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Quality of life in adults and elderly patients with rheumatoid arthritis

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ABSTRACT

Objective: To analyze and compare quality of life (QoL) in adults and elderly patients with rheumatoid arthritis (RA).
Methods: This was a cross-sectional quantitative study. The tools include the Medical Outcomes Study Short Form-36 (SF-36), the Disease Activity Score 28 (DAS-28), the Assessment Health Questionnaire (HAQ), the Beck Depression Inventory (BDI) and the 6-Minute Walk Test (6MWT). Data analysis was done by descriptive statistics, Student's *t* test and linear regression test, with significance level of $p < 0.05$.
Results: The sample consisted of 99 patients diagnosed with RA, divided into adults and elderly. Those considered adults were 18-59 years-old and those with 60 years or older where considered elderly. In SF-36, the groups showed the pain domain as the most compromised and the emotional aspects domain as the less compromised. Both showed moderate level of disease activity and mild disability. Applying the *t* test, it was found that there was no significant difference between groups with respect to QoL, functional ability, depression and disease activity. The difference was significant in the 6MWT, in which the elderly achieved an average of 330.8 m, and the adults, 412.2 m ($p=0.000$). In linear regression, a significant correlation ($r=-0.31$) between the 6MWT and increasing age was noted.
Conclusion: QoL and functional capacity in RA were affected in adults and the elderly. However, the results showed no significant difference between groups, with the exception of the 6MWT.

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Qualidade de vida de pacientes adultos e idosos com artrite reumatoide

Palavras-chave:
Qualidade de vida
Artrite reumatoide
Idoso

RESUMO

Objetivo: Analisar e comparar a qualidade de vida (QV) de pacientes adultos e idosos com artrite reumatoide (AR).
Métodos: Trata-se de um estudo transversal, quantitativo. Os instrumentos aplicados incluem o *Medical Outcomes Study-36 Short Form* (SF-36), o *Disease Activity Score 28* (DAS-28), o *Health Assestment Questionnaire* (HAQ), o inventário de depressão de Beck e o Teste de Caminhada de 6 Minutos (TC6). A análise dos dados foi feita por estatística descritiva, teste *t de student* e teste de regressão linear, sendo adotado nível de significância de p<0,05.
Resultados: A amostra foi constituída por 99 pacientes com diagnóstico de AR, divididos em adultos e idosos. Foram considerados adultos aqueles de 18 a 59 anos, e idosos aqueles com 60 anos ou mais. No SF-36 os grupos apresentaram o domínio dor como o mais comprometido e o domínio aspectos emocionais como menos comprometido. Ambos apresentaram nível moderado de atividade da doença e deficiência leve. Aplicando-se o teste t, constatou-se que não há diferença significativa entre os grupos no que diz respeito à QV, capacidade funcional, depressão e atividade da doença. A diferença foi significativa no TC6, no qual os idosos obtiveram uma média de 330,8 m, e os adultos 412,2m, com um p=0,000. Na regressão linear houve correlação significativa (r=-0,31) entre a distância percorrida no TC6 e o aumento da idade.
Conclusão: A QV e a capacidade funcional na AR mostrou-se afetada nos adultos e nos idosos; porém, os resultados mostraram que não há diferença entre os grupos com exceção do TC6.

Introduction

In recent years, Brazil and the world are undergoing changes in the population pyramid with the increasing number of elderly people and consequent prevalence of chronic degenerative diseases, including rheumatoid arthritis.[1-3]

Rheumatoid arthritis (RA) is a chronic inflammatory, autoimmune, systemic, progressive disease with unknown aetiology that causes progressive damage to the musculoskeletal system, involving small and large joints and leading to pain, deformity and even an irreversible bone and cartilage destruction.[4-6]

RA attacks approximately 0.5% to 1% of the world population, with predominance of 2-3 times more in females. It affects all age groups, but is more prevalent among 40-60-year people.[4,5] In Brazil, a prevalence of up to 1% was found in the adult population; it is estimated that 1.3 million of people are affected.[4]

In addition to problems related to pain and inflammation that arise from the disease, patients with RA are also affected by psychological problems such as anxiety and depression. Studies show that the development of RA is closely related to increases in anxiety and depression, with prevalence of 13%-47%, and these disorders are 3 times more prevalent in patients with RA.[7,8]

