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QUALITY OF LIFE AND MULTIMORBIDITY OF ELDERLY OUTPATIENTS

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INTRODUCTION: Substantial medical research has established an inverse relationship between quality of life and illness. However, there exists minimal evidence for such a connection in the context of stable and controlled diseases.
OBJECTIVE: We wished to correlate multimorbidity with quality of life for elderly patients who suffer from stable chronic diseases.
METHODS: We used a tool to evaluate quality of life, namely World Health Organization quality of life-BRIEF, together with a scale of multimorbidity known as the Cumulative Illness Rating Scale - Geriatric Version. Furthermore, the quality of life data were correlated with scores recorded on the Cumulative Illness Rating Scale - Geriatric Version, the number of drugs used, and individual perceptions of health and age.
RESULTS: We studied 104 elderly patients who suffered from chronic diseases. The patients had exhibited neither acute events nor secondary complications, their cognition was intact, and they were functionally independent. The Cumulative Illness Rating Scale - Geriatric Version showed an inverse correlation with the physical domain (p= 0.008) and a tendency toward an inverse correlation with the psychological domain (p= 0.052). Self-perception of health showed a high correlation with the physical domain (p= 0.000), psychological domain (p= 0.000) and environmental domain (p= 0.000). The number of drugs used correlated only with the physical domain (p= 0.004). Age and social domain showed a tendency toward a positive correlation (p= 0.054).
DISCUSSION: We uncovered an inverse relationship between quality of life and multimorbidity in a group of patients who suffered from stable chronic diseases, with no functional limitations, pain or complications. Our data suggest that a patient's knowledge that they have a certain clinical condition changes their subjective assessment of quality of life in the related domain.
CONCLUSION: The perceived quality of life of the sample was affected by multimorbidity in the physical domain, with a tendency toward commensurate effects in the psychological domain.

KEYWORDS: Stable chronic diseases; Elderly; Aged; Multimorbidity; Quality of life.

INTRODUCTION

The increase in life expectancy associated with a reduction of birthrates has led to population aging both in developed countries and in developing nations. It is estimated that, in Brazil, there are approximately 10 million people over the age of 60, where this is expected to rise to 25 million in 2030.[1]

In association with population aging, an increase in the prevalence of chronic diseases has been observed. Such conditions are defined by the World Health Organization as "health problems, which require continuous treatment during a period of time from years to decades." Chronic conditions account for about 60% of all diseases worldwide; furthermore, scientists project that this figure will increase to 80% by 2020.[2]

In medical literature, the terms "comorbidity" and "multimorbidity" are frequently used synonymously to describe situations in which a multiplicity of diseases occur in the same individual. Nonetheless, certain authors have

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distinguished between the two terms. Feinstein, quoted by V. de Groot,[3] defined the word comorbidity as any distinct additional entity that exists or may occur during the clinical course of a patient with an index disease under study. The distinction of the term "multimorbidity" was made by Van den Akker et al.[4] who considered it as a concurrent occurrence of two or more chronic diseases in the same person. In studies related to multimorbidity, no index disease is used; on the other hand, in studies related to comorbidities, such an entity is mandatory. In this study, the denomination given by Van den Akker et al. will be used.

In 2005, Fortin et al.[5] reported the prevalence of multimorbidity in Quebec, Canada, in primary-care patients. Of the 980 people assessed, 9 out of 10 had at least one chronic disease and approximately 50% had five or more. This figure was 68% for females in the cohort who were 18-44 years of age, 95% for those 45-64 years of age and 99% for those 65 years of age and over. In the case of the male participants, the corresponding metric was 72% for those aged 18-44, 89% for the 45-64 age group and 97% for those over 65.

In 2002, Wolff [6] analyzed data from 1,217,103 people aged 65 years and older, all of whom were Medicare patients in the United States. Approximately 82% of the subjects had one or more chronic diseases. The prevalence increased with advancing age: 74% for those between 65 and 69 years of age, and 88% for those over 85. Considering the number of chronic diseases per person, 65% of all participants had two or more, 43% had three or more and 24% had four or more.

The coexistence of diseases is a phenomenon of interest in clinical research, especially in the field of primary healthcare. Several tools have been developed and improved to quantify such incidences and establish the impact on people's quality of life (QOL).

According to the World Health Organization (WHO), QOL is "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns."[7] Therefore, it involves the perception that each subject has about one's own life, ambitions and values in the context of the environment in which a person lives.

