

## Rheumatoid Arthritis (RA): Implications in people's loss of function

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### Abstract

**Background:** Rheumatoid Arthritis (RA) is a pathology which has deep implications in people's loss of function (physical, emotional, social and economical implications). It is therefore essential to assess the functionality and the kind of limitations people who suffer from AR experience and their relationship with the socio-demographic and clinical variables as well as with these people's sleep quality. **Methods:** Non-experimental, cross-sectional, descriptive-correlational and quantitative study. A non-probabilistic defined for convenience sample was used. That sample was formed by 75 Portuguese people diagnosed with Rheumatoid Arthritis. In the data collection, a protocol that included socio-demographic and clinical questions was used. The Pittsburgh Sleep Quality Index and The Health Assessment Questionnaire (HAQ) were used in the data collection as well. **Results:** We could witness that 60% of the participants show mild incapacity as far as their ability to perform daily tasks was concerned, 32,0% show moderate incapacity and 8,0% show serious incapacity. The functionality of people suffering from RA is in correlation with the socio-demographic, age ( $p=0,003$ ), people's employment situation ( $p=0,000$ ), their educational level ( $p=0,006$ ) and their monthly income ( $p=0,001$ ). These people loss of function is worsened by the pain intensity ( $p=0,007$ ), the time needed to performed the diagnosis ( $p=0,013$ ) and bad sleep quality ( $p=0,030$ ). **Conclusion:** Evidence shows that incapacity is a reality in the lives of people suffering from RA. This incapacity is associated with several socio-demographic, clinical and psycho-social variables. Thus, early diagnosis, adopting the right measures to promote good sleep quality, implementing pharmaceutical and non-pharmaceutical measures which will ease people's pain and educational measures that will be offered to RA patients should be developed as strategies to minimize the negative impact caused by this disease.

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**Keywords:** Rheumatoid Arthritis, functionality, sleep quality, pain, patients.

## 1. Introduction

Rheumatoid Arthritis is a chronic, inflammatory disease of unknown etiology that can touch people from all ages which affects, usually in a repeated and chronic way, the joint and periarticular structures.

According to Reis (2011), RA has often got a progressive, destructive and deforming evolution, affecting about 1% of the world population regardless of ethnic groups. Peripheral joints are the first to be affected by RA, particularly hands and feet joints which cause changes in the patients' mobility and locomotion capacity and in their daily activities. The Portuguese Society of Rheumatology (SPR, 2015) estimates that the disease will affect 0,5 to 1,5% of the population in industrialized countries, in Portugal estimates are that it affects 0,8 to 1,5% of the population.

According to Branco (2013), the global occurrence of RA is twice to four times higher in women than in men. The highest rates of occurrences happen after menopause. However this disease can affect people of all ages, even teenagers.

Functional state or functional capacity may be defined as someone's capability to perform certain tasks that will allow him to take care of himself and have an independent life (Martins e Mestre, 2014). We know that the erosive and progressive changes that happen in the cartilage and in bones of people suffering from RA lead to deformities and incapacities that can affect that person in a serious, precocious and permanent way. The negative consequences of RA in patients' functionality are multidimensional and are visible in the decrease in muscular strength, in physical endurance, reduced joints' movement amplitude and a lower quality of life. At the same time there's a decrease in productivity and in people's professional activities that leads to serious economic consequences. Those expenses come from long term pharmacologic treatments, surgeries, physical rehabilitation, the loss of work days, both patients' and family members' who have to keep them company, and even from early retirements due to the patients' incapacity to fulfill their jobs' demands.

Freitas et al. (2013) state that pain and discomfort caused by RA can lead to serious consequences to the patients since they both contribute to the loss of functionality, and bad sleep quality, they undermine the patients' social participation, they have an important negative impact on people's health and well-being, especially when these people are older.

A study developed by Luyster, Chasens, Wasko e Dunbar-Jacob (2011) showed that bad sleep quality is associated with high depressive symptom levels, with a higher intensity of pain, an increase in weariness and a higher functional incapacity in people suffering from RA. The physical disability caused by Rheumatoid Arthritis can limit patients' ability to perform daily tasks like walking, getting dressed, self-care, and these tasks may even be harder to perform when the patient suffers from fatigue, pain and depression.

