Original Research Article

Outcome of physiotherapy on mechanical low back pain at Combined Military Hospital Dhaka

ABSTRACT

Aims: The aim of this study is to determine the outcome and factors influencing outcome of physiotherapy among patients with mechanical low back pain.

Study design: This was a descriptive type of cross sectional study.

Place and Duration of Study: Department of Physical Medicine Combined Military Hospital, Dhaka Cantonment. The study period was from 01 January 2021 to 31 December 2021.

Methodology: we have included 103 participants with age range 18-75years irrespective of sex who came for physiotherapy due to mechanical low back pain during study period. Data were collected by face to face interview with structured questionnaire. Data analysis was done with the help of software SPSS (Statistical Package for Social Science) version 26. Permission was taken from the concerned authority for conducting the study. Informed consent was taken from the respondents. This study had few limitations like short duration, small sample size and sampling technique which can be overcome by further study in a large scale for a prolonged period of time.

Results: Maximum respondents in this study were in 33-47 years age group (46.60%). The mean age of the respondents was 43.15 years with a standard deviation of $\pm$ 4.19 years. Among the 103 respondents 74(72%) were male and 29(28%) were female. Here, it was evident that 45.63% of the respondents perform light activity followed by sedentary worker (24.27%). Among the rest 20.39% are hard laborer, 9.71% perform other types of physical activity, 47(45.63%) were from the military services, 21(20.38%) were housewives,

27(26.21%) completed primary education, 42(40.78%) completed secondary education, 78(75.72%) were married though 22(21.35%) were unmarried. Here 41(39.80%) of the respondents had been suffered from low back pain for 1weeks to 1 month followed by 27(26.21%) for 1 month to 6 month, 19(18.45%) for less than 7 days and 16(15.53%) for more than 6 months. Highest number of respondents underwent traction(36.89%) followed by short wave diathermy 26.21%, microwave diathermy 14.56%, Transcutaneous electrical nerve stimulation 9.70% alone but some of the respondents also underwent more than one mode of physiotherapy 12.62% to get relieve from low back pain. It was evident that 31(30.09%) became improved after getting physiotherapy for upto7 days, 28(27.18%) for 8-14 days, 27(26.21%) for 15-30 days and 17(16.50%) for more than 30 days. Here we have found that 72 (69.90%) of the participants with mechanical low back pain underwent physiotherapy along with medication whereas 31(30.10%) underwent only physiotherapy to get rid of their pain. Marked reduction of pain was noticed among (47.06%) of the participants who underwent physiotherapy for more than 30 days whereas 51.85% after 15-30 days, 46.43% after 8-14 days, 9.68% after 07days of physiotherapy though 32.14% experienced no changes of pain. It was also observed that many individual did not responded to physiotherapy alone or in combination with drugs. Those who experienced in improvement of pain were 66.67% among combined therapy rather 64.51% among who underwent physiotherapy alone. There were very little differences in quality pain reduction, 37.50% patients who undergone physiotherapy along with the medication while 35.48% who undergone physiotherapy without the medication experienced marked reduction of pain. We have also found some (16.62%) participants who experienced worsening of pain. In this study it was obvious that participants who were more compliant to physiotherapy experienced better outcome in consideration of reduction of pain than noncompliant

Conclusion: The outcome of physiotherapy was varied with the duration of low back pain, compliance to physiotherapy and mode of physiotherapy. Maximum benefit was noted in

patients who underwent physiotherapy for 15-30 days and among who get treatment under traction mode of physiotherapy.

Keywords: Mechanical Low back pain, Traction, SWD, MWD, TENS, Complaint.

1. INTRODUCTION

Physiotherapy is one of the most widely used forms of treatment adopted for gaining relief from low back pain. According to the European Guidelines for prevention of low back pain, low back pain is defined as “pain and discomfort, localized below the costal margin and above the inferior gluteal folds, with or without leg pain". Low back pain is usually categorized in 3 subtypes: acute, sub-acute and chronic low back pain. This subdivision is based on the duration of the back pain. Acute low back pain is an episode of low back pain for less than 6 weeks, sub-acute low back pain between 6 and 12 weeks and chronic low back pain for 12 weeks or more (1). Low back pain (LBP) remains the most frequent musculoskeletal complaint worldwide and all age groups are affected by these symptoms. Acute episodes of LBP statistically have quite a good prognosis more or less independently of the chosen treatment. Back pain is one of the most common patient complaints brought forth to physicians. Mechanical back pain accounts for 97% of cases, arising from spinal structures such as bone, ligaments, discs, joints, nerves, and meninges (2). Acute back pain in absence of progressive neurologic deficits and other underlying non-mechanical causes may be treated conservatively, with specific emphasis on maintaining activity levels and function. Mechanical back pain persisting for more than 4 to 6 weeks may warrant further diagnostic testing and imaging. Common causes of mechanical back pain include spinal stenosis, herniated discs, zygapophysial joint pain, vertebral fractures and sacroiliac joint pain (3). A wide variety of treatments are available targeted toward different causes. A balanced approach, which takes into account patients’ psychosocial factors along with physiotherapy and incorporating multidisciplinary care, increases the likelihood of success from back pain interventions.