Patients with RA exhibit significant functional impairment, with a consequent reduction in quality of life (QoL).[3-5] Studies show that patients with RA have a lower QoL, when compared to those without the disease. Apparently, QoL is affected in the physical and mental components, as well as in the functional capacity. These studies also relate worse QoL with those patients with very active disease, a more intense pain and functional disability.[9-16]

Quality of life is a multidimensional concept that incorporates all aspects of human life, including physical, functional, emotional, social and spiritual dimensions.[17] It relates the self-perception of the individual expectations, standards and concerns within the context of the culture and value systems in which these people live.[18]

Knowing that RA can lead to profound changes in people's health and autonomy, especially in a growing and vulnerable group as the elderly, the assessment of QoL in this population deserves to be considered. Thus, this study aims to analyze and compare the QoL of adults and elderly patients with RA followed-up at an outpatient rheumatology service in a teaching hospital, in order to identify the influence of age on the QoL of patients with RA.

Materials and methods

A cross-sectional quantitative study on a sample of patients with RA at an outpatient specialized service of a university hospital in Marília, São Paulo, was performed.

In the study, we included only patients of both genders, users of Brazilian Unified Health System [Sistema Único de Saúde (SUS)], and with enough health condition to take part

in the study, including cognitive and physical abilities. Patients with some type of comprehension deficit that would limit the interview – for instance, those with hearing or visual disabilities and limited mobility (i.e., wheelchairs users) – were excluded.

The study was approved by the Ethics Committee in Research of the Faculty of Medicine of Marília (Protocol number 477/12).

After the informed consent, a questionnaire concerning sociodemographic aspects of patients and clinical aspects of the disease. Next, the questionnaires of QoL evaluation, functional capacity, disease activity and depression were applied.

To assess QoL, the generic instrument SF-36 was used. To assess functional capacity the HAQ, a specific questionnaire for patients with rheumatoid arthritis, was applied. The 6MWT was used to assess the physical fitness of the patients. Other instruments used were: the DAS-28, which assesses disease activity, and the BDI, which shows the presence of depressive symptoms.

As to the analysis of data, to detect differences between the means of the two study groups (adults and elderly), we used the Student's *t* test. The scores with p-value <0.05 were tested to assess whether there is a linear relationship with increasing age, through linear regression. The analyses were performed with the software SPSS v20. A significance level of p <0.05 was considered.

Results

In this study, 99 (61 adults and 38 elderly) patients with a diagnosis of RA according to the American College of Rheumatology (ACR) criteria were studied.[4] We considered as elderly subjects aged 60 years or more, according to the WHO classification of elderly people for developing countries, and as adults those between 18 and 59 years.

In the description of the sociodemographic characteristics listed in Table 1, it appears that in both groups there is a predominance of white race, female and married individuals. As for the level of education, most adults completed elementary school, and many elderly people have never studied.

The results related to age, disease duration and comorbidities of the two groups are shown in Table 2. The mean age for the adult group was 49 years, with a standard deviation (SD) of 8.44; for the elderly group, the mean age was 67,5 years (SD=5.51). The mean duration of disease for the adult group was 10.9 years (SD=7.7); as for the elderly group, was 15.8 years (SD=10.4).

As for the number of comorbidities, the elderly had an average of two comorbidities, and most of them (60%) had hypertension; as for the adult group, its participants have an average of one comorbidity, also with prevalence of hypertension, totalling 45%.

Regarding disease activity measured by DAS-28, both groups showed an average consistent to moderate activity disease. With the Student's *t* test, it was found that the difference between groups was not significant (p-value=0.530).

Regarding the assessment of QoL by SF -36 questionnaire, the scores obtained in eight domains for adults ranged from 50.5 to 79.2, and the pain domain was the most affected in these patients; and the emotional aspects domain was the least compromised. In the elderly, the scores ranged from 54.9 to 78.1, and here again the pain domain was the most compromised, and the emotional aspects domain was the least compromised.

