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ORIGINAL ARTICLE

Effects of Brief Intervention of Behavioural Change on Pain, Mobility, Function, and Quality of Life in Patients with Chronic Ankylosing Spondylitis: A Randomised Clinical Trial

RAHEEL YOUNUS[1], TAZEEM AKHTAR[2], HAFIZ SYED IJAZ AHMED BURQ[3], RABBIYA SARWAR[4], WADHA KAMRAN[5], AHMED JAMAL[6]
[1]MBBS, FCPS Medicine Fellow in Rheumatology National Hospital DHA, Lahore
[2]MBBS, MPH, PHD Public Health Associate Professor Public Health Department University of Health Sciences, Lahore
[3]DPT, PHD Physical Therapy Physiotherapy Department Lahore General Hospital, Lahore, Pakistan
[4]MBBS, MPHIL Public Health Lecturer Public Health Department University of Health Sciences, Lahore
[5]DPT Rehab Officer Nur International University, Lahore
[6]DPT Teaching fellow Nur International University, Lahore
Corresponding author: Ahmed Jamal, Email: ahmedjamal912@gmail.com, Cell: +92 312 4222341

ABSTRACT

Background: Exercise is essential for maintaining the flexibility and functionality of the joints in patients with ankylosing spondylitis. Additionally, it could ease pain, enhance posture, correct muscular imbalances, facilitate breathing, and generally enhance the quality of life. However, since patient education is poorly structured, patients fail to consider this significant element.

Objective: To determine the effects of brief intervention of behavioural change on pain, mobility, function, and quality of life in patients with chronic ankylosing spondylitis

Methods: This was a randomized controlled trial with 80 patients in two groups: brief intervention and control. Purpose sampling was used to enrol ankylosing spondylitis patients aged 18 to 60 with stable medical management. Patients with respiratory, cardiac, neurological, pregnancy, or inability to walk unassisted were excluded. All participants provided written informed consent. Cardiorespiratory test duration, physical activity duration per week, flexibility measured by chest expansion, back pain usual, back pain at night, global disease activity, Bath Ankylosing Spondylitis Functional Index (BASFI) and Ankylosing Spondylitis Quality of Life (ASQoL) scale. Week 0 before treatment, 6th week end, and 12th week follow-up were assessed. Data was analysed in SPSS 25.0.

Results: The results showed that the demographic variables were equally distributed in both groups without a significant association to any group (p value >0.05) except for urban residence where urban residents were having more percentage of ankylosis spondylitis. The results regarding outcome variables post-interventional 8th week showed that Cardiorespiratory test duration 881±(47.23) and 812±(56.89), Flexibility, chest expansion 6.7±(2.75) and 5.2±(2.14), Back pain usual 2.7±(0.79) and 3.4±(1.04), Back pain at night 3.8±(1.78) and 4.4±(1.54), Global disease activity 6.2±(1.97) and 6.7±(2.03), Bath Ankylosing Spondylitis Functional Index (BASFI) 7.4±(1.16) and 7.2±(1.69) and Ankylosing Spondylitis Quality of Life (ASQoL) scale 12.6±(1.25) and 15.7±(1.05). while the p value (<0.05) showed significant difference in favour experimental group, brief intervention for all variables. Similarly, the follow up results measured at 16th week were significantly different in favour experimental group, brief intervention for all variables, p value (<0.05

Conclusion: The findings of study concluded that brief intervention-based health improving physical activity was significantly on pain, mobility, function, and quality of life in patients with chronic ankylosing spondylitis.

Keywords: Brief Intervention, Physical Activity, Ankylosing Spondylitis, Back Pain, Spinal Mobility

INTRODUCTION

Ankylosing spondylitis is a kind of rheumatoid arthritis characterised by a protracted inflammatory response that mostly affects the axial bones. This condition is characterised by severely restricted spinal mobility, stiffness, inflammatory back pain, functional impairment, and weariness.(1, 2) This illness may cause a variety of extra-articular symptoms, including osteoporosis, uveitis, psoriasis, inflammatory bowel disease, lung involvement, heart involvement, and kidney involvement. Furthermore, there is a decrease in health-related quality of life, occupational productivity, and physical fitness.(3) Ankylosing spondylitis is mostly treated by physical activity, which may also include exercise. Exercise-based therapy has been demonstrated to improve clinical outcomes such as improved mobility and physical function, as well as improve quality of life and lower disease activity.(4) Physical exercise has been shown to lessen the risk of obesity-related disorders such as cardiovascular disease, type 2 diabetes, and osteoporosis, in addition to the advantages of reducing ankylosing spondylitis-related impairments.(5) It has a favourable impact on both physical and mental health and aids in their improvement.(6) Despite the many health advantages, people with ankylosing spondylitis have a low rate of compliance with the recommended exercise treatment.(7) The vast majority of patients do not exercise regularly, and they are much less likely than the general population to do any kind of physical activity that is good for their health.(8) Moreover, the exercise program routinely focuses on mobility and flexibility exercises. However, without involving resistance training and aerobic training, it may not produce the health benefits of physical activity, which may lead to poor compliance. Physical activity promotion among chronic disease patients is another main challenge for policy makers and health professionals.(9, 10)

