

## Effectiveness of home modification on quality of life on wheel chair user paraplegic population

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**Objective:** To determine the effectiveness of home modification on quality of life on spinal cord injury in wheel chair user spinal cord injuries

**Methodology:** This community based randomized control trial was carried out in district Kohat and Hangu, from January to December 2012. A total of 40 wheel chair users paraplegic patients were randomly assigned into experimental and control groups. The baseline LiSAT score was calculated. The home modification program was implemented for patients in the experiments group, including wheel chair accessible doors, ramps, rails, tub seats in bathrooms, and non-slip surfaces. LiSAT questionnaire was filled through face to face

interviews before the implementation of home modifications and after two months.

**Results:** The quality of life was significantly enhanced in the experimental group after home modification with mean LiSAT score 33.32 ( $p=0.001$ ), as compared to the control group, with LiSAT score 22.85 ( $p=0.154$ ), in wheel chair user paraplegic population.

**Conclusion:** The home modification is effective in the enhancement of quality of life in wheel chair user paraplegic population. (Rawal Med J 2013;38: 263-265).

**Key Words:** Home Modification, quality of life, paraplegia.

### INTRODUCTION

Paraplegia is loss of motor strength and sensation of the lower half of body due to spinal cord injury and quadriplegia is the worse situation where it involves all the four limbs.<sup>1</sup> The common causes of spinal cord injuries are trauma such as Road Traffic Accidents, gun shot, sports injuries and fall and diseases like spina bifida, polio myelitis, transverse myelitis and other diseases.<sup>2</sup> The spinal cord injuries are medically managed along with comprehensive rehabilitation which includes muscle strengthening, sensory re-education, and mobility on wheel chair with proper training and home modification.<sup>3</sup>

The paraplegic population is the most marginalized section of our society and confronted with barriers in accessibility, health facilities, educational opportunities, and skill development. Accessibility is very important for paraplegic population and lack of accessibility affects their abilities in education health and employment.<sup>4</sup> The Braille signage, wheel chair ramps, elevators, audio signals at pedestrian crossings, walkway counters, and website design are important aspects of accessibility. The

international and national laws support the accessibility rights for paraplegic population.<sup>5</sup> The accessibility code of Pakistan formulated in 2006 explains that the accessibility is a basic human right for person with disability.<sup>6</sup>

Home modification means that home environment may be modified in accordance to the needs of paraplegic patients by including wheel chair accessible doors, ramps, rails, tub seats in bathrooms, and non-slip surfaces.<sup>7</sup> Home modification is an important aspect of rehabilitation after spinal cord injuries and vital for free accessibility at home and in the community with improvement in the quality of life of persons with disability.<sup>8</sup> The aim of this study was to determine the effectiveness of home modification on quality of life on patients with paraplegia.

### METHODOLOGY

This community based randomized control trial was carried out in district Kohat and Hangu, from January to December 2012. A total of 40 wheel chair

users paraplegic patients were randomly selected and placed into experimental and control groups. The base line LiSAT score was calculated and a written consent was taken from all patients. The home modification program was implemented for patients in the experiments group, including wheel chair accessible doors, ramps, rails, tub seats in bathrooms, and non-slip surfaces.

Modified LiSAT questionnaire was used as an assessment tool, and only seven components were used after a pilot study on 10 patients. Each item of LiSAT questionnaire has score 1-6, where 1 is very dissatisfied and 6 is very satisfied. This questionnaire is used for the assessment of quality of life in spinal cord injury patients. The components of modified LiSAT questionnaire was life as whole, occupation, finance, leisure, contact with friend and relatives, ability to manage self care, and family life. The questionnaire was filled after face to face interview before the implementation of home modifications and after two months. The data were analyzed by SPSS v 20 and paired t-test was applied at the 95% level of confidence to calculate p value.

## RESULTS

Baseline Demographics of experimental and control groups are shown in Table 1. The quality of life was significantly enhanced in the experimental group after home modification with mean LiSAT score 33.32 ( $p=0.001$ ), as compared to the control group without home modification, with LiSAT score 22.85 ( $p=0.154$ ). Details are shown in Table 2.

**Table 1. Baseline Demographics of experimental and control groups.**

Demographics	Experimental Groups: n=20	Control Group: n=20
Male	14	16
Female	06	04
Maximum age	60 years	58 years
Minimum age	19 years	18 years
Mean age	33.66 years	31.57 years
Pre LiSAT score	19.11	18.76

**Table 2. p-value of individual variables of LiSAT Questionnaire.**

Variables of LiSAT Questionnaire	Experimental Group: (n=20) P-value	Control Group: (n=20) p-value
Life as a whole	0.001	0.155
Vocational situation	0.00	0.163
Financial situation	0.002	0.268
Leisure situation	0.004	0.582
Contact with friends and relatives	0.003	0.772
Ability to manage self care	0.002	0.671
Family life	0.005	0.103

## DISCUSSION

Stevens and colleagues showed that strong positive relationship exists between level of physical activity and quality of life in adults with spinal cord injury.<sup>9</sup> It supports our results that enhancement in physical activity by betterment in accessibility through home modification can improve quality of life in paraplegic population. Petersson et al reported that subjects who received home modifications had a statistically significant improvement in their self-rated ability in everyday life compared with the control group.<sup>10</sup> All reported less difficulty and increased safety, especially in tasks related to self-care in the bathroom and transfers, such as getting in and out of the home.<sup>10</sup>

Johansson et al carried out a study on performance of activities of daily living in a sample of applicants for home modification services on a group of 102 patients. The participants reported high levels of independence in activities of daily living, and were using assistive devices to a large extent, however, some patients experienced difficulties in performing activities related to the applied home modification.<sup>11</sup> Turner and colleagues conducted a systematic review on modification of the home environment for the reduction of injuries under Cochrane Collaboration and found 28 studies on the topic and after review they concluded that the home

modification reduced the injuries and enhances quality of life in persons with disability.<sup>12</sup>

Carla et al conducted a systematic review of the effect of home modification and fall prevention programs on falls and the performance of community-dwelling older adults. The total of 33 articles were analyzed and synthesized. The strongest results were found for multifactorial programs that included home evaluations and home modifications, physical activity or exercise, education, vision and medication checks, or assistive technology to prevent falls. Positive outcomes included a decreased rate of functional decline, a decrease in fear of falling, and an increase in physical factors such as balance and strength.<sup>13</sup>

## CONCLUSION

The home modification was effective in the enhancement of quality of life in wheel chair user paraplegic population.

### Author contributions:

Conception and design: Syed Shakil-ur-Rehman  
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