بسم الله الرحمن الرحيم

Ministry of Higher Education and Scientific Research

University of Babylon College of Medicine

“Sleep Quality in Patients with Rheumatoid Arthritis”

4th stage

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Sleep quality in patients with rheumatoid arthritis:-

Abstract:

Rheumatoid arthritis (RA) is a chronic, systemic, autoimmune, inflammatory disorder of which the etiology is not known. Rheumatoid arthritis mostly affects synovial joints. The clinical presentation of RA varies, but an insidious onset of pain with symmetric swelling of small joints is the most frequent finding. to evaluate sleep quality in rheumatoid patients and it relations to disease activity. A cross-sectional study of 121 patients with rheumatoid arthritis was conducted. They were approached randomly in their scheduled visits to receive their biologic therapy and were evaluated using the Pittsburgh Sleep Quality Index (PSQI), under the supervision of medical students who helped and explained the questionnaire. A total of 121 patients with rheumatoid arthritis were enrolled in this study. The mean age of the patients was (50.4). Most of the patients were females (81.81%), and only (21.21%) were males. In terms of females, 67.67% of them reported poor sleep quality (55.37% of the total study sample), and only 32.32% of them had good sleep quality (26.44% of the total study samples). As for males, the opposite was true since 54.54% of them reported good sleep quality (9.91% of the total study sample), and 45,45% of them reported poor sleep quality (8.26% of the total study sample). Rheumatoid patients as expected had poor sleep quality and sleep problems correlate positively with disease activity and duration

Introduction:-

Rheumatoid arthritis (RA) is a chronic, systemic, autoimmune, inflammatory disorder of which the etiology is not known. Rheumatoid arthritis mostly affects synovial joints. The disease usually presents with arthritis that is characteristically symmetrical and if left without treatment, or uncontrolled by treatment, usually leads to deformities of the joints caused by erosion and destruction of the cartilage and bone. [1]

The clinical presentation of RA varies, but an insidious onset of pain with symmetric swelling of small joints is the most frequent finding. RA onset is acute or subacute in about 25% of patients, but its patterns of presentation also include palindromic onset, monoarticular presentation (both slow and acute forms), extra-articular synovitis (tenosynovitis, bursitis), polymyalgic-like onset, and general symptoms (malaise, fatigue, weight loss, fever). The palindromic onset is characterized by recurrent episodes of oligoarthritis with no residual radiologic damage, while the polymyalgic-like onset may be clinically indistinguishable from polymyalgia rheumatica in elderly subjects. [2]

Many extra-articular manifestations are recognized, which are related to worse long outcomes. Rheumatoid nodules are the most common extra-articular feature, found in about 30% of patients. Secondary Sjögren's syndrome and pulmonary manifestations are observed in almost 10% of patients, also in the early disease. Active RA with high disease activity has been associated with an increased risk of such features. Male gender, smoking habit, severe joint disease, worse function, high pro-inflammatory markers levels, high titer of rheumatoid factor, and HLA-related shared epitope have been reported as clinical predictors of occurrence of these rheumatoid complications. [3]

In Iraq, the disease pattern is not very much different from that found in Europe, although the disease process seems to be less destructive and there are fewer extra-articular manifestations of the disease. The distribution of the arthritis seemed to be more pronounced in the hands than the feet. Rheumatoid nodules and severe systemic upset seemed to be less common. [4]

Clinically articular involvement presents as pain,

swelling, stiffness and motion impairment. The patients with positive rheumatoid factor are > 70% likely to develop joint damage or erosions within 2 years of disease onset. Any joint can be involved, but the proximal interphalangeal and metacarpophalangeal joints of the hand and the wrist are preferential sites, as well as the metatarsophalangeal joint of the foot, the knee and the joints of the shoulder, the ankle and the hip. Symmetry is the hallmark of joint involvement. The synovium of bursae and tendon sheaths is also affected. Soft tissue (subcutaneous nodules), muscles (weakness and atrophy) and vessels (vasculitis) may also be involved. [5]

Other diagnoses should be considered and excluded since some infections, malignancies and rheumatic diseases can lead to synovitis which can be confused with rheumatoid arthritis. Other conditions may present without synovitis but with joint pain or dysfunction, such as carpal tunnel syndrome, osteoarthritis, or certain hypermobility syndromes. [6]

Management of rheumatoid arthritis is mainly aimed at controlling the synovitis along with prevention of joint destruction and injury. The current consensus is based upon observations that joint damage begins early on in the course of disease and that the longer the active disease persists, the likelihood that the disease will respond to therapy is markedly reduced. Hence, early aggressive treatment is generally recommended to prevent tissue destruction. [7].

It is also reported that there is a “window of opportunity” earlier on in the course of disease, in which the use of disease modifying anti-rheumatic drugs can markedly arrest progression of disease into its destructive and deforming form. [8]

The use of biological disease-modifying antirheumatic drugs (bDMARDs) has significantly improved patient outcomes. Overall, studies using bDMARD induction have shown early clinical improvements, with high proportions achieving remission with minimal radiographic progression. As these drugs are still relatively costly, conventional synthetic DMARDs, as monotherapy or in combination, remain the mainstay of treatment initiation. Good, albeit somewhat slower, responses can be achieved with these drugs. Strategies incorporating glucocorticoids and a treat-to-target approach (i.e. regular monitoring of disease activity and early treatment escalation with a conventional synthetic or b-DMARD, if needed) have shown additional benefit. In patients achieving low disease activity or remission, bDMARD dose reduction and withdrawal, and even drug-free remission have been possible in some. [9]

Sleep is a periodically recurring condition characterized by reduced reactivity to external stimuli, suppressed mobility, and reduced cognitive ability [10]. Sleep quality is defined as one’s satisfaction of the sleep experience, integrating aspects of sleep initiation, sleep maintenance, sleep quantity, and refreshment upon awakening. Insomnia symptoms impose daytime consequences and impairments associated with sleep disturbances (e.g., fatigue, change in mood, daytime sleepiness or cognitive difficulties). Insomnia affects 8-18% of the general population [11]. Most adults need to sleep 7-9 hours per night on a regular basis to promote optimal health [12]. Sleep problems and pain are common in patients with RA, which have significant relationship with inflammatory markers, and increased inflammatory markers can be affected by sleep problems and pain [13].

