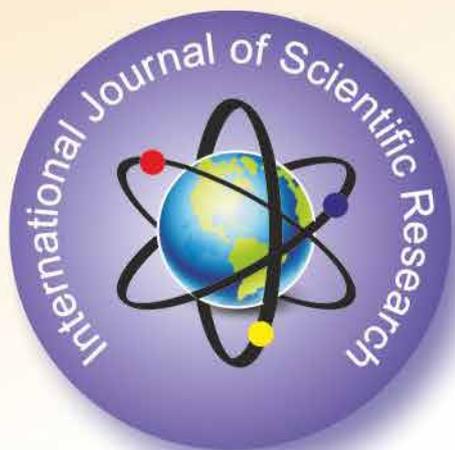


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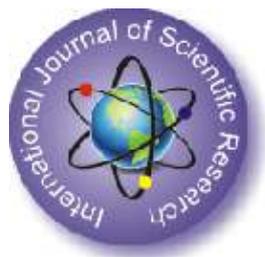
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## A Study to Find out the Prevalence and Effectiveness of Occupational Therapy Intervention for Pain and Activity Performance in Mobile Users with Risk of Repetitive Strain Injury



### Medical Science

**KEYWORDS :** Mobile Users, Repetitive Strain Injury, Activity Performance

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### ABSTRACT

**Objectives:** To find the prevalence of pain and activity restriction among mobile users with risk of Repetitive Strain Injury (RSI). To study the effectiveness of Occupational Therapy (OT) intervention for improving activity performance in mobile users with RSI.

**Methodology:** 3 questionnaires were made and validated. RSI Screening Questionnaire was given to 100 participants to find out the prevalence. Among which 64 of them were selected based on inclusion criteria. Pretest was taken using McGill Pain Questionnaire, Activity Restriction Questionnaire and Awareness Questionnaire. Interventions such as health education, strengthening activities and pamphlets were given for three 30 min session / week. After a period of 3 weeks posttest was taken using the same questionnaire and results were analyzed.

**Results:** Using SPSS-15, Descriptive analysis and Paired 't' test was used to analyze the data. 64% of them had symptom of pain and limitation in their activity performance. There was a significant difference between pre and post test score in pain and activity restriction and awareness at  $p < 0.05$  level.

**Conclusion:** There was a significant reduction in the pain and activity restriction among mobile users and increased awareness after Occupational Therapy intervention.

### Introduction

Communication has been made easier in the 21<sup>st</sup> century through latest handheld electronic devices. Among them, mobile phones are growing in immense popularity with a wide range of models and facilities (Deepak, 2005).

One of the most attractive features of the mobile phones is that it provides a cheap and convenient way to communicate through 'TEXT MESSAGING'. The frequency of the use of text messages for communication has increased as many as 100 a day (Bharti, 2005). Here, the thumb is called upon to punch buttons or keys innumerable times each day (Geoffrey, 2004).

Latest mobile phones come with smaller and more attractive handsets. As more and more youngsters compete to own the most recent models they are exposing themselves to over use injury as low amplitude, repetitive movements are required to operate them. These awkward positions and movements that the persons takes while texting, causes the problem related to cumulative traumatic disorders (Bronwyn, 2006).

Text messaging is causing an increased incidence in 'Repetitive Strain Injury' (RSI) in people with mobile phones. People experience pain and swelling in the thumb, wrist or forearm. There could be difficulty with fine movements of the thumb which will cause restriction in Activities of Daily Living. So there is a need for the Occupational Therapist to find out the prevalence of pain and activity restriction in Activities of Daily Living (Bharti, 2005).

Hence this study attempts to find out the prevalence of pain and activity restriction among mobile users with risk of RSI. It also intends to find out the effectiveness of Occupational Therapy intervention for improving activity performance and reducing pain in mobile users with RSI.

### Objectives

- To find out the prevalence of pain and Activity restriction among mobile users with risk of RSI.
- To find out the intensity of pain and level of activity restriction among mobile users with risk of RSI.
- To find out the effectiveness of Occupational Therapy intervention in mobile users to reduce pain and activity restriction.

### Null Hypothesis

- There is no significant difference in the prevalence of pain and activity restriction among mobile users.