In a systematic review of the literature regarding primary-care patients, Fortin et al.[8] observed a correlation between QOL and multimorbidity in 7 articles when it was the main subject of study and in 23 papers when it was a secondary outcome. The results of these studies showed an inverse association between QOL and multimorbidity. It is important to note that a wide variety of instruments were used in these studies. Despite recognition of this association, questions still remain. Specifically, we do not know which factors are responsible for the negative impact of disease on QOL. We also have not discovered whether asymptomatic chronic diseases–with appropriate outpatient control and no impact on independence or functionality–similarly influence the subjective assessment of QOL.

The field is in need of new studies that address this topic, especially those that include detailed assessments of groups of patients.

The objective of our study was to correlate multimorbidity with quality of life in the case of elderly patients who have stable chronic diseases that are managed with appropriate outpatient primary care. Our secondary objectives were to correlate quality of life with age, self-perception of health and the number of drugs being taken by each patient.

MATERIALS AND METHODS

Our study, which was both transverse and quantitative, was performed from July to December of 2006, with the approval of our Institutional Ethics Committee. Patients from two outpatient clinics were invited to participate; both clinics had primary care facilities. Our exclusion criteria were: cognitive disorders, functional limitations, secondary complications and acute disease, including non-controlled pain or a symptom that was under investigation. Our final sample comprised asymptomatic subjects with stable chronic diseases – such criteria were as defined by the adjunct physician.

The WHOQOL-BRIEF questionnaire was used. This is a Brazilian survey that was validated by Fleck. [9] It comprises 26 questions across five domains: physical, psychological, social, relationships and environment. This tool, consistent with its original concept, is self-administered. In case of an inability to comprehend any question, assistance was available as follows: the researcher read such part of the survey slowly, using the same words in order to maintain exactly the same meaning. If the patient could not answer the question(s) because of illiteracy or difficulties in reading, the researcher read the entire questionnaire (administered application).

The collected data were evaluated using the statistical program SPSS, with syntax provided by the World Health Organization.

Subsequently, a self-evaluation of patient health was conducted. It consisted of a single question: "How would you classify your health: excellent, good, acceptable, bad or very bad?" The score for "very bad" was 1 and for "excellent" it was 5. The patient was invited to select the most appropriate score.

Following this evaluation, a review of medical records was performed, including data collection on participant age, number of drugs being administered, and responses on the

CIRS-G scale. The latter was originally developed by Linn et al. in 1968[10] and was termed CIRS (Cumulative Illness Rating Scale). It was subsequently modified by Miller et al. in 1991[11] to adapt and validate a version for the elderly, named Cumulative Illness Rating Scale - Geriatric Version (CIRS-G). This tool has not been validated in its Portuguese translation.

The CIRS-G covers 13 independent organ systems (cardiac, vascular, respiratory, upper gastrointestinal, lower gastrointestinal, hepatic, renal, genitourinary, musculoskeletal/ skin, neurological, psychiatric, endocrine/ metabolic systems, and eyes/ears/nose/throat) each of which is scored from 0 to 4 according to severity. [10] The score is consistent with the following criteria: 0 for no disease; 1 (mild) when normal daily activities are not compromised, drug treatment is not necessary and prognosis is excellent; 2 (moderate) when treatment is necessary, but there are no complications, and prognosis is good; 3 (severe) when treatment is urgently required and the prognosis is bad; and 4 (extremely severe) when there is risk of death.

Scores generated by the WHOQOL-BRIEF across these 4 domains were correlated with scores obtained from the CIRS-G, including a self-evaluation of health, number of drugs, and age. Univariate analysis was performed using the statistics program Minitab 14.

RESULTS

We invited 134 patients to participate in our study. Among our study group, 21 declined, claiming that they had no time to answer the questionnaire or citing a lack of interest. We excluded 9 patients from the sample: 6 of them had non-controlled pain and 3 walked with a cane, both of which were conditions that were revealed only during or after the interview.

Consequently, 104 patients participated in our study. The average age was 73.8 years, and the cohort was comprised of 28% men and 72% women. Descriptive characteristics of the sample are listed in Table 1.

Only 3 patients answered the questionnaire without assistance. In a further 28 cases, assistance was provided for certain questions; the remainder had the entire questionnaire read out to them. This was not only because of illiteracy, but also because of difficulties understanding the text and interpreting the meaning of each question.