Materials and Methods:-

Participants: -

One hundred and twenty-one patients with previously diagnosed rheumatoid arthritis were enrolled in this study after verbal consent was obtained from them. They were recruited from the Rheumatology Clinic at Merjan Teaching Hospital, during their scheduled visits to receive their therapy. Patients with confirmed diagnosis

of rheumatoid arthritis by a rheumatologist according to 2010 ACR/EULAR Classifications Criteria for RA [14]. Patients with mental illnesses and those who refused to consent were excluded

Methods:-

This study was done using a cross-sectional study method. Patients were approached randomly in their scheduled visits to receive their biologic therapy and were evaluated using the Pittsburgh Sleep Quality Index (PSQI), under the supervision of medical students who helped and explained the questionnaire questions to them, and recorded their answers. Statistical analysis for this study was conducted using Statistical Package for Social Sciences (SPSS®) Software (version 26.0). Qualitative data were represented as numbers and percentages, while continuous numerical data were represented as mean ± standard deviation. Categorical variables were compared using chi-square test.Spearman's rho correlation coefficient, Kruskal-Wallis Test and Mann Whitney test had been calculated in order to assess the correlation between discrete numerical variables. P value was considered statistically significant when if < 0.05.

Questionnaire:-

Patients' sleep was assessed using the Pittsburgh sleep quality index (PSQI). This questionnaire is made up of ten items regarding the patients' sleep in the last thirty days. The Pittsburgh sleep quality index (PSQI) is a self-report questionnaire that uses seven different components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, daytime dysfunction. Each of which has a range of 0-3 points. With "3" indicating severe difficulty. The seven components scores are then added up to yield a "global" score, with a range of 0-21 points. "0" indicating no difficulty, while "21" indicating severe difficulties in all areas. We also inquired about the smoking history, the presence and number of any tender or swollen joints, the disease duration, and the presence or absence of any deformities. [15]

Measurements:-

Patients were asked to rate their joint pain on a scale of 0-10, with higher numbers indicating more intense pain. Their inflammatory parameters were assessed using their ESR levels. Disease activity is assessed using CDAI including the number of swollen and tender joints, patient global assessment of disease activity and physician global assessment of disease activity. The scoring for patients was graded as follow:

1. Remission CDAI ≤ 2.8
2. Low disease activity CDAI >2.8 and ≤ 10
3. Moderate disease activity CDAI >10 and ≤ 22
4. Severe disease activity CDAI >22

Results:-

A total of 121 patients with rheumatoid arthritis were enrolled in this study. The mean age of the patients was (50.4). Most of the patients were females (81.81%), and only (21.21%) were males. Patients were classified as having poor sleep (global PSQI score of more than 5), and good sleep quality (global PSQI score of less than or equal to 5). They were also divided based upon their disease duration into two groups. The first one has the disease for more than 5 years, and the second had the disease for less than or equal to 5 years, to determine if there's a correlation between disease duration and sleep quality. They were also subcategorized based upon gender. Analysis of data revealed that 63.63% of patients had poor sleep quality, and 36.36% had good sleep quality (see figure 1).

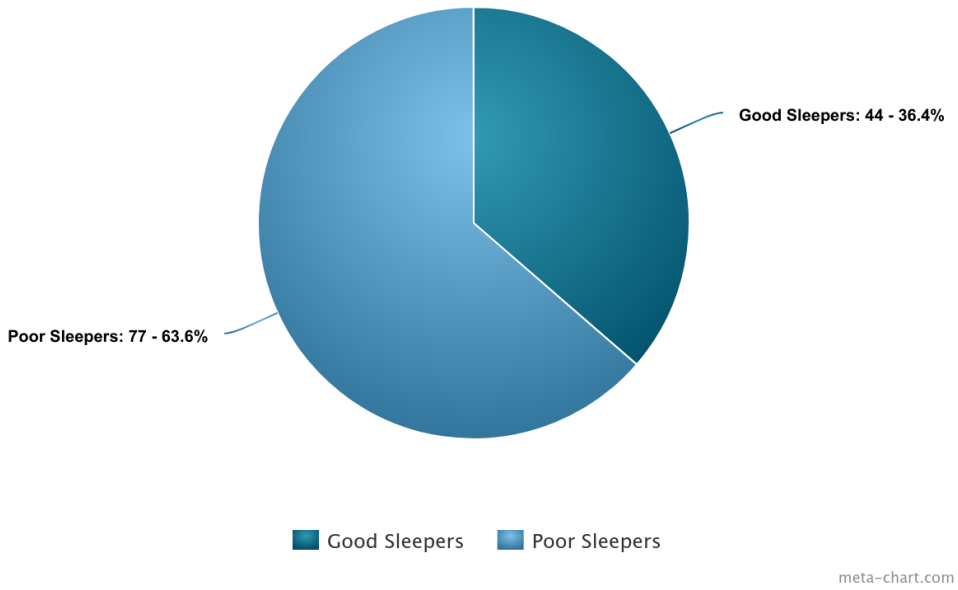


Figure 1

In terms of females, 67.67% of them reported poor sleep quality (55.37% of the total study sample), and only 32.32% of them had good sleep quality (26.44% of the total study samples), (see figure 2). As for males, the opposite was true since 54.54% of them reported good sleep quality (9.91% of the total study sample), and 45,45% of them reported poor sleep quality (8.26% pf the total study sample) (see figure 2).

