

Compliance with Hand Splints Among Patients of Rheumatoid Arthritis at Benazir Bhutto Hospital Rawalpindi Pakistan

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ABSTRACT

Objectives: To determine the compliance with hand splints among patients of Rheumatoid arthritis at Benazir Bhutto Hospital Rawalpindi and their satisfaction with usage of splints.

Subjects & Methods: A cross-sectional descriptive study was done among 22 rheumatoid arthritis patients who were enrolled in the study through consecutive non-probability sampling. Data was collected pertaining to demographics, type of upper limb deformity, usage of splints and resultant degree of satisfaction. Descriptive statistics were applied. Data was analysed by SPSS version 25.0. and Microsoft Excel 2016.

Results: Of the 22 cases of rheumatoid arthritis, 73% were females. Most (13) of them were 41-50 years old. 11 cases had boutonniere deformity while 8 and 3 patients had swan neck deformity and ulnar deviation respectively. Many males and females had swan neck and boutonniere deformity respectively. Only 2 males and 5 females were found compliant with hand splints. 9 patients were not willing to use splints and 6 were non-compliant with splints despite their availability. Of the 13 cases using splints, 7 felt improvement in their deformity while 6 found it convenient to use splints.

Conclusion: boutonniere deformity was among the most widespread upper limb deformities in rheumatoid arthritis cases. Only one third of the cases were compliant with hand splints.

Keywords: Hand Splints, Rheumatoid Arthritis, Boutonniere Deformity, Swan Neck Deformity, Ulnar Deviation

Introduction

Rheumatoid arthritis is an autoimmune disease that is primarily associated with inflammation of small joints of hands and feet. Although it can affect all age groups, but women 60-70 years of age are more vulnerable [1]. Approximately 17.6 million were suffering with this inflammatory disease during 2020 and this incidence across the globe is likely to reach around 31.7 million by 2050. About 0.1% of the total global Disability Adjusted Life Years (DALYs) are accounted to rheumatoid arthritis. Central Asia is one of the three major regions of the globe where

intensified age standardized death rate owing to rheumatoid arthritis have been reported [2].

Rheumatoid arthritis is a multi-system disease that predominantly influences the joints [3]. It drastically impacts proximal interphalangeal and metacarpophalangeal joints [4]. Although numerous host and environmental factors are linked with occurrence of this disease, post-traumatic stress disorder and depression has significantly been identified as risk factors for development of rheumatoid arthritis among both men and women [5,6]. Although ulnar deviation, swan neck and boutonniere deformities develop in upper limb of rheumatoid arthritis cases over a period, swan neck deformity either as a

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solo problem or along with other hand distortions is more likely to negatively impact the hand functions [7].

Tendon rupture has also commonly been ascertained among patients with rheumatoid arthritis. The deformity of proximal joints of hand is liable to cause impairment of distal joints [8]. Middle aged women without any comorbidity may also present with Z-thumb in addition to rheumatoid nodules on joints of both hands and feet [9]. About six times reduction in the strength of affected hands among rheumatoid arthritis have been determined [10]. Approximately 60% of the inflicted cases report with wrist deformities that drastically deteriorates their social life and occupational activities [11]. In addition to clinical presentation, laboratory investigation for autoantibodies and imaging facilitates a great deal in accurately diagnosing the problem [12]. The decline in mortality among rheumatoid arthritis cases of high-income countries have been attributed to strict disease control and early intervention to halt the complexities [13].

The present study is intended to ascertain the compliance with hand splints among patients having hand deformities because of rheumatoid arthritis presenting at Benazir Bhutto Hospital Rawalpindi and their degree of satisfaction with usage of splints. This study will enlighten us about the existing scenario and hence will be the food for thought of the strategic planners that may enable them to make essential measures categorically for the patients of rheumatoid arthritis.

Subjects & Methods

A cross-sectional descriptive study was carried out among 22 rheumatoid arthritis cases who were included in the study through consecutive non-probability sampling. After identifying the patients with upper limb deformities, suitable hand splints or orthosis were prescribed according to their deformity. This article is based on a thesis that was composed for fulfilment of research requisite for BSc Orthotics & Prosthetics. The compliance with hand splints or their willingness to use them was then assessed. Data was collected during a period of 3 months during 2021. A semi-structured questionnaire was used to gather information regarding demographics, upper limb deformity, hand splints used and the extent of satisfaction with splint usage. Data was entered and analysed by SPSS version 25.0 and Microsoft Excel 2016. Descriptive statistics were applied.

Results

Of the 22 rheumatoid arthritis patients with upper limb deformities, 73% were females. Around 13 cases were 41-50 years old. Gender based distribution with respect to age is shown below in Figure 1.

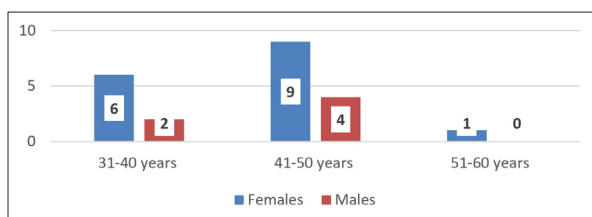


Figure 1: Gender Distribution with Respect to Age of Rheumatoid Arthritis Patients

This graph illustrates the occurrence of upper limb deformities in association with rheumatoid arthritis among females

predominantly during 5th decade of life. Most of the male and female patients had swan neck and boutonniere deformity respectively as depicted below in Figure 2.