Functional incapacity is probably the cause of those people's depression, pain and fatigue that will, in turn, affect their sleep quality. When someone doesn't sleep well at night, he will feel more pain, more fatigue during the day. Consequently this situation will limit the patient's ability to perform his daily tasks (Løppenthin et al, 2015). Therefore, keeping in mind the chronic nature of RA, the functional assessment of the incapacity caused by this disease becomes fundamental. The short HAQ-c version developed by Fries in the 80s is the most used internationally to perform this assessment, since

it was conceived specifically to assess rheumatic patients. Besides the pain, it assesses the functional capacity and its viability and reliability have already been proved.

As we have already said RA is a chronic disease for which there is no cure, but when efficiently treated we get a good vital and functional prognosis. The last few years have witnessed a substantial improvement in the treatment of this disease, not only because of the improvement in drug therapy strategies but also because of the reemergence of non-pharmaceutical measures (Jovanovic et al., 2015).

## **2. Problem Statement**

The impact functional state and sleep quality may have in the lives of people suffering from RA is well-known. The factors that cause the degradation of these people's functional state may include its origin, socio-demographic and clinical factors, how long the disease will last, the presence of pain, sleep quality, among others.

Thus we think that it is very important to correctly assess the implications the disease has in the patients' quality of life in order to define improvement strategies.

## **3. Research Questions**

What are RA implications in patients' functional capacity and to what extent do socio-demographic , clinical variables and sleep quality relate to this (in)capacity?

## **4. Purpose of the Study**

To assess the functional capacity of people suffering from Rheumatoid Arthritis and to analyse the existing correlations between this capacity and the socio-demographic and clinical variables and sleep quality

## **5. Methods**

Non-experimental, cross-sectional, descriptive-correlational and quantitative study.

A non-probabilistic defined for convenience sample was used. That sample was formed by 75 people suffering from Rheumatoid Arthritis being treated in the Pain Unit, Rheumatology services or in Physical Rehabilitation services of Hospitals located in the centre of Portugal.

The selection criterion were: being over 18 years old, having been diagnosed with Rheumatoid Arthritis , being registered in the Hospitals Pain Unit. The data collection took place between May and June 2015 and in our data collection instrument we used socio-demographic variables and clinical characterization variables and two scales: the Pittsburgh Sleep Quality Index (PSQI), validated and translated into Portuguese by Alessandra Bertolazi in 2008 and the Health Assessment Questionnaire (HAQ) validated for the Portuguese population by Santos et all (1996). This instrument assesses the perception patients suffering from RA have about their functional capacity through 20 self-report questions that assess 8 dimensions (dressing, getting up, eating, walking, personal hygiene, reaching,

grabbing, other activities) and also includes a Visual Analog Scale for Pain (VASP). The highest rates in the scale correspond to a higher functional incapacity. All the process was conducted through a strict ethical conduct (with authorization from the Hospital Management Board and Ethics Commissions) so that anonymity and collected data confidentiality could be assured.

The Statistical processing was done through the 19.0 version of the *Statistical Package Social Science* program developed for Windows and Word Microsoft and was processed using descriptive and inferential statistics.

## 6. Results

The sample was formed by 75 participants: 60 female and 15 male. The participants' age was between 22 (minimum) and 85 (maximum). 56,21 was the sample's average age, with a 15,17 standard deviation and a 26,98% coefficient of variation. This indicates the existence of a moderate dispersion when compared to the average rate. Females' average age (M=54,7) is slightly inferior to males' (M=62,07), showing a moderate dispersion when compared to the average rate.

**Table 1.** Descriptive statistics: participants' age and gender.

Age	N	Min	Max	Mean	Sd	Sk/error	K/error	CV(%)
Male	15	35	81	62,07	13,10	-0,91	-0,28	21,10
Female	60	22	85	54,75	15,39	3,23	-1,02	28,10
Total	75	22	85	56,21	15,17	-3,61	-1,16	26,98

The majority of the sample (69,33%) is married or living as unmarried partners. Professionally speaking, they are employed (38,7%) and retired (42,7%). They show a low schooling situation (58,2% primary education and high school) and low income, earning only between 500 and 1000 Euros a month.

When it comes to their clinical situation, we saw that they were diagnosed with RA when they were 3 to 10. This diagnosis was performed mainly by rheumatologists (40%) or by general doctors (37,3%); the drugs they were prescribed were mostly corticosteroids (76,0%), anti-inflammatory drugs (64,0%), painkillers (33,3%) and antidepressants (22,7%); 9,5 % only used to go to rehabilitation programmes.

When we assessed their mood, 52,0 % of our participants showed a mild depression, 20,0 % showed they were depressed and 28,0 % showed no sign of depression.

