Alcoholic chronic pancreatitis: A quality of life study

Pancreatite crônica alcoólica: um estudo de qualidade de vida

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A B S T R A C T

Objective

To compare the quality of life between patients with alcoholic chronic pancreatitis and controls, and between diabetic and non-diabetic patients, correlating clinical, sociodemographic, and nutritional factors with their quality of life scores.

Methods

Forty-three outpatients of the pancreas and biliary tract clinic diagnosed with alcoholic chronic pancreatitis were assessed. Quality of life was measured by the Brazilian version of the Short Form-36. The control group consisted of 43 healthy companions. Nutritional status was classified according to body mass index and triceps, biceps, suprailiac, and subscapular skinfold thicknesses, using the appropriate methods. The percentage of body fat was given by adding the four skinfold thicknesses and by bioelectrical impedance analysis. The statistical tests included the Chi-square, Mann-Whitney, and Spearman's correlation tests, with the significance level set at $p < 0.05$.

Results

The sociodemographic variables of the case and control groups did not differ. Quality of life was lower in alcoholic chronic pancreatitis patients than in controls. The only quality of life domain that differed between diabetics and non-diabetics was functional capacity, lower in diabetics ($p=0.022$). Smoking duration, alcohol intake in grams, and time since pancreatic surgery correlated negatively with the quality of life of alcoholic chronic pancreatitis patients. Old age, skinfold thicknesses, and percentage of body fat correlated positively with quality of life.

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Conclusion

Quality of life is low in alcoholic chronic pancreatitis patients because of the negative influence of certain factors, such as smoking duration, amount of alcohol consumed, and time since pancreatic surgery.

Keywords: Diabetes *Mellitus*. Pancreatitis, alcoholic. Pancreatitis, chronic. Quality of life.

R E S U M O

Objetivo

Avaliar a qualidade de vida dos pacientes com pancreatite crônica alcoólica, comparando-os aos participantes de um grupo-controle e entre pacientes com e sem diabetes.

Métodos

Avaliaram-se 43 pacientes do ambulatório de pâncreas e vias biliares diagnosticados com pancreatite crônica alcoólica. A qualidade de vida foi verificada por meio do Short Form-36, versão brasileira. O grupo-controle para a qualidade de vida foi composto por 43 acompanhantes sem doenças conhecidas. Para avaliação do estado nutricional, foi calculado o índice de massa corporal e dobras cutâneas do tríceps, bíceps, suprailíaca e subescapular, de acordo com a metodologia adequada. Para obtenção da porcentagem de gordura corporal, utilizou-se o somatório das quatro dobras e a medida obtida por meio da bioimpedância. Para análise estatística, foi utilizado teste de Qui-quadrado, Mann-Whitney e correlação de Spearmam, com p<0,05.

Resultados

Não houve diferença entre o grupo-caso e o grupo-controle para as variáveis sociodemográficas. A qualidade de vida dos pacientes com pancreatite crônica alcoólica mostrou-se diminuída quando comparada aos membros do grupo-controle. Ao serem comparados os domínios de qualidade de vida dos pacientes com e sem diabetes, somente o quesito capacidade funcional apresentou diferença: menor para o grupo com diabetes (p=0,022). A correlação mostrou que o tempo de tabagismo, a quantidade de etanol em gramas e o tempo de cirurgia pancreática incidiram negativamente na qualidade de vida do grupo com pancreatite crônica alcoólica. Idade avançada, pregas cutâneas e porcentagem de gordura corporal se correlacionaram positivamente com qualidade de vida.

Conclusão

A qualidade de vida está diminuída no grupo com pancreatite crônica alcoólica devido à influência negativa de fatores como tempo de tabagismo, quantidade de etanol e tempo de cirurgia pancreática.