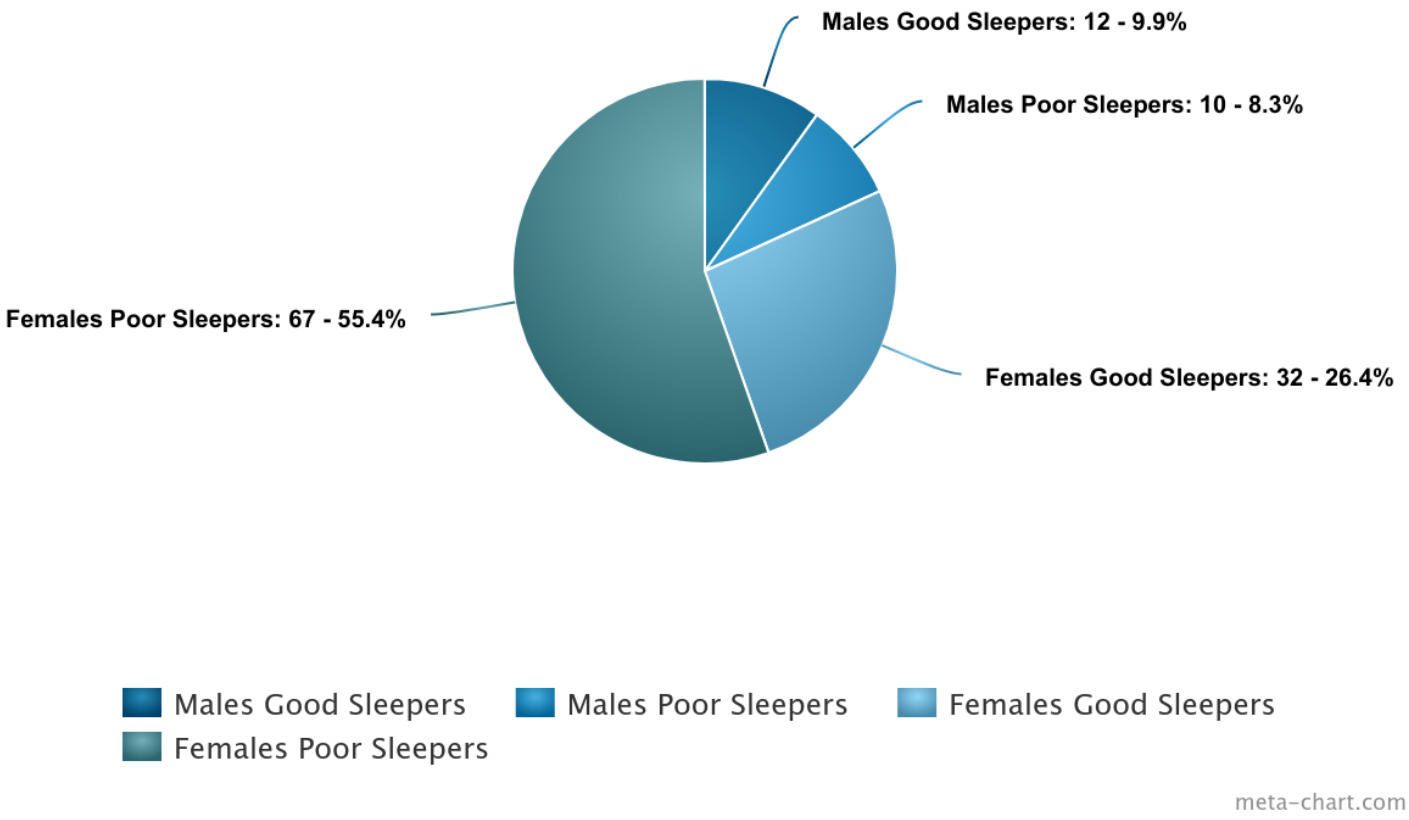


Figure 2

In terms of disease duration, patients who had rheumatoid arthritis for more than 5 years, 65.15% of them (35.53% of the total study sample) reported poor sleep quality, whilst only 34.84% of them (19% of total) reported good sleep quality (see figure 3). As for patients with a disease duration of less than or equal to 5 years, the results were similar, since 61.81% of them (28% of the total study sample) reported poor sleep quality, whilst only 38.18% of them (17.35% of the total study sample) reported having good sleep quality (see figure 3). This shows that there might be a poor correlation between sleep quality and disease duration.

