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RESEARCH ARTICLE

EFFECTIVENESS OF EPSOM SALT HOT WATER APPLICATION ON KNEE JOINT PAIN AMONG ELDERLY PEOPLE AT SELECTED OLD AGE HOME

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Abstract

Background: Osteoarthritis is a progressive musculoskeletal joint disorder of basically Knee, Hip, and Shoulder among which Knee OA is highly prevalent. Bilateral Knee OA is dominant over Unilateral Knee OA. Obesity, age, gender, educational background, and occupation were included in the risk factors of OA. Prevalence of Knee OA is reported more in highly obese geriatric female patients who have low education and did hard work.

Objective: To evaluate the effectiveness of Epsom salt hot water application on knee joint pain among elderly people at selected old age homes.

Material and methods: The study used a quasi-experimental approach with two groups pretest-posttest non-randomized control group design. purposive sampling technique was used to collect data from 60 old age people with age groups above 60 from selected old age homes in Dehradun.

Result: The Epsom salt hot water application has shown a Highly significant difference (t=30.077 at p-value .OO1) between the pretest and posttest with a mean +SD of 6.233± 1.135 in the experimental group was significant at p<0.05 level.Independent 't' test was used for significant comparison between the experiment and control in the post-test with mean±SD 3.40±1.44, the obtained Independent 't' value 2.346 was significant at p-value= 0.022. Post-test had a higher mean score in the experimental group than in the control group.

Conclusion: This study concluded that Epsom salt hot water application is effective in reducing knee joint pain.

Introduction:-

Aging is an advanced biological alteration in a living structure that leads to reduced biological activity and structure. Though aging is omnipresent, it persists incredible experience for each individual. There is an increasing number of older people in the world population of both developed and developed countries due to the increased life expectancy. This has eventually resulted in old age health problems, requiring more specialized care and facilities. Aging changes and resulting disabilities require more intensive nursing care than that required by older who are independent and healthy[1].

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Musculoskeletal condition is the leading contributor to disability worldwide. It significantly limits mobility and dexterity, leading to early retirement from work, lower well-being, and reduced ability to participate in society. According to WHO approximately 1.7 billion people have the musculoskeletal condition worldwide. It appears that knee pain of some kind is a common complaint in middle-aged elders, with varying possible causes leading to varying types of pain.[2]

Age is the great cause of Osteoarthritis of the knee. No definite cure for osteoarthritis exists, but treatment can help reduce pain and maintain joint movement. Medication is useful in decreasing pain and inflammation.[3]

There are several alternative therapies to prevent and treat osteoarthritis. Epsom salt is one of the alternative treatments to ease health problems, such as muscle soreness. Hot water compress for joint pain with Epsom salt is very effective in the treatment of joint pain. Epsom salt may act topically and quickly and help decrease the pain.Epsom salt is also known as magnesium sulfate. It's a chemical compound made up of magnesium, Sulphur, and oxygen. Epsom salt is a completely different compound than table salt It is most likely termed "salt" because of its chemical structure.[4]

Material and Methods:-

In this quasi-experimental, two-group pretest, posttest non-probability control research design was conducted at a selected old age home in Dehradun Uttarakhand above 60 years elderly among 60 samples, through a purposive sampling technique. The inclusion criteria for the study are those in the age group of above 60 years with knee pain males and females, interested in participating in the study. A standardized Oxford knee score was used to assess the knee joint pain level. Then pre-test was taken on the first day, intervention for 10 days was given, and the post-test was conducted on the eleventh day of Intervention. The Epsom salt was prepared by adding 30 grams of Epsom salt to one liter of Hot water (The temperature of the Hot water was 125-degree Fahrenheit) Then the investigator gave Epsom salt hot water application to the experimental group for 20 min, two times a day for 10- days No intervention for the control group. Routine care is given to the control group. The study was analyzed through Paired 't-test and an Independent 't-test.

Instrument/Tool

The tool consists of Part I and Part II

Part-I: Consists of demographic variables that include 2-sections.

Section-A Family Profile-Such asage, sex, educational status, religion, marital status, previous occupation, dietary pattern, and body mass index.