Because the survey was completed by people with stable chronic diseases, *i.e.*, with no symptoms, complications or lifestyle impairments, the highest score on the CIRS-G scale was 2 for every system. Averages and standard deviations are shown in Table 2.

CIRS-G was inversely correlated with the physical domain (p= 0.008). Self-perception of health was strongly correlated with the physical domain (p= 0.000), psychological domain (p= 0.000) and environmental domain (p= 0.000). The number of drugs used was correlated only with the physical domain (p= 0.004).

CIRS-G and the psychological domain tended towards an inverse correlation (p= 0.052). Age and social domain tended towards a positive correlation (p= 0.054).

The correlation between WHOQOL-BRIEF scores and CIRS-G results is shown in Figure 1. The correlation with self-perception of health is addressed in Figure 2.

Table 1 - Descriptive characteristics of the sample

VARIABLE	
Age	73.86 ± 7.22
Female	79 (76%)
Male	25 (24%)
Self-administered survey	3 (2.8%)
Required assistance with certain questions	28 (26.9%)
Required that the entire survey be read out	73 (70.2%)

Table 2 - Means and standard deviations of variables

VARIABLE	M ± SD
Cumulative Illness Rating Scale - Geriatric Version	4.88 ± 2.75
Number of drugs used	3.27 ± 2.23
Self-perception of health	3.86 ± 0.82
Physical domain	74.59 ± 14.63
Psychological domain	73.76 ± 13.62
Social domain	76.76 ± 14.99
Environmental domain	66.62 ± 13.52

DISCUSSION

In 2003,[8] Fortin published a systematic review of all studies that assessed subjective quality of life. Multiple scales were used, including the Short-Form-36 Health Survey (SF-36), Short-Form-20 Health Survey (SF-20), Nottingham Health Profile (HNP) and European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EOTC QLQ-C30). In a multimorbidity context, the chronic condition count was recorded using a pre-established list for each individual. Several factors were not considered, such as the severity of each disease, the type of involvement (only one organ or a multi-system disease), and the presence or absence of associated pain. Five out of seven studies did not take into consideration psychiatric diseases as a primary measure.[8]