It was verified that the elderly had worse averages *versus* adults only in the following domains: physical functioning, social function and emotional aspects. In other domains of the SF -36 questionnaire (as pain, physical appearance, general health, vitality and mental aspects), a better outcome for the elderly was found. Comparing the averages of the

Table 1 – Sociodemographic characteristics (%)

	Adults	Elderly
Race		
Caucasian	62.3	57.9
Brown	24.6	26.3
Black	13.1	15.8
Marital State		
Married	55.7	63.2
Single	21.3	15.8
Divorced	9.8	10.5
Widower	8.2	10.5
In cohabitation	4.9	0
Gender		
Female	90.2	86.8
Male	9.8	13.2
Schooling		
Illiterate	11.5	44.7
Elementary	26.2	28.9
Fundamental	31.1	23.7
High school	26.3	2.6
College	4.9	0

Table 2 – Age, disease duration, and number of comorbidities

		Minimum	Mean	Maximum	SD
Age	Adults	23	49.1	59	8.44
	Elderly	60	67.5	88	5.51
Disease duration (years)	Adults	2	10.9	31	7.7
	Elderly	4	15.8	40	10.4
Number of Comorbidities	Adults		1		
	Elderly		2		

groups using the Student's *t* test in order to obtain a more reliable evaluation, we found that there was no statistical significance in all domains of the SF-36, i.e., no difference in QoL between adult and elderly subjects with RA. Means, SDs, minimums and maximums, and p-values for the groups are represented in Table 3.

On BDI, elderly subjects presented average scores consistent with mild depression; as for adults, absence of depression or minimal depressive symptoms were found. In the Student's *t* test, a significant difference between the groups was not perceived (p=0.511), i.e., the difference between adults and the elderly with respect to depression was not significant.

Considering the average of HAQ, an instrument that measures functional ability in relation to the activities of daily life, the results showed that both groups had mild disability. In the Student's *t* test, no significant difference between adult and elderly groups (p = 0.429) was found.

In 6MWT, the elderly scored an average of 330.8 meters, while adults achieved an average of 412.2 m, given that the reference value for healthy adults is 400-700 meters.[19,20] Applying the Student's *t* test, we obtained a significant difference between adults and the elderly, where p=0.000.

Table 3 shows the averages, minimums, maximums, standard deviations and p-values for all the questionnaires above mentioned.

For the 6MWT, we applied the linear regression model, and a significant correlation, r = -0.31 (p = 0.001), was found. Thus, we can consider that the older the subject, the shorter the distance on the 6MWT (Fig. 1).

Discussion

This study showed a female predominance in both groups, which was expected due to the fact that RA preferentially affect women at a ratio of 3:1,[4] that was also demonstrated in other studies involving the subject, which also showed a predominance of women in their samples.[10,21-23] The prevalence of women in the elderly group may also be explained by the remarkable feminization of the ageing process.[24]

Regarding the duration of the disease, our sample had a mean of 10.9 years for adults and 15.8 years for the elderly, which draws attention to a population possibly with irreversible joint damage. Similar studies analyzed samples with a mean duration of illness similar to that found in this study, which allows us to formulate reliable comparisons.[13,22,25,26]

The result of the DAS-28, an instrument that measures the activity of the disease, showed that the mean of our groups corresponded to a moderate activity; this can be explained by the fact that the patients surveyed had been already under medical care at an outpatient rheumatology service.

Most of the studies that examine the assessment of RA activity also use samples with moderate disease.[13,14,22,27] There was no significant difference between the results of DAS-28 between adults and the elderly.

With regard to QoL, both groups had worse scores in the pain domain, with 50.5 for adults and 54.9 for the elderly.

In general, the adults showed worse averages in the domains of pain (50.5), general health (56.9), vitality (57.4) and physical aspects (57.5), and the best averages in the domains