- There is no significant difference in the pain and activity restriction among mobile users after Occupational Therapy intervention.

### Methodology

**Research Design:** Quasi-Experimental study design

### Subjects

Convenient sampling was used. A sample of 100 clients was screened using the RSI questionnaire for mobile users. Among them 64 clients were selected for the study.

### Inclusion Criteria

- Both male and female
- 18 years of age.
- Subjects scoring  $> 21 / 29$  in Screening Tool – RSI questionnaire for mobile users.

### Exclusion Criteria:

- Subjects with other complaints in the Hand namely tendon injury, fracture and deformities.
- Subjects who underwent treatment for the pain.

### Questionnaires Used:

- RSI questionnaire for mobile users-self-made –questionnaire for screening purpose.
- McGill pain questionnaire -Short form
- Activity restriction questionnaire-self-made.
- Awareness questionnaire related to Repeated Text Messaging- self-made.

Three of the self-made questionnaires such as RSI questionnaire for mobile users, Activity restriction questionnaire and Awareness questionnaire related to Repeated Text Messaging were validated by 4 Occupational therapists and a psychologist.

### Descriptions:

- RSI questionnaire for mobile users**  
Used for selection of participants for this study. It consisted of 25 questions.
- McGill pain questionnaire -Short form**  
This was used to find out the type, present pain intensity and the perception of pain. Type of pain consists of 15 components. Each one graded as per severity. The present pain intensity consist of score 6, range from 0-6. The visual analog scale is from 1-10 for the perception of pain.
- Activity restriction questionnaire**  
This was used to find out the activity restriction. The differ-

ent components were bathing, brushing, grooming, dressing, eating, home activities and work which were scored as 0-3. It consist of 30 questions. Among which brushing-1, bathing -3, grooming-6, dressing-5, eating -2, home activities-11, Work-2.

- Awareness questionnaire related to Repeated Text Messaging

This was used to know the knowledge of the participants about the effects of Repeated Text messaging. It consists of 15 questions related to awareness about text messaging.

**Procedure**

The informed consent was obtained from the subjects. The RSI questionnaire for mobile users was given to 100 participants to find out the prevalence of pain in thumb, wrist and activity restriction among mobile users. Only 64 participants fulfilled the inclusion criteria. Pretest scores were taken using the McGill pain questionnaire- short form to identify the type and intensity of pain, Activity restriction questionnaire to find out the extend of activity restriction and Awareness questionnaire related to Repeated Text Messaging to explore the awareness on hand related issues of using mobile phones.

**Intervention consisted of**

- Education regarding the effects of Repeated Text Messaging.
- Education regarding the exercises to prevent RSI.
- Reminders in the form of pamphlets

After a period of 3 weeks (3 sessions for 30 min/week), post test scores using the same 3 questionnaires were taken and the results were analyzed.

**Data Analysis**

Using SPSS- Version 15, Descriptive statistics and Paired t test was used for analyzing the data.

**Table-I: Comparison of Pre and Post Test Score of McGill Pain Questionnaire**

S.NO	TESTS	MEAN	n	t	LOS
1	PRE	30.31	64	37.91	0.01*
2	POST	20.84	64		

\*- Significant at p<0.05.

**Table-II: Comparison of Pre and Post Test Score of Activity Restriction Questionnaire**

S.NO	TESTS	MEAN	n	t	LOS
1	PRE	33.68	64	25.39	0.01*
2	POST	20.28	64		

\*- Significant at p<0.05.

**Table-III: Comparison of Pre and Post Test Score of Awareness Questionnaire**

S.NO	TESTS	MEAN	n	t	LOS
1	PRE	33.92	64	47.93	0.01*
2	POST	65.81	64		

\*- Significant at p<0.05.

**Results and Discussion**

With the wide spread use of mobile phones, the associated problem of RSI among mobile users is a major issue to be looked into. The current study found that among 100 participants, 64 had the problem of pain and activity restriction. As per gender there were 31 females and 33 males, and according to profession there were 48 college students & 16 employees. The ratio found here confirmed the report by **Deepak** (2005) that people suffered from pain due to repeated text messaging and most of them are college students. Based on the analysis, it was found that the text messages can be used for the purpose of study, work & fun.

