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A STUDY ON ASSESSMENT OF DEPRESSION AND SLEEP DISTURBANCES AMONG PATIENTS WITH RHEUMATOID ARTHRITIS

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ABSTRACT: The prevalence of Rheumatoid Arthritis is 0.1% to 1% and it is most common in developed countries. More than 2/3rd [54%-70%] of patients with RA have sleep disturbances. In RA multiple episodes of inflammation are predictive of an increased risk of developing depression. The prevalence of depression in individual RA ranges 14% to 48%. Sleep disturbances & depression in those with RA patients worsen their quality of life and impair their daily activity. Sleep issues and depressions have the potential to disrupt the effectiveness of treatments for RA. By addressing their concerns, we can enhance treatment compliance. There is a bidirectional relationship between RA, sleep disturbance & depression, poor sleep and depression can worsen RA symptoms. Understanding this complex scenario is crucial for the comprehensive care. Identifying and addressing sleep problems & depression can lead to better management strategies. These may involve lifestyle changes medication adjustments or mental health interventions to improve both physical & emotional well-being. This study is essential for enhancing their wellbeing, optimizing treatment outcomes and providing comprehensive care.

INTRODUCTION: Rheumatoid Arthritis (RA) constitutes a chronic, autoimmune and systemic inflammatory disorder. It is known to have a wide range of effects beyond the joints, with established impact on sleep and mood [1]. There is a higher prevalence of depression amongst arthritis patient [2]. It is characterized by inflammation of the joints, leading to pain, stiffness and swelling. It not only affects physical functioning but also has a profound impact on mental health [3].

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Sleep problems occur in 54–70% of RA patients and include poor quality, difficulty falling asleep, non-restorative sleep, awakening during the night, wakefulness and excessive daytime sleepiness [4]. In RA patients, sleep problems may be caused by pain [5], mood, and disease activity [6]. Sleep quality has been affected indirectly by pain through disease activity.

Moreover, by triggering a depressive mood, pain can contribute to sleep disturbance as well [7]. Depressive symptoms in RA have been associated with increased pain [8], physical disability [9], co morbidities [10], reduced quality of life [11] and higher mortality levels [12]. Recently, it has been reported that baseline and persistent depressive symptoms are associated with worse response to treatment and poorer long-term health outcomes [13].

Effects of Rheumatoid Arthritis on Sleep Disturbances: Poor sleep quality has been linked to pain, mood, fatigability, stress and disease activity in the rheumatoid disease population.

Pain and Discomfort: The inflammation in the joints can lead to persistent pain, making it difficult for RA patients to find a comfortable sleeping position. This pain can keep them awake at night, leading to difficulties falling asleep and frequent awakenings.

Stiffness and Joint Discomfort: Stiffness in the joints especially in the morning can cause significant discomfort making it challenging for patients to get out of bed or change their positions during sleep.

Fatigue: RA patients often experience fatigue, which can be both physical and mental. This fatigue can cause excessive daytime sleepiness and a constant feeling of tiredness, affecting the quality of sleep at night.

Medication Side Effects: Some medications used to manage RA symptoms such as corticosteroids, can interfere with normal sleep patterns and contribute to insomnia or restless sleep for RA patients.

Sleep Apnea: Sleep Apnea, a disorder characterized by interrupted breathing during sleep, can further disrupt the quality of sleep and contribute to daytime sleepiness. There is a higher prevalence of sleep Apnea in RA patients compared to the general population [18].

Effects of Rheumatoid Arthritis on Depression:

Chronic Pain: Persistent pain experienced by RA patients can not only impact sleep but also contribute to the development or worsening of depression. The constant discomfort and limitations in activities can result in feelings of sadness, helplessness and loss of interest in previously enjoyed activities.

Functional impairment: The physical limitations caused by RA may restrict a person's ability to engage in social activities, work or hobbies. These limitations can lead to feelings of isolation, dependency, frustration and increasing the risk of depression.

Inflammatory Processes: Inflammation a hallmark of RA can also affect the brain. Chronic inflammation may disturb the balance of neurotransmitters such as serotonin, which play a crucial role in mood regulation, potentially contributing to depressive symptoms.

Psychosocial Factors: The impact of living with a chronic disease like RA can affect a person's self-esteem, body image, relationships and financial burdens. The uncertainty of disease progression and the need for ongoing medical care can all contribute to increased stress levels and the development of depression [19].

It is important for healthcare providers to address both sleep problems and depression in RA patients, as they can significantly impact a patient's overall well-being and quality of life [20]. Treatment options include management of pain and inflammation, lifestyle modifications, cognitive behavioural therapy, medications for sleep or depression and when necessary, referral to mental health professionals for further evaluation and support [21].

Laboratory Tests:

Erythrocyte Sedimentation Test: The erythrocyte sedimentation rate (ESR) test was employed to assess the extent of inflammation in the body by measuring the rate at which red blood cells separated from other blood cells when treated with an anti-clotting substance in a laboratory setting. Clumping of red blood cells, indicative of inflammation resulted in faster separation. Elevated ESR levels suggested heightened inflammation while low levels indicated minimal inflammation. Although the ESR test alone was insufficient for diagnosing rheumatoid arthritis, it served as a valuable indicator. Various chronic conditions, infections or injuries could trigger inflammation and increased ESR levels guiding doctors in identifying potential causes. For instance, markedly elevated ESR levels would likely signify an infection rather than rheumatoid arthritis [30].

