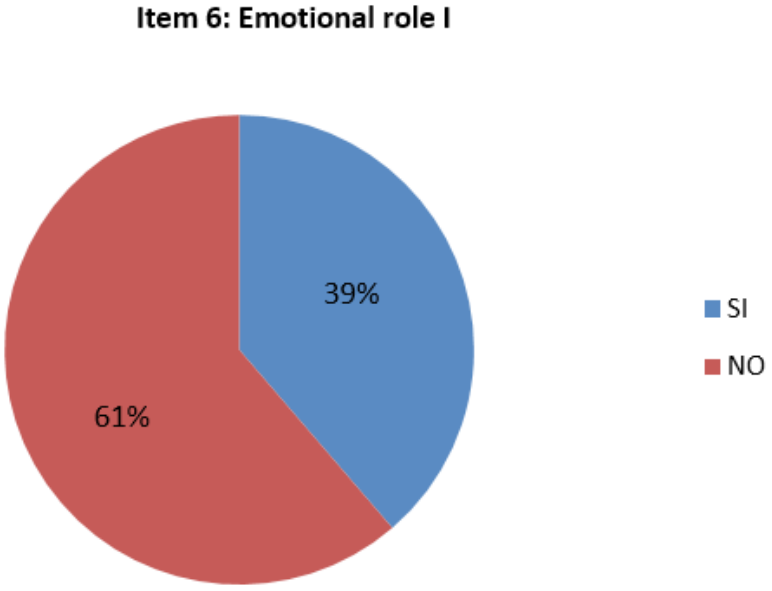

Figure 9: Item 6. Emotional role I, percentage of responses. Source: self-made.

Emotional role II: During the last 4 weeks, 56% of the total (33% of women and 23% of men) carried out their work or daily activities as usual without having emotional problems (Figure 10).

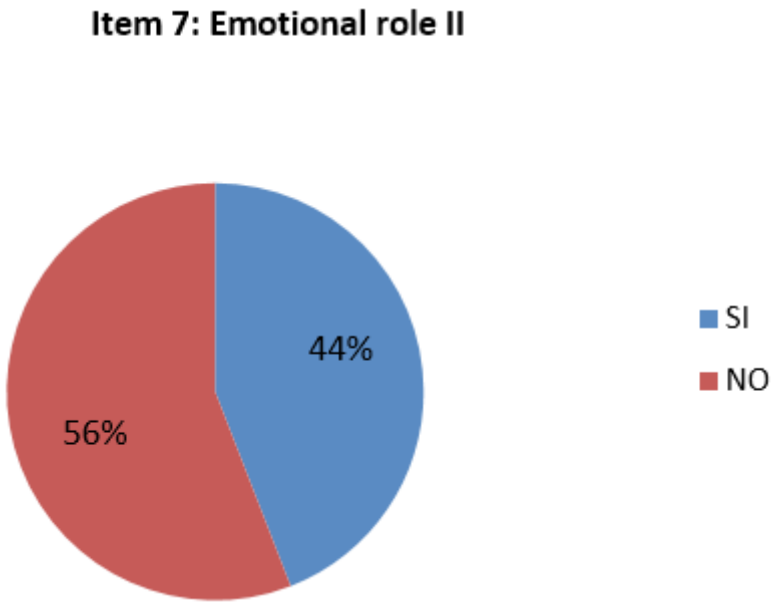

Figure 10: Item 7. Emotional role II, percentage of responses. Source: self-made.

Bodily pain: During the last 4 weeks, 38% of diabetics (18% of men) consider that their usual work has been hampered by regular pain. 35% of the total (22% of women) have had some pain. Only 16% (14% of women) consider that they have not had any pain and 1% of men that they have had a lot of pain (Figure 11).