Palavras-chave: *Diabetes Mellitus. Pancreatite alcoólica. Pancreatite crônica. Qualidade de vida.*

I N T R O D U C T I O N

The main characteristics of chronic pancreatitis are presence of abdominal pain and clinical manifestations secondary to endocrine and exocrine pancreatic insufficiency[1]. Chronic pancreatitis is characterized by chronic inflammation with anatomical lesions and substitution of the normal parenchyma by fibrous tissue, and later, pancreatic calcification[2]. The disease is caused mainly by chronic alcohol abuse[3]. In our practice alcoholism is responsible for most cases, affecting mainly males[4,5].

Quality of life can be measured by specific questionnaires with closed questions. The Short Form-36 (SF-36), an instrument that measures quality of life, was developed in the late 1980s in the United States of America. It has been used in diverse situations, presenting good sensitivity[6,7]. This instrument has been translated and validated in Brazil to measure the quality of life of patients with rheumatoid arthritis and proved to be appropriate for the local conditions[8]. Its greater scope allows its use in different clinical situations and on healthy individuals[8,9].

Quality of life is low in approximately 85% of the patients with chronic pancreatitis, especially the younger patients, with social consequences[10-12]. Chronic pain is the main deteriorator of the quality of life of these patients, more so than other

associated diseases[13]. Gastrointestinal, metabolic, and nutritional (low body mass index) factors also deteriorate quality of life. Diabetes also hurts quality of life, especially the body and mental health domains[10,11,14].

This study aimed to compare quality of life between patients with alcoholic chronic pancreatitis and healthy controls, and between diabetic and non-diabetic alcoholic chronic pancreatitis patients; and then to correlate clinical, sociodemographic, and nutritional factors with quality of life.

METHODS

This prospective, cross-sectional study was conducted from January 2011 to May 2012 after approval of the Research Ethics Committee of the *Universidade Federal de São Paulo* under Protocol nº 1944/10. Forty-three outpatients diagnosed with alcoholic chronic pancreatitis were interviewed. The control group consisted of 43 healthy companions who only provided sociodemographic data and answered the quality of life questionnaire (SF-36). This group was selected randomly among outpatients' companions. All individuals in both groups were males. The study participants were interviewed and answered a questionnaire about their diagnoses and associated clinical conditions. The alcohol intake reported by each patient was converted to grams of ethanol/day[15].

Quality of life was measured by the Brazilian version of the SF-36 questionnare[8]. The questionnaire consists of 11 questions and 36 items in eight domains, namely functional capacity, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health. The answers were tabulated and weighted according to specific formulas and values for each answer or domain, with scores that varied from 0 (worst) to 100 (best), according to the criteria proposed by Ware *et al.*[6].

Nutritional status was classified according to the Body Mass Index (BMI), given by dividing weight (kg) by height squared (m^2). Nutritional status was classified according to the cut-off points for adults and older adults proposed by the World Health Organization[16] and Organização Pan-Americana de Saúde[17], respectively. The triceps, biceps, suprailiac, and subscapular skinfold thicknesses were measured in mm by the precision caliper Lange® (Creative Health Products, Ann Arbor, Michigan, United States). Arm circumference and skinfold thicknesses were measured as recommended by Heyward & Stolarczyck[18]. The percentage of body fat was given by adding the four skinfold thicknesses (triceps skinfold thickness, biceps skinfold thickness, suprailiac skinfold thickness, and subscapular skinfold thickness) as proposed by Durnin & Womersley[19], and by Bioelectrical Impedance Analysis (BIA), using the device Biodynamics® (Biodynamics Corporation, Shoreline, Washington, United States) and the patient's weight and height measured earlier. The percentage-of-body-fat values were compared with the reference values established by Lohman[20] for males.