Sleep quality was also correlated with their disease activity score (Clinical Disease Activity Index). The majority of the studied patients (64.46%) had severe disease activity. Out of those who had severe disease activity, 76.82% of them (49.58% of the total study sample) had poor sleep quality, while 23.07% of them (14.87% of the total study sample) had good sleep quality. For those with moderate disease activity, 51.61% of them (13.22% of the total study sample) had poor sleep quality, and 48.38% of them (12.39% of the total study sample) had good sleep quality. Those with low disease activity, only 10% of them

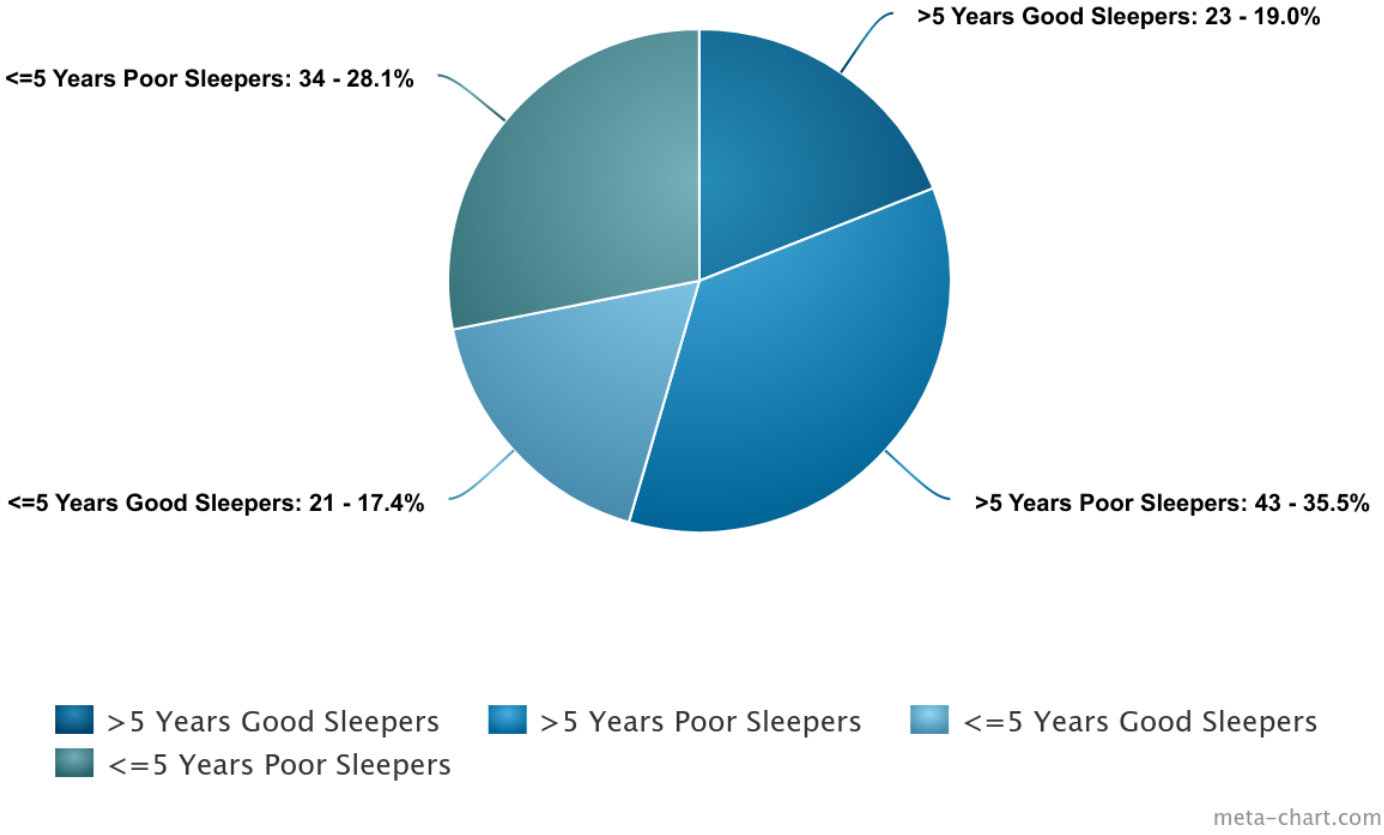


Figure 3

(0.82% of the total study sample) had poor sleep, and 90% of them (7.43% of the total study sample) had good sleep quality.

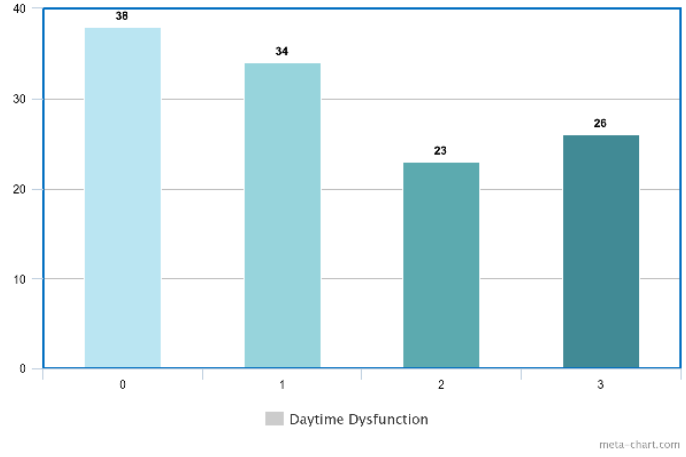


Figure 4

Only two patients were in remission, and one had poor sleep quality, while the other had good sleep quality (see figure 5).