As suggested by global physical activity guidelines, adults should engage in at least 150 minutes (activity bouts of at least 10 minutes) of moderate-level aerobics per week, 75 minutes of intense exercise per week, or a combination of moderate and vigorous activity. All patients should do things that gradually build up their resistance, while patients over 65 should do things that help them improve their coordination and balance.(11, 12)

Patients with rheumatic conditions have poor awareness about these physical activity and exercise therapy guidelines. This is also because the patients consider themselves different from the normal population due to the physical, systemic, and psychosocial impairments they experience.(13)

Management guidelines have suggested 'brief intervention,' which includes briefing about potential health benefits associated with intervention, prognosis, verbal advice, encouragement for intervention, and discussions about it, as well as formal support for follow-up.(14) This used to be personally focused advice and is different from the basic routine advice about intervention. Brief interventions can bring a positive behavioural change, including enhanced physical activity, especially in sedentary patients.(15, 16) Although clinical trials on patient education and exercise-based treatments in patients with ankylosing spondylitis have been conducted, there is less evidence on a habitual increase in physical activity in patients and its impact on subclinical areas. The current study aimed to determine effects of brief intervention of

behavioural change on pain, mobility, function, and quality of life in patients with chronic ankylosing spondylitis.(17, 18)

MATERIAL AND METHODS

It was randomized controlled trial conducted at Link Medical Centre, Lahore between May 2021 to March 2022. From total 80 eligible patients, in each of group, Brief Intervention and control group, 40 patients were randomized by computer generated random list. The randomization was performed by staff member not involved in trial. Moreover, the allocation was concealed through sealed opaque envelopes. Purposive sampling technique was used, and the patients were referred from rheumatology outpatient clinics, through awareness campaigns and word of mouth. The pre-diagnosed patients ankylosing spondylitis were enrolled having age between 18 to 60 years and with a stable medical management of disease. The patients were excluded for having respiratory, cardiac, neurological comorbidity, pregnancy, or inability to walk without support. All participants gave written informed consent before participation in study.

The patients in Brief Intervention group were briefed about intervention and were assured that all patients were setting goals for behavioural change, problem solving, planning of action, discrepancy removal between current behaviour and goals, social support, educating emotional and health consequences, habit formation, societal reward, persuading verbally and past success.

The control group was let to continue medical treatment and was introduced mobility exercises, yet, if patients were doing aerobics or other form of physical activity, they were not stopped from doing it. The outcomes used were Cardiorespiratory test duration, physical activity duration per week, Flexibility measured by chest expansion, Back pain usual, Back pain at night, Global disease activity, Bath Ankylosing Spondylitis Functional Index (BASFI) and Ankylosing Spondylitis Quality of Life (ASQoL) scale. The assessment was made at week 0 before treatment, at end of 6th week and at 12th week at time of follow up. The data was analysed using SPSS 25.0. The independent samples t test was applied to compare mean difference between Experimental group (EG) and control group (CG).

RESULTS

The results showed that the demographic variables including male gender, employment, higher education, married, smoking, Rural Residents, NSAIDS, DMARD and Anti-Tnfa were equally distributed in both groups without a significant association (p value >0.05) except for urban residence where urban residents were having more percentage of ankylosis spondylitis. Mean age and Duration means was also equal in both groups. (See Table *1*)

The results about the outcome variables showed that at week 0 before treatment cardiorespiratory test duration was respectively for experimental and control was found to be 747±(53.87) and 751±(63.98), Flexibility, chest expansion to be 4.3±(1.78) and 4.1±(1.58), Back pain usual 4.7±(1.23) and 4.4±(1.14), Back pain at night and 5.8±(2.78) and 5.6±(2.37), Global disease activity 7.8±(2.14) and 7.5±(2.12), Bath Ankylosing Spondylitis Functional Index (BASFI) and 8.3±(1.91) and 7.9±(2.10) Ankylosing Spondylitis Quality of Life (ASQoL) scale and 16.3±(1.96) and 16.7±(1.21), while the p value (>0.05) showed non-significant different for all variables.