Knowing the outcome of physiotherapy on low back pain patients will help to select the treatment modalities. This study will help to identify how far the disability can be reduced or limited, how much activity can be restored by undergoing physiotherapy, when to get this therapy and how long it should be undertaken. As low back pain is presented as a pathology that can be a considerable burden on the individual, their families, society and the economy (through loss of working days or even the need to apply for retirement in advance). Given this reality, the objectives of interventions and conservative treatments carried out through physical therapy should be oriented towards reducing the symptoms of this dysfunction, such as pain management and disability, reducing anxiety states, trying to minimize the risk of recurrence and the time required for re-entry into the work. Thus increasing the working capability of the patients suffering from low back pain will increase the productivity as well as reduce the economic and social burden due to low back pain.

The aim of this study is to determine the outcome and factors influencing outcome of physiotherapy among patients with mechanical low back pain and to determine the duration of physiotherapy for significant improvement as well as to determine the satisfaction level of the patients undergoing physiotherapy. The objectives of this study is to determine the outcome of physiotherapy among low back pain patients in terms of relief of pain and the reduction of limitation of movements and disability, to determine the influence of the duration of physiotherapy on reducing low back and to determine socio-demographic characteristics i.e. age, sex, nature of job or occupation etc of low back pain patients.

2. MATERIAL AND METHODS

This was a descriptive type of cross sectional study which took place at department of Physical Medicine, Combined Military Hospital Dhaka Cantonment Dhaka. It was chosen purposively because of easy communication, accessibility, availability of samples. The study period was from 01 January 2021 to 31 December 2021. All available serving & retired armed forces personnel and their family members having low back pain attended the

physical medicine department of Combined Military Hospital of Dhaka Cantonment for physiotherapy during the study period were included in this study. Persons who had low back pain with age 18-75 years were considered for the study irrespective of sex but those who were unwilling to participate and severely ill were excluded from the study. Purposive sampling technique was adopted for the study. This technique was taken as to select only the targeted population who were attending in Combined Military Hospital of Dhaka for undergoing physiotherapy. Data were collected by face to face interview with structured questionnaire. The sample size was 103. Data analysis was done with the help of software SPSS (Statistical Package for Social Science) version 26. Permission was taken from the concerned authority for conducting the study. Informed consent was taken from the respondents. This study had few limitations like short duration small sample size and sampling technique which can be overcome by further study in a large scale for a prolonged period of time.

3. RESULTS

This study was conducted at department of physical medicine at combined military hospital Dhaka. Here we have included all patients who had come for physiotherapy due to low back pain among age group 18 to 75 years. Maximum respondents in this study were in the 33-47 years age group (46.60%), followed by the age between 18 years to 32 years. The mean age of the respondents was 43.15 years with a standard deviation of $\pm$ 4.19 years (Table 1).

Table 1: Distribution of respondents by age groups (n=103)

Age in years	Frequency	Percentage
18-32	21	20.39%
33-47	48	46.60%
48-62	23	22.33%
63-75	11	10.68%

Among the 103 respondents 74(72%) were male and 29(28%) were female. So numbers of male respondents were much higher than the female respondents (Fig-1)

Figure 1: Distribution of respondents by their sex (n=103)

Here, it was evident that almost half (45.63%) of the respondents perform light activity followed by sedentary worker (24.27%). Among the rest 20.39% are hard laborer and 9.71% perform other types of physical activity (Fig-2).

Figure 2: Distribution of respondents as per the physical activities (n=103)

Most of the respondents under study were from the military services 47(45.63%) and 21(20.38%) were housewives. Among others 17(16.50%) were from the nonmilitary government service, 10(9.70%) were businessman and 8(7.76%) were from other professions (Fig-3).

Figure 3: Distribution of respondents by their occupation (n=103)

Among the respondents 27(26.21%) completed primary education, 42(40.78%) completed secondary education. Among others 19(18.45%) had completed higher secondary degree and 15(14.56%) obtained bachelor degree and above (Fig-4).

Figure 4: Level of education of the patients undergoing physiotherapy (n=103)

In this study most of the respondents 78(75.72%) were married though 22(21.35%) were unmarried and only 3(2.91%) were divorced (Fig-5).

Fig 5: Marital status of the respondents (n=103)

Study showed that highest number 41(39.80%) of the respondents had the duration of low back pain from 1weeks to 1 month followed by the duration of 1 month to 6 month were 27(26.21%), 19(18.45%) of them had duration of 7 days and 16(15.53%) of them had a duration of more than 6 months (Fig-6).

