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Original Article

Effect of Stress on Quality of Life in Patients with Chronic Rheumatoid Arthritis

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ABSTRACT

Stress symptoms affect one's body, thoughts and feelings. Stress may decrease an individual's self-esteem, increasing anxiety and sadness, and adversely affecting the general quality of life (QoL) in rheumatoid arthritis (RA) patients. **Objective:** To determine the effect of stress on quality of life in patients with chronic rheumatoid arthritis. **Methods:** This cross-sectional study was conducted on 196 participants at The University of Lahore Teaching Hospital. Stress in RA patients was measured using a perceived stress score (PSS). PSS scores were calculated by inverting replies to the four positively stated items (items 4, 5, 7, and 8) and then accumulating all scale items (*e.g.*, 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0). The SF-36 questionnaire was used to measure QoL. The lower the score, the greater the degree of impairment; for example, a score of zero equals maximum disability and a score of 100 equals no disability. A non-probability convenient sampling strategy was used to compute sample size. **Results:** The results showed that the average value of age was 44.14± 6.842 years with a lowest value of 32.00 and a highest value of 58.00 years. Male had a frequency of 13 (6.6%) and patients with a frequency of 183 (93.4%). According to the results, the average value of physical health component scoring was 37.12± 9.96 and the average value of mental health component scoring was 44.00± 5.738. The results showed that the average value of perceived stress score was 25.32± 7.47. The significant value of 0.000 was smaller than the *p-value* in the study, indicating that there is a link between stress and quality of life. **Conclusions:** These findings led to the conclusion that stress had an impact on RA Patient's quality of life.

INTRODUCTION

Immune system normally works to protect the body against any infections and diseases [1]. Problem in the immune system leads to autoimmune disorders in body [2]. One of the most common autoimmune disorder include RA [3]. It is inflammatory systemic autoimmune [4]. In RA immune system attacks the healthy cell of the body causing inflammation in that body area [5,6]. It commonly affects hand joint, wrist and knees. It includes eyes, joints, heart, kidney, salivary gland, bone marrow, blood vessels, skin and nerve tissue [7]. RA occurs when a lining of the joint gets inflamed and damages the tissue of the joint which further cause long lasting pain, inflammation and unsteadiness [8]. Its symptoms include warm area, inflammation, joint pain, joint stiffness (normally in morning), fever, fatigue and loss of appetite. Symptoms which occur before six months is known as early and when the symptoms are present for more than six month it is called established [9]. Prevalence of the RA is 3 cases out of every 10000 populations annually [10]. With every 1% increase of age prevalence of the RA increase by 1% [11]. It is more prevalent in people with 35 to 50 years of age [12]. RA shows symmetrical presentation which effects multiple joints. Its clinical presentation includes pain, swelling as well as nausea in the affected area. Pain involvement is early in this disease which involves metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joints [13]. It also has extra articular involvement. In RA, MCP and PIP are commonly involved in hand which occurs early and as the disease progresses deformities such as Boutonniere and swan neck occurs [14]. In normal joints there are synovial membranes which contain synovial fluid. This fluid acts as a lubricant between the joints [15]. In RA, there is an inflammation of synovial membrane which results in cartilage erosion. This causes symptoms such as pain and swelling. Another feature seen

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in RA patient is angiogenesis [16]. Synovial membrane is made up of fibroblast synoviocytes cells. In this synovial membrane there are macrophages like TNFα, IL-1 and IL-6. These cytokines result in inflammation. These cytokines cells stimulate fibroblast synoviocytes [17]. When synoviocytes are stimulated they proliferate after their activation. Along with proliferation process they also assist in stimulate RANKL expression [18]. This RANKL expression together with cytokines stimulates osteoclast activation which lead towards joint erosion. Cytokines also contribute in stimulating proteases which breaks the bone cartilage causing degradation [19]. As a result of this cartilage causes further secretion of proteases leading to more degeneration of the cartilage [20]. These synoviocytes then travels from one joint to another causing symmetry leading towards progression of the rheumatoid arthritis [21]. Its risk factor includes age, gender, smoking status, obesity and family history [22]. The complications include dry eyes, rheumatoid nodules, osteoporosis, infection, lung problem, heart problem, carpal tunnel syndrome and lymphoma along with abnormal body composition [23-25]. The treatment involves pharmacological and non-pharmacological agents. Recently anti rheumatic drug is the most advance form of disease modifying treatment [26]. Stress being one of the common factor effects rheumatoid patients as a trigger which flares up this disease. It is stated that mind and body interact with one another in unique manner which impacts person health [27]. Stress causes more damage and inflammation in RA patient. This destruction results in impairment with respect to all aspect of QoL [28-31]. By improving the QoL, health promoting activities strengthens a person's over all well-being and also helps a person in preventing such disease like rheumatoid arthritis [32]. This study was conducted to investigate the impact of stress on the quality of life of rheumatoid arthritis patients.

METHODS

A total of 196 participants from The University of Lahore Teaching Hospital were enrolled in this cross-sectional survey. Stress in RA patients was measured using a perceived stress score. PSS scores were calculated by inverting replies to the four positively stated items (items 4, 5, 7, and 8) and then totaling across all scale items (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0). The PSS 10 item scale was broken down into four questions: 2, 4, 5, and 10 [33]. The SF-36 questionnaire was used to measure QoL. The SF-36 is made up of eight scaled scores, which are the weighted sums of each section's questions. On the assumption that each question bears equal weight, each scale was immediately translated into a 0-100 scale. The lower the score, the greater the degree of impairment. The lower the number, the less impairment; for example, a score of zero equals maximum disability, while a score of 100 equals no disability [34]. The symptoms' history was recorded. A non-probability convenient sampling strategy was used to compute sample size. Before completing out the surveys, all patients were given written consent and the significance of the study was explained.

