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Orignal Article

Perception of Physiotherapists of Lahore, Pakistan About The Effects of Transcutaneous Electrical Nerve Stimulation For Short and Long Term Pain Management; A Quantitative Insight.

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ABSTRACT

Physical therapy is a Health care Profession in which the patient is examined, plan of treatment designed and implement to improve or restore human activity of daily living, maximize movement functions, relieve pain, and treat or prevent physical deformities associated with diseases, injuries and other impairments. **Objective:** To determine the knowledge about TENS usage among professional physical therapists of Lahore city. **Methods:** In this study cross sectional survey was conducted in Physiotherapy department of UOL Teaching Hospital, CMH, Ghurki Teaching Hospital and Social Security Hospital, Lahore. The sample size of 117 physical therapist participated in this study. Questionnaire was used to determine response of participants. **Results:** 117 questionnaires were filled by physical therapists, using electrotherapy (TENS) in their setup. Only 81.2% physical therapist found TENS effective as a sole treatment for acute pain, while 36.8% founds it effective as a sole treatment for chronic pain. Physical therapists 70% in Lahore prefer using gels/lotions with TENS about for prolonged relief. Majority of physical therapists (84.6%) were satisfied with the effectiveness of TENS applying with other modalities. **Conclusion:** TENS is frequently used among Physical Therapist aged more than 26 years. Most of physical therapist found it effective for both short and long term care. Physical therapist were frequently using it for the management of frozen shoulder pain.

INTRODUCTION

Physical therapy is a Health care Profession in which the patient is examined, plan of treatment designed and implement to improve or restore human activity of daily living, maximize movement functions, relieve pain, and treat or prevent physical deformities associated with diseases, injuries and other impairments. In this we use physical therapy protocols through different techniques and modalities such as ultrasound, heating, TENS, shortwave diathermy and other modalities. The International Association for the Study of Pain's generally utilized definition states: "Pain is an unpleasant sensory and emotional experience related with real or potential tissue harm, or portrayed as far as such harm" [1]. Pain rouses the person to pull back from harming circumstances, to protect a harmed body part while it mends, and to keep away from similar experience later on [2]. Most pain settle instantly once the painful stimulus is removed and the body has mended, however some of the time pain endures despite removal of the stimulus and evident recuperating of the body; and at times pain emerges without any noticeable stimulus, harm or sickness [3]. It is a noteworthy manifestation in numerous

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medical conditions, and can altogether meddle with a man's quality and general functioning [4, 5]. Right now, the mechanism by which electrical neuromodulator produces relief of pain isn't totally comprehended. In any case, various test thinks about have demonstrated that transcutaneous electrical nerve stimulation (TENS) can decrease both acute and chronic pain from a variety of causes. For a few patients, TENS is powerful as the sole treatment for pain, though, for others, it produces valuable outcomes when utilized as a part of conjunction with any of various modalities, including heat, cold, operant conditioning, biofeedback, exercise, meds, and psychotherapy [6, 7]. Since TENS is a nonhazardous, non-pharmacological method of pain control and has turned out to be successful for a few patients for whom other ordinary types of treatment have fizzled, TENS has turned out to be generally utilized for pain management, particularly by physical therapist. Recent publications have helped with instructing the clinician in the idea and potential uses of TENS for patients with pain [8, 9] and have recommended rules for its utilization [10]. This current study aimed to determine the utilization of TENS by physical therapist through their general practice in clinics and hospitals and to estimate the usage of TENS as an analgesic modality. A survey was done to investigate the clinical use of TENS among patients in relieving pain. The motivation behind the study was to decide if TENS is viable in relieving pain or not, A study of TENS usage among therapists was done, consisted of 196 respondents, out of which 64.8% used TENS to relive chronic pain than acute pain. Numerous therapist were happy with the viability of TENS in relieving chronic, acute and psychogenic pain; likewise short term utilization of TENS was more satisfactory than long term use [11, 12]. TENS is a modality using in physical therapy rehabilitation centers as a pain management tool. The mechanism by which it reduces or stops pain is different from analgesic medicine. A study was done on TENS usage, and their findings suggest that TENS is an adjunct to analgesia, is effective in relieving pain [13]. A study by was intended to assess the effectiveness of TENS in neck pain because of musculoskeletal issues, the study demonstrated that 11 subjects in the treatment while 7 in the controlled groups had gained improvements. This change was measured in terms in reduction of levels of pain during and after the end of first session, thus their finding suggests the beneficial results of pain reduction in mild cases of neck pain, and TENS is effective treatment in pain relieving with musculoskeletal disorders [14]. A study found that TENS is effective in reducing pain, yet clinical effectiveness of TENS is controversial, and it is used by many professionals from years, some study's support its use while some refute it, Authors also describe the theories which support TENS usage, which are gate control theory and the endogenous opioid release, which causes pain suppression. Authors have found that TENS is non-addictive and portable modality, and support its use with different frequencies and intensities [15, 16]. Another study was conducted to investigate the relationships between patient, stimulator, and outcome factors in a large number of chronic pain patients who use TENS on a long-term basis. 179 patients completed a TENS poll designed to record age, gender, cause and location of pain, and TENS treatment regimen. TENS was discovered to reduce pain by more than half by 47 percent of patients [17]. A research was conducted to determine the effects of afferent cutaneous electrical stimulation on leg muscular stiffness. This was tested on 20 individuals who had persistent hemiplegia following a stroke. TENS with a 100 Hz impulse frequency was used. The findings support the concept that TENS applied to the sural nerve may have short-term inhibitory effects on the exceptionally increased stretch reflex response in spasticity of cerebral origin [18]. A study was done to discover the adequacy of TENS on three adult patients with below knee amputation of different etiologies; in every one of the three cases the phantom limb pain was serious. The patients were treated solely by utilization of the TENS unit to the contra lateral extremity at the point where phantom pain originated on the removed limb. A six-month follow-up showed no pain recurrence of phantom pain in each of the three cases [19].