C– Reactive Protein Test: The C-reactive protein test was commonly utilized for assessing inflammation which played a crucial role in diagnosing rheumatoid arthritis and monitoring disease activity as well as response to treatments. Various other blood tests encompassing

assessments of kidney function, electrolytes, liver function, thyroid function, muscle markers, autoimmune markers and infection markers were conducted to evaluate overall health and consider alternative diagnoses.

Additionally, specific tests tailored for rheumatoid arthritis were occasionally considered. In the investigation of potential joint damage, imaging tests were employed to provide insights into the condition and progression of disease [31].

Rheumatoid Factor Test (RF): This blood test checks for Rheumatoid Factor, an antibody that many people with rheumatoid arthritis can eventually have in their blood. An antibody is a special protein made by the immune system that normally helps fight invaders in the body [32].

Anti–Cyclic Citrullinated Peptide Antibody Test: This blood test checks for anti-CCP antibodies which appear in many people with rheumatoid arthritis. In addition, anti-CCP can appear before RA symptoms develop, which can help to diagnose the disease early. This test's results, along with the results from RF blood tests, are useful for confirming rheumatoid arthritis diagnosis [33].

Complete Blood Count Test: This blood test measures different blood cell counts and can help diagnose anemia which is common in people with RA [34].

Other Tests: There's no cure for rheumatoid arthritis, but treatment can help manage your symptoms. However, multiple blood tests can indicate rheumatoid arthritis is the likely cause of your symptoms. In addition to blood tests, various diagnostic methods are employed to confirm rheumatoid arthritis [35]. These include:

Physical Assessment: Evaluating the impact of symptoms on daily life involves assessing the ability to perform tasks like showering, eating, and dressing. A physical therapist may also examine grip strength, walking patterns, and balance [36].

Joint Scan: This diagnostic method aims to identify inflammation and damage in joints, providing valuable information to support the confirmation of a rheumatoid arthritis diagnosis [37].

Imaging Tests: X-rays and MRIs generate detailed images of bones, muscles, and joints, aiding in the diagnosis of rheumatoid arthritis by revealing structural changes and abnormalities [38].

Research Methodology: This was a cross-sectional observational study conducted for a period of 6months with sample size of 189 study participants at Health Hospital, Tenali, Guntur district. The data was collected using Pittsburgh Sleep Quality Index. This measures the sleep quality reported during the previous 4 weeks. It has 19 items that measure the 7 components of sleep which include sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medication and daytime dysfunction. APSQI score ≥ 5 (max score 21) determines poor quality of sleep. Depression was assessed by Patient Health Questionnaire (PHQ-9), a 9-item questionnaire with each question scoring 0-3, PHQ score ranges from 0-27 with higher scores indicating lower mood. A total score of 5 considered to be a positive result for depression. Disease activity of RA was measured by using Disease Activity Score (DAS-28). It includes assessment of Tender Joint Count (TJC), Swollen Joint Count (SJC), Erythrocyte Sedimentation Rate (ESR) or C-reactive protein (CRP) and the activity classified as remission (<2.6), low (2.6-<3.2), moderate (>3.2-<5.1) or high (>5.1).

Study Criteria:

Inclusion Criteria: Both the genders of male and female patients above the age of 18 years, Patients diagnosed with RA, Individuals willing to participate and who provide informed consent are included in the study.

Exclusion Criteria: Patients with severe medical or psychiatric conditions and co-morbid conditions will be excluded and Patients with previous medication history or medical history of sleep or mood disorders unrelated to RA will be excluded, Pediatrics, pregnant women and patients not willing to participate will be excluded.

RESULTS: Table 1 represents the gender wise categorization of study participants. A total of 189 study participants were recruited in this study. Among them, 49(25.9%) were found to be males and 140(74.1%) were found to be females.

TABLE 1: GENDER WISE CATEGORIZATION OF THE STUDY PARTICIPANTS

Gender	Total (%)
Male	49(25.9)
Female	140(74.1)
Total%	189(100)

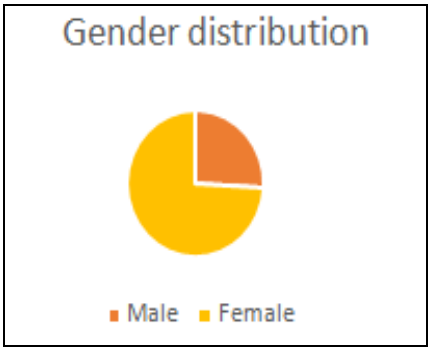

FIG. 1: GENDER DISTRIBUTION

Table 2 represents the age wise categorization of the study participants. Among the 189 study participants, 1(0.5%) was below 30 years of age, 19(10.1%) were of 31-40 years age group, 84(44.5%) were of 41-50 years age group, 61(32.3%) were of 51-60 years age group, 22(11.6%) were of 61-70 years age group and 2(1.0%) were of 71-80 years of age.

