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## RESEARCH ARTICLE

### EFFECTIVENESS OF FOOTREFLEXOLOGY TECHNIQUE ON REDUCING LOWER BACK PAIN

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#### ABSTRACT

Low back pain is a common, disabling musculoskeletal disorder in both developing and developed countries. Foot reflexology is referred as “medicine of the soul” as it is able to reach the root of physical or emotional problems. **Aim:** To assess the effectiveness of foot reflexology technique on reducing lower back pain among adults. **Methodology:** Study was conducted using True experimental pre-test and post-test control group research design among 50 adults (25 in control group and 25 in experimental group) who were selected using purposive sampling technique at selected villages under Kirumampakkam PHC, Puducherry. Data was collected by interview method using the pre-determined tool-Oswestry low back pain disability questionnaire. **Results:** Through Mann-Whitney test, It revealed that the difference in median level of lower back pain of adults in experimental group (M=5) was lower in the post-test than in the pre-test (M=18) which is statistically significant ( $p < 0.05$ ). In control group, median level of lower back pain of adults between the pre-test and post-test (M=18, 20) was not statistically significant ( $p > 0.05$ ). **Conclusion:** The study findings revealed that foot reflexology technique is effective in reducing lower back pain among adults. Hence we recommended that foot reflexology technique can be used as an alternative non-pharmacological therapy for lower back pain.

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#### INTRODUCTION

Low back pain is a common, disabling musculoskeletal disorder in both developing and developed countries. With chronic lower back pain being the leading causes of disability and absenteeism, worldwide. The life time prevalence of low back pain in the general population is estimated to be between 70 and 85% with an annual incidence ranging from 6.3 to 15.4. It is a major disability symptom in today's societies and the cost of this disability are high. It has been estimated that up to 80% of all people will experience back pain during their life. Low back pain is the main reason for visiting an emergency department in more than 50% of cases, and is present in 30% of family practice visit. Several epidemiological studies have reported widely about varying prevalence rate for chronic pain, which ranges from 12 to 80% of the population. It becomes more common as people approach death. Low back pain (LBP) is a major health and socioeconomic problem in modern society. There is little information about LBP in general and also in working population in developing and low income countries. Older patient may experience low back pain associated with osteoporotic vertebral fractures or bone metastasis. Other causes include kidney disorder, pelvic problem, retroperitoneal tumours, and abdominal aortic aneurysms.

In addition obesity, stress, and occasionally depression may contribute to low back pain. Low back pain is one of the most common condition which a nurse encounters in any practice setting. Although a common disorder, LBP is also a challenge to health care professionals. Ninety percent of Indians have at least one episodes of LBP in their life time. It is also a major cause of work disability in person under 45 yrs. Eighty percent of cases of LBP are idiopathic. Indeed approximately to 8 % of persons with LBP without neurologic symptoms the pain resolves within 4 to 6 weeks without specific treatment. In recent years, the popularity of alternative medicines has grown due to the increasing popularity of holistic approaches to health that emphasize the integration of body, mind and spirit along with physical symptom in improving health care and wellbeing. Therefore, patients with chronic diseases that are not completely healed by modern medicine are increasingly using complementary and alternative medicine in the process of seeking other treatment. Alternative medicine improves the symptoms of diseases and pain with the healing power of nature and to reinforce the immune system and recuperative power of the body. In other words, alternative medicines may be used to observe the harmonized physical, mental, social and environmental aspects in totality in patients.<sup>33</sup> LBP is the fifth most common reason for physician visits, which affects nearly 6-8 % of people throughout their lifetime. The lifetime prevalence of LBP is reported to be as high as 84% and the

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prevalence of chronic LBP is about 23% with 11-12% of the population being disabled by low back pain.

**Bruna Hoffmann de Oliveira et al., (2017)** evaluated a study on footreflexotherapy induces analgesia in elderly individuals with low back pain. The design used for the study is Randomized, controlled pilot study. Participants were randomly assigned to 2 groups: individuals submitted to conventional foot reflexology (control group) or foot reflexotherapy (RT, intervention group) for a period of 5 weeks. Questionnaires on pain and disability (visual analogue scale [VAS] and Roland-Morris Disability Questionnaire [RMDQ]), heart rate variability, and orthostatic balance and baropodometric analysis were assessed at two intervals: before and after intervention. RT group showed statistically significant differences when compared to control group in the following parameters: decrease in VAS scores for pain throughout the study, decrease in parasympathetic activity, and improvement in RMDQ scores.

**Mateusz W Romanowski et al., (2016)** evaluated the foot reflexology and its effects on low back pain and functional capacity of pregnant women. A woman, aged 28, with low back pain went under foot reflexology treatment which consisted of specific techniques: appropriate pressure, combination of lengthening movements, movements in intermuscular grooves, anchor and stretch technique, releasing muscle adhesions. There were twelve 30-minutes sessions in total. Questionnaires were used for the assessment of patient: Modified Roland-Morris Disability Questionnaire (RDQ), Modified Oswestry Low Back Pain Disability Index (ODI), Quebec Back Pain Disability Scale (QBPD), and The Numeric Rating Scale (NRS). In all parameters there was improvement: (RDQ), (ODI), (QBPD), and (NRS). A positive effect of foot reflexology on low back pain and functional capacity in pregnant women was noticed.

