Impact of using an Online Interactive Rehabilitation Program for Low Back Pain Compared with Traditional Physical Therapy: A Pilot Study

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ABSTRACT

Background and Purpose: The recent Covid-19 pandemic has demonstrated the need for alternatives to face-to-face physical therapy services. Virtual physical therapy services and online rehabilitation programs are becoming more popular throughout the United States. Little research has been conducted to establish the effectiveness of these online programs. The purpose of this study is to investigate if an online interactive rehabilitation program improves patient pain and return to function for subjects experiencing low back pain. In addition, to investigate the outcomes of an online interactive rehabilitation program compared to traditional physical therapy.

Methods: This is a non-randomized clinical study of subjects that engaged in the RecoveryOne web and app-based program for recovery from low back pain compared to traditional care in the literature. Each participant was asked to complete a visual analog pain scale and an Oswestry Disability Index. Subjects were subsequently asked to complete both scales again after a 4 week and a pain scale at 8 weeks.

Findings: The 40 subjects who completed a VAS at 4 weeks demonstrated a mean decrease of 1.275 on the visual analog scale with a p of .000. The 25 subjects who completed an ODI at 4 weeks had a mean decrease of 3 with a p of .023. The 24 subjects who completed a VAS at 8 weeks demonstrated a mean decrease in VAS of 2 from the beginning of treatment with a p of .000

Clinical Relevance: Online rehabilitations program may be a viable alternative to face-to-face physical therapy in reducing pain and improving function in patient's with non-surgical low back pain.

Conclusion:

Patients who have been diagnosed with low back pain saw a decrease in pain and increase in function after 4 weeks and an overall decrease in pain at 8 weeks utilizing an online interactive rehabilitation program that was statistically significant. An online interactive rehabilitation program may be an alternative to traditional physical therapy. As this is only a pilot study with a small number of participants, further studies should be conducted to explore the effectiveness of an online interactive rehabilitation program.

KEY WORDS

Telehealth

Tele Physical Therapy

Virtual Physical Therapy

BACKGROUND

Management of low back pain has become increasingly challenging and expensive. Movement towards telehealth platforms has become increasingly popular over the last few years. This movement has only grown with the recent Covid-19 pandemic. With the need for alternatives to face-to-face physical therapy, online rehabilitation programs may be considered as a viable option. While the move to virtual therapy sessions has gained popularity there is little research to support the outcomes of this modality.

RecoveryOne is an online rehabilitation platform. This program is HIPAA compliant, password protected, and customized to the patient. The patient works through the online program

and gets placed into a specific rehabilitation pathway. This pathway creates a rehabilitation program that is based on the patient's diagnosis and rehabilitation preferences.[1]

The literature has demonstrated the prevalence of low back pain ranges between 1.4 to 20% in the United States and the incidence is between .024 and 7.0% globally.[2] Given the prevalence of low back pain globally, considering the effectiveness of online rehabilitation programs for this population is indicated. Studies have previously demonstrated no significant difference between telehealth interventions and a control.[3] This work does not specifically explore physical therapy interventions. A Study that considered exercise-based interventions found no significant value to online interventions compared to traditional therapy.[4] An additional study found a digital application was superior in reducing pain in patients with chronic low back pain compared to traditional care.[5]

There persists a gap in the literature to specifically consider online rehabilitation platforms as compared to traditional physical therapy. This indicates the need for further studies to be performed in this arena.

PURPOSE

The purpose of this study was to investigate if an online interactive rehabilitation program improves patient pain and return to function for subjects experiencing low back pain. In addition, this study seeks Investigate the outcomes of an online interactive rehabilitation program compared to traditional physical therapy.