TABLE 2: AGE WISE CATEGORIZATION OF STUDY PARTICIPANTS

Age (Yrs)	Male (%)	Female (%)	Total (%)
Below 30	0 (0.0)	1 (0.7)	1 (0.5)
31-40	3 (6.1)	16(11.4)	19(10.1)
41-50	20(40.8)	64(45.8)	84(44.5)
51-60	18(36.7)	43(30.7)	61(32.3)
61-70	6(12.3)	16(11.4)	22(11.6)
71-80	2 (4.1)	0 (0.0)	2 (1.0)
Total (%)	49 (100)	140 (100)	189 (100)

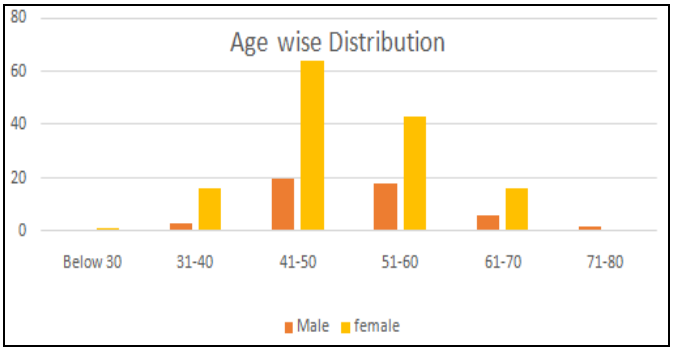

FIG. 2: AGE WISE DISTRIBUTION

Table 3 represents the categorization of study participants based on occupation. Among 189 study participants, 43(87.8%) males and 34(24.2%) females were employed. About 6(12.2%) males and 106 (75.8%) females were unemployed.

TABLE 3: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON OCCUPATION

Occupation	Male (%)	Female (%)	Total (%)
Employed	43(87.8)	34(24.2)	77(40.8)
Unemployed	6(12.2)	106(75.8)	112(59.2)
Total (%)	49 (100)	140 (100)	189 (100)

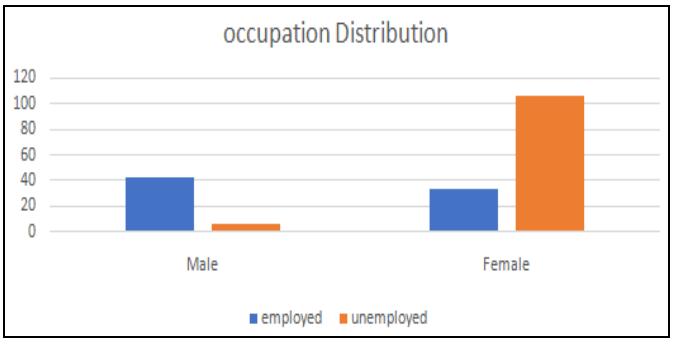

FIG. 3: OCCUPATIONAL DISTRIBUTION

Table 4 represents the categorization of study participants based on personal history of smoking status. Among 189 subjects, 26(53.1%) males and 3(2.1%) females were smokers. About 23(46.9%) males and 137 (97.9%) females were non-smokers.

TABLE 4: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON SMOKING STATUS

Smoking Status	Male (%)	Female (%)	Total (%)
Smoker	26(53.1)	3 (2.1)	29(15.3)
Non-smoker	23(46.9)	137(97.9)	160(84.7)
Total (%)	49 (100)	140 (100)	189 (100)

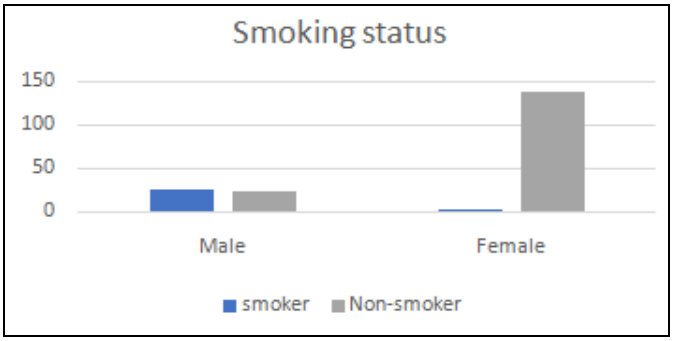

FIG. 4: SMOKING STATUS

Table 5 represents the categorization of study participants based on personal history of alcohol intake. Among 189 subjects, 24(48.9%) males and 3(2.1%) females were alcoholic. About 25(51.1%) males and 137 (97.9%) females were non alcoholic.

TABLE 5: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON ALCOHOLIC STATUS

Alcohol status	Male (%)	Female (%)	Total (%)
Yes	24(48.9)	3 (2.1)	27(14.3)
No	25(51.1)	137(97.9)	162(85.7)
Total (%)	49 (100)	140 (100)	189 (100)

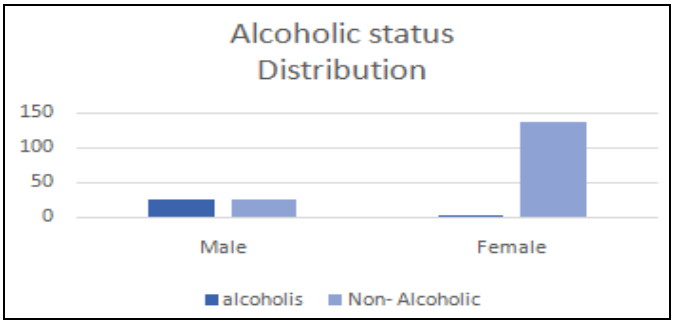

FIG. 5: ALCOHOLIC STATUS DISTRIBUTION

Table 6 represents the categorization of study participants based on this verity of depression.

