



Original Article

Socioeconomic Burden of Major Rheumatic Diseases in A Tertiary Care Facility

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ABSTRACT

Rheumatic diseases can have serious socioeconomic implications in a developing country like Pakistan. With dwindling resources in the healthcare sector, decision makers are forced to prioritize treatment between patients. **Objective:** To assess the socio-economic burden of major rheumatic diseases in a tertiary care hospital. **Methods:** 171 patients were enrolled in the study prospectively. Patients were selected through specially designed questionnaires. Diagnosis of the disease and patient's socioeconomic status were recorded and analyzed using SPSS ver. 25.0. **Results:** The mean age of the participants was 38.65 ± 13.20 years. A higher ratio of female patients (78.4 %) as compared to the male patients (21.6 %) was seen. The majority of the patients were not well educated as 79 % of the patients were below matric, 9 patients were graduated and only 2 patients were postgraduates. Most of patient fall in low socioeconomic background ($30,924.8 \pm 19,107.3$). Out of all the rheumatic diseases, Rheumatoid Arthritis 96 (56.1 %) was the most commonly found autoimmune disease. **Conclusion:** Rheumatic disease outcomes in Pakistan are influenced significantly by socioeconomic status. A comprehensive treatment plan for rheumatic disease is needed, especially for those with low education levels and poor quality of life.

INTRODUCTION

Rheumatic diseases can have serious socioeconomic implications in a developing country like Pakistan. With dwindling resources in the healthcare sector, decision makers are forced to prioritize treatment between patients. These decisions require accurate assessments of healthcare intervention costs and effectiveness. Nearly 30% of sick days are attributed to back, neck, and shoulder pain [1]. There is a prevalence between 0.5% -1% of rheumatoid arthritis (RA), and a rate of occurrence of 25-50 per 100 000 each year [2]. Studies have shown that prevalence of rheumatoid arthritis in northern Pakistan was 0.55% and 0.142% in urban areas of Karachi, although exact epidemiological statistics are not yet available for developing countries [3,4]. Health services and people with RA are both believed to bear a substantial economic burden. Compared to other disease groups,

musculoskeletal disorders impose a significant burden on society concerning morbidity, long-term disability and costs, but their mortality rate is low [5]. According to Rice [6], cost of illness (COI) assessments include three types of cost components: direct costs, indirect costs, and psychosocial costs. The term direct cost refers to those that are actually payable. These costs include medical costs such as hospital costs and treatment, as well as personal expenses like transportation to the physician and specialist aids. Indirect costs are incurred when resources are lost without direct payment. The costs of morbidity and mortality can be divided into two categories: morbidity costs related to productivity losses suffered by an individual, his or her family, society, and employer, and mortality costs related to lost production due to premature death caused by illness. The third category of costs is

intangible or psychosocial. These costs reduce the quality of life for patients as well as their families and friends. For example, individuals with RA may experience disability, pain, low self-esteem, and a lack of well-being. These costs are difficult to quantify and therefore are often left out of economic studies [7]. Among developing world countries, Pakistan ranks 84th on the social composite index [8]. The majority in Pakistan is of low or middle socioeconomic status; only a small fraction has high socioeconomic status. Pakistan's economy is largely reliant on its agriculture sector. Over the last decade, the country's urbanization rate has increased by 5.6%, which has a negative impact on agriculture. In turn, this has led to unemployment and poverty in the country [9]. The Social Economic Status (SES) of individuals, households, and census tracts is defined as the level at which they are able to produce and consume goods valued by society [8]. SES is difficult to assess, and the tools used to measure it vary from study to study. Some studies assess SES by measuring an individual's educational level, while others consider occupation or income as more reliable indicators. Using census data, such as job levels in the area or poverty indices, it is possible to determine the socioeconomic status of an area [9,10]. The rationale of this study was to investigate the socio-economic burden of major rheumatic diseases in leading tertiary care hospital of Pakistan.