METHODOLOGY

This was a non-randomized clinical study of subjects that engaged in the RecoveryOne web rehabilitation program for recovery from low back pain compared to traditional care in the literature. This study included patients aged 18-65 who were placed in a non-surgical low back pain pathway on the online platform. Once enrolled in the study, subjects were asked to complete a Visual Analog Scale (VAS) for pain as well as an Oswestry Disability Index (ODI) upon beginning their program. Subjects were then asked to provide a VAS weekly and an ODI at one month. The collection of VAS continued weekly and ODI monthly up to three months.

RESULTS

There were 97 subjects who met the inclusion criteria. Of the 97 subjects, 40 completed a VAS score from initiation into the program through 4 weeks. 25 of the subjects completed the Oswestry Disability Index (ODI) at week one and four weeks into the program. There were 24 subjects who completed VAS scores upon initiation and upon 8 weeks into the program. Figure 1 demonstrates the mean scores for the VAS at 1, 4, and 8 weeks, along with the mean ODI scores at 1 and 4 weeks, respectively. A paired sample T-test was run and the results are provided in Figure 2. The 40 subjects who completed a VAS at 4 weeks demonstrated a mean decrease of 1.275 on the visual analog scale with a p of .000. The 25 subjects who completed an ODI at 4 weeks had a mean decrease of 3 with a p of .023. The 24 subjects who completed a VAS at 8 weeks demonstrated a mean decrease in VAS of 2 from the beginning of treatment with a p of .000. This demonstrates a significant change in VAS at both 4 and 8 weeks, and ODI at 4 weeks.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAS4	3.1500	40	2.08228	.32924
	VAS1	4.4250	40	2.15891	.34135
Pair 2	VAS8	2.5833	24	1.97631	.40341
	VAS1A	4.6250	24	2.16318	.44156
Pair 3	ODI4	20.4000	25	12.06579	2.41316
	ODI1	23.4000	25	14.53731	2.90746

FIGURE 1.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	VAS4 - VAS1	-1.27500	2.01262	.31822	-1.91867	-.63133	-4.007	39	.000
Pair 2	VAS8 - VAS1A	-2.04167	2.03190	.41476	-2.89966	-1.18367	-4.923	23	.000
Pair 3	ODI4 - ODI1	-3.00000	6.18466	1.23693	-5.55290	-.44710	-2.425	24	.023

FIGURE 2.

DISCUSSION

Given the prevalence of low back pain globally, the rising costs of healthcare, along with the current Covid-19 pandemic, finding effective alternatives to face to face physical therapy are needed to address this patient population. This non-randomized pilot study explored an online rehabilitation platform compared to traditional physical therapy. There were 97 subjects that met the eligibility criteria and accepted participation in the study. Of the 97, 40 completed VAS scores over 4 weeks, 25 completed ODI scores at initiation and at 4 weeks, and 25 completed VAS scores at initiation and at 8 weeks. A paired sample T-test was run and found significant difference in both VAS and ODI during this time. Previous research that explored traditional physical therapy in treating chronic low back pain and comparing changes in VAS and ODI over a 3-month period found a mean change in VAS of 1.8 and ODI of 7[6]. Another study which compared VAS and ODI at 4 weeks in the treatment of chronic low back pain found mean changes in VAS of 1.63 and ODI of 4.2[7.] With a VAS change of 1.27 and 2.04 at 4 at 8 weeks respectively and a ODI change of 3.0 at 4 weeks, the results of this pilot study are consistent with contemporary research on traditional physical therapy results. These findings would indicate that an online rehabilitation program may be a viable option compared to traditional physical therapy. Limitations of this study include a small sample size and a comparison of the online rehabilitation program to the literature.

CONCLUSIONS

Patients who have been diagnosed with low back pain saw a decrease in pain and increase in function after utilizing an online interactive rehabilitation program that was statistically significant. An online interactive rehabilitation program may be an alternative to traditional physical therapy. Further studies should be conducted to explore the effectiveness of online

rehabilitation programs beyond the diagnosis of low back pain. These studies should include both online and face-to-face cohorts and progress to a randomized control trial.

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