METHODS

The study utilized a cross-sectional examination plan. Data was collected from Physical therapists of Lahore city. 117 physical therapist were asked to participate in the study. The sample size was calculated by the following formula keeping the margin of error equal to 10% and level of significance equal to 5%. Random sampling was used to get the sample. A total 117 number of physical therapists were taken in this study in which 110 physical therapists were taken from different private clinics and hospitals of Lahore city. Participants of the study are of both genders, having qualification of BSc (Hons) Physiotherapy, Transitional Doctor of Physiotherapy and Post Professional Physiotherapy, M.Phil. With at least 6 months of experience. Full time workers in private clinics and hospitals. Any health care professional using TENS in their clinical practice other than Physical Therapist were excluded from the study. A cross-sectional survey was done for the study in which the participants were Physical therapist selected from different private clinics and hospitals in Lahore city through random sampling. A self-controlled poll was utilized. The reliability and validity of the survey was done through literature review. The reason for

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the investigation was disclosed to members and informed consent was taken before information gathering. The sample size of this study is 117. A very much composed and detailed Questionnaire was used to gather the relevant information from the subjects. Lastly, the data was analyzed by using SPSS version 16. Mean, percentages calculated. Qualitative data like gender, Personal history etc. presented in form of Table and Pie charts.

RESULTS

Comparison between gender and age and response regarding TENS is effective as the sole treatment for acute pain. Fisher's Exact Test 27.4 revealed that there is an association between Age/gender and response regarding TENS is effective as the sole treatment for acute pain (p-value <0.001) (Table 1-3). Pearson Chi-Square 7.699 shows that there is an association between gender and response to TENS is successful as the sole treatment. There is association between different medical conditions and response regarding TENS as a sole treatment for acute pain.

Age group	TENS is effective as the sole treatmer acute pain		p-value
	Yes	No	
20-25	21(53.8%)	18(46.2%)	<0.00
26-30	32(88.9%)	4(11.1%)	
31-35	29(100%)	0(0%)	
36-40	9(100%)	0(0%)	
40 andabove	4(100%)	0(0%)	
Total	95(81.2%)	22(18.8%)	

Table 1: Comparison between Gender and Response regarding TENS

Variables	TENS is successful as the sole treatment for acute pain		p-value
Gender	Yes	No	
Female	38(70.4%)	16(29.6%)	0.008
Male	57(90.5%)	6(9.5)	
Total	95(81.2%)	22(18.8%)	

Table 2: Comparison between Age and Response regarding TENS

For which medical conditions of pain you prefer using TENS :	TENS is effective as the sole treatment for acute pain:		p-value
	Yes	No	
Frozen shoulder pain	24(100.0%)	0(0.0%	0.001
Carpal tunnel syndrome pain	5(100%)	0(0.0%)	
Arthritis pain	2(100.0%)	0(0.0%)	
Phantom limb pain	5(100.0%)	0(0.0%)	
Cervical pain	10(90.9%)	1(9.1%)	
Others	6(85.7%)	1(14.3%)	
Low back pain	27(75.0%)	9(25.0%)	
Muscle spasm	13(68.4%)	6(31.6%)	
Post -surgical pain	2(66.7%)	1(33.3%)	
Peripheral neuropathy pain	0(0.0%)	2(100.0%)	
Myo -fascial pain syndrome	0(0.0%)	2(100%)	
Total	94(81.0%)	22(19.0%)	

Table 3: Comparison between Different medical conditions and TENS is effective as sole treatment for acute pain
Fishers exact test: 24.595