The participants' sleep quality varies from 0 (min) to 21 (max) with a 10,36 average rate, a 3,37 Sd and a 32,52 coefficient of variation, which shows a high dispersion when compared to the average rate. The most significant changes in sleep patterns can be found in the following dimensions: "sleep disorders" (M=1,95), "sleep latency" (M=1,87) and "sleep subjective quality" (M=1,65). On the other hand the dimensions which are less affected are "duration" (M=0,93), "use of sleeping pills" (M=1,13) and "day dysfunction" (M=1,37). According to the rating used by the authors (<5 good sleep quality and  $\geq 5$  bad sleep quality) we could see that the majority of the people we interviewed show bad sleep quality (94,7%) and only 5,3% of them show good quality sleep.

The global functional capacity showed by those RA patients is moderate, ranging from 1 (min) to 3(max) with a 1,48 average rate, a 3,64 Sd and a 43,24 coefficient of variation which show a high

dispersion when compared to the average rate. The highest functional disorders are found in the following subscales: “reaching” (M=2,01), “activities” (M=1,70), “getting dressed” (M=1,65) and “walking” (M=1,58). In contrast the activities which are less affected are “eating” (M=1,46), grabbing(M=1,48), and personal hygiene( M=1,49). (See table 2)

**Table 2.** Descriptive statistics: participants’ functionality.

Subscales	Min	Max	Mean	Sd	Sk/error	K/error	CV (%)
Getting dressed	1	3	1,65	0,64	1,72	-1,19	38,78
Getting up	1	3	1,54	0,52	0,33	-2,51	33,76
Eating	1	3	1,46	0,62	3,58	-0,03	42,46
Walking	1	3	1,58	0,59	1,61	-1,18	37,34
Self-care/Hygiene	1	3	1,49	0,66	3,66	-0,20	44,29
Reaching	1	3	2,01	0,70	-6,85	-1,74	34,82
Grabbing	1	3	1,48	0,62	3,38	-0,21	41,89
Activities	1	3	1,70	0,71	1,79	-1,62	41,76
Total Functionality	1	3	1,48	0,64	3,64	-0,09	43,24

According to the scale ranking levels, we concluded that 60,0 % of the participants show mild difficulties to perform their daily tasks, 32,0% show moderate to serious difficulties and 8,0% show a very serious incapacity. As far as pain is concerned, we witnessed that only 38,7% of the patients don’t mention pain, while 38,7 % of them refer feeling intense pain, 36,0 % moderate pain, 12,0% light pain and 6,7% maximum pain.

When we associated different variables we saw that patients who showed worse functionality levels (with considerable statistical significance) were older patients (p=0,003), retired patients(p=0,000), people with lower education (p=0,006) and lower monthly income (p=0,001). A higher intensity of pain (p=0,007), late diagnosis (p=0,013) and bad sleep quality worsen the loss of function in those patients.

## 7. Conclusion

This study reinforces the Rheumatoid Arthritis paradigm: it is a chronic inflammatory disease of unknown etiology which evolution leads to joint deformity, pain and to the loss of function. We concluded that 60,0% of the participants in our study show mild difficulties/incapacity when trying to perform daily tasks or activities , 32,0% show moderate difficulties and 8,0% serious difficulties. We recalled that the average rate of global functionality assessed through HAQ was 1,48 which shows that moderate incapacity affects the participants in our survey. The impact caused by pain, and by its intensity, in our participants’ functionality is a reality we cannot hide.

Participants who show no pain are those who show a higher functionality level, however “intense pain” is the pain typology which prevails in our survey (38,7%), the feeling of “moderate pain” is referred by a significant group of patients (36,0%). We have to underline the little importance people give to the adoption of alternative forms of treatment , since 90,5% of the participants don’t attend any rehabilitation programme.

We confirmed that we are facing an actual and relevant issue which has a high and real impact on patients' quality of life, as well as on the Healthcare System, and therefore deserves to get the right attention from the Scientific Community.

The truth is that this issue has been widely studied in different countries. In Portugal, however, few studies have been conducted yet and those that have already been presented are about patients' sleep quality. The assessment of the patients' functionality to perform their daily tasks is not given the importance they deserve. We hope this study can be seen as a warning which will remind people about how important it is to investigate the different factors that may contribute to the RA patients' loss of function. We hope it could be important to the development of multidisciplinary factors that will guide people's intervention in order to prevent and/or to minimize the incapacities that are caused by the disease as soon as possible.

In this perspective we suggest patient centered healthcare, implemented through intervention programmes and educational programmes that will include physical exercise, non-pharmaceutical measures that will help relieve the patients' pain, measures that will promote a good sleep, self-care techniques, the use of support products and compensation devices.

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