The quantitative variables were expressed as mean and standard deviation, and the categorical (qualitative) variables were expressed as absolute frequency and percentage using descriptive statistics. The Kolmogorov-Smirnov test investigated whether the variables had normal distribution. The Chi-square test compared the groups. The Fisher's test was used on frequencies below five. Correlations between nonparametric variables were determined by Spearman's correlation. The Mann-Whitney test compared the nonparametric variables and the SF-36 domain scores with the categorical variables. The significance level was set at 5% ($p<0.05$). All analyses were performed by the Statistical Package for the Social Science (SPSS Inc., Chicago, Illinois, United States) for Windows, version 18.0 and Microsoft® Excel 2007 (Microsoft Corporation, Redmond, Washington, United States).

RESULTS

Forty-three individuals were included in the case group (patients) and another 43 in the control group (companions). All participants were male, and the mean ages of both groups were similar. Education level categories between the groups were also compared. Education level, number of household members, mean monthly income, and *per capita* monthly income did not differ between the groups (Table 1).

Table 2 shows patients' clinical characteristics, smoking status, alcohol intake data, and nutritional

Table 1. General characteristics of the study groups. São Paulo (SP), Brazil, 2012-2013.

Characteristics	Case group				Cotrol group				p-value
	M	SD	AV	%	M	SD	AV	%	
Gender									
Male	43.0	100.0			43.0	100.0			NS*
Age	52.9	9.40			48.9	10.6			NS*
Education level									
Elementary school			31.0	72.1			22.0	51.2	
High school			8.0	18.6			15.0	34.9	
Higher education			4.0	9.3			6.0	14.0	NS**
Nº people in household	3.2	1.80			3.5	1.5			NS*
Monthly income (R$)	2022.4	1503.0			2265.6	1741.9			NS*
Monthly income *per capita* (R$)	697.8	473.0			751.4	760.8			NS*

Note: *Mann-Whitney test; **Chi-square test.
NS: Not Significant; M: Mean; SD: Standard Desviation; AV: Absolut Values.

Table 2. Clinical and nutritional characterization of patients with alcoholic chronic pancreatitis. *São Paulo* (SP), Brazil, 2012-2013.

Characteristcs	M	SD	Yes		No	
			n	%	n	%
Alcoholic chronic pancreatitis duration (years)	8.20	7.55				
Presence of diabetes *Mellitus*/n (%)			22	51.2	21	48.8
Diabetes *Mellitus* duration (years)	4.27	5.99				
Associated diseases/n (%)			37	86.0	6	14.0
Use of enzymes/n (%)			34	79.1	9	20.9
Enzyme use duration (m)	43.98	47.46				
Pain/n (%)			11	25.6	32	74.4
Pancreatic surgery/n (%)			12	27.9	31	72.1
Time since surgery (years)	3.56	7.53				
Smoker/n (%)			27	62.8	16	37.2
Quit smoking (years ago)	9.00	20.93				
Smoking duration (years)	27.72	14.59				
Alcohol use/n (%)			10	23.3	33	76.7
Alcoholism duration (years)	23.23	10.87				
Grams of ethanol/day	247.32	291.54				
Body mass index	22.38	3.89				
Triceps skinfold thickness	9.20	5.35				
Biceps skinfold thickness	4.74	2.88				
Subscapular skinfold thickness	12.17	6.86				
Suprailiac skinfold thickness	12.10	7.95				
% of body fat Σ 4 skinfold thickness	19.80	7.07				
% of body fat BIA	21.77	7.22				

Note: M: Mean; SD: Standard Deviation; BIA: Bioelectrical Impedance Analysis.

assessment data. The mean alcoholic chronic pancreatitis duration was 8.20 (±7.55) years, and 22 (51.2%) patients were also diabetic. Thirty-four (79.1%) patients used enzymes. Only 11 (25.6%) patients still experienced pain. Twelve (27.9%) patients had had pancreatic surgery. Twenty-seven (62.8%) patients were smokers and 7 (16.27%) had never smoked. Ten (23.3%) patients were still consuming alcohol. Mean alcoholism duration was 23.23 (±10.87) years and mean intake, 247.32 (±291.54) grams of ethanol *per* day. Mean BMI was 22.38 (±3.89) kg/m^2, the percentage of body fat obtained by adding the four skinfold thicknesses was 19.80% (±7.07%), and that determined by BIA was 21.77% (±7.22%).