DISCUSSION

117 questionnaires were filled by physical therapists, using TENS in their setup. Data shows that out of 117 physical therapists majority of them 18 (25.0%) were working in hospitals and found TENS to be effective in relieving chronic pain, other 25 (55.6%) were working in private clinics and were satisfied with the effectiveness of TENS for chronic pain. Majority of physical therapists were working in setups provided with both 76(88.4%)short-term and long-term care, they were also satisfied with effectiveness of TENS with other modalities and 75(87.2%) found TENS to be successful for relieving pain. Data reveals that PT aged between 20-25 were 21(53.8%) TENS to be effective for relieving acute pain whereas PT aged between 20-30 found TENS to be effective for relieving acute pain 32(88.9%), PT aged between (31-35) found TENS to be effective for relieving acute pain 29(100%),(36-40)PT aged between found TENS to be effective for relieving acute pain9 (100%) and PT aged between 40 and above found TENS to be effective for relieving acute pain 4(100%). Majority of 57 (90.5%) Male physical therapists working in Lahore found TENS to be successful in relieving acute pain whereas 38(70.4%) of Female physical therapist found TENS to be successful in relieving acute pain. When asked on which conditions they prefer using TENS, majority of therapists mentioned low back pain, frozen shoulder and muscle spasm, cervical pain and less with trigger points, and knee pain. Thus we can conclude here that TENS is best in relieving acute pain on short term use, and also in conjunction with other modalities according to physical therapists working in Lahore. Physical therapists working in hospitals and clinics prefer using TENS for pain management. Physical therapists prefer using TENS for acute pain relief on short term use. They use TENS in conjunction with other modalities, which includes heat and cold pack and effects of TENS usage among physical therapists working in Lahore city. This trend is never been studied before in Pakistan, Thus this study would be helpful for other professionals and physical therapists as well, to get the knowledge about usage of TENS. This study would add up knowledge about TENS usage, physical therapist come to know the benefits of TENS, and continue its use in their setups.

REFERENCES

[1] Bonica JJ. The need of a taxonomy. Pain. 1979;6(3):247-8. Doi: 10.1016/0304-3959(79)90046-0

[2] Winlow W, Holden AV. The neurobiology of pain.

DOI: https://doi.org/10.54393/pbmj.v5i2.255

Lancet. 1984 8;353(9164):1610-5. doi: DOI: 10.1016/s0140-6736(99)01313-6

[3] Raj PP. The Handbook of Chronic Pain. Nova Biomedical Books. 2007. https://doi.org/10.1016/S1995-7645(14)60202-9

[4] Breivik H, Borchgrevink PC. Allen SM, Rosseland LA, Romundstad L, Hals EK, Kvarstein G, Stubhaug A. Assessment of pain. British Journal of Anaesthesia. 2008;101(1):17-24. https://doi.org/10.1093/bja/aen103

[5] Eisenberger, N. I., & Lieberman, M. D. Why It Hurts to Be Left Out: The Neurocognitive Overlap Between Physical and Social Pain. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), The social outcast: Ostracism, social exclusion, rejection, and bullying. 2005; 109–127. Psychology Press.

[6] Straus BN. Chronic pain of spinal origin: the costs of intervention. Spine. 2002;27(22):2614-9. doi: 10.1097/01.BRS.0000032228.10152.F3

[7] Shealy CN: The pain patient. American Family Physician. 1974;9(3):131-136. doi: 10.1111/j.1526-4610.1973.hed1303131.x

[8] Wolf SL: Perspectives on central nervous system responsiveness to transcutaneous electrical nerve stimulation. Physical Therapy. 1978;58:1443-1449. Doi: 10.1093/ptj/58.12.1443

[9] 9. Rushton DN: Electrical stimulation in the treatment of pain. Disability and Rehabilitation. 2002, 24(8):407-415. Doi: 10.1080/09638280110108832

[10] Paxton SL. Clinical uses of TENS, a survey of physiotherapists. Physical therapist. 1980;60(1):38.44. doi: 10.1093/ptj/60.1.38

[11] Wright A. Exploring the evidence for using TENS to relieve pain. Nursing Times. 2012;108(11):20-3. Doi: 10.1097/ACO.0b013e32832fbdf1

[12] Maayah M, Al-Jarrah M. J (2010) Evaluation of transcutaneous electrical nerve stimulation as treatment of neck pain due to musculoskeletal disorders, May 19;2(3):127-36. https://doi.org/10.4021/jocmr2010.06.370e

[13] Leah JD, et al: Potentiated expression of FOS protein in the rat spinal cord following bilateral noxious cutaneous stimulation. Neuroscience 1992;48:525-532. Doi: 10.1016/0306-4522(92)90399-M

[14] Melzack R: Phantom limb pain: implications for treatment of pathologic pain. Anesthesiology 1971;35:409-419. Doi: 10.1097/00000542-197110000-00018

[15] Chipchase LS, Williams MT, Robertson VJ. A national study of the availability and use of electrophysical agents by Australian physiotherapists. Physiotherapy theory and practice. 2009;25(4):279-96. Doi: 10.1080/09593980902782611

[16] Winnem MF et al: Treatment of phantom limb pain with transcutaneous electrical nerve stimulation. Pain. 1982;12:299-300. Doi: 10.1016/0304-3959(82)90162-2

[17] 19. Shealy CN: Transcutaneous electrical stimulation for control of pain. Clinical Neurosurgergy. 1974;21:269-274. Doi: 10.1093/neurosurgery/21.CN_suppl_1.269

[18] Kawamura H, Ito K, Yamamoto M, Yamamoto H, Ishida K, Kawakami T, et al. The transcutaneous electrical nerve stimulation applied to contralateral limbs for the phantom limb pain. Journal of Physical Therapy Science. 2001;9(2):71-6. Doi: 10.1589/jpts.9.71