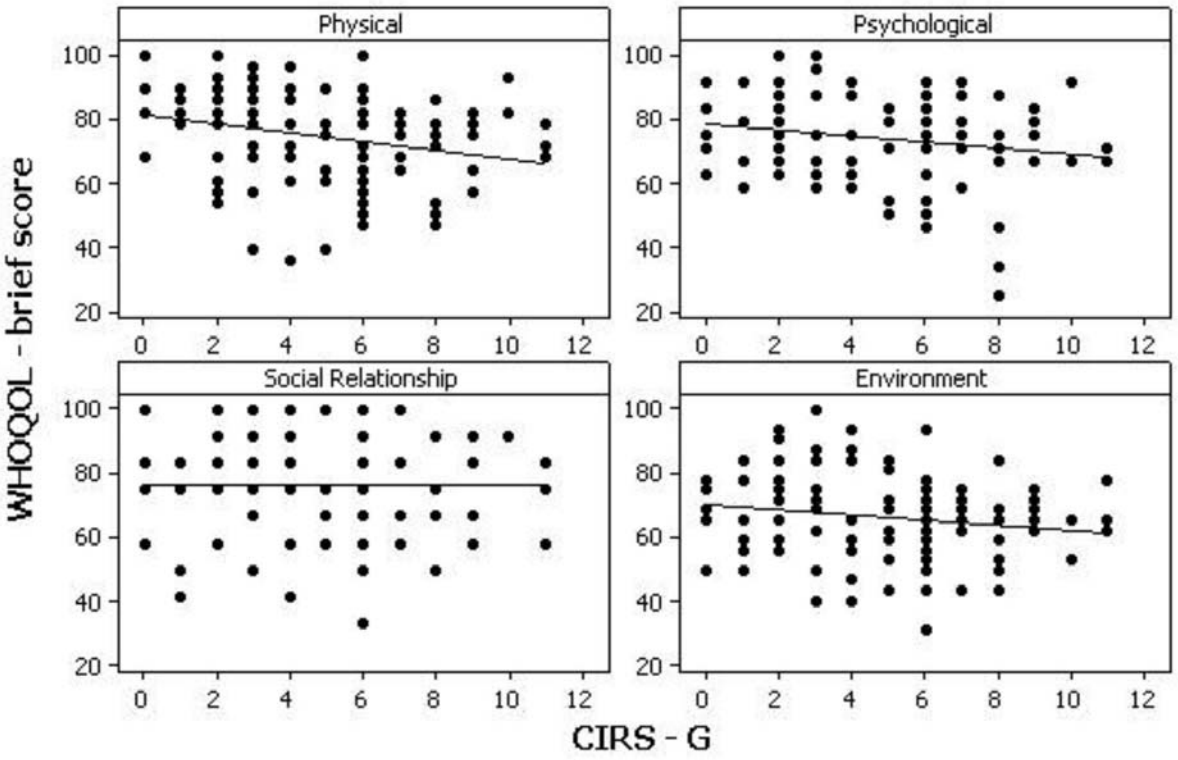

Figure 1 - Correlation between World Health Organization quality of life-BRIEF (WHOQOL-BRIEF) and Cumulative Illness Rating Scale - Geriatric Version (CIRS-G) for each domain

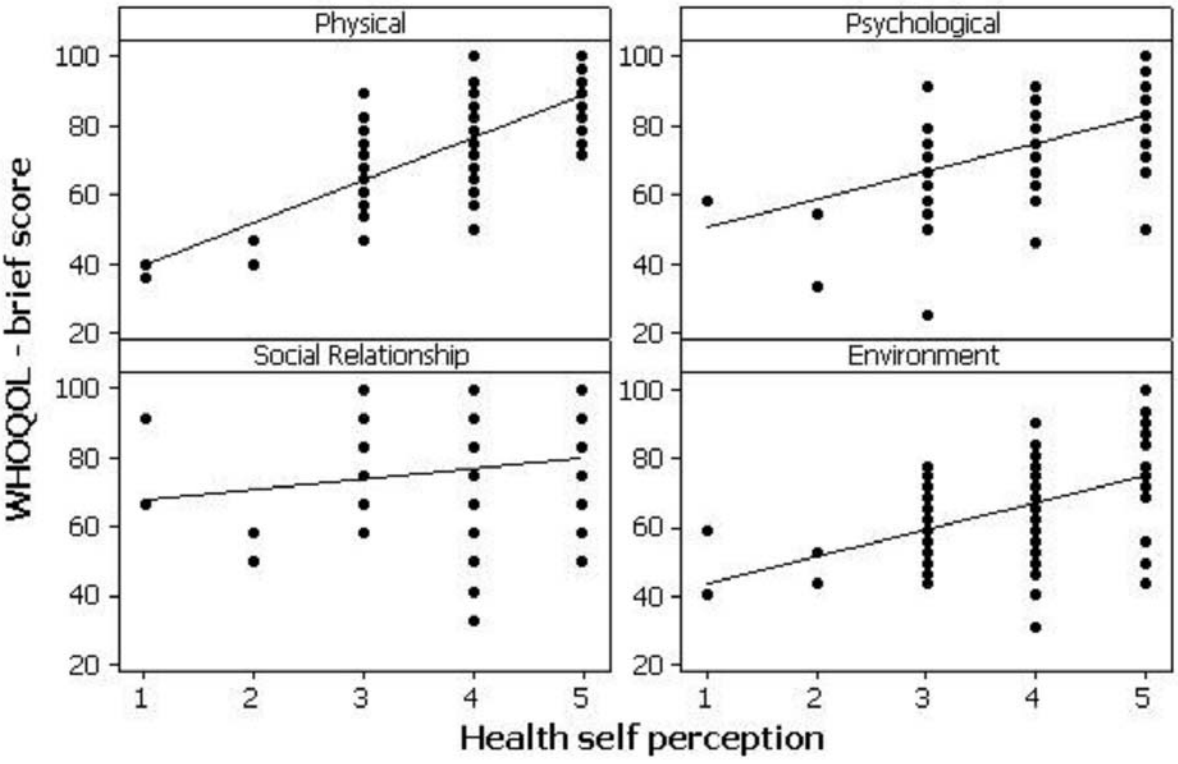

Figure 2 - Correlation between self-evaluation of health and World Health Organization quality of life-BRIEF (WHOQOL-BRIEF) score for each domain

Even with such heterogeneity, all studies to date have suggested the same conclusion: There exists an inverse relation between the number of medical conditions and quality of life. The physical domain was of great importance. These studies also suggested that psychological and social domains may be influenced in patients with four or more diagnoses.[8]