Section-B Clinical variables- These consist of duration, types, remedy uses during pain, pain effect in daily life, co-morbid illness, history of trauma, activity limitation, Regular performance of the exercise, types of exercise, knowledge of hot application, sources of information, taken any alternative therapy**.**

Part II: It consists of a standardized Oxford knee score. The score contains a total of 48 grades Score 0-19=May indicate severe knee arthritis is likely that you may well require some form of surgical intervention. Scores 20-19 indicate moderate to severe knee arthritis. See your family physician for assessment and x-ray. Score30 -39=May indicate mild to moderate knee arthritis. Score 40 - 48=May indicate satisfactory joint function.

Statistical analysis

The collected data were analyzed using descriptive and inferential statistical methods. **Paired 't'** test was used for significant comparison between pre and post-test levels of knee pain score in an experiment with p=0.001 and mean ±SD 6.233±1.13. The experimental group showed an effect in the post-test after the intervention.

The Independent 't' test was used for significant comparison between the experiment and control in the post-test with p=0.022 and mean±SD 3.40±1.44. Post-test had a higher mean score in the experimental group than in the control group.

The findings were considered based on the objective of the study. The data relating to demographic variables are analyzed using descriptive statistics (frequency, percentage). The knee joint pain level was assessed using descriptive measures (mean, standard deviation).

2. Hypothesis related to the effectiveness of Epsom salt hot water application in reducing the level of knee joint pain was analyzed by using paired 't-test and Independent 't-test, mean and standard deviation.

3. Chi-square (test of goodness of fit) test used to find out the association between the level of knee joint pain and selected demographic variables (age, occupation, marital status, BMI, etc.

In demographic variables,most of the participants were in the age group of 71-75years (36.7%, 10%), females (96.7%, 86.7%), illiterates (23%, 60%%), married (63.3%, 96.7%) and the majority of them were nonvegetarians (90%, 43.3%), Hindu religion(43.3%,90%), majority of normal weight(43.3%,46.7%) no history of trauma (90%, 76.7%), history of no co-morbid illness (10%, 16.7%) not following exercise pattern (33.33%,63.3%), not knowing about the hot application (46.7%,53.3%), not taking alternative therapy(13.3%,26.7%) in the experimental and control group respectively.

Table 1.1:- Frequency and percentage distribution of pretest pain level score among elderly people in experimental and control group N=60

Pretest pain level	Experiment (n=30)		Control (n=30)	
	Frequency	%	Frequency	%
Mild to moderate	9	30	14	46.7
Moderate to severe	17	56.7	13	43.3
Severe	4	13.3	3	10

Table 1.1 shows that the majority of 56.7% of people had moderate to severe pain levels, 30% had mild to moderate pain levels, and 13.3% had severe pain levels in the experimental group. The majority of 46.7% had mild to moderate pain levels, 43.3% had moderate to severe pain levels, and 10% had severe pain levels in the control group.

Table 1.2:- Frequency and percentage of posttest pain level score among elderly people in experimental and control group. N=60

Posttest pain level	Experiment (n=30)		Control (n=30)	
	Frequency	%	Frequency	%
Mild to moderate	22	73.3	14	46.7
Moderate to severe	4	13.3	13	43.3
Severe	0	0	3	10
Satisfactory	4	13.3	0	0

Table 1.2: Shows that the majority of 56.7% of people had moderate to severe pain levels, 30% had mild to moderate pain levels, and 13.3% had severe pain levels in the experimental group. The majority of 46.7% of people had mild to moderate pain levels, 43.3% had moderate to severe pain levels, and 10% had severe pain levels in the control group.

Table No.2.1:- Compare the post-assessment, knee joint pain score level among elderly people in experimental and control groups N=60.

Pain level	Pre-test (mean ± SD)	Post-test (mean ± SD)	Mean Difference (SD)	Paired t-test	DF	P-value	Result
Experiment	27.77 ± 5.104	34 ± 4.518	6.233 ± 1.13	30.077	29	0.001	Significant
Control	30.60 ± 6.526	30.60 ± 6.526	0.0± 0.0	0	29	p>0.05	Insignificant

A hypothesis is tested at the level of $p \leq 0.05$

Table No.2.1 shows that there was a statistically significant comparison between pre and post-test levels of knee joint pain score in the experimental group with mean±SD 6.233±1.13, the obtained 't' value 30.077 was significant at p-value= 0.001. The experimental group was showing an effect in the post-test after an intervention.