The case and control groups differed significantly in all quality of life domains (Table 3). Cases had smaller means, that is, patients with alcoholic chronic pancreatitis had low quality of life compared with healthy patients.

Comparison of the eight quality of life (SF-36) domains of diabetic and non-diabetic cases showed that only functional capacity differed (p=0.022) (Table 4).

Correlation of sociodemographic, clinical, and nutritional factors with the eight quality of life domains (Table 5) showed that the functional capacity domain was inversely correlated with smoking duration (p<0.05). On the other hand, the functional capacity domain correlated positively with biceps and suprailiac skinfold thicknesses (p<0.05).

The bodily pain domain was inversely correlated with the amount of ethanol consumed

Table 3. Scores for the eight quality of life domains of Short Form-36 for cases and controls. *São Paulo* (SP), Brazil, 2012-2013.

Domains	Case group		Control group		p-value[*]
	M	SD	M	SD	
Functional capacity	68.49	23.79	86.98	27.73	0.000
Role physical	50.58	40.63	81.40	33.67	0.000
Bodily pain	52.56	25.38	76.63	21.74	0.000
General health	41.44	15.34	62.72	13.70	0.000
Vitality	54.30	15.37	70.35	12.36	0.000
Social functioning	66.57	25.25	86.34	17.21	0.000
Role emotional	51.16	42.63	82.17	31.99	0.000
Mental health	55.63	15.56	72.28	12.26	0.000

Note: [*]Mann-Whitney test.
M: Mean; SD: Standard Deviation.

Table 4. Scores for the eight quality of life domains of Short Form-36 for diabetics and nondiabetics. *São Paulo* (SP), Brazil, 2012-2013.

Domains	Diabetics n=22		Non-diabetics n=21		p-value[*]
	M	SD	M	SD	
Functional capacity	61.19	22.35	75.45	23.49	0.022
Role physical	42.24	42.29	55.68	39.28	NS
Bodily pain	52.52	22.38	52.59	28.48	NS
General health	38.95	18.43	43.82	11.62	NS
Vitality	54.05	18.07	54.55	12.71	NS
Social functioning	70.24	21.82	63.07	28.21	NS
Role emotional	47.62	44.18	54.54	41.84	NS
Mental health	57.33	14.38	54.00	16.77	NS

Note: [*]Teste Mann-Whitney.
M: Mean; SD: Standard Deviation; NS: Not Significant.

Table 5. Correlation between the quality of life domains and sociodemographic, clinical, and nutritional factors. *São Paulo* (SP), Brazil, 2012-2013.

Evaluated factors	FC*	RP*	BP*	GH*	V*	SF*	RE*	MH*
Age (y)	0.447	0.304	0.360	0.771	0.203	0.561	0.325	<0.01 (+)
Per capita income	0.217	0.086	0.172	0.925	0.562	0.602	0.288	0.147
Alcoholic chronic pancreatitis duration (y)	0.512	0.198	0.312	0.511	0.473	0.084	0.461	0.711
Diabetes *Mellitus* duration (y)	0.065	0.752	0.569	0.469	0.637	0.610	0.591	0.753
Enzyme use duration (m)	0.503	0.276	0.718	0.725	0.974	0.460	0.589	0.935
Time since surgery (y)	0.775	0.231	0.258	0.151	0.131	0.546	<0.05 (-)	<0.05 (-)
Smoking duration (y)	<0.05 (-)	0.557	0.154	0.184	0.164	0.115	0.502	0.873
Grams of ethanol/day	0.690	0.258	<0.01 (-)	0.091	0.841	0.699	0.544	<0.05 (-)
Alcoholism duration (y)	0.546	0.595	0.484	0.117	0.356	0.202	0.973	0.551
Body mass index (kg/m²)	0.137	0.874	0.147	0.446	0.354	0.571	0.709	0.573
Percentages of body fat (4 SS)	0.212	0.193	<0.05 (+)	0.750	0.101	0.650	0.546	0.230
Percentages of body fat (BIA)	0.443	0.248	<0.05 (+)	0.180	0.134	0.592	0.925	0.178
Triceps skinfold thickness	0.249	0.526	<0.05 (+)	0.716	0.089	0.761	0.883	0.621
Biceps skinfold thickness	<0.05 (+)	0.196	<0.01 (+)	0.741	0.063	0.618	0.698	0.726
Subscapular skinfold thickness	0.142	0.130	<0.05 (+)	0.301	0.136	0.434	0.812	0.348
Suprailiac skinfold thickness	<0.05 (+)	0.233	<0.01 (+)	0.917	0.143	0.799	0.652	0.427