In this study 189 subjects were included. Among them 28(14.9%) were observed with no depression between the score of 1-4, 102(53.9%) were observed with mild depression between the score of 5-9, 49(25.9%) were observed with moderate depression between the score of 10-14, 1 (0.5%) was observed with moderately severe depression between the score of 15-19 and 9 (4.8%) were observed with severe depression between the score of 20-27 based on patient health questionnaire interpretation (PHQ-9).

TABLE 6: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON SEVERITY OF DEPRESSION

Depression Severity	Male (%)	Female (%)	Total (%)
Normal (1-4)	8(16.3)	20(14.3)	28(14.9)
Mild depression (5-9)	27(55.1)	75(53.6)	102(53.9)
Moderate depression (10-14)	11(22.5)	38(27.1)	49(25.9)
Moderately severe depression (15-19)	0 (0.0)	1 (0.7)	1 (0.5)
Severe depression (20-27)	3 (6.1)	6 (4.3)	9 (4.8)
Total (%)	49 (100)	140 (100)	189 (100)

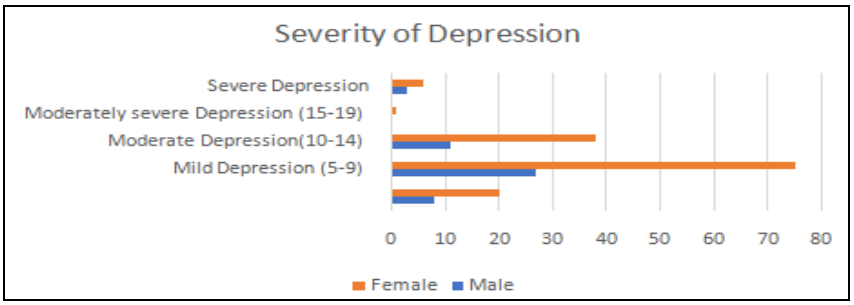

FIG. 6: SEVERITY OF DEPRESSION

Table 7 represents the categorization of study participants based on depression status. Among 189 study participants, 41(83.7%) males and 120(85.8%) females were observed with depression. About 8(16.3%) males and 20(14.2%) females were not observed with depression.

TABLE 7: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON DEPRESSION STATUS

Depression Status	Male (%)	Female (%)	Total (%)
With Depression	41(83.7)	120(85.8)	161(85.1)
Without Depression	8(16.3)	20(14.2)	28(14.9)
Total (%)	49 (100)	140 (100)	189 (100)

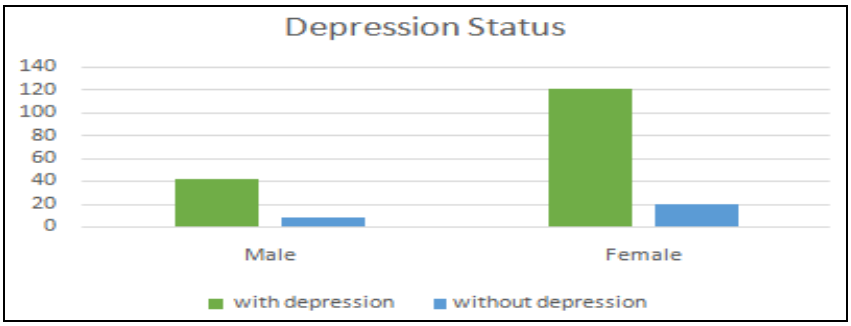

FIG. 7: DEPRESSION STATUS

Table 8 represents the categorization of study participants based on difficulties faced during depression in performing work, managing house hold task and interacting with others. Among 189

study participants, 120(63.5%) were observed with no difficulty, 61(32.3%) were observed with somewhat difficulty, 8(4.2%) were observed with very difficult and no one were observed with extremely difficulty.

TABLE 8: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON DIFFICULTIES FACED DURING DEPRESSION

Difficulties Faced During Depression	Male (%)	Female (%)	Total (%)
Not difficult	32(65.3)	88(62.9)	120(63.5)
Somewhat difficult	14(28.6)	47(33.6)	61(32.3)
Very difficult	3 (6.1)	5 (3.5)	8 (4.2)
Extremely difficult	0 (0.0)	0 (0.0)	0 (0.0)
Total (%)	49 (100)	140 (100)	189 (100)

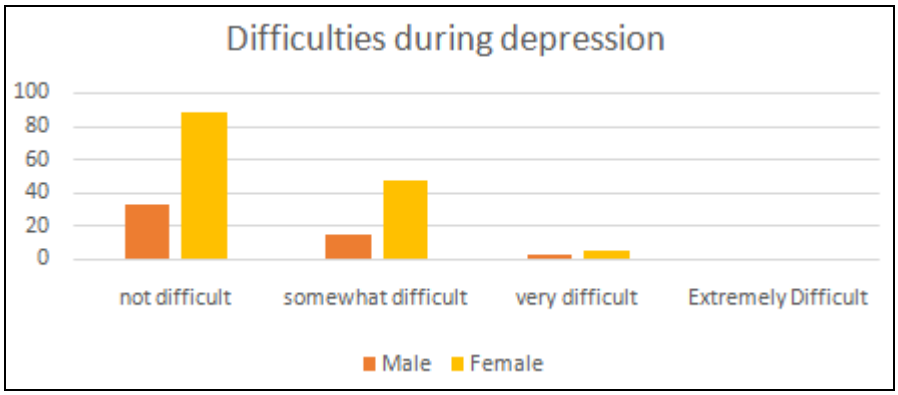

FIG. 8: DIFFICULTIES DURING DEPRESSION

Table 9 represents the categorization of study participants based on activity of the disease. Among 189 study participants, 1 (0.5%) was observed with remission between the score of 0-2.6, 4(2.1%) were observed with low disease activity between the score of 2.6-3.2, 93(49.2%) were observed with moderate disease activity between the score of 3.2-5.1 and 91 (48.2%) were observed with the score greater than 5.1 which indicates high disease activity based on Disease Activity Score 28.