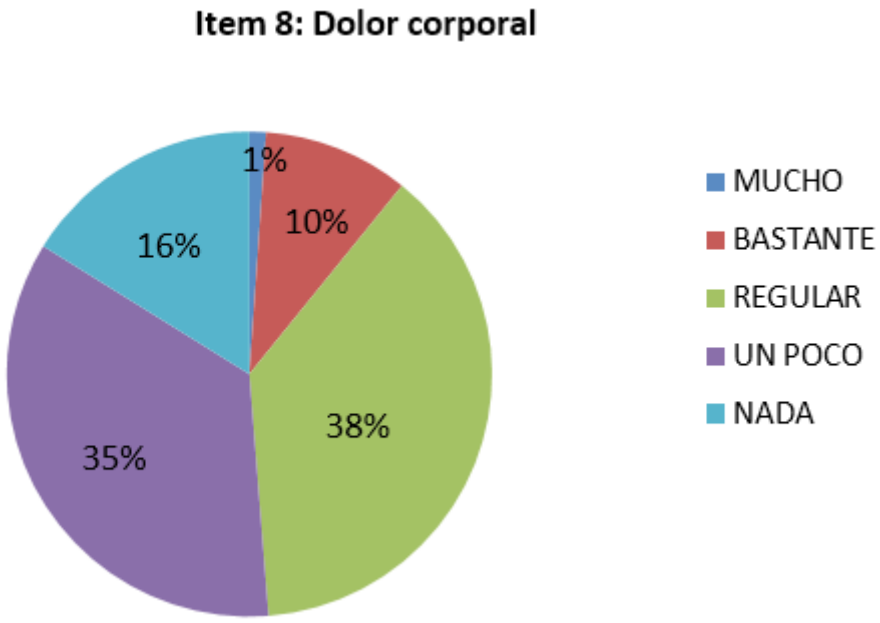

Figure 11: Item 8. Bodily pain, percentage of responses. Source: self-made.

Mental Health I: There are significant differences between the sexes in this item: during the last 4 weeks, 37% of all diabetics (22% of women) almost always felt calm and calm. There is a discrepancy between women (24%) who often feel calm and calm, and men (16%) who feel that way only sometimes (Figure 12).

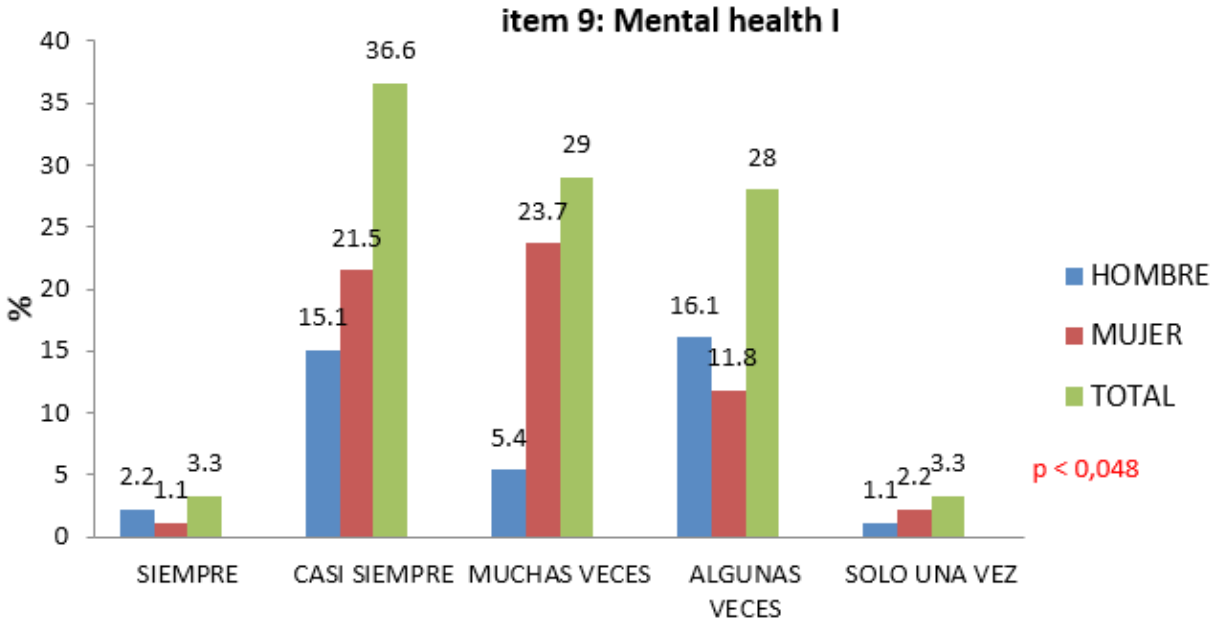

Figure 12: Item 9. Mental health I, percentage of responses. Source: self-made.