In our study, the CIRS-G scale was used together with a thorough review of patients' medical records. The first advantage of this tool was in terms of accuracy; the method was simple, easily accomplished, and recorded not only the number of diseases, but also their severity and overall nature.[10] The implementation did not require the patient to be present, and was therefore more reliable.[9]

When compared to other multimorbidity scales, the CIRS scale proved to be more appropriate in studies pertaining to primary care[12] because of its direct relevance to clinical practice, coupled with its overall validity and reliability.[3]

In our study, an inverse correlation between CIRS-G and the physical domain showed statistical significance. We also identified a tendency toward a correlation with the psychological domain. The number of drugs taken by each patient also negatively influenced patient quality of life in the physical domain. This outcome had previously been observed in other studies with patients in primary care. Those studies showed no correlation with the severity of the disease.[8] Since our study replicates this result with a group of patients who exhibit stable chronic diseases, together with no functional limitations, pain or other complications, we suggest that knowledge about one's clinical condition changes the subjective quality of life that these elderly patients perceive.

Another aspect assessed in our study was the influence of age on quality of life. There was no statistical correlation between any domains in the WHOQOL-BRIEF; nonetheless, we observed a tendency toward a positive correlation with the social domain. Such data contradict the idea that advancing age may be linked to feelings of social isolation. Such a relationship may exist only because the participants were unimpaired by disease.

Our study demonstrated that self-perception of health is an excellent quality of life indicator because it correlated positively with all domains, except for the social domain.

The primary limitations of this study were that many of the elderly patients had difficulty comprehending questions in the WHOQOL-BRIEF survey.

The low scores that we observed on the CIRS-G scale were expected because we did not include any patients with secondary complications. The severity of the diseases was recorded as score level 2 for each item, producing an average of 4.88. By contrast, the average score on the CIRS-G scale of any control outpatient is 8.[13] The use of instruments not validated in translation is not appropriate, even in the case of a scale comprised of check list items as the CIRS-G, because of language and cultural differences.

CONCLUSIONS

The quality of life of elderly patients who suffer from stable and controlled chronic diseases in the primary care setting can be affected by multimorbidity in the physical domain and probably also in the psychological domain. We found no influence of age on quality of life; however, self-perception of health proved to be a good indicator of quality of life.

REFERENCES

1. Fundação Instituto Brasileiro de Geografia e Estatística. IBGE. 2000 [accessed in 2006 May]. Available in: http://www.ibge.gov.br

2. World Health Organization, Innovative Care for Chronic Conditions: Building Blocks for Action. Available in: www.who.int/en [accessed in 2006 November]

3. De Groot V, Beckerman H, Lankhorst GJ, Bouter LM. How to Measure Comorbidity: a Critical Review of Available Methods. J Clin Epidemiol. 2003;56: 221-9.

4. Van Den Akker M, Buntinx F, Metsemakers JF, Roos S, Knottnerus JA. Multimorbidity on General Practice: Prevalence, Incidence, and Determinants of Co-occurring Chronic and Recurrent Disease. J Clin Epidemiol. 1998;51:367-75.

5. Fortin M, Bravo G, Hudon C, Vanasse A, Lapoint L. Prevalence of Multimorbidity Among Adults Seen in Family Practice. Ann Fam Med. 2005;3: 223-8.

6. Wolff JL, Starfield B, Anderson G. Prevalence, Expenditure, and Complications of Multiple Chronic Conditions in Elderly. Arch Intern Med. 2002;162:2269-76.

7. The World Health Organization Quality of Life Assessment (WHOQOL): Development and General Psychometric Properties. Soc Sci Med. 1998;46:1569-85.

8. Fortin M, Lapoint L, Hudon C, Vanasse A, Ntetu ATL, Maltais D. Multimorbidity and Quality of Life in Primary Care: a Systematic Review. Health Qual Life Outcomes. 2004;2:51.

9. Fleck MPA, Leal OF, Louzada F, Xavier M, Chachamovich E, Vieira G, et al. Aplicação da Versão em Português do Instrumento Abreviado de Avaliação de Qualidade de Vida "WHOQOL-BRIEF". Rev Saúde Pública. 2000; 34: 178-83.

10. Linn BS, Linn MW, Gurel LEE. Cumulative Illness Rating Scale. J Am Geriatr Soc. 1968; 16: 622-6.

11. Miller M, Paradis CF, Houck PR, Mazumdar S, Stack JA, Rifai AH, et al. Rating Chronic Medical Illness Burden in Geropsychiatric Practice and Research: Application of the Cumulative Illness Rating Scale. Psychiatry Research. 1992;41: 237-48.