Table 3 – Scores of questionnaires: DAS-28, SF-36, HAQ, BECK and of 6MWT

		Mean	SD	Minimum	Maximum	P-value
DAS-28	Adults	3.5	1.4	1.7	7.5	0.530
	Elderly	3.7	1.2	2.3	6.6	
SF-36						
CF	Adults	61.0	25.2	5	100	0.729
	Elderly	59.1	28.2	10	100	
Pain	Adults	50.5	25.2	10	100	0.413
	Elderly	54.9	26.1	0	100	
PA	Adults	57.5	45.6	0	100	0.852
	Elderly	59.2	44	0	100	
GH	Adults	56.9	24.3	0	100	0.618
	Elderly	59.3	23.6	20	100	
VIT	Adults	57.4	25.3	5	100	0.454
	Elderly	61.2	23.1	5	95	
SA	Adults	76.2	30	25	100	0.882
	Elderly	75.3	28.8	12.5	100	
EA	Adults	79.2	40.5	0	100	0.888
	Elderly	78.1	39.5	0	100	
MH	Adults	62.5	23.2	12	100	0.811
	Elderly	63.5	19.6	28	96	
Beck	Adults	8.7	8.3	0	35	0.511
	Elderly	9.8	7.8	0	30	
HAQ	Adults	0.84	0.74	0	3.00	0.429
	Elderly	0.97	0.87	0	2.88	
6MWT	Adults	412.2	105.6	162	600	0.000*
	Elderly	330.8	103.5	135	620	

FC, Functional capacity; PA, Physical aspects; GH, General health; VIT, Vitality; SA, Social aspects; EA, Emotional aspects; MH, Mental health.
* p <0.05 significant

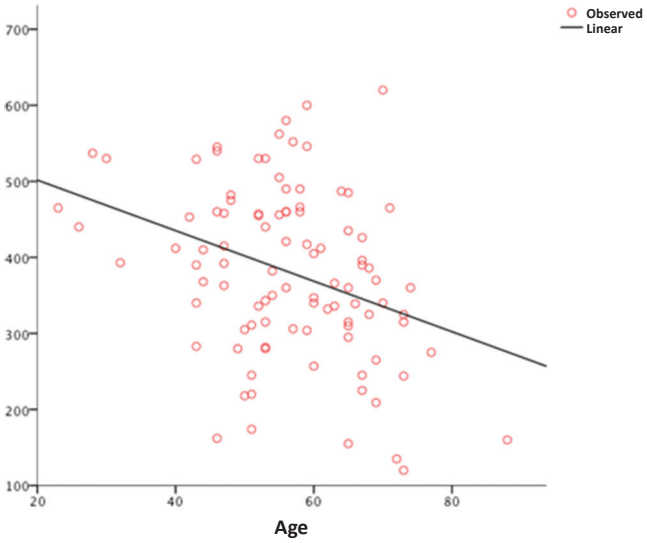

Fig. 1 – Dispersion curve showing the correlation between increasing age and performance in 6MWT

emotional (79.2), social (76.2), mental health (62.5) and functional capacity (61).

It is remarkable that the domains related to physical health affected most the QoL of patients with RA, than the domains relating to mental health. Other studies also reveal that adult patients with RA have lower QoL,[23,28] especially in domains relating to physical aspects, pain and vitality.

In studies using the division of the eight domains of the SF-36 questionnaire in physical and mental components, the physical component appears as the most affected in all of these studies.[11,14,16,22,27]

As for the elderly, these participants had worse averages for the SF-36 domains of pain (54.9), functional capacity (59.1), physical aspects (59.2), and general health (59.3); and best averages for the domains of emotional aspects (78.1), social (75.3), mental (63.5) and vitality (61.2). These data can be compared with those of a study assessing QoL of elderly patients with RA and OA, in whom the worst averages involved general health, physical health, mental health, pain, sleep and energy. In this study, the questionnaire used was not the SF-36, but a module of the Center for Disease Control and Prevention (CDC).[23]

In another study, also conducted with the aim to assess the QoL of the elderly, but with no specifications for RA or any other type of disease, the worse averages in the SF-36 occurred in the domains physical aspects, pain and general health status,[29] which allow us to conclude that the issues related to the physical component, functional capacity and pain are the most affected in the elderly, with or without RA.

In this study, no difference in QoL among adults and elderly with RA was noted, which is somewhat surprising, as it was believed that older people with RA would report worse QoLs due to the ageing process itself and the concurrent changes. However, studies were published with similar results, as a survey conducted by Khanna et al.[12] in the United States, that aimed to analyze the impact of self-reported arthritis in an adult population. The authors applied six questionnaires assessing QoL, among them the SF-36, and, as a result, obtained an improvement of QoL in the age group 65-74 years, when comparing data with those subjects with 35-64 years. Surprised, the authors clarified this result by explaining that the healthiest subjects in the age group of 35-64 years may be very busy; or, perhaps, the less healthy subjects in the group 65-74 years may be too sick or frail to participate in the survey.