Vitality: During the last 4 weeks, 47% of all diabetics (29% of women and 18% of men) had a lot of energy at times. And only 3% of men never feel vital (Figure 13).

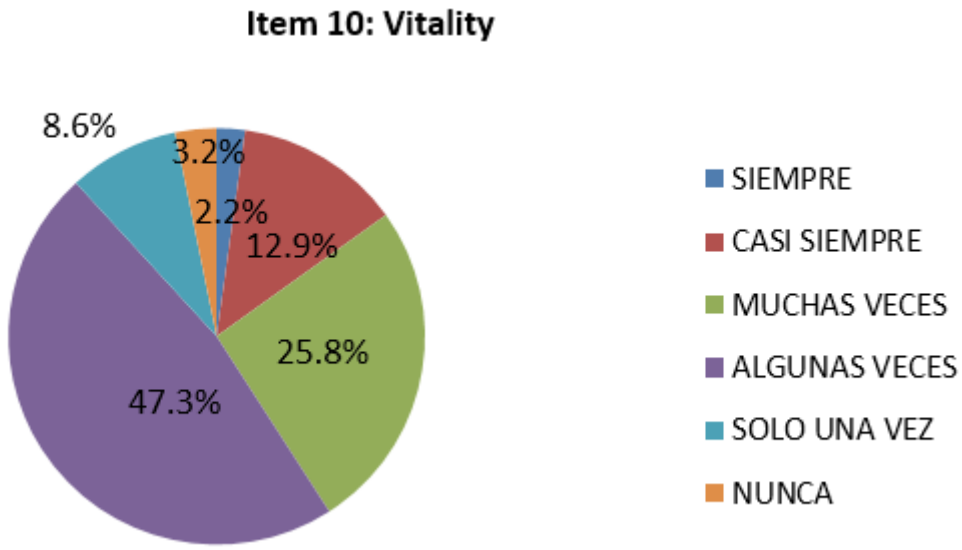

Figure 13: Item 10. Vitality, percentage of responses. Source: self-made.

Mental Health II: During the last 4 weeks, 44% of all diabetics (27% of women and 17% of men) felt discouraged and sad at times. Only 1% of men have always felt it and 1% of women almost always (Figure 14).

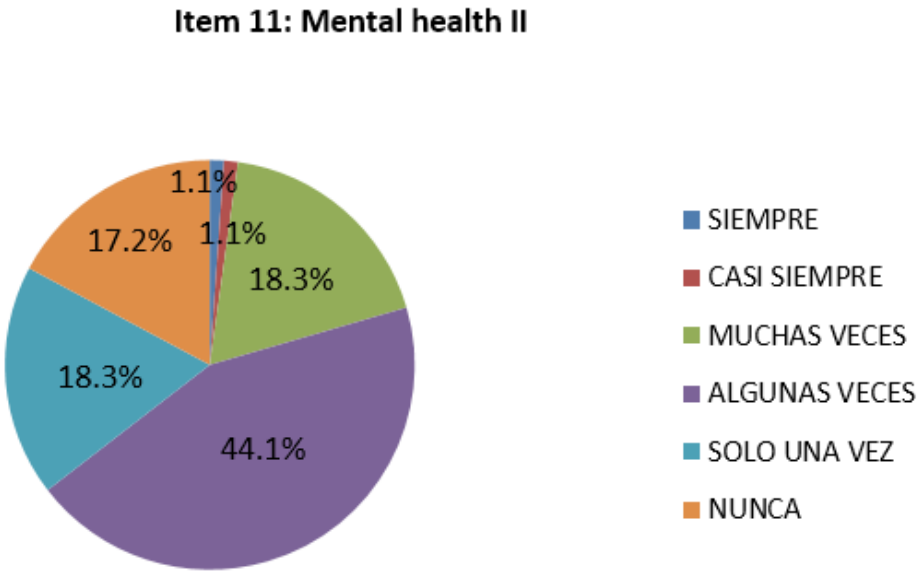

Figure 14: Item 11. Mental health II, percentage of responses. Source: self-made.