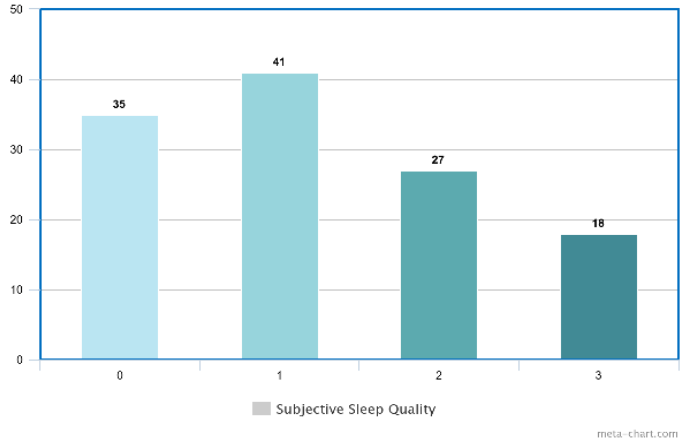
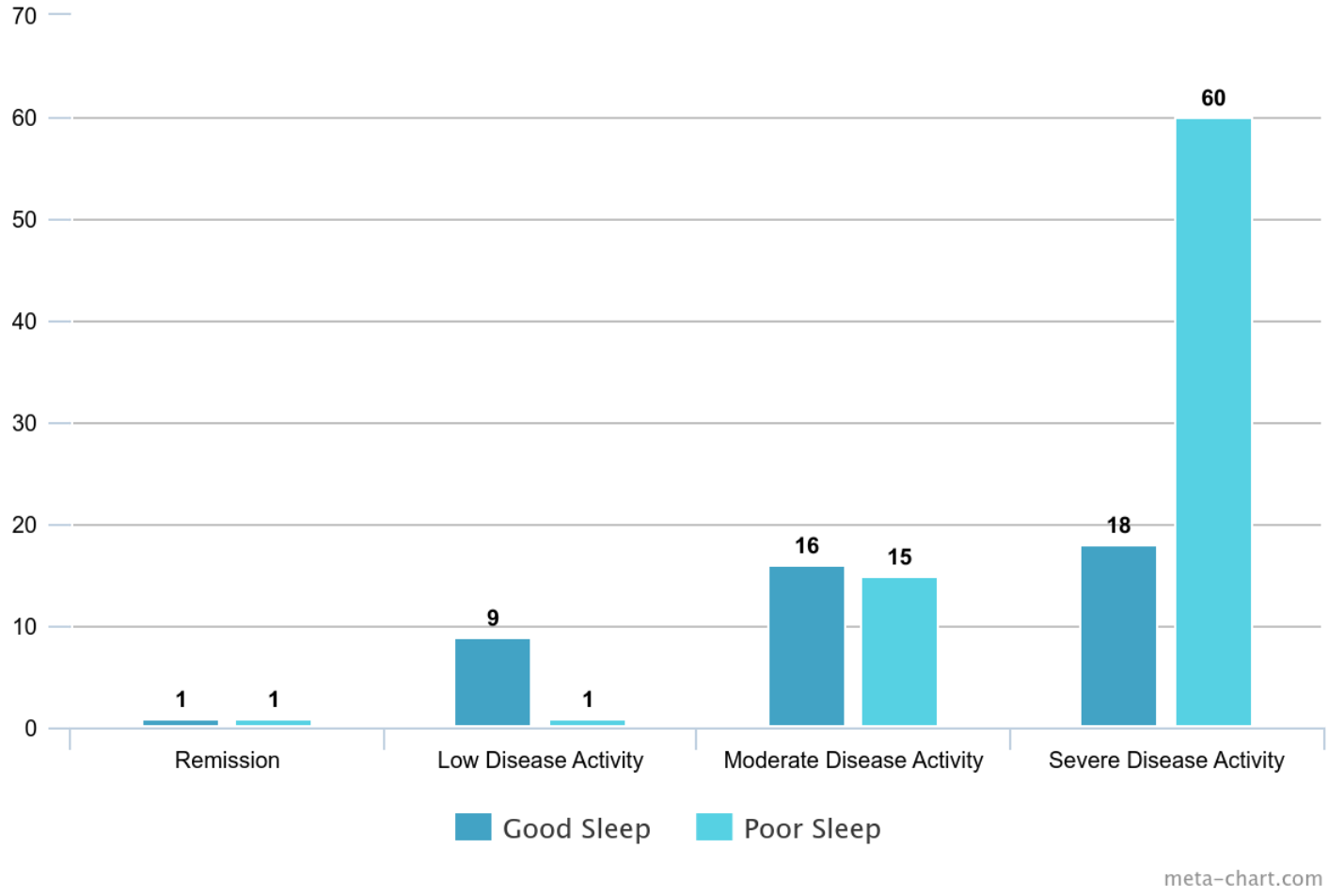


Figure 5


70
60
50
40
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0
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15
18
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Remission
Low Disease Activity
Moderate Disease Activity
Severe Disease Activity
Good Sleep
Poor Sleep
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Figure 6