TABLE 9: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON DISEASE ACTIVITY

Disease activity score	Male (%)	Female (%)	Total (%)
Remission (0-2.6)	0 (0.0)	1 (0.7)	1 (0.5)
Low disease activity (2.6-3.2)	2 (4.2)	2 (1.4)	4 (2.1)
Moderate disease activity (3.2-5.1)	23(46.9)	70(50.0)	93(49.2)
High disease activity (>5.1)	24(48.9)	67(47.9)	91(48.2)
Total (%)	49 (100)	140 (100)	189 (100)

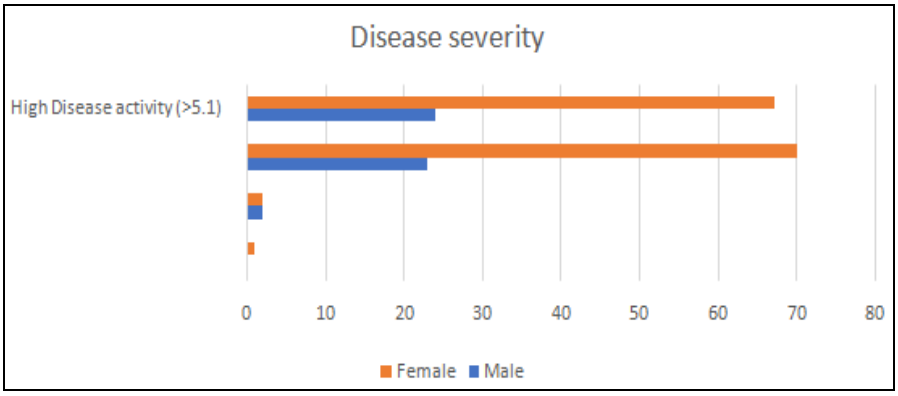

FIG. 9: DISEASE SEVERITY

Table 10 represents the categorization of the study participants according to their sleep quality. Among 189 subjects with rheumatoid arthritis, 7 (3.7%) were experienced with very good quality of

sleep, 97(51.4%) were experienced with fairly good sleep quality, 70(37.0%) were experienced with fairly bad sleep quality and 15 (7.9%) were experienced with very bad sleep quality.

TABLE 10: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON SLEEP QUALITY

Sleep Quality	Male (%)	Female (%)	Total (%)
Very good (0)	1 (2.0)	6 (4.4)	7 (3.7)
Fairly good (1)	30(61.2)	67(47.8)	97(51.4)
Fairly bad (2)	17(34.8)	53(37.8)	70(37.0)
Very bad (3)	1 (2.0)	14(10.0)	15 (7.9)
Total (%)	49 (100)	140 (100)	189 (100)

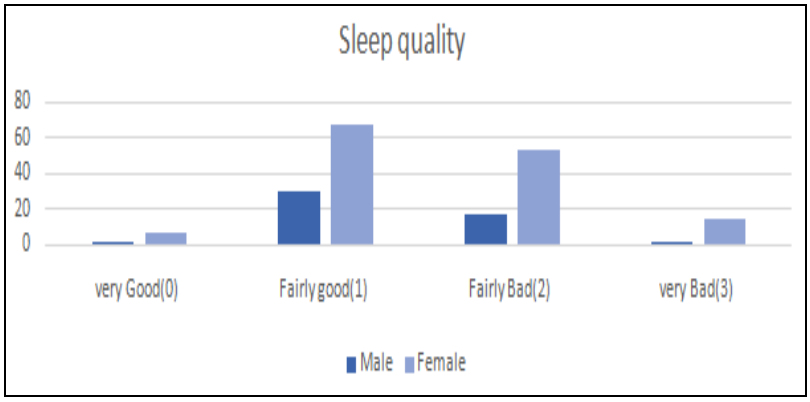

FIG. 10: SLEEP QUALITY

Table 11 represents the categorization of study participants based on sleep latency. Among 189 subjects with rheumatoid arthritis, 23 (12.1%) fall asleep during night within less than 15minutes, 54(28.5%) subjects usually take 16-30 minutes to fall asleep, 41(21.6%) subjects usually take 31-60 minutes to fall asleep and 71 (37.8%) subjects usually take greater than 60 minutes to fall asleep during night.