Although not specific for RA, some studies compared QoL among the elderly in order to identify whether age influences QoL. The study of Pimenta et al.[29] shows a comparison between QoL of young and elderly subjects with a more advanced age, all of them retired, resulting in higher scores for those older individuals with regard to functioning capacity, pain, vitality, social functioning and mental health, similarly to another study with the same objective, which also demonstrated that QoL seems not to decline with age.[30]

In our study, although the elderly had worse averages for the adults in the functional, social and emotional capacities, this difference was not significant, as well as in the other domains of the SF-36, in which the scores were very close.

This result can be explained thanks to the enormous variability of the ageing process, which makes the heterogeneity of the elderly greater than in young people, as they are more susceptible to environmental influences; in addition, the peculiar characteristics of ageing and the sociocultural context render even more complicated the measurement of QoL in this age group.

In agreement with Haddad,[31-32] we must understand that the ageing process promote natural changes in these subjects. There is a difference, however, between the physiological ageing, which occurs due to chronological age, and the pathological ageing, that affects even not older people, by depending mainly on how the person deals with the disease and with their difficulties. Some elderly people tend to refrain from obligations and from their social and professional roles, while others take a more active attitude, by getting involved in physical and recreational activities, not shying away from social interaction.

In his book, Spilker states that the conclusions about the QoL of elderly people should be highly individualized,[33] as there are large individual differences among the elderly, more than in any other age group. There are differences in almost all kinds of characteristics, including physical, mental, psychological, socioeconomic and health conditions. The author explains that many elderly people can remain fairly healthy and with good functional ability until their late years, maintaining their physical, mental and social characteristics, provided they have healthy habits and lifestyles, and that means adaptability and sufficient functional reserve for most daily activities.

The fact that there is no difference between QoL of adults and elderly with RA in this study can also be explained by the use of a generic questionnaire for the assessment of QoL, not specific to the elderly population, a group that has specific characteristics that differ from younger age groups, especially because they passed through various social situations such as retirement, widowhood, dependency, and loss of autonomy and social roles. Then, there is the need for multidimensional instruments that can capture the variability of the elderly, and that more faithfully assess QoL in this age group.

Grimley-Evans raises some problems in the application of QoL questionnaires in older people,[34] since we must suspect

that the elderly will have more difficulty in answering to concepts on the likelihood of to make decisions, unlike younger adults. This author also alert to the tendency of an optimistic assessment among the elderly on their health status and their well-being, or even to ignore the symptoms because they believe that these are part of the natural ageing process.

The lack of correlation between QoL and age does not mean that one should underestimate the assessment of elderly patients with RA, as they have specific characteristics and must be treated according to their needs.

In our country, the old-age stereotypes and the confusion between normal and pathological ageing slow, and even prevent, an appropriate treatment which can have negative effects on QoL of the elderly.[34-35] This stereotypical view is also reinforced by part of the health professionals, who tend to explain symptoms or complaints brought by the elderly as being part of the ageing process, which leads to the omission and neglect, preventing treatment, rehabilitation and healing.

As we tried to demonstrate, although the characteristics of ageing and the sociocultural context increase the complexity of measuring QoL of older people, this assessment should be performed without underestimating the particularities of the ageing process.

In short, we believe that two assessments of QoL can never be equal; all individuals have specific identities with regard to the physical, emotional, social and spiritual aspects. Each assessment shows an individual experience can be limited by the particular environment of the individual, or by a specific time.

In BDI, an instrument that assesses the presence of depressive symptoms, the elderly presented an average consistent with symptoms of mild depression, and the adults showed absence of depression or minimal depressive symptoms, although this difference was not significant (p=0.511).

In previous studies, it is possible to identify that there is a higher prevalence of depressive symptoms in people with RA, compared to those who do not have the disease.[26,36]

Dario et al.[7] showed that the development of RA is closely related to increases in anxiety and depression, being three times more prevalent in patients with RA. An association among these disorders and recurrent pain, obesity, physical inactivity and social or functional limitations was found.

Although there is no consensus in the literature as to the origin of the higher prevalence of depressive symptoms in RA, we found it important to evaluate the subjects participating in our study with respect to these symptoms, probably because their presence aggravates the complaints related to RA, hindering the continuity of health care, which often worsens the clinical condition and interfere with the assessment of QoL.

