RESEARCH PAPER

A Quasi-Experimental Study To Assess The Effectiveness Of Epsom Salt Application On Joint Pain Among The Elderly People

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ABSTRACT:

Elderly people frequently have joint discomfort from diseases like osteoarthritis, which can seriously impair mobility and quality of life. The purpose of this study was to determine whether applying Epsom salt to elderly people of Velachha village, Surat, might effectively reduce joint discomfort. Purposive sampling was utilized to identify 80 participants who were 60 years of age or older for a quantitative quasi-experimental one-group pretest–post-test design. The Numerical Rating Scale (0–10) was used to measure pain. For seven days in a row, the intervention involved a daily 20-minute Epsom salt bath (two cups of magnesium sulphate in warm water at 38–40°C). In the post-test, the mean pain score dropped from 6.7 ± 1.3 to 3.8 ± 1.2 ($t = 14.5$, $p < 0.001$). 52.5% of individuals reported minor pain following the intervention, up from 15% prior to it. After the educational session, 86.7% of participants showed appropriate understanding on the application of Epsom salt. According to the study's findings, Epsom salt baths are a non-pharmacological, safe, and efficient way to lessen joint discomfort in older people living in rural areas.

Keywords-Epsom salt,joint pain,elderly people

How to cite this article: Bhagat VM, George D. A Quasi-Experimental Study To Assess The Effectiveness Of Epsom Salt Application On Joint Pain Among The Elderly People. Int J Drug Deliv Technol. 2026;16(11s): 715-717. DOI: 10.25258/ijddt.16.11s.73

INTRODUCTION

Many elderly people experience joint pain from diseases like osteoarthritis and rheumatoid arthritis. This pain impairs quality of life, restricts everyday activities, and decreases mobility. Patients are drawn to non-pharmacological methods because of the adverse effects of drugs like NSAIDs. By reducing inflammation and relaxing muscles, epsom salts (magnesium sulfate) may improve hot tub soaks, which increase circulation and lessen joint stiffness. Epsom salts have been used for centuries, yet there is still little proof that they are beneficial for senior citizens.

Applying heat locally or generally causes physiological changes that reduce pain, such as muscular relaxation and vasodilation. Vision loss, joint pain, low back pain, skin changes, and weakened immunity are common age-related problems. 9.6% of men and 18% of women over 60 worldwide suffer from osteoarthritis, a major source of knee discomfort in the elderly (WHO, 2010). It was predicted to rank as the fourth most common cause of disability globally by 2020. With a prevalence of 22–39%, osteoarthritis is the second most common cause of knee pain in India.

MATERIALS AND METHODS

A descriptive, quasi-experimental one-group pretest-post-test design was employed in this quantitative study. Eighty elderly people from Velachha village in Surat were chosen through purposive sampling to participate.Elderly people (60 years of age and older) with knee joint discomfort who do not have systemic lupus erythematosus, skin hypersensitivity, neuropathies, vascular impairment, or chronic diseases are eligible.Skin hypersensitivity, systemic lupus erythematosus, neuropathies, vascular dysfunction, and chronic illnesses (such as uncontrolled diabetes or heart failure) are among the exclusion criteria.The Numerical Rating Scale (NRS) for pain (0–10 scale) and a self-structured knowledge questionnaire were among the tools used. For seven days, the intervention consisted of daily 20-minute Epsom salt baths (two cups magnesium sulfate in warm water, about 38–40°C).Chi-square tests, paired t-tests, and descriptive statistics (SPSS v.25; $p<0.05$ significant) were used to evaluate the data.

RESULTS

Section I: Sociodemographic Characteristics

Of the 80 participants, 28 (35%) were between the ages of 60 and 65; 57.5% were women and 42.5% were men. The most prevalent level of education was primary (32.5%), followed by illiteracy and secondary education. The majority were housewives (32.5%),

followed by laborers and farmers. They were all (100%) from rural regions. 50% of those affected had knee joints, and 40% had been in discomfort for one to three years. The majority of responders were rural women with moderate-duration knee pain and only a primary education.

Section-II-A Knowledge Level of Participants (Pretest vs Post test)

The elderly people level of knowledge considerably increased following the educational intervention. None of the participants had sufficient knowledge during the pretest, while 62 (77.5%) had insufficient knowledge. Following the intervention, 69 individuals (86.7%) showed sufficient knowledge, suggesting a significant increase in awareness of Epsom salt baths for the treatment of joint pain**.**

Section II: B Pretest and Posttest Pain Levels (NRS)

Pain level	Pretest(n)	Pretest (%)	Post test(n)	Post test