Social function: During the last 4 weeks, 57% of the total (33% of women and 24% of men) consider that emotional or physical problems have rarely made their social activities difficult, unlike 2% of total number of women who have always had social difficulties (Figure 15).

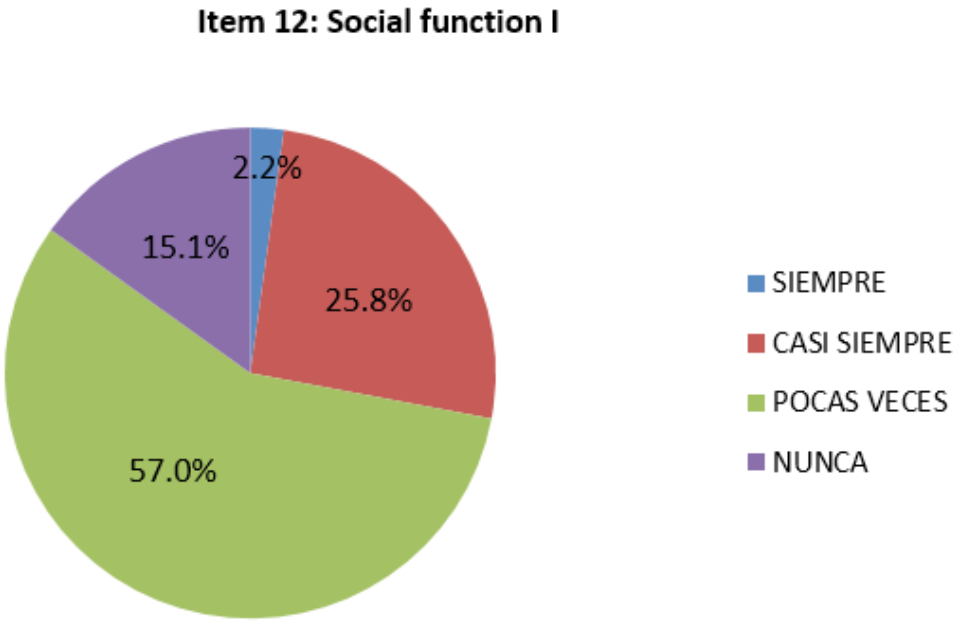

Figure 15: Item 8. Bodily pain, percentage of responses. Source: self-made.

Differences between sex

There are significant differences ($p<0.01$) in the ninth item SF-12v2 (mental health I), which specifies that during the last 4 weeks, 37% of all DM2 almost always felt calm and calm. 24% of women feel calm and collected many times, but only 16% of men feel that way sometimes.

When examining the rest of the answers of the 12 items, comparing between the sexes, at a global level it can be observed that the physical dimensions affected more in men, such as the perception of regular general health with physical limitation, the perception of bodily pain of regular intensity no interference in your work, and the feeling of energy only sometimes. Likewise, despite presenting less mental health involvement, men presented a greater feeling of sadness and vitality but with little social interference.

Discussion

HRQoL is a subject that is currently gaining much interest in health, especially in chronic pathologies [12]. The impact of certain diseases on patients cannot be measured solely by quantifying objective clinical parameters; qualitative measures such as HRQoL must be taken into account to improve self-control and adherence. According to the different studies on DM, the dimensions that are most important are those that have to do with physical and psychosocial function and disease control [5-12].