RESULTS

Several participants who fulfilled the inclusion criteria were registered i.e., N= 196. Data was collected by using PSS and SF 36 questionnaire. PSS was used to assess stress in RA patients. The results showed that the average value of age was 44.14± 6.842 years with a lowest value of 32.00 and a highest value of 58.00 years (Table 1).

Age	
Mean	44.14
Std. Deviation	6.842
Minimum	32.00
Maximum	58.00

Table 1: Descriptive statistics of age

Males had a frequency of 13(6.6%) and female with a frequency of 183 (93.4%). The average value of height was 5.52± 197 ft with a lowest value of 5.1 ft and a highest value of 5.7 ft. The average value of weight was 57.54± 11.059 Kg with a lowest value of 42.00 Kg and a highest value of 75.00 Kg. According to the results the frequency of upper class out of 196 were 77 (39.3%), patients who were middle class out of 196 were 51(26.0%), and patients who belong to lower class were 68 (34.7%).

socio-economic status	frequency (%)
upper class	77(39.3)
middle class	51(26.0)
lower class	68(34.7)
Total	196(100.0)

Table 2: Descriptive statistics of socioeconomic status

The results showed that the average value of physical health component scoring was 37.12± 9.96 with a lowest value of 20.96 and highest value of 50.05. The results showed that the average value of mental health component scoring was 44.00± 5.738 with a lowest value of 36.12 and highest value of 55.57. The results showed that the average value of perceived stress score was 25.32± 7.47 with a lowest value of 11.00 and highest value of 38.00 (Table 3).

perceived stress score	rheumatoid patients
Mean	25.32
SD	7.47
Minimum	11.00
Maximum	38.00

Table 3: Descriptive statistics of perceived stress score

The results show the comparative relationship between

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gender and the domains of QoL. According to results female had less QoL with respect to body pain, physical function, health transition and role in comparison to males. The results show a significant value of 0.000 which were less than the p-value which means there was a relationship between Stress and the QoL (Figure 1).

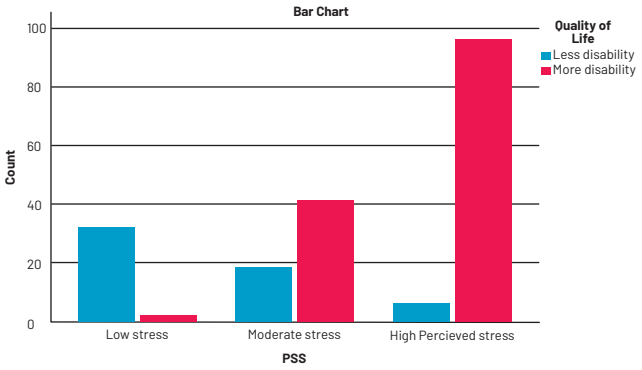

Figure 1: Descriptive statistics of Chi-square

DISCUSSION

Rheumatoid arthritis is known to be affected by many factors such as age, gender, gene, smoking history, obesity, stress etc. Stress being one of the common factor effects rheumatoid patients. It is stated that mind and body interact with one another in unique manner which impacts individual's health [27]. Stress causes more damage and inflammation in RA patient. Finally, stress has an influence on RA patients' QoL [28]. Stress management has been shown to improve QoL in persons with RA, along with many other risk factors. Stress symptoms affects our body, thoughts and feelings [33,34]. Previous study had shown less evidence related stress [35-39]. According to some studies there were no difference in level of stress between the two genders [40]. S Mehta et al., conducted a research in 2016 in order to see assess mood, QoL and disability among RA. It was concluded that level of stress impact level of disease and its QoL [41]. This result supported the result of our study. In another study by Gholamhossein Alishiri et al., it was stated that stress management technique enhances quality of life in RA patients [42]. Similarly, Samar H. Goma et al., conducted a study in 2019 in order to see the RA and QoL with respect to disease activity. A total of 89% people showed that people with high disease activity were depressed. It was concluded that rheumatoid impair health with all aspect of QoL which is commonly due to the level of anxiety and stress [43]. In another study Alireza Vahedi Hemat et al., conducted in 2020 see the effect of reducing stress on QoL in students with RA. In this study it was stated that stress do effect quality of life in people with RA [44]. Another study reason explained that as stress tends to make RA symptoms worse its leads towards further disability and impacts patient's QoL [45]. According to one study stress is a factor which impacts rheumatoid patients specially with chronic rheumatoid than acute [46-48]. In another study it is stated that in chronic rheumatoid disability is more in comparison to acute rheumatoid. Due to this chance of stress in higher in chronic cases than acute one's [49]. Seyedeh Parisa Moosavian et al., conducted a study in 2020 in order to determine the effect of oxidative stress and QoL on rheumatoid arthritis patient. Result showed that garlic supplement does impact the stress level which improves the QoL in RA patients [50]. So, based on all previous studies and result of this research it is proved that stress does affect QoL in RA patients.

CONCLUSIONS

It is stated that stress does impact quality of life of chronic rheumatoid patients which impacts individual's mental health resulting in poor quality of life and more disability. As a result, it was established that stress had an impact on rheumatoid arthritis patients' quality of life.

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