Figure 6: Duration of complaints among the respondents (n=103)

Here it is evident that highest number of respondents underwent traction(36.89%) followed by SWD (26.21%). Other types of physiotherapy they undewent were MWD (Microwave diathermy) 14.56%, TENS (Transcutaneous electrical nerve stimulation) 9.70% alone but some of the respondents also underwent more than one mode of physiotherapy 12.62% to relieve from back pain (Fig 7).

Fig 7: Types of physiotherapy undertaken by the respondents (n=103)

In this study it is evident that 31(30.09%) were underwent physiotherapy for up to 7 days, 28(27.18%) for 8-14 days, 27(26.21%) for 15-30 days and 17(16.50%) for more than 30 days (Fig-8).

Figure 8: Distribution of duration of physiotherapy (n=103)

More than two thirds 72 (69.90%) of the patients who were suffering from low back pain underwent physiotherapy along with medication whereas 31(30.10%) underwent only physiotherapy to get rid of their pain (Fig-9).

Figure-9: Distribution of respondents who took medication along with physiotherapy (n=103)

In this study it was evident that reduction of perception of pain largely varied according to the duration of physiotherapy as shown in the table-2. Marked reduction of pain was noticed among 47.06% of the participants who underwent physiotherapy for more than 30 days and 17.65% experienced moderate reduction of pain. In comparison 51.85% experienced marked reduction of pain after 15-30 days physiotherapy but only 29.63% experienced moderate reduction of pain. Those underwent physiotherapy for 8-14 days experienced marked reduction of pain 46.43% whereas 14.29% experienced moderate reduction of pain though 32.14% experienced no changes of pain.On the other hand only 9.68% of the patients who undergone physiotherapy for up to 7 days experienced marked reduction of pain, 48.39 %experienced moderate reduction of pain and 32.26% did not experienced any improvement of pain.

Table 2: Reduction of pain in relation to duration of physiotherapy (n=103)

Level of reduction of pain	**Duration of physiotherapy**							
	Upto 7 days (n=31)		8-14 days (n=28)		15-30 days (n=27)		More than 30 days (n=17)	
	f	%	f	%	f	%	f	%
Markedly reduced	3	9.68	13	46.43	14	51.85	8	47.06
Moderately reduced	15	48.39	4	14.29	8	29.63	3	17.65
No change	10	32.26	9	32.14	4	14.81	4	23.53
Deteriorated	3	9.68	2	7.14	1	3.70	2	11.76

In this study it was observed that many individual did not responded to physiotherapy alone or in combination with drugs. Those who experienced in improvement of pain were 66.67% among combined therapy rather 64.51% among who underwent physiotherapy alone. There were very little differences in quality pain reduction, 37.50% patients who undergone physiotherapy along with the medication while 35.48% who undergone physiotherapy without the medication experienced marked reduction of pain. We have also found some (16.62%) participants who experienced worsening of pain (Table-3).

Table-3: Reduction of pain in relation to medication and without medication (n=103)

Level of reduction of pain	**Physiotherapy with medication (n=72)**		**Physiotherapy without medication (n=31)**	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Markedly reduced	27	37.50	11	35.48
Moderately reduced	21	29.17	9	29.03
No change	19	36.39	8	25.81
Deteriorated	5	6.94	3	9.68

Here we have found that there is very little differences among modalities of physiotherapy in terms of superiority in reduction of pain marked to moderate at around 57.9%-80% though some (13.6%) of the participants experienced worsening of pain after underwent traction physiotherapy (Table-4).

Table 4: Reduction of pain in relation to the types of physiotherapy (n=103)

Level of reduction of pain	Types of physiotherapy				
	Traction (n=38) f (%)	SWD (n=27) f (%)	MWD (n=15) f (%)	TENS (=10) f (%)	Mixed (n=13) f (%)
Markedly reduced	12 (31.58)	11 (40.74%)	7 (46.67%)	3 (30.00%)	5 (38.46%)
Moderately reduced	10 (26.32%)	8 (29.63%)	5 (33.33%)	4 (40.00%)	3 (23.08%)
No change	11 (28.95%)	6 (22.22%)	3 (20.00%)	2 (20.00%)	5 (38.46%)
Deteriorated	5 (13.6%)	2 (7.41%)	0 (0.00%)	1 (10.00%)	0 (0.00%)

In his study it was found that 41.03% of the participants who underwent physiotherapy regularly as per the advice of the concerned physiotherapy said they experienced marked reduction of their pain and 29.48% experienced moderate reduction of their pain. On the other hand low back pain patients who undergone physiotherapy irregularly responded that 24% of them experienced marked reduction and 28% experienced moderate reduction of pain (Table-5).