TABLE 11: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON SLEEP LATENCY

Sleep Latency	Male (%)	Female (%)	Total (%)
Less Than or Equal to 15 Minutes (0)	6(12.2)	17(12.1)	23(12.1)
16-30 Minutes (1)	15(30.6)	39(27.8)	54(28.5)
31-60 Minutes (2)	16(32.8)	25(17.8)	41(21.6)
Greater Than 60 Minutes (3)	12(24.4)	59(42.3)	71(37.8)
Total (%)	49 (100)	140 (100)	189 (100)

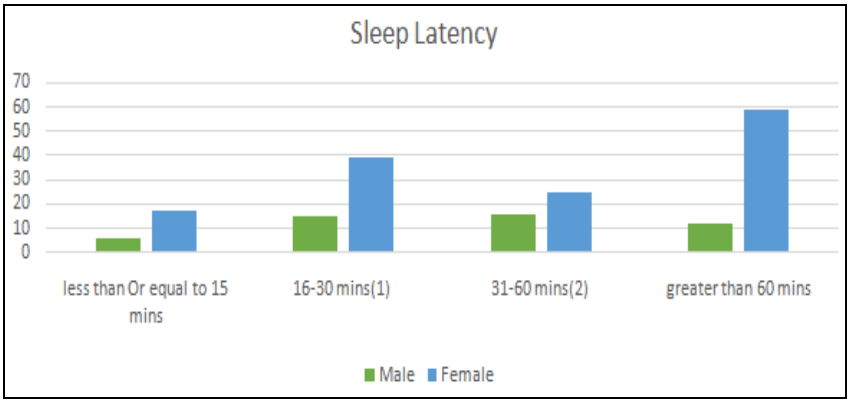

FIG. 11: SLEEP LATENCY

Table 12 represents the categorization of the study participants based on their sleep duration. Among 189 subjects with rheumatoid arthritis, 67 (35.5%) were observed with greater than 7 hours of sleep daily, 69 (36.5%) were observed with 6-7 hours of sleep, 32 (16.9%) were observed with 5-6 hours of sleep and 21(11.1%) were observed with less than 5 hours of sleep.

TABLE 12: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON SLEEP DURATION

Sleep Duration	Male (%)	Female (%)	Total (%)
Greater Than 7 Hours (0)	21(42.8)	46(32.9)	67(35.5)
6-7 Hours (1)	17(34.6)	52(37.1)	69(36.5)
5-6 Hours (2)	7(14.5)	25(17.9)	32(16.9)
Less Than 5 Hours (3)	4 (8.1)	17(12.1)	21(11.1)
Total (%)	49 (100)	140 (100)	189 (100)

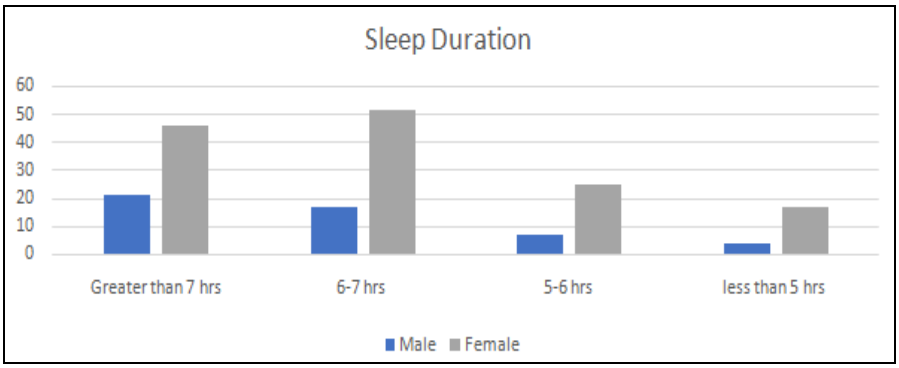

FIG. 12: SLEEP DURATION

Table 13 represents the categorization of the study participants based on sleep efficacy. Among 189 subjects with rheumatoid arthritis, 132 (69.9%) were observed with greater than 85% of sleep efficacy, 28 (14.8%) were observed with 75-84 % of sleep efficacy, 18 (9.5%) were observed with 65-74 % of sleep efficacy and 11 (5.8%) were observed with less than 65 % of sleep efficacy.

TABLE 13: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON SLEEP EFFICIENCY

Sleep Effiency	Male (%)	Female (%)	Total (%)
Greater Than 85% (0)	38(77.6)	94(67.1)	132(69.9)
75%-84% (1)	8(16.3)	20(14.3)	28(14.8)
65%-74% (2)	0 (0.0)	18(12.9)	18 (9.5)
Less Than 65% (3)	3 (6.1)	8 (5.7)	11 (5.8)
Total (%)	49 (100)	140 (100)	189 (100)

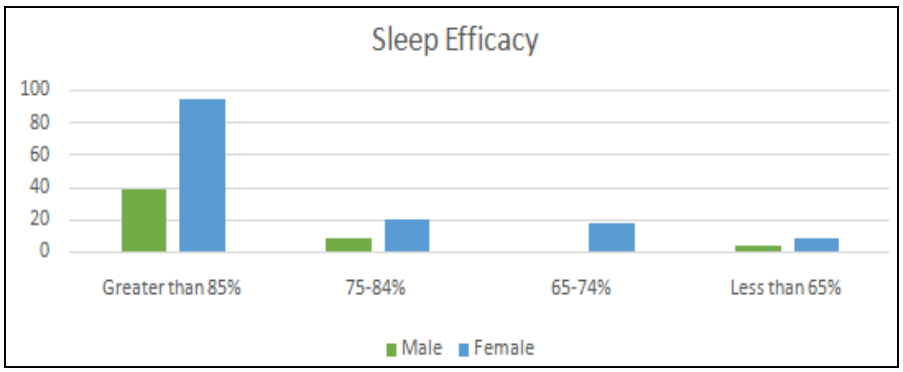

FIG. 13: SLEEP EFFICACY

Table 14 represents the categorization of the study participants based on their sleep disturbances. Among 189 subjects with rheumatoid arthritis, 10(0.5%) were not observed with sleep disturbances during the past month, 136 (72.0%) were observed with sleep disturbances less than once a week, 51 (27.0%) were observed with sleep disturbances in once or twice a week and 1(0.5%) was observed with sleep disturbances in three or more times a week.