METHODS

Inclusion Criteria: Patients 13 years of age or older with rheumatic diseases. **Exclusion Criteria:** Patients aged less than 13 years and with a diagnosis other than the rheumatic diseases spectrum. The sample size was calculated as 142 cases with the WHO sample size calculator using the following parameters; expected prevalence 24% [11], precision level 5%, and confidence level 95%. A total of 171 patients were enrolled in the study after a complete medical history and written consent was obtained. A questionnaire was used to select the patients. Information on socio-demographic variables such as age, gender, level of education, marital status and socioeconomic status was extracted from questionnaires. A number of health characteristics were considered, such as disease duration, disease activity, and quality of life. Expenses related to travel, transportation, medication, and the sources of medication as well as the diagnosis of different forms of rheumatic diseases were noted. The clinical history of every patient was noted. The data were recorded and analyzed using SPSS version 25 (Statistical Package for Social Sciences). The mean and standard deviation were calculated for continuous data, while frequency and percentage were calculated for categorical data.

RESULTS

After providing informed consent, 171 participants were enrolled in the study. The mean age of the participants was 38.65 ± 13.20 years. We observed a higher ratio of female patients (78.4%) than male patients (21.6%).

Features	N = 171
Age	38.65 ± 13.20
Gender	
1.Male	37 (21.6 %)
2.Female	134 (78.4 %)
Marital Status	
1.Married	119 (69.6 %)
2.Un-Married	42 (24.6%)
3.Divorced	5 (2.9 %)
4.Widow	5 (2.9 %)
Education	
1.Illiterate	46 (26.9 %)
2.Primary School	26 (15.2 %)
3.Middle School	1 (0.6 %)
4.Matriculation	62 (36.3 %)
5.Intermediate	25 (14.6 %)
6.Graduate	9 (5.2 %)
7.Postgraduate	2 (1.2 %)
Income (PKR)	30,924.8 ± 19,107.3

Table 1: Demographic characteristics of Patients

There were 119 married patients (69.6%), 42 unmarried patients (24.6%), and also divorced and widowed individuals (2.9% each) included in the study. In this study, 79 % of the patients had less than matriculated, 9 patients graduated and only 2 patients had postgraduate degrees. A massive income gap was seen between the patients ($39,941.8 \pm 50,563.7$) as shown in Table - I.

Disease Diagnosed	Cases n = 171
1.Rheumatoid Arthritis (RA)	96 (56.1 %)
2.Ankylosing spondylitis (AS)	17 (9.1 %)
3.Psoriatic Arthritis (PA)	5 (2.9 %)
4.Axial Spondyloarthritis	14 (8.2 %)
5.Systemic lupus erythematosus (SLE)	18 (10.5 %)
6.Juvenile Idiopathic Arthritis (JIA)	9 (5.3 %)
7.Systemic Sclerosis (SSc)	2 (1.2 %)
8.Mixed Connective Tissue Disease (MCTD)	5 (2.9 %)
9.Osteoarthritis	2 (1.2 %)
10.Polymyalgia Rheumatica	1 (0.6 %)
11.Scleroderma	1 (0.6 %)
Vasculitis	1 (0.6 %)

Table 2: Different Autoimmune Diseases Diagnosed in Patients

A variety of different autoimmune diseases were seen in the cases. Out of all the autoimmune diseases Rheumatoid Arthritis was seen most frequently 96 (56.1 %). Some rare diseases like Polymyalgia Rheumatic, MCTD and JIA were also recorded as shown in Table 2. The mean duration of diagnosis in patients was 8.35 ± 7.2 year and the mean duration of symptoms was 9.833 ± 7.95 year. Out of the 171 patients enrolled, the majority visited with a family member 123 (71.9 %) and traveled in local transport 128 (74.9 %). Out of 171 patients, only 5 patients got reimbursements from

their companies and 32 (18.7 %) patients got support from Bait-ul-Mal for medication costs as shown in Table 2.