Table 5: Relationship of reduction of pain with the compliance of the patients (n=103)

Level of reduction of pain	Compliance of the patients			
	Compliance (n=78)		Noncompliance (n=25)	
	Frequency	%	Frequency	%
Markedly reduced	32	41.03	6	24
Moderately reduced	23	29.48	7	28
No change	18	23.07	9	36
Deteriorated	5	6.41	3	12

In this study it was obvious that participants who were more compliant to physiotherapy experienced better outcome in consideration of reduction of pain than noncompliant (Fig-10).

Figure 10: Relative reduction of pain in relations with their compliance to physiotherapy (n=103)

4. DISCUSSION

Low back pain is one of the leading causes of physical disability, especially at the workplace. Research indicates that almost 80% of the population is likely to suffer from lower back pain in their lifetime (4) Physiotherapy is one of the most widely used forms of treatment adopted for gaining relief from low back pain. It may be used alone or in combination with other modalities of treatment like medication, sometimes combination of one modalities of physiotherapy also being used to treat the patient.

Low back pain is the fifth most common reason for physician visits, which affects nearly 60-80% of people throughout their lifetime (5). The lifetime prevalence of low back pain is reported to be as high as 84%, and the prevalence of chronic low back pain is about 23%, with 11-12% of the population being disabled by low back pain (6). Sometimes low back keeps patients from out of work. The problem may be solved by advice and conservative treatment with physiotherapy. The problem may be prevented by personal awareness, keeping posture erect and maintain strong back and abdominal muscles. In order to plan for an appropriate and effective treatment program for a patient with low back pain sufferer, a comprehensive patient's evaluation should be done by the health care providers to assist in

making the patient's diagnosis. This is necessary in determining whether the cause of the low back pain is mechanical or has a secondary underlying cause. This study was performed at outdoor of department of physical medicine at combined military hospital Dhaka Bangladesh where mostly military persons and their entitled relatives come for treatment that's why out of 103 participants 47 were from military service personnel, male predominant 72%, majority (46.60%) were among age group 33-47 years, 45.63% were involved in light activities and their educational status remains within secondary and higher secondary level around 59%. This biasness of this study can be overcome by comparing with similar study in another center in future study.

In this study it was noticed that most of the participants 39.80% and 26.21% were suffering from low back pain less than one month and between one to six months respectively but only 15.53% were suffering from pain more than six months which was similar to the study (7) but dissimilar to the study (8) where 41.8% were suffering from low back pain between one to six months and 8.2% were suffering more than six months. Here it is evident that highest number (36.89%) required traction physiotherapy which was similar (41%) to the study (9) followed by (SWD) short wave diathermy (26.21%), Other types of physiotherapy required MWD (Microwave diathermy) 14.56%, TENS (Transcutaneous electrical nerve stimulation) 9.70% alone which was different (25%) from the study (10) but some (12.62%) of the respondents required more than one mode of physiotherapy. It is evident that 31(30.09%) were improved after getting physiotherapy for up to 7 days, 28(27.18%) for 8-14 days, 27(26.21%) for 15-30 days and 17(16.50%) for more than 30 days, which is different from the study (11) where 17% pain relieved from acute onset within seven days. More than two thirds 72 (69.90%) of the patients who were suffering from low back pain underwent physiotherapy along with medication whereas 31(30.10%) underwent only physiotherapy to get rid of their pain which is different from the study (12) where no significant difference observed between physiotherapy alone with combination of medication group. There were

very little differences in quality pain reduction, 37.50% patients who undergone physiotherapy along with the medication while 35.48% who undergone physiotherapy without the medication experienced marked reduction of pain which was similar to the study (12). On the other hand we have also found some (16.62%) participants who experienced worsening of pain. In his study it was found that 41.03% of the participants who underwent physiotherapy regularly as per the advice of the concerned physiotherapy said they experienced marked reduction of their pain and 29.48% experienced moderate reduction of their pain. On the other hand low back pain patients who undergone physiotherapy irregularly responded that 24% of them experienced marked reduction and 28% experienced moderate reduction of pain. In this study it was obvious that participants who were more compliant to physiotherapy experienced better outcome in consideration of reduction of pain than noncompliant which is similar to the study (13).

5. CONCLUSION

The purpose of this study was to determine the outcome of physiotherapy among mechanical low back pain at Combined Military Hospital Dhaka. The outcome in largely varied with the duration of low back pain and maximum benefit was noted in patients who underwent physiotherapy for 15-30 days. Another important result evident in this study is that outcome of physiotherapy largely varied between compliant and non-compliant patients as perception of reduction of low back pain was much higher in compliant patients. Outcome from physiotherapy also varied with different modes of physiotherapy and maximum benefit was evident in patients who took traction therapy.

CONSENT

A written informed consent has been obtained from the participants for this study

ETHICAL APPROVAL

Ethical approval has been taken from concerned authority for this study.

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