TABLE 14: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON SLEEP DISTURBANCES

Sleep Disturbances	Male (%)	Female (%)	Total (%)
Not during the past month	0 (0.0)	1 (0.7)	10 (0.5)
Less than Once A Week (1)	34(69.4)	102(72.9)	136(72.0)
Once or Twice A Week (2)	15(30.6)	36(25.7)	51(27.0)

Three Or More Times a week (3)	0 (0.0)	1 (0.7)	1 (0.5)
Total (%)	49 (100)	140 (100)	189 (100)

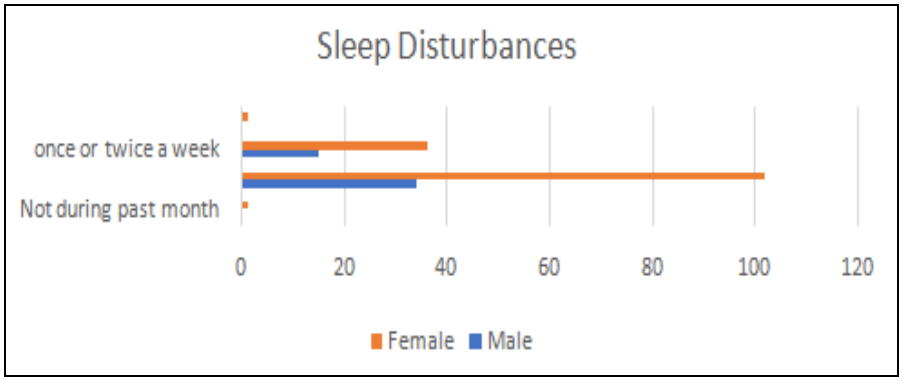

FIG. 14: SLEEP DISTURBANCES

Table 15 represents the categorization of the study participants based on the use of sleep medication. Among 189 subjects with rheumatoid arthritis, 144(76.2%) had not used medication for sleep during the past month, 11(5.8%) were used medication for sleep less than once a week, 12(6.4%) were used medication for sleep in once or twice a week and 22(11.6%) were used medication for sleep in three or more times a week.

TABLE 15: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON USE OF SLEEP MEDICATION

Use of Sleep Medication	Male (%)	Female (%)	Total (%)
Not during past month (0)	39(79.6)	105(75.0)	144(76.2)
Less than once a week (1)	3 (6.1)	8 (5.7)	11 (5.8)
Once or twice a week (2)	3 (6.1)	9 (6.4)	12 (6.4)
Three or more time a week	4 (8.2)	18(12.9)	22(11.6)
Total (%)	49 (100)	140 (100)	189 (100)

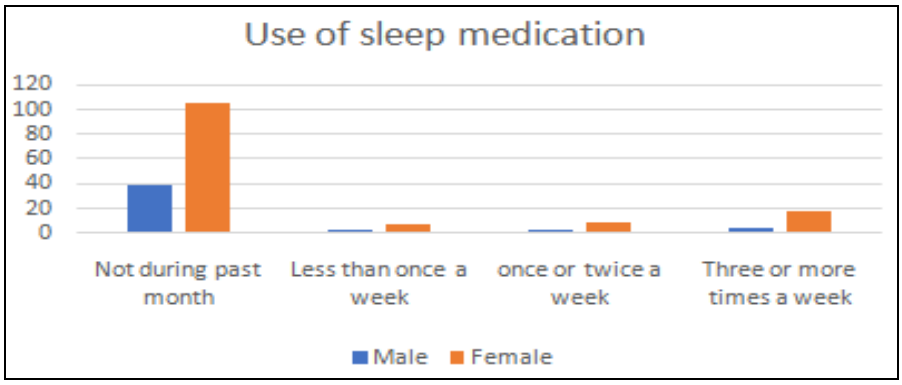

FIG. 15: USE OF SLEEP MEDICATION

Table 16 represents the categorization of the study participants based on their daytime dysfunction. Among 189 subjects with rheumatoid arthritis, 12 (6.3%) subjects were not observed with daytime dysfunction, 129 (68.3%) subjects were observed with dysfunction and had a very slight problem, 41(21.7%) subjects were observed with dysfunction caused somewhat a problem in doing things and 7 (3.7%) subjects were observed with dysfunction and had a very big problem.