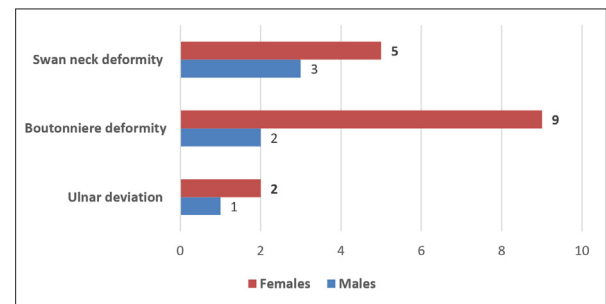


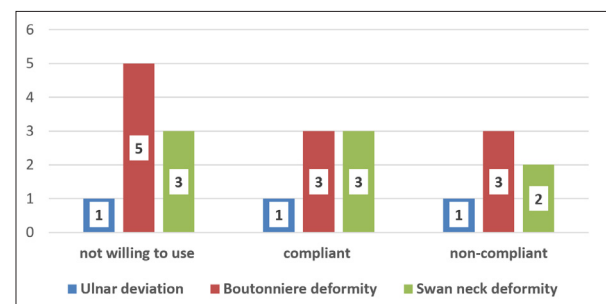
Figure 2: Gender-Wise Hand Deformities

Only 2 males and 5 females were compliant with hand splints as shown below in Table 1.

Table 1: Compliance With Hand Splints Among Rheumatoid Arthritis Cases

Gender	Compliance with hand splint / orthosis		
	Not willing to use	Compliant	Non-compliant
Males	3	2	1
Females	6	5	5
Total	9	7	6

Compliance with hand splints in linkage with different upper limb deformities is presented below in Figure 3.



Degree of satisfaction with respect to ease of using hand splint, comfort with it and improvement in deformity are illustrated below in Figure 4.

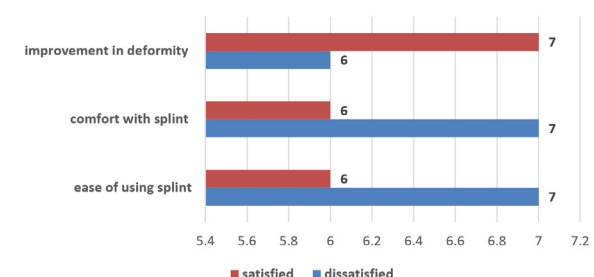


Figure 4: Degree of Satisfaction Among Rheumatoid Arthritis Patients

Discussion

Of the 22 rheumatoid arthritis cases in our study, 73% were females. A similar study elucidated the higher incidence of rheumatoid arthritis among females [14]. Its incidence among

females below 50 years of age is 4-5 times higher than those of males. On the other hand, its predisposition among women to men in 60-70 years age group is 1:2 [15]. Even gender-wise differences in the consequent complications have also been identified [16]. Likewise, a study by Sokka T et al revealed not only gender-based diversities in clinical presentation of rheumatoid arthritis but also highlighted the differences with respect to the outcome of treatment [17]. This gender variation in the incidence of rheumatoid arthritis should thoroughly be scrutinized for identifying genetic or any associated reason for this discrepancy.

Of the 22 patients in current study, 6 females and 3 males were not willing to use splints or orthosis for their hand deformities resultant of rheumatoid arthritis (Table 1). Only 2 males and 5 females were found compliant. Splinting is imperative to minimize hand deformities among rheumatoid arthritis patients and to enhance their functionality [18]. According to the findings of enrolling the rheumatoid arthritis cases in trials and subjecting them to frequent follow-up with respect to usage of hand splints prove quite beneficial in enhancement of their compliance with treatment. Although there was not significant reduction in wrist or hand pain either in experimental or control group; the experimental group subjected to compliance stated significant decline in duration of morning stiffness [19]. Likewise, Oakes TW et al reported on an average higher compliance among females with hand resting splint regime [20]. As most of the females in present study are in 5th decade of their life, so usage of splints can be linked with advanced age. However, analysing data from a big cohort can verify the association of splint compliance with older age. Studying other concomitant factors among our patients like family history, educational and socio-economic status may also enable us to get any valuable conclusion.

Most (50%) of the patients in present study had boutonniere deformity. Rest of the 8 and 3 patients had swan neck deformity and ulnar deviation respectively (Figure 2). About 3 of our patients with swan neck deformity were not willing to use splints while rest of the 3 and 2 cases were found compliant and non-compliant respectively (Figure 3). The swan neck deformity either alone or in combination with other hand deformities is liable to cause grave consequences and impair the hand functioning. A comprehensive study done over a span of 10 years revealed the occurrence of combined hand deformities among 50% of rheumatoid arthritis cases [21]. About 54% of our study subjects felt improvement in their hand deformity with usage of splint while only 46% experienced comfort and ease with hand splints (Figure 4). Similarly, an experimental study carried out among 104 females disclosed significant improvement with respect to hand strength and pain intensity with wrist splinting. The hand deformities recognized among our rheumatoid arthritis cases represent the most prevailing upper limb deformities of rheumatoid arthritis that emerge early in due course of time. Splinting and hand exercises are advantageous for relieving the initial stage of hand deformities, patients of rheumatoid arthritis often underestimate their symptoms and hence are either non-willing to opt treatment or non-compliant [22]. A systematic review also discovered the effectiveness of psychological interventions among rheumatoid arthritis cases [23]. Assessing the effectiveness of all physical and psychological intrusions

for functional enhancement of rheumatoid arthritis is vital to improve the healthcare outcome of the patients in terms of allaying their consequent disabilities.

Conclusion & Recommendations

Boutonniere deformity was the most prevailing upper limb deformity among rheumatoid arthritis cases. As most of our patients were non-willing and non-compliant with usage of splints, this attitude should intelligently be tackled by the health education of the cases visiting medical centres and providing splints free of cost. This approach will not only enhance their compliance level but will also prove beneficial in reducing the risk of complications.

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