The source of information for most of the studies that assess the impact of DM2 on HRQoL comes from health surveys carried out in the general population [13]. Despite the fact that there are 22 specific questionnaires to assess HRQoL in DM that report on the patient's perception of how diabetes affects their well-being and health in their physical and mental areas, only the 5 questionnaires in the Spanish version (ADDQoL-19, DAS -3sp, DQOL, DTSQ and MIAT-D) show great variability in measurements and scales, which makes it difficult to compare results. For this reason, there is little evidence available about the real impact of DM on HRQoL [14].

The self-perception of HRQoL in patients with DM2 and according to previous research, is negatively affected, having used both generic instruments such as the EQ-5D (UKPDS study) [15], as well as specific ones, the difficulty lies in their heterogeneity. Comparison with data from other studies with the Spanish population using the SF-36 is difficult, since no studies with diabetic patients have been found. The IQOLA Project [15] with self-referenced data from population surveys from 8 different countries, expressed with the SF-36 the greatest impact on the DM of the physical component and in the dimensions "general health", "physical role" and "physical function". Rubin RR, et al. [16] in their systematic review "Diabetes and Quality of Life" showed that HRQoL among DM in the USA was worse than that of the general population, especially in the dimensions "physical function", "emotional role" and "general health" of the SF-36". In the case of the SWEDQUAL [17] study, carried out in Sweden, they detected better HRQoL in the population without DM for all dimensions of the SF-36 (except for "social function"). In Spain, using the EQ-5D [18], in a cross-sectional study of the impact of DM2 on the QoL of 8,963 patients treated in 29 PC centers, a worse HRQOL has been documented in patients with DM2, women, over 30 years of age, subjects with complications and those treated with insulin than in those treated with non-pharmacological measures.

For this reason, in this study, the use of a generic instrument has been prioritized, such as the SF-12v2 subjective measure of easy individual application, which has allowed obtaining a profile not only physical, but also mental and social, in relation to HRQoL [5]. This work has shown that in poorly controlled DM2 there is a greater affectation in the physical dimension, specifically in the items of "general health" (46% consider having regular health); "physical function" (60% consider that they are somewhat limited to make moderate efforts and 68% to climb several stairs); the "physical role" (52% have done less than they would have wanted to do) and "body pain" (84% have some pain making their usual work difficult). Despite this, they have presented less affectation in the mental dimension as in the "emotional role" items (61% had no limitation in their activities); of "vitality" (73% had a lot of energy); or in "social function" (57% do not consider difficulty in their social activities). In mental health, it should be noted that although they felt calm and calm (94%), 65% were discouraged and sad. Results similar to those obtained in the study carried out in Finland [19], which detected worse HRQoL in all dimensions of the SF-12v2 for people with DM2, except in the mental health dimension. Some studies have observed a greater impact of DM2 on physical dimensions, and no impact on social function. In the cross-sectional observational study of HRQoL in patients with DM2 [20] carried out in the ZBS of Navarra with 12,200 inhabitants, the worst perception in the health concepts of "physical function", "physical role", and "general health", except in the sections on "vitality" and "mental health".

The effect of sociodemographic factors such as age or sex on people's HRQoL is not specific to DM but to various pathologies [12]. There are many determinants that influence the HRQoL of DM2, such as sex [21]. In this work, there are only significant differences ($p<0.01$) in the ninth item SF-12v2 (mental health I), which specifies that during the last 4 weeks, 37% of all DM2 almost always felt calm and calm 24% of women feel calm many times, but only 16% of men feel that way sometimes. In contrast to the results obtained where all the scores obtained were better in women than in men, in opposition to what was previously published since in several studies carried out in adults with DM2 they observed worse HRQoL in women [14,22,23], of older age, when the duration of DM was longer, in those taking insulin, those with comorbidity, were obese and did little physical activity. Similarly, in the diabetic population of Murcia, men report a lower impact of the disease on all the scales of the SF-12v2 [24].

Conclusions

People with T2DM and poor glycemic control present poor initial adherence to the MedDM and a poor perception of their physical and mental health, affecting more in the physical than in the mental area, more in men and hardly affected in the social activity. For this reason, it is proposed to approach these patients in a holistic and individual way through a nutritional dietary intervention that promotes this MedDM, since it has been shown that improving adherence to the MedDM would improve their HRQoL.

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