TABLE 16: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON DAY TIME DYSFUNCTION

Day Time Dysfunction	Male (%)	Female (%)	Total (%)
No problem at all (0)	3 (6.1)	9 (6.4)	12 (6.3)
Only a very slight problem (1)	38(77.6)	91(65.0)	129(68.3)
Somewhat a problem (2)	7(14.3)	34(24.3)	41(21.7)
A very big problem (3)	1 (2.0)	6 (4.3)	7 (3.7)
Total (%)	49 (100)	140 (100)	189 (100)

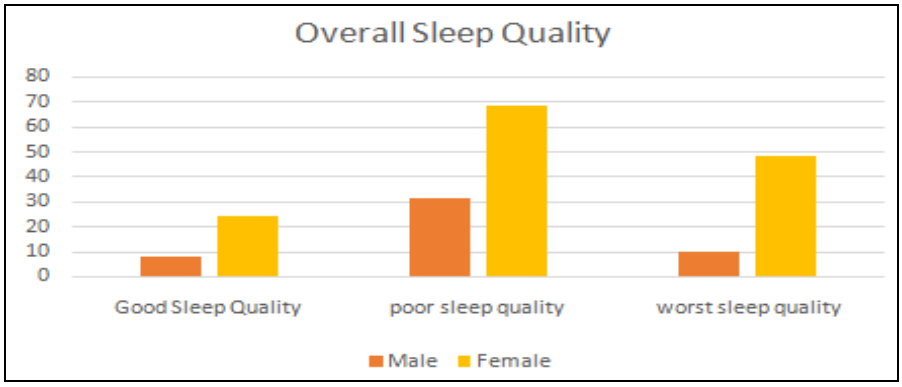

FIG. 16: OVERALL SLEEP QUALITY

Table 17 represents the categorization of the study participants based on their overall quality of sleep. Among 189 subjects with rheumatoid arthritis, 32 (16.9%) were observed with good sleep quality, 99(52.4%) were observed with poor sleep quality and 58(30.7%) were observed with worst sleep quality.

TABLE 17: CATEGORIZATION OF STUDY PARTICIPANTS BASED ON OVERALL SLEEP QUALITY

Sleep Quality	Male (%)	Female (%)	Total (%)
Good sleep quality (0-4)	8(16.3)	24(17.1)	32(16.9)
Poor sleep quality (5-9)	31(63.3)	68(48.6)	99(52.4)
Worst sleep quality (10-21)	10(20.4)	48(34.3)	58(30.7)
Total (%)	49 (100)	140 (100)	189 (100)

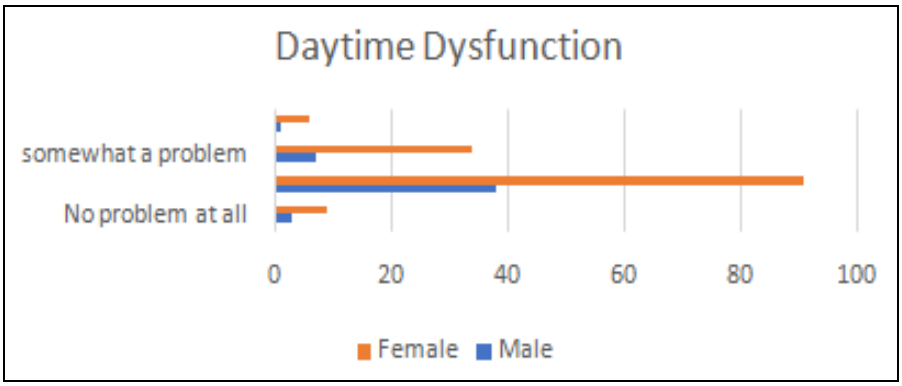

FIG. 17: DAYTIME DYSFUNCTION

DISCUSSION: A total of 189 study participants were recruited in the study. Among them 49 (25.9 %) were found to be males and 140 (74%) were found to be females. Most of the study participants were observed in the age group of 41-50 years (44.5%) followed by the age group of 51-60years (32.3%). The majority of the study participants were non-smokers (84.7%) and non-alcoholic (85.7%). In the aspect of severity of depression most of the patients were mild (53.9%) followed by moderate (25.9%). In this study the disease activity score was interpret ant by means of DAS 28 assessment. Almost half of the study participants were observed with moderate disease activity (49.2%) followed by high disease activity (48.2%). The overall mean disease activity score of the study participants was observed to be 5.127 (±1.04). In the aspect of sleep quality half of the study participants were observed with fairly good sleep (51.4%) followed by fairly bad (37%) and very bad (7.9%). The overall mean score of the component 1 (sleep quality) was observed to be 1.49 (±0.69). In the aspect of sleep latency most of the study participants were observed with a sleep latency of >60 minutes (37.8%). The overall mean score of the component 2 (sleep latency) was observed to be 1.84 (±1.06). In the aspect of sleep duration most of the study participants were observed with sleep duration of 6 to 7 hours (36.5%). The overall mean score of the component 3 (sleep duration) was observed to be 1.03 (± 0.98). In the aspect of sleep efficiency most of the study participants were

observed with sleep efficiency of greater than 85% (69.9%). The overall mean score of the component 4 (sleep efficiency) was observed to be 0.513(±0.89). In the aspect of sleep disturbances most of the study participants were observed with sleep disturbances, less than once a week (72%). The overall mean score of the component 5 (sleep disturbances) was observed to be 1.27 (±0.47). In this study, the overall mean score of Pittsburgh sleep quality index was observed to be7.89 (±3.33).

CONCLUSION: In this study, the prevalence of depression among the patients with rheumatoid arthritis was found to be (85.1%). The severity of depression was observed to be mild followed by moderate in the majority of the study participants. Among the patients with rheumatoid arthritis patients were observed with moderate disease activity followed by high disease activity.

In conclusion, the prevalence of depression was observed to be very high among patients with rheumatoid arthritis. Clinical pharmacists should take the responsibility along with rheumatologist in association with psychiatrist in the aspect of the management of rheumatoid arthritis associated with psychiatric disorders like depression that helps in providing a better patient care and with an increased health related quality of life among them.

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