12. Fortin M, Hudon C, Dubois MF, Almirall J, Lapointe L, Soubhi H. Comparative Assessment of Three Different Indices of Multimorbidity for Studies on Health Related Quality of Life. Health Qual Life Outcomes. 2005;3:74.

13. Fleck MPA, Lousada S, Xavier M, Chachamovich, Vieira G, Santos L, et al. Aplicação da versão em português do instrumento de avaliação de qualidade de vida da Organização Mundial da Saúde (WHOQOL-100). Rev Saúde Pública. 1999;33: 198-205.

14. Browne JP, O'Boyle CA, Mcgee HM, Joyce CR, MCDonald NJ, O'Malley K, et al. Individual Quality of Life in the Healthy Elderly. Qual Life Res. 1994;3:235-44.

15. Carr AJ, Higginson IJ. Are Quality of Life Measures Patient Centred? Br Med J. 2001;322:1357-60.

16. Charlson M, Pompei P, Ales KL, Mackenzie R. A New Method of Classifying Prognostic Comorbidity in Longitudinal Studies: Development and Validation. J Chronic Dis. 1987;40:373-83.

17. Hudon C, Fortin M, Vanasse A. Cumulative Illness Rating Scale Was a Reliable and Valid Index in a Family Practice Context. J Clin Epidemiol. 2005;58:603-8.

18. Fleck MPA, Chachamovich E, Trentini CM. Projeto WHOQOL-OLD: Métodos e Resultados de Grupos Focais no Brasil. Rev Saúde Pública. 2003;37:793-9.

19. Fortin M, Bravo G, Hudon C, Lapoint L, Almirall J. Relationship Between Multimorbidity and Health Related Quality of Life of Patients in Primary Care. Qual Life Res. 2006;15:83-91.

20. Gill T, Feinstein AR. A Critical Appraisal of the Quality of Life Measurements. JAMA. 1994;272:619-26.

21. HALL SF. A User's Guide to Selecting a Comorbidity Index for Clinical Research. J Clin Epidemiol. 2006;59:849-55.

22. Hoffman C, Rice D, Sung H. Persons With Chronic Conditions: Their Prevalence and Costs. JAMA. 1996;276:1473-9.

23. Lebrão ML, Duarte YAO. Saúde, Bem-estar e Envelhecimento: O Estudo SABE no Município de São Paulo. Rev Bras Epidemiol. 2005;8:127-41.

24. McClane KS. Screening Instruments for use in a Complete Geriatric Assessment. Clin Nurse Spec. 2006;20:201-7.

25. Parmelee PA, Thuras PD, Katz IR, Lawton MP. Validation of the Cumulative Illness Rating Scale in a Geriatric Residential Population. J Am Geriatr Soc. 1995; 43:130-7.

26. Pascoal SMP, Jacob Filho W, Litvoc J. Development of elderly quality of life index - EQOLI: Theoretical-Conceptual Framework, Chosen Methodology, and Relevant Items Generation. Clinics. 2007;62:279-88.

27. Rijken M, Van Kerkhof M, Dekker J, Schellevis FG. Comorbidity of Chronic Disease. Effects of disease pairs on physical and mental functioning. Qual Life Res. 2005;14:45-55.

28. Sprangers MAG, DE Regt EB, Andries F, VAN Agt HM, Bijl RV, DE Boer JB, et al. Which Chronic Conditions Are Associated With Better or Poorer Quality of Life? J Clin Epidemiol. 2000;53:895-907.

29. Trabucci M. How to Measure Comorbidity in Elderly Person? J Clin Epidemiol. 2004;57:321-2.

30. Wensing M, Vingerhoets E, Grol R. Functional Status, Health Problems, Age and Comorbidity in primary care patients. Qual Life Res. 2001;10:141-8.

31. Xavier FMF, Ferraz MPT, Marc N, Escosteguy NU, Moriguchi EH. Elderly People's Definition of Quality of Life. Rev Bras Psiquiatr. 2003;25:35-9.

32. Xuan J, Kirchdoerfer LJ, Boyer JG, Norwood GJ. Effects of Comorbidity on Health Related Quality of Life Scores: An Analysis of Clinical Trial Data. Clin Ter. 1999;21:383-403.