### Objectives

1. To assess the level of lower back pain among adults.
2. To evaluate the effectiveness of foot reflexology technique on reducing lower back pain among adults.
3. To associate the pre-test level of lower back pain with demographic variables and clinical variables.

### METHODS

The study design was experimental. It was conducted in Moorthikuppam and Mathikrishnapuram as selected villages under Kirumampakkam Primary health centre, Puducherry. Adults aged between 25 to 59 years with lower back pain from Moorthikuppam village were considered to be experimental group, whereas Mathikrishnapuram village adults were taken as control group for this study. Using sampling technique, a sample size of 50 adults were selected. Among them 25 were selected for experimental group and 25 were selected for control group. The sample were selected using purposive sampling technique. The instrument used in this study was Oswestry low back pain disability questionnaire and the scoring interpretation was 0% to 20%: Minimal disability, 21%-40%: Moderate disability, 41%-60%, Severe disability 61%-80%, Crippled & 81%-100%: Bed bound. The instrument was tested and validated by experts. The study was conducted after the approval by college research and ethics committee, Formal permission was obtained from Medical Officer in

Primary Health Centre, Kirumampakkam through Director of Medical Superintendent, Health and Family Welfare and oral consent was obtained from Village Leader of Moorthikuppam and Mathikrishnapuram under Kirumampakkam, PHC, respectively. Subjects were explained about the purpose and need of the study, and assured confidentiality throughout the study. Descriptive and Inferential statistics were used to analyze data.

### RESULTS

Regarding demographic variables, age wise majority of adults belongs to 8(32%) in control group were in the age group of 55 years and above, and in experimental group, majority of adults belongs to 55 years and above 11(44%). In relation to sex in both control group and experimental group, majority of adults belongs to female sex 21(84%). Regarding education in control group majority of the adult belongs to illiterate and middle school 10(40%) and in experimental group, majority of adults belongs to primary school certificate 10(40%). In view of occupation, in control group majority of the adult 14(56%) belongs to unskilled worker and in experimental group, majority of adults belongs unemployed 12(48%). In terms of nature of work in both control group and experimental group majority of the adult belongs to sedentary workers 18(72%), 16 (64%) respectively.

Both in control and experimental group majority of adults belongs to family income per month of Rs 2001-6000. 24(96%) and 18(72%) respectively. With regard to the residence in both control and experimental group 100% and 96% adults are living in rural respectively. In terms of religion in both control group and experimental group majority of the adult belongs to Hindu 24(94%) and 25(100%) respectively. In view of type of family both control group and experimental group majority of the adult belongs to nuclear family 25(100%) and 14 (54%) respectively. Towards the clinical variables of research sample. It reveals the history of lower back pain majority of adults have positive history of 25 (100%) and 23 (92%) both in control and experimental group respectively. In terms of the duration of illness both in control group and experimental group majority of the adult belongs to more than 2 years 12(48%) and 10(40%) respectively. Regarding consultation with doctor, in control group 12(48%) of adults consulted doctor and in experimental group 16(64%) of adults consulted doctor. In views of the practice of any alternative medicines for reducing lower back pain, both in control and experimental group majority of adults 23 (92%) said no.

In view of past medical illness, in control group 17(68%) of adults did not had any past medical illness and in experimental group majority of adults 14 (56%) didn't had past medical illness. With regards to the intake of analgesics or steroid both in control and experimental group majority of adults 15(60%) and 22(88%) said no to intake of analgesic or steroids. Regarding, history of past surgery within 6 months all the adults (100%) responded no both in control and experimental group. In regards to history of accident for past 6 months majority of the adults answered no both in control and experimental group 23(92%) and 24(96%) respectively. In term of habit of doing exercise, majority of adults both in control and experimental group reported no 25(100%) and 24(96%) respectively.

## Pain among Adults

Table 1. Comparison of pre-test and post-test level of lower back pain among adults

Level of Lower Back	Pre-test				Post-test			
	ExpGrp		Con Grp		ExpGrp		Con Grp	
	n	%	N	%	n	%	N	%
Pain	0	0.0%	0	0.0%	24	96.0%	0	0.0%
Mild disability	20	80.0%	19	76.0%	1	4.0%	14	56.0%
Moderate disability	4	16.0%	5	20.0%	0	0.0%	10	40.0%
Severe disability	1	4.0%	1	4.0%	0	0.0%	1	4.0%
Crippled								
Total	25	100%	25	100%	25	100%	25	100%

Table 2. Effectiveness of foot reflexology technique on reducing lower back pain among adults

Group	Pre-test			Post-test			U-value	p-value
	Mean	Median	SD	Mean	Median	SD		
Experimental Group	18.28	18	5.038	4.96	5	3.102	328	<0.001*
Control Group	18.04	18	5.443	19.68	20	5.194	10	0.016

\*Significant at the level of p&lt;0.05.