During the screening, it was found 80% used mobiles >1yrs, 64% send > 20 msg/hr, 52% work with computer for >8hrs, 45% used to play games > 30 min, 75% of them were using the dominant hand thumb for typing the messages. Hence these subjects had a greater risk of RSI.

Pain is a prominent symptom of RSI. 64% suffered from pain, with a maximum score of 38/75 according to MC Gill pain questionnaire. The most common type of pain was sharp, aching, heavy, tender and tiring type of pain. Around 68% of the 64 participants scored 2 in the present pain intensity scale signifying discomforting pain. In Visual Analog Scale 87% of participants scored between 5 and 7. These findings are strongly supported by **Andrew** (2002) who suggested that pain is the most common symptom of RSI.

Restriction of activities in RSI is most commonly due to pain. This is shown by the maximum score of 52/75 in the activity restriction questionnaire. In females, there was more difficulty in grooming and home activities compared to the other activities. In males, the most common problem was in dressing and in home activities. Both male and female together had a severe restriction in writing, as all of these above activities needs sustained fine movements of the thumb. This analysis was supported by the statement of **Bharti** (2005) that there was a restriction in activities which involves fine movements of thumb.

According to the table I, there was a significant difference between the mean values of the pre and post scores at p< 0.05 level, from which it can be inferred that the implementation of the intervention program was effective in managing the pain in mobile users at risk of developing Repetitive Strain Injury. The results of this study were in accordance with the study conducted by **Dortch** in 1990, effect of education on hand use in industrial workers with Repetitive Strain Injury.

The results in Table II showed that there was a significant difference between the mean values of the pre and post scores at p< 0.05 level, from which it can be inferred that there was remarkable decrease in the Activity restriction after providing education, which was strongly supported by the study done by **Pesco** in 2006, on the effectiveness of education and active exercises for improving activity performance in computer users with risk of Cumulative Trauma Disorder.

In Table III, there was a significant difference between the mean values of pre and post scores at p< 0.05 level which was supportive of the fact that the education was effective on creating awareness about the problems related to repetitive text messaging and the Do's and Don'ts which coincided with the quotation made by **Andrew** in 2002, which stated that through highlighting the risks, and arising awareness of the consequences, injuries from texting can be prevented.

**Limitations**

- Subjectivity of answers makes the reliability of the scores more skeptical.
- The educational program could have included other means of education like groups.
- Geographical and cultural boundaries.

**Recommendations**

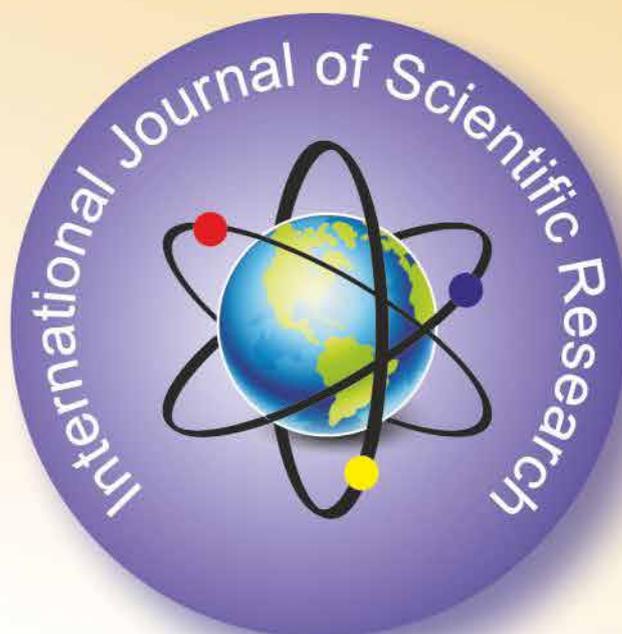
- Study can be conducted for a larger group of subjects with control and experimental group.
- Comparative study can be done on genders, professionals.
- Study can be done on effectiveness of modification of mobile phones with painful thumbs.
- Objective measurement can be done to get the more reliable results.

**Conclusion**

The results of this study rejected the null hypothesis. There was a significant reduction in the pain and activity restriction among mobile users after Occupational Therapy intervention. The studies further confirm the role of occupational therapists to intervene for RSI clients.

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