Table No.2.2:- Compare experimental and control groups in pre and post-level knee joint pain score among elderly people N=60

Pain	Experiment(mean	Control	Independent	Mean	DF	P-value	Result

level	± SD)	(mean ± SD)	t test	difference (SD)			
Pre test	27.77 ± 5.104	30.60 ± 6.526	1.873	2.833 (1.513)	58	0.066	Non-Significant
Post test	34 ± 4.518	30.60 ± 6.526	2.346	3.40 (1.449)	58	0.022	Significant

A hypothesis is tested at the level of $p \leq 0.05$

Table No.2.2 shows there was a statistically significant comparison between the experiment and control in the post-test with mean±SD 3.40±1.44, the obtained Independent 't' value 2.346 was significant at p-value= 0.022. Post-test had a higher mean score in the experimental group than in the control group.

Discussion:-

This study aimed to deliver an intervention that would reduce knee joint pain among elderly people and provide a painless life. It was obtained that, most of the elderly had a moderate to severe frequency of 17 and a percentage is 56% pain in the pre-test and most of them had a mild to moderate pain frequency is 22 and a percentage is 73.3% in the post-test after the intervention of Epsom salt hot water application. There are no changes in the control group between pre and post-test.

However, the result showed that Epsom salt hot water application effectively reduces knee joint pain with a 't' value of 30.077 was significant at p-value= 0. 001.After 10 days two times a day Epsom salt hot water application mean±SD 6.233±1.135. The experimental group was showing an effect in the post-test after the intervention.

A similar study conducted by Madaswamy, assess the effectiveness of hot water compress with Epsom salt among elderly women with knee joint pain in selected areas. The pre-test level of knee joint pain data revealed that (47%) were Severe Pain, (51%) was Moderate Pain, and (2%) were Mild Pain. The Post-test level of knee joint pain. The data revealed that (81%) were No pain, (19%) were Mild pain, and none of Moderate and Severe pain after the intervention of Epsom salt hot water application.The finding reveals that the Pre-Test score mean ±SD was9.08±2.61. Whereas in the Post Test score, the mean±SD was 18.49±2.53. The calculated paired t value is t = 0.000*. It was found to be statistically significant at p=< 0.005 level. It indicates that the Hot Water Application with Epson Salt significantly improved the level of Knee Joint Pain among Elderly Women.

Conflict of interest:
None.

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Nil.

References:-

1. Dash Bijayalaskhmi," A Comprehensive Textbook of Community Health Nursing," Jaypee Brothers Medical Publishers(P) Ltd: pg. 613-619(1)
2. Musculoskeletal health [Internet]. [cited 2022 Oct 19]. Available from: https://www.who.int/news-room/fact-sheets/detail/musculoskeletal-condition.
3. Contributors WE. Osteoarthritis of the Knee (Degenerative Arthritis of the Knee) [Internet]. WebMD. [cited 2022 Oct 19]. Available from: https://www.webmd.com/osteoarthritis/ostearthritis-of-the-knee-degenerative-arthritis-of-the-knee)
4. Epsom salt: Benefits, Uses, and Side Effects [Internet]. Healthline. 2018 [cited 2022 Dec 21]. Available from: https://www.healthline.com/nutrition/epsom-salt-benefits-uses
5. Oxford Knee Score [Internet]. Physiopedia. [cited 2023 Apr 25]. Available from: https://www.physio-pedia.com/Oxford_Knee_Score
6. 6.Madaswamy.R, Brisky Jenisha. J, Lokeshwarri.S. A STUDY TO ASSESS THE EFFECTIVENESS OF HOT WATER COMPRESS WITH EPSOM SALT AMONG ELDERLY WOMEN WITH KNEE JOINT PAIN

RESIDING IN A SELECTED AREA. 2022 Oct 31 [cited 2023 Apr 23]; Available from: https://zenodo.org/record/7267454
7. Ayarachan and A. Daniel J. A Quasi-experimental study to assess the effectiveness of hot water application with Epsom salt and hot water application on joint pain among adults suffering from arthritis. IJSRP. 2019 Oct 24;9(10):p94105
8. Sankar L. Effectiveness of Epsom Salt with Hot Water Application on Knee Joint Pain among Elderly in a Selected Rural Area at Puducherry. Pondicherry Journal of Nursing. 2020 Jul 28;12(2):42–45.