Note: The results are Spearman's correlations (*p*-value); (+) Significant positive correlation; (-) Significant negative correlation.

FC: Functional Capacity; RP: Role Physical; BP: Bodily Pain; GH: General Health; V: Vitality; SF: Social Functioning; RE: Role Emotional; MH: Mental Health; BIA: Bioimpedance Electrical Analysis. Y: Years; 4 SS: Sum 4 folds; M: Months.

per day (*p*<0.01) and positively correlated with the percentage of body fat given by adding the four skinfold thicknesses (*p*<0.01) and by BIA (*p*<0.05). Likewise, the skinfold thicknesses triceps skinfold thickness (*p*<0.05), biceps skinfold thickness (*p*<0.01), suprailiac skinfold thickness (*p*<0.01), and subscapular skinfold thickness (*p*<0.05) were also positively correlated with the bodily pain domain. The role emotional domain was inversely correlated with time since surgery in years (*p*<0.05). The mental health domain was positively correlated with age (*p*<0.01). However, the mental health domain correlated inversely with time since surgery in years and ethanol intake *per* day in grams (*p*<0.05).

DISCUSSION

The mean age, monthly income, *per capita* monthly income, education level, and number of household members of the two groups were similar. Therefore, the low quality of life of patients with alcoholic chronic pancreatitis can be attributed to the disease and their general situation because many of the patients' social, economic, and educational aspects were similar to those of controls.

The patients had mean disease duration of eight years, defined as the time since diagnosis, not necessarily the time since disease onset. The patients' mean age was 52.98 (±9.40) years; subtracting mean disease duration from mean age confirms data published by Lowenfels *et al.*[21], who found that the mean age of their patients at diagnosis of chronic pancreatitis was 44.6 years. Yet Mullhaupt *et al.*[22] found a mean age at alcoholic chronic pancreatitis onset of 36 years in a sample of 265 patients.

A little over half the study patients were diabetic with mean diabetes duration of 4.27 (±5.99) years. These findings disagree with Quilliot *et al.*[23], who found that most patients were diabetics with longer disease duration. Probably these different percentages reflect the different outpatient care durations. Diabetic patients had significantly more time since chronic pancreatitis diagnosis than nondiabetic patients.

Most study patients had a history of smoking, corroborating Yadav *et al.*[24]. About 20%

of the study patients had active alcoholism despite constant outpatient care professionals advising against it. In the West the most common cause of chronic pancreatitis is alcohol intake, affecting 70 to 80% of the patients[25,26].

All quality of life domains of the patients with alcoholic chronic pancreatitis had significantly lower means than those of controls, indicating considerable impact. Studies have shown that quality of life can be affected by pain and nutritional, metabolic, and gastrointestinal factors, especially in patients with advanced disease[11,27].