With respect to HAQ, an instrument that measures functional ability, the results of this study showed no significant difference between adults and the elderly, which can be explained by the same reason on the results obtained with SF-36, since the elderly tend to optimistically assess their health status and ignore their symptoms, by believing that they are part of the ageing process. This fact can be demonstrated by the outcome of the 6MWT, a test that assesses physical fitness on a practical level. With this test, the elderly had lower averages *versus* the adults, and a significant correlation with increasing age was noted, with $p < 0.05$.

In the 6MWT, the subject walks the farthest distance possible within 6 minutes; it is not possible to distort the data or ignore the symptoms. The results show that the elderly in our study have lower functional capacity than adults in this test, and that the older the person is, the less the distance walked.

Other studies have also shown a correlation between increasing age with less distance in the 6MWT.[36-39] In these studies, when applying the 6MWT in healthy people aged 50 to 85 years-old, it was observed that the distance covered on the test decreases with increasing the age of the subjects.

However, if we compare our data with those obtained by Pires et al.,[36] who evaluated the results of the 6MWT in different age groups, it is evident that our adults and elders with RA had a lower mean in the test, compared to those in the study. The adults in Pires et al. study achieved a mean of 606.3 m, whereas our group of adults obtained a mean of 412.2 m. The same happened with the elderly: in that study, the mean for this group was 447.2 m, and the elderly with RA in our study achieved 330.8 m.

In another study, conducted by Steffen et al.,[37] the aim was to obtain data for four physical tests conducted with elderly people, among them the 6MWT. The elderly people in this study had an average of 486.2 m, while in our study the elderly with RA achieved a mean of 330.8 m.

Troosters et al.[39] also evaluated the 6MWT in healthy older subjects. As a result, they found a mean of 631 m, higher than that for the elderly in our study.

It is believed that the significant difference in the distance walked among adults and elderly people in our study may be explained by the physiological changes resulting from the ageing process itself, as the decrease in overall muscle strength and changes of heart and lung function. This result may also have been influenced by the duration of the disease, which is high in both groups, and by the disease activity at the time of the test, which interferes with the physical performance of patients. The existing comorbidities in individuals of the sample may also affect the results of the physical test; the exclusion of this variable from our study was not possible, whereas it would be hard to find elderly people without some associated comorbidity.

Conclusions

In this study, adult and elderly subjects with RA had a low QoL, as assessed by HAQ and SF-36.

Except by 6MWT, there is no difference between adult and elderly groups with RA. The data obtained were equivalent as the questionnaires used (SF-36, HAQ, DAS-28, and BECK); i.e., no difference regarding QoL, functional capacity, disease severity, and presence of depressive symptoms among adults and elderly with RA.

In 6MWT, the difference between adults and elderly was significant, as well as the linear relationship, i.e., the higher the age, the lower the distance covered in this test. However, we believe that this result may have been influenced by other variables, such as changes resulting from the ageing process, length of disease, disease activity, and pre-existing comorbidities in patients with RA.

In view of the results obtained, it is suggested that, during the implementation of actions aiming at improving the QoL of the elderly, the magnitudes and differences of each group are taken into account with respect to what its components value, in their pursuit of wellness in the old age.

Conflicts of interest

The authors declare no conflicts of interest.