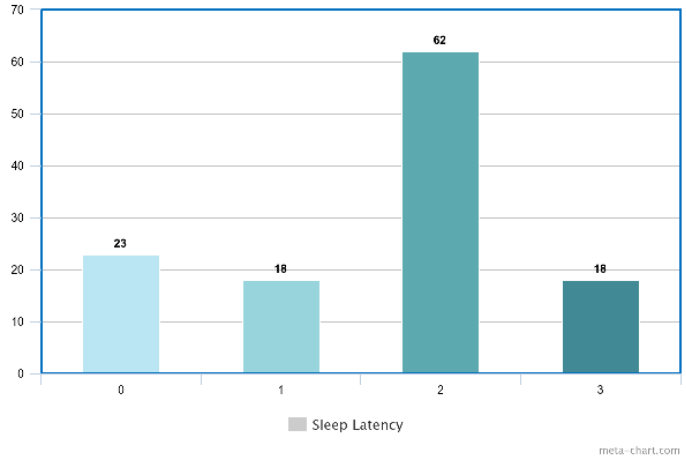

Figure 7

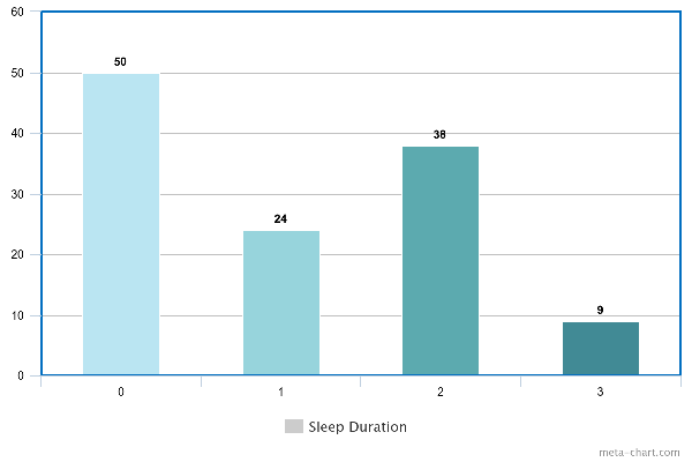

Figure 8

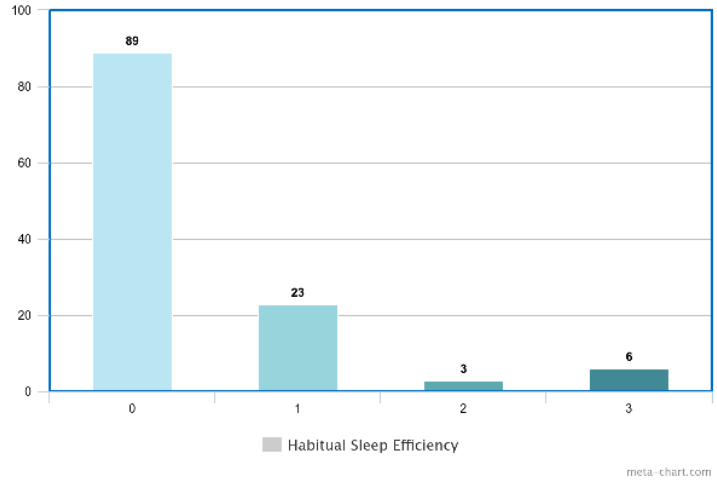

Figure 9

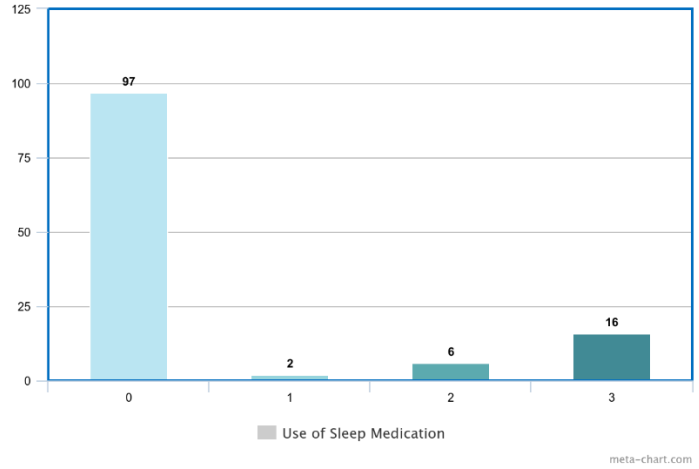

Figure 10

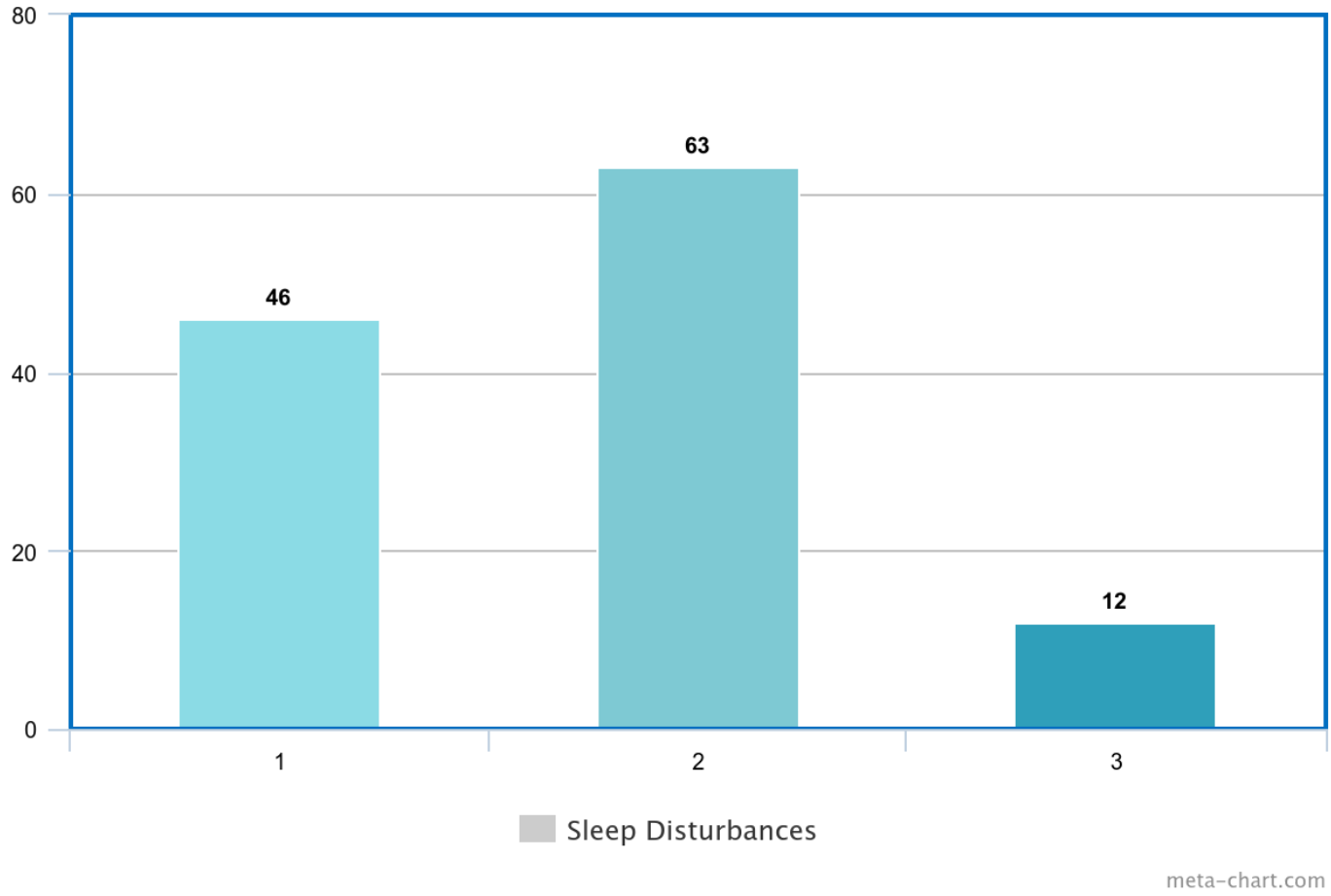