Table 3. Effectiveness of foot reflexology technique on reducing lower back pain among adults

Sl. No	Demographic variables	LBP scores				KW/ MW test	p-value
		n	Mean	Median	SD		
1.	Age					4.2852	0.2323
	25-34 years	7	17	19	4.62		
	35-44 years	10	16.1	15.5	2.81		
	45-54 years	14	17.14	17	3.46		
	55 years & above	19	20.42	20	6.68		
2.	Sex					8.0839	0.0045*
	Male	8	14.12	14	1.89		
	Female	42	18.93	18	5.27		
3.	Education					1.5389	0.8197
	Illiterate	18	19.56	19	6.81		
	Primary school certificate	14	17.64	17.5	4.67		
	Middle school certificate	15	16.93	17	3.58		
	High school certificate	2	18	18	2.83		
4.	Occupation					3.8787	0.567
	Unemployed	19	18.32	18	3.99		
	Unskilled worker	21	19	17	6.88		
	Semi-skilled worker	3	14	14	1		
	Skilled worker	1	17	17	.		
	Clerical, shop owner, farmer	5	16.6	17	1.14		
5.	Nature of work					3.8297	0.1474
	Sedentary work	34	19.18	18	5.74		
	Moderate work	13	16.08	16	3.07		
	Severe work	3	15.67	15	2.08		
6.	Family income per month					0.8846	0.8291
	Rs 2001-6000	42	18.05	17	5.39		
	Rs 6001-10000	5	19.4	20	4.98		
	Rs 10001-15000	2	17	17	4.24		
	Rs 20001-40000	1	19	19	.		
7.	Religion					2.7888	0.0949
	Hindu	49	18.31	18	5.14		
	Christian	1	11	11	.		
8.	Type of family					0.0112	0.9157
	Nuclear family	39	18.23	18	5.47		
	Joint Family	11	17.91	17	4.3		
9.	Residence					0.2046	0.6511
	Rural	49	18.14	17	5.24		
10.	Marital status					2.4885	0.2882
	Single	1	18	18	.		
	Married	31	17.03	17	4.05		
11.	Source of health information					1.4389	0.487
	Friends & relatives	2	15	15	2.83		
	Mass media	2	16	16	2.83		
	All the above	46	18.39	18	5.32		

\*Significant at the level of 'p&lt;0.05'.

Table 1 reveals the pre-test and post-test level of lower back pain among adults. The findings shows that pre-test level of lower back pain among adults in experimental group is about 20 (80%) were in moderate level of lower back pain, 4 (16%)

were in severe level of lower back pain, remaining 1 (4%) in crippled level of lower back pain and where as in control group 19 (76%) were in moderate level of lower back pain, 5 (20%) were in severe level of lower back pain, remaining 1 (4%) in

crippled level of lower back pain. The post-test level of lower back pain among adults in experimental group is about 24 (96%) were in mild level of lower back pain, 1 (4%) in moderate level of lower back pain and where as in control group 14 (56%) were in moderate level of lower back pain, 10 (40%) were in severe level of lower back pain, remaining 1 (4%) in crippled level of lower back pain. Table 4.4.1 shows that 'p<0.05' is the association between the pre-test level of lower back pain with demographic variables among adults. It reveals that there is a significant association between pre-test level of lower back pain and sex. At the level of p that 'p<0.05' is the association between the pre-test level of lower back pain with demographic variables among adults. It reveals that there is a significant association between pre-test level of lower back pain and sex (0.0045\*), there is a significant association between pre-test level of lower back pain and consultation with doctor and consumption of analgesics / steroids pertaining towards clinical variables.

## DISCUSSION

**Objective I: - To assess the level of lower back pain among adults:** The findings shows that pre-test level of lower back pain among adults in experimental group is about **20 (80%)** were in moderate level of lower back pain, 4 (16%) were in severe level of lower back pain, remaining 1 (4%) in crippled level of lower back pain and where as in control group **19 (76%)** were in moderate level of lower back pain, 5 (20%) were in severe level of lower back pain, remaining 1 (4%) in crippled level of lower back pain.

**Objective II: - To assess the effectiveness of foot reflexology on reducing lower back pain among adults by comparing the control and experimental group:** The table 2.reveals that the median difference of pre-test and post-test of experimental group is zero at significant level of p <0.05 and the U-value is 328 and 10 of experimental and control group respectively. Hence, rejecting the null hypothesis and accepting the research hypothesis that is foot reflexology is effective in reducing lower back pain among adults in experimental group.

**Objective III: - To find out the association between pre-test levels of lower back pain with demographic variables and clinical variables:** shows that 'p<0.05' is the association between the pre-test level of lower back pain with demographic variables and clinical variables among adults. It reveals that there is a significant association between pre-test the level of lower back pain and sex, consultation with doctor and consumption of analgesics / steroids.

## Conclusion

Through this study we concluded that, the effectiveness of foot reflexology technique practices on reduction of lower back pain among adults is effective. The study provided us an important insight in the reduction of lower back pain by foot reflexology technique. Since, foot reflexology is affordable, time consuming, done by self, convenient and best alternative non-pharmacological treatment for lower back pain.

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