REFERENCES

1. Wong LLR, Carvalho JA. O rápido processo de envelhecimento populacional do Brasil : sérios desafios para as políticas públicas. Rev Bras Estud Popul. 2006;23:5-26.
2. World Health Organization - WHO. Envelhecimento ativo: uma política de saúde. Brasília (DF): Organização Pan-Americana da Saúde; 2005. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/envelhecimento_ativo.pdf. [Cited 2013 Apr 25].
3. Lee TJ, Park BH, Son HK, Song R, Shin KC, Lee EB et al. Cost of illness and quality of life of patients with rheumatoid arthritis in South Korea: Value Health. 2012;15(1 Suppl):S43-9. Available from: http://www.ispor.org/consortiums/asia/ViH/3rdIssue/Cost-of-Illness-and-Quality%20of%20Life-of-Patients-with-Rheumatoid-Arthritis-in-South-Korea.pdf. [Cited 2013 Mar 20].
4. Mota LMH, Cruz BA, Brenol CV, Pereira IA, Fronza LSR, Bertolo MB, Freitas MVC, Silva NA, Louzada-Junior P, Giorgi RDN, Lima RAC, Pinheiro GRC. Consenso da Sociedade Brasileira de Reumatologia 2011 para o diagnóstico e avaliação inicial da artrite reumatoide. Rev Bras Reumatol. 2011;51:207-19.
5. Mota LMH, Cruz BA, Brenol CV, Pereira IA, Rezende-Fronza LS, Bertolo M B, Freitas MVC, Silva NA, Louzada-Júnior P, Giorgi RDN, Lima RAC, Pinheiro GRC. Consenso 2012 da Sociedade Brasileira de Reumatologia para o tratamento da artrite reumatoide. Rev Bras Reumatol. 2012;52:152-74.
6. Goeldner I, Skare TL, Reason ITDM. Artrite reumatoide : uma visão atual. J Bras Patol Med Lab. 2011;47:495-503.
7. Dario AB, Faraco HC, Gevaerd MS, Domenech SC. Alterações psicológicas e exercício físico em pacientes com artrite reumatoide. Motricidade. 2010;6:21-30. Available from: http://revistas.rcaap.pt/motricidade/article/view/142/131. [Cited 2013 May 29]
8. Mella LFB, Bértolo MB, Dalgalarrondo P. Depressive symptoms in rheumatoid arthritis patients. Rev Bras Psiquiatr. 2010;32:257-63.
9. Brandão L, Ferraz MB, Zerbini CAF. Avaliação da qualidade de vida na artrite reumatoide: revisão atualizada. Rev Bras Reumatol. 1997;37:275-81.
10. Mota LMH, Laurindo IMM, Santos Neto LL. Avaliação prospectiva da qualidade de vida em uma coorte de pacientes com artrite reumatoide inicial. Rev Bras Reumatol. 2010;55:249-61.
11. Corbacho MI, Dapueto JJ. Avaliação da capacidade funcional e da qualidade de vida de pacientes com artrite reumatoide. Rev Bras Reumatol. 2010;50:31-43.
12. Khanna D, Maranian P, Palta M, Kaplan RM, Hays RD, Cherepanov D, Fryback DG. Health-related quality of life in adults reporting arthritis: analysis from the National Health Measurement Study. Qual Life Res. 2011;20:1131-40. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3156343/.[Cited 2013 Apr 15]
13. Haroon N, Aggarwal A, Lawrence A, Agarwal V, Misra R. Impact of rheumatoid arthritis on quality of life. Mod Rheumatol. 2007;17:290-5.
14. Bedi GS, Gupta N, Handa R, Pal H, Pandey RM. Quality of life in Indian patients with rheumatoid arthritis. Qual Life Res. 2005;14:1953-8.
15. Mathew J, Antony J, Eremenco S, Paul B V, Jayakumar B, Philip J. Health-related quality of life in rheumatoid arthritis patients in South India. Singapore Med J. 2009;50:800-3. Available from: http://smj.sma.org.sg/5008/5008a9.pdf. [Cited 2013 May 5].
16. Salaffi F, Carotti M, Gasparini S, Intorcia M, Grassi W. The health-related quality of life in rheumatoid arthritis, ankylosing spondylitis, and psoriatic arthritis: a comparison with a selected sample of healthy people. Health Qual Life Outcomes. 2009;7:1-12. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2674445&tool=pmcentrez&rendertype=abstract. [Cited 2013 Mar 15].
17. Bowling A. Measuring disease: a review of disease-specific quality of life measurement scales. 2nd ed. Philadelphia (PA): Ann Bowling. 2001:1-19. Available from: http://mcgraw-hill.co.uk/openup/chapters/0335206417.pdf. [Cited 2013 Apr 15]
18. The Whoqol Group. The World Health Organization quality of life assessment (WHOQOL): position paper from the World Health Organization. Soc Sci Med. 1995;41:1403-10.
19. Rezende R, Nogueira A, Oliveira D, Dal S, Malaguti C, Nove U et al. An update and standardization proposal for the six-minute walk test. 2009;22:249-59.
20. American Thoracic Society. ATS Statement: guidelines for the six-minute walk test. Am J Respir Crit Care Med. 2002;166:111-17. Available from: www.atsjournals.org. [Cited 2013 Apr 10]
21. Louzada Junior P, Dias B, Souza B, Toledo RA, Ciconelli RM. Análise descritiva das características demográficas e clínicas de pacientes com artrite reumatoide no Estado de São Paulo. Rev Bras Reumatol. 2007;47:84-90.
22. Nicassio PM, Kay MA, Custodio MK, Irwin MR, Weisman MH.An evaluation of a biopsychosocial framework for health-related quality of Life and disability in rheumatoid arthritis. J Psychosom Res. 2011;71:79-85.
23. Dominick KL, Ahern FM, Gold CH, Heller D a. Health-related quality of life among older adults with arthritis. Health Qual Life Outcomes. 2004 [cited 2013 May 25];2:1-22. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=324570&tool=pmcentrez&rendertype=abstract22.
24. Negreiros TCGM. Sexualidade e gênero no envelhecimento. Alceu. 2004;5:77-86. Available from: http://revistaalceu.com.puc-rio.br/media/alceu_n9_negreiros.pdf. [Cited 2013 Apr 15]
25. Yacoub YI, Amine B, Laatiris A, Hajjaj-Hassouni N. Rheumatoid factor and antibodies against citrullinated peptides in Moroccan patients with rheumatoid arthritis: association with disease parameters and quality of life. Clin Rheumatol. 2012;31:329-34.
26. Costa AFC, Brasil MAA, Papi JA, Azevedo MNL. Depressão, ansiedade e atividade de doença na artrite reumatoide. Rev Bras Reumatol. 2008;48:7-11.
27. Rupp I, Boshuizen HC, Dinant HJ, Jacobi CE, Van Den Bos GA. Disability and health-related quality of life among patients with rheumatoid arthritis: association with radiographic joint damage, disease activity, pain, and depressive symptoms. Scand J Rheumatol. 2006;35:175.
28. Ciconelli RM, Ferraz MB, Santos W, Meinão I, Quaresma MR. Tradução para a língua portuguesa e validação do questionário genérico de avaliação de qualidade de vida SF-36 (Brasil SF-36). Rev Bras Reumatol. 1999;39:143-50.
29. Pimenta FAP, Simil FF, Torres HOG, Amaral CFS, Rezende CF, Coelho TO, Rezende NA. Avaliação da qualidade de vida de aposentados com a utilização do questionário SF-36. Rev Assoc Med Bras.2008;54:55-60.