Figure 11

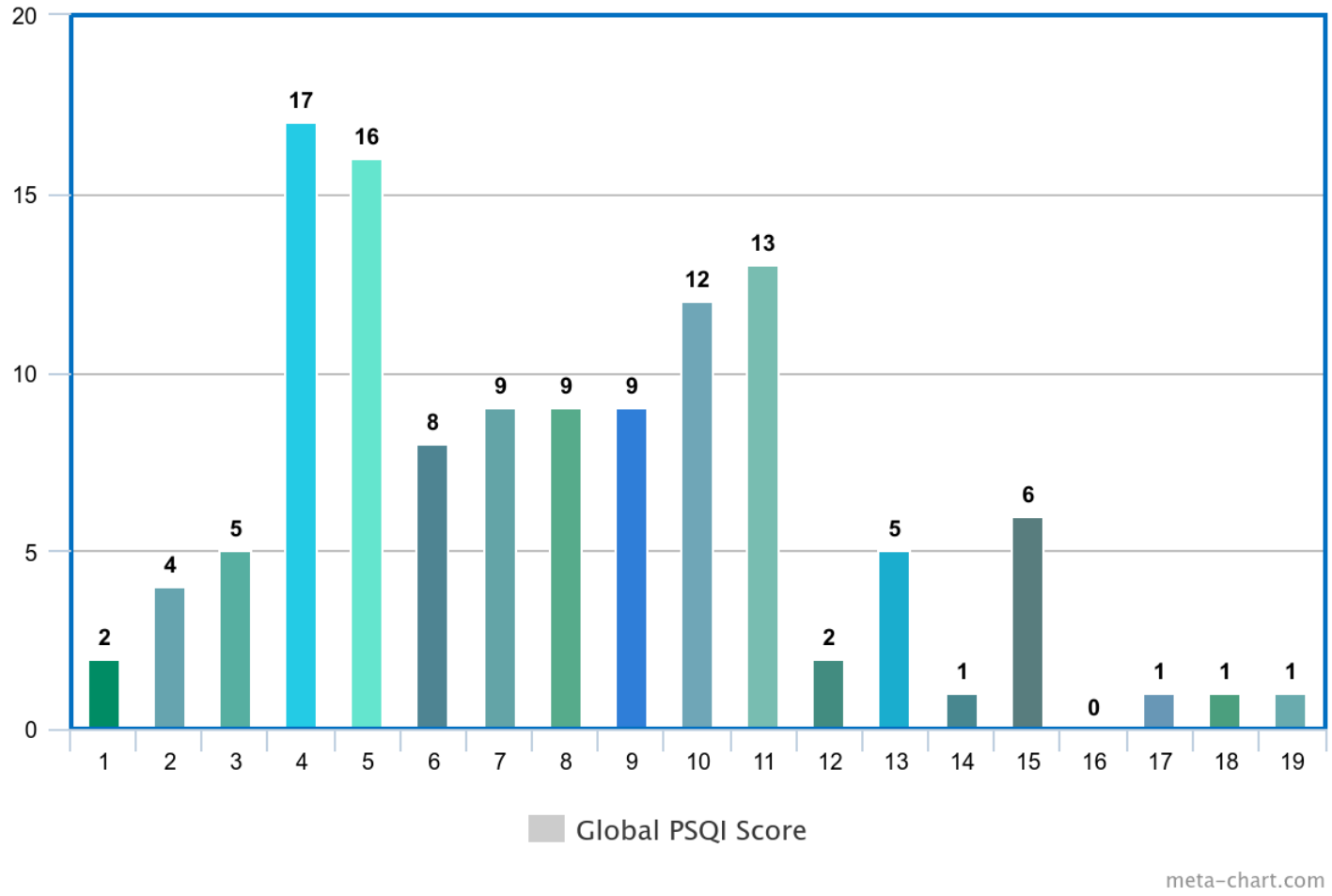

Figure 12

Discussion:-

Sleep problems are common in patients with chronic diseases and the prevalence of poor sleep is high in rheumatoid arthritis patients compared to healthy individuals [16].