The results about the outcome variables showed that at week 8 after treatment Cardiorespiratory test duration 881±(47.23) and 812±(56.89), Flexibility, chest expansion 6.7±(2.75) and 5.2±(2.14), Back pain usual 2.7±(0.79) and 3.4±(1.04), Back pain at night 3.8±(1.78) and 4.4±(1.54), Global disease activity 6.2±(1.97) and 6.7±(2.03), Bath Ankylosing Spondylitis Functional Index (BASFI) 7.4±(1.16) and 7.2±(1.69) and Ankylosing Spondylitis Quality of Life (ASQoL) scale 12.6±(1.25) and 15.7±(1.05). while the p value (<0.05) showed significant difference in favour experimental group, brief intervention for all variables.

The results about the outcome variables showed that at week 16 after treatment Cardiorespiratory test duration 938±(23.78) and 897±(69.44), Flexibility, chest expansion 7.6±(2.67) and 6.3±(1.67), Back pain usual 1.31±(0.12) and 1.93±(0.74), Back pain at night 2.6±(1.74) and 3.3±(1.97), Global disease activity 4.8±(1.89) and 5.7±(1.01), Bath Ankylosing Spondylitis Functional Index (BASFI) 5.1±(2.02) and 6.4±(1.29) and Ankylosing Spondylitis Quality of Life (ASQoL) scale 10.8±(1.15) and 13.3±(1.57), while the p value (<0.05) showed significant difference in favour experimental group, brief intervention for all variables.

Table 1: Comparative Demographics

Variables	Brief Intervention Group, N=40	Control Group, N=40	P Value
Sex, males n(%)	28(70%)	32(80%)	0.105
Full time employed n(%)	32(80%)	36(90%)	0.473
Educated Masters and above n(%)	30(75%)	32(80%)	0.736
Married Patients n(%)	24(60%)	22(55%)	0.137
Smoker n(%)	4(10%)	6(15%)	0.902
Rural Residents n(%)	6(15%)	4(10%)	0.769
Urban Residents n(%)	36(90%)	32(80%)	0.047
NSAIDS n(%)	20(50%)	23(57.5%)	0.867
DMARD n(%)	18(45%)	19(47.5%)	0.375
Anti-Tnfa n(%)	1(2.5%)	3(7.5%)	0.089
Age, mean (SD) n(%)	41 (8.7)	44 (11.6)	0.587
Duration means (SD) n(%)	18 (5.97)	24 (3.94)	0.288

Table 2: Mean Comparison of clinical outcomes at Week 0, Week 8 and Week 16

Variables	EG	CG	P Value	EG	CG	P	EG	CT	P
		Week 0		Week 8		Value	Week 16		value
Cardiorespiratory test duration	747±(53.87)	751±(63.98)	0.587	881±(47.23)	812±(56.89)	0.021	938±(23.78)	897±(69.44)	0.017
Flexibility, chest expansion	4.3±(1.78)	4.1±(1.58)	0.288	6.7±(2.75)	5.2±(2.14)	0.011	7.6±(2.67)	6.3±(1.67)	0.011
Back pain usual	4.7±(1.23)	4.4±(1.14)	0.868	2.7±(0.79)	3.4±(1.04)	0.013	1.31±(0.12)	1.93±(0.74)	0.019
Back pain at night	5.8±(2.78)	5.6±(2.37)	0.898	3.8±(1.78)	4.4±(1.54)	0.013	2.6±(1.74)	3.3±(1.97)	0.018
Global disease activity	7.8±(2.14)	7.5±(2.12)	0.131	6.2±(1.97)	6.7±(2.03)	0.014	4.8±(1.89)	5.7±(1.01)	0.018
Bath Ankylosing Spondylitis Functional Index (BASFI)	8.3±(1.91)	7.9±(2.10)	0.953	7.4±(1.16)	7.2±(1.69)	0.011	5.1±(2.02)	6.4±(1.29)	0.015
Ankylosing Spondylitis Quality of Life (ASQoL) scale	16.3±(1.96)	16.7±(1.21)	0.998	12.6±(1.25)	15.7±(1.05)	0.016	10.8±(1.15)	13.3±(1.57)	0.022
EG: Experimental Group, Brief Intervention CG: Control Group									