30. Maues CR, Paschoal SMP, Jaluul O, Jacob W, França CC. Avaliação da qualidade de vida: comparação entre idosos jovens e muito idosos. Rev Soc Bras Clin Med. 2010;8:405-10.
31. Haddad EGM. A velhice em movimento. Gerontologia. 1993;1:29-30.
32. Haddad EGM. A ideologia da velhice. São Paulo: Cortez, 1986.
33. Spilker B. Quality of Life and Pharmacoeconomics in Clinical Trials. 2 ed. 1995.
34. Evans JG. Quality of life assessments and elderly people. In: Hopkins A, editor. Measures of quality of life and the uses to which such measures may be put. Londres: Royal College of Physicians of London, 1992:107-16.
35. Paschoal SMP. Desafios da Longevidade: qualidade de vida. Mundo saúde. 2005;29:608-11.
36. Pires SR, Oliveira AC, Parreira VF, Britto RR. Teste de caminhada de seis minutos em diferentes faixas etárias e índices de massa corporal. Rev Bras Fisioter. 2007;11:147-51.
37. Steffen TM, Hacker TA, Mollinger L. Age- and gender-related test, berg balance scale, timed up and go test, and community-dwelling elderly people: six-minute walk age- and gender-related test performance in gait speeds. Phys Therm. 2002;82:128-37.
38. Enright PL, Sherrill DL. Reference equations for the six-minute walk in healthy adults. Am J Respir Crit Care Med. 1998;158:1384-7. Available from: http://www.atsjournals.org/doi/pdf/10.1164/ajrccm.158.5.9710086. [Cited 2013 Jul 13].
39. Troosters T, Gosselink R, Decramer M. Six minute walking distance in healthy elderly subjects. Eur Respir J. 1999;14:270-4. Available from: http://erj.ersjournals.com/content/14/2/270.long. [Cited 2013 Jul 13].