Searching for the Correlation between PSQI scores and rheumatoid arthritis duration and activity, the results revealed that rheumatoid arthritis duration and activity have a significant positive correlation with the global PSQI. The relationship between sleep quality and rheumatoid arthritis disease activity and duration is still poorly understood as it is unclear to what extent they affect each other. Patients with rheumatoid arthritis suffer from a variety of symptoms such as joint pain and swelling, stiffness, fatigue and functional disability, that impair their quality of life and subsequently disturb their sleep. Conversely, sleep problems can cause a decrease in pain threshold which worsen sleep problems and tend to increase inflammatory markers that augment pain sensitivity. Patients who had no deformities, and subsequently had better controlled disease, had better overall sleep quality than those who had deformities.

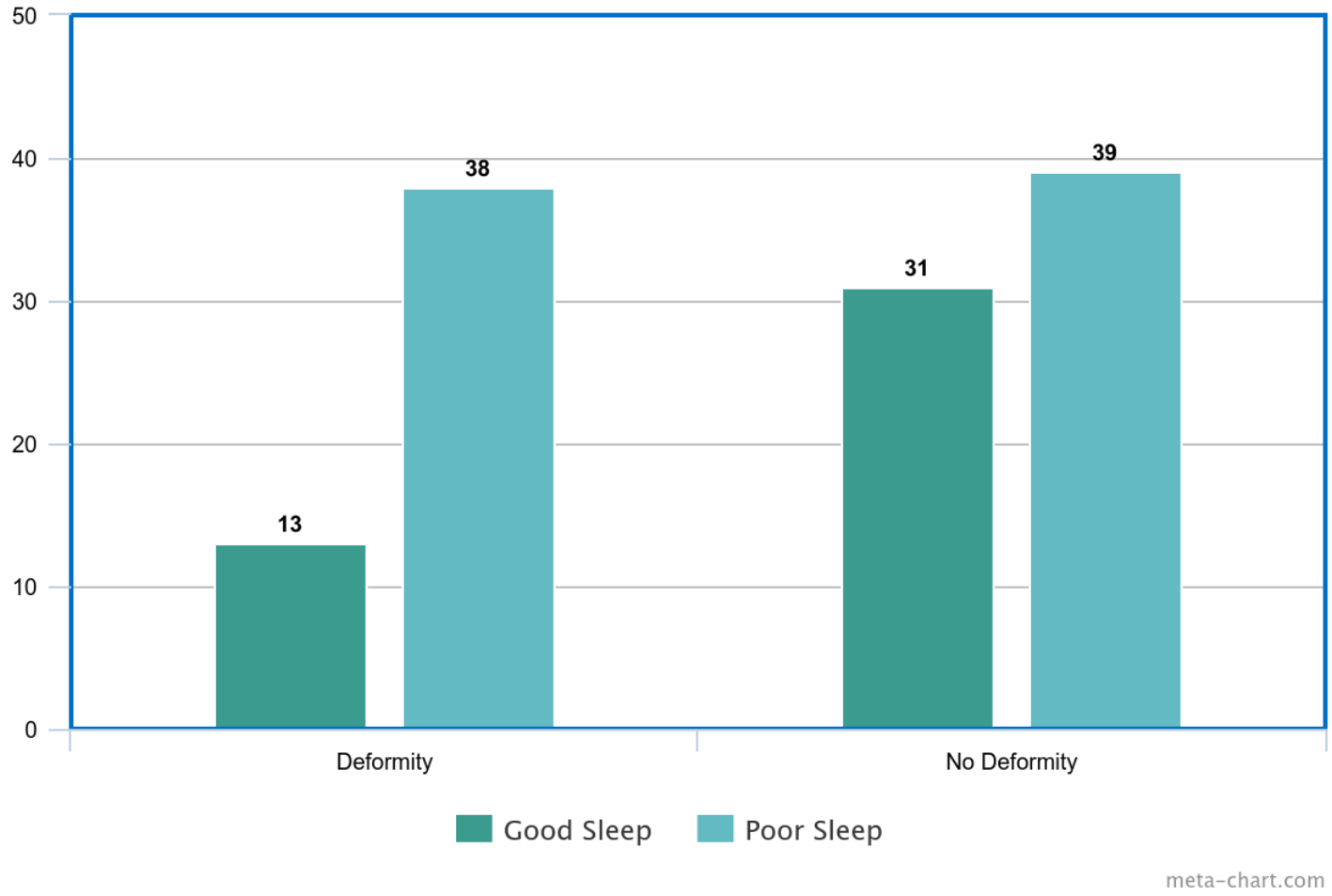

Figure 13

These results are in line with previous studies conducted by Sariyildiz MA et al. (2014), and Westhovens R, et al. (2014) which revealed a positive correlation between poor sleep quality and rheumatoid arthritis disease activity and duration [17,18].

In this study, we report the prevalence of poor sleep among patients with rheumatoid arthritis. Poor sleep is a common finding in patients with rheumatoid arthritis, as indicated by a global PSQI score of more than 5. This finding is consistent with previous studies, which also reported a high prevalence of poor sleep. There's a strong correlation between sleep quality and disease activity, as the majority of patients with severe disease activity had poor sleep, while those with low disease activity had better quality of sleep overall. However it demonstrated a poor correlation between sleep quality and disease duration, and sleep quality tend to be poor regardless of how long the disease have been present. Since most patients were females, it is difficult to ascertain whether there is a correlation between sex and sleep quality.

Conclusion:

Rheumatoid patients as expected had poor sleep quality and sleep problems correlate positively with disease activity and duration.

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