Of the eight Short Form-36 domains, only functional capacity differed between diabetic and non-diabetic patients, indicating that diabetic patients with chronic pancreatitis have even lower quality of life, impairing their ability to carry out activities of daily living, lift objects, or practice sports. However, this difference may stem from disease duration since diabetic patients have longer chronic pancreatitis duration (p=0.047).

How patients perceive their current health in comparison with their health a year ago is important. Chronic pancreatitis patients' health perception was divided mainly between "a bit better" and "almost the same", unlike the control group, where the answer "almost the same" prevailed. Similar results were reported by Pezzilli et al.[10] with chronic pancreatitis patients: 10.5% of the patients thought their health was "a bit better"; 52.0% thought "it was the same"; 21.1% thought "it was a bit worse"; and 7.6% thought "it was much worse than a year ago" (p.186). The study results may indicate that symptom relief (especially pain and diarrhea) promoted by multidisciplinary and pharmacological treatment improved perceived health in at least some patients.

The correlations between the quality of life domains and clinical and nutritional factors were significant. Smoking duration hurt functional capacity as worse quality of life was related to longer smoking duration. This is probably due to the fact that smoking is dose dependent and an alcohol-independent risk factor for chronic pancreatitis[24]. Triceps and suprailiac skinfold thicknesses were positively associated with the functional capacity domain because quality of life increased with skinfold thicknesses, indicating that appropriate nutritional status improves quality of life.

The domains role physical, general health, vitality, and social functioning did not correlate with any of the study variables.

The amount of ethanol a day in grams had a negative impact on the domains bodily pain and mental health, indicating that as alcohol intake increased, these quality of life domains worsened. This is probably related to the fact that alcoholic pancreatitis is directly related to the amount of alcohol consumed[28]. Lankish et al.[29] found that continuous alcohol intake accelerates the disease and is associated with diabetes and greater pain, steatorrhea, morbidity, and mortality.

The percentage of body fat given by the sum of the skinfold thicknesses or BIA correlated positively with the domain bodily pain. Thus, as percentage of body fat improves, bodily pain decreases.

Time since surgery in years had a negative impact on the domains role emotional and mental health, indicating that as time since surgery increases, quality of life in these two domains decreases. It is possible that patients with higher time since surgery had been ill longer, probably experiencing more severe and symptomatic forms of the disease that required surgery because of abdominal pain. The intensity and severity of the pain felt by patients with chronic pancreatitis vary, sometimes leading to unemployment due to frequent hospitalizations, excessive use of medications, and multiple surgeries[30]. Pain treatment in chronic pancreatitis is the main therapeutic conduct to improve quality of life[10].

The patients' age was important for the mental health domain, indicating that mental health increased with age. Quality of life in younger patients is more compromised than in

older patients mainly because of recurrent bouts of abdominal pain[10,11].

Pezzilli *et al.*[10] and Wehler *et al.*[11] reported that low BMI was associated with worse quality of life. In the present study, BMI did not correlate with any of the eight quality of life domains, maybe because most study patients had appropriate BMI. On the other hand, if only one nutritional assessment tool is used, BMI alone may not be enough to detect malnutrition in this population. This hypothesis is supported by the fact that all other nutritional status indicators (skinfold thicknesses and body composition given by percentage of fat) were positively related to quality of life. Therefore, it is admissible that improvements in nutritional status increase quality of life, and the association of different nutritional assessment methods is essential for accurate determination of these patients' nutritional status.

Finally, considering the study conditions, we can conclude that the eight quality of life domains of the SF-36 are significantly lower in patients with alcoholic chronic pancreatitis than in controls. However, only the domain functional capacity differed between diabetic and nondiabetic patients. Smoking duration, alcohol intake in grams, and time since surgery were negatively correlated with the quality of life of patients with alcoholic chronic pancreatitis. Nonetheless, higher age, skinfold thicknesses, and percentage of body fat were positively correlated with quality of life.

C O N T R I B U T O R S

All authors participated in all phases of the research article.

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