DISCUSSION

This was the first randomized, controlled trial in which a group of ankylosing spondylitis (AS) patients took part in a behavior change program that focused on physical activity (PA).(7) This study found that a short, individualized intervention that encourages healthy physical activity increases PA as a habit, and this effect lasts for three months. Patients with Asperger's Syndrome who could pick physical activities based on their skill levels participated in a shorter programme designed to encourage them to be more active. After the intervention, 70% of the intervention group achieved the required level of aerobic physical activity.(19) This was a considerably higher rate of adherence than was seen in the control group of AS patients. According to the study's findings, one out of every two people diagnosed with AS who received the intervention did not otherwise fit the PA criteria (confidence interval of 95 percent). The second and third goals of the research were to investigate the impact of a change in PA behaviour on disease-related clinical outcomes and the participants' health-related physical fitness, respectively. It was critical to the study's findings since a short intervention resulted in a little improvement in the spine mobility scores of those with AS. This was produced without the use of preliminary designs in order to retain versatility.(20) The most common kinds of exercises and activities chosen by people looking to satisfy their PA demands are functional tasks, cardiovascular activity, and sports. Other aspects of fitness, like body composition, cardiorespiratory capacity, and muscular fitness, didn't change much over the course of the study, according to the researchers.(21)

Because the intervention's major emphasis was on PA, it's likely that the quantity of exercise wasn't enough to generate improvements in these areas (physical activity). One of the most significant advantages of the treatments was an improvement in PA and spinal mobility. From the start of the study until the end of the research, the quality of life increased significantly, and this improvement remained seen at the three-month follow-up examination. Despite the many advantages of PA, most AS patients do not adhere to their exercise programmes or engage in PA as often as they should.(22) Patients feel that developing tailored treatment plans in partnership with skilled medical experts is an effective approach to encouraging patients to participate in physical activity and exercise. This was the first research to show that employing this strategy to boost PA had a significant and long-lasting favourable impact on PA in people with AS. The findings of this research were published in Physical Activity and Health. Given the therapeutic effects of increased physical activity for BOUTS, improved spine mobility, and improved quality of life, it seems that short-term intervention is safe, practicable, and successful for treating AS patients with self-reported stable disease activity. Individuals could take part in the intervention since it was individualised for each participant and the follow-up sessions were adaptive. Similarly, a self-directed strategy has been demonstrated to raise PA in both healthy and rheumatoid arthritis patients. Short treatments, such as fitness programmes, need less time and money than their longer counterparts. Furthermore, they are simple enough to give in primary care settings or hospitals. Medical providers now have a second option for treating AS patients as a consequence of PA-targeting short-term medicines. It is critical to determine which behavior modification strategies are most effective and which, if any, are unnecessary. Future studies should look at the usefulness of different consultation frequencies and lengths as well as the ideal content of follow-up sessions and what happens when people are encouraged to be more physically active by combining regular exercise classes with short interventions. It is critical to examine if an intervention could be carried out from a fully remote location and whether it would be successful (with no in-person interactions). Future research should look at the best time to start an intervention, as well as identify subgroups that may be more susceptible (or resistant) to the kind of intervention being researched. It is unknown if the intervention is helpful for those who are hesitant or uninterested in changing their PA behavior. Even though short, community-based interventions to get people to be more active are cost-effective, the costs and effects of these interventions have not been well studied.(23)

Due to the exploratory nature of this research, sample size was not determined prior to its commencement. In light of this, it is proposed that a larger study be conducted to corroborate the conclusions of this one. However, the analysis revealed that the intervention's positive effects lasted barely three months. The intervention's long-term implications are yet unknown. People in the research group had low scores, so the findings may not be applicable to those with more severe types of AS, whose functional impairments may make exercise difficult. Another issue was that neither the subjects of the study nor the therapists wore blindfolds. However, one of the positive aspects of the trial was the good compliance of patients to participate in the trial for up to 6 months. The absence of data was determined to be fully random, so it is unlikely to compromise the dataset's integrity. This was one of the first studies to use a brief intervention to change the physical activity habits of a group of AS patients.(24, 25) Compared to the control group, the intervention led to big increases in health-promoting physical activity, more spinal mobility, and a better quality of life.

CONCLUSION

The findings of study concluded that brief intervention-based health improving physical activity was significantly on pain, mobility, function, and quality of life in patients with chronic ankylosing spondylitis.

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