Features	Cases n= 171
Clinical History	
1.Duration of diagnosis (Years)	8.35 ± 7.2
2.Duration of symptoms (Years)	9.833±7.95
3.First Visited Clinic (Years)	7.62± 6.71
Clinical Visit	
1.Alone	48 (28.1 %)
2.Family	123 (71.9 %)
MemberTransport	
1.Local/Public	128 (74.9 %)
2.Self-Transport	43 (25.1 %)
3.RentedTravel	-
1.Travel Time (hours)	2.5 ± 3.4
2.Travel Cost (PKR)	1946.3 ± 3514.5
Medication Cost (PKR)	
Source of Medication Cost	5464.7 ± 6778.7
1.Self	134 (78.4 %)
2.Bait-ul-Mal	32 (18.7 %)
3.Company Reimbursement	5 (2.9 %)

Table 3: Clinical History and Socio-Economic Status

DISCUSSION

The purpose of this study was to investigate the impact of socioeconomic status on rheumatic diseases in developing countries like Pakistan. Rheumatic diseases are caused by genetic, socioeconomic and environmental factors, but which environmental factors because rheumatic diseases are still a matter of debate [9]. An individual's socioeconomic status is typically determined by their educational level, occupation (e.g., their own or their partner's occupation), and income (either individual or household income). In previous studies, obtaining information on income was difficult because a great number of people were reluctant to declare their individual or family incomes [10]. The mean age of the participants was similar to that found in other studies. Studies have shown that females are more likely to suffer from rheumatic diseases [11]. A recent European cohort study has revealed that women are more likely than men to develop rheumatic diseases [12]. According to the study, symptoms of rheumatic diseases in females appear later than those in males. We found similar results in terms of gender proportion and duration of symptoms in our study. This difference is most likely due to the difference in physical workload between genders [16]. The link between SES and rheumatic diseases is multidimensional as evidenced by previous studies. Case-control or cross-sectional studies have shown that there is sometimes disagreement between association between SES and disease activity and patient-reported outcomes [13]. RA, for example, can result in very serious economic consequences for people, as they have to reduce their working hours or become work disabled due to the pain of

this condition, resulting in reduced income and low socioeconomic standing. In our study, people relying on daily wages or doing physical labor were found to be at risk due to the mean monthly income of workers in the labour class. In general, people from lower socioeconomic backgrounds have higher smoking and obesity rates. These individuals also have more nutritional deficiencies [14,17]. SES is also associated with the risk of developing autoimmune diseases and should be considered when investigating the independent relationship between SES and disease. In our study, we found that patients with low SES show up at the hospital long after their symptoms appear because of a lack of education. This can be seen from the difference between mean time between diagnosis and onset of symptoms (8.35 ± 7.2 vs. 9.833±7.95). Pakistan is a nation with strong family ties, so most of our cohort came to the hospital with a relative (n=123, or 71.9%). In developing countries, access to transport is an issue as Pakistan has 20.2 vehicles per 1000 people making it number 150 globally; while the United States has 785.6 vehicles per 1,000 people making it number 4 [15,18]. In our study, we found that more people use public or local transportation (n=128, 74.9%). Using our study population as an example, the average cost of a single visit to the hospital with the patient and caretaker and monthly medication expenses was about 1946.3±3514.5 and 5464.7±6778.7 (PKR) which is 25% of the mean monthly income. Several studies conclude that patients with a low socioeconomic status are worse off than patients with a high socioeconomic status. Patients with lower and higher SES had significantly different health outcomes [19]. SES must be explored further as a risk factor for developing autoimmune diseases and as a factor that might affect self-reported and disease activity outcomes. In turn, authorities will be able to improve management strategies with this type of information[20].

CONCLUSION

Socioeconomic status significantly impacts the rheumatic disease outcomes of Pakistani patients. Based on the results, it is imperative for authorities to formulate an integrated approach for treating rheumatic diseases, especially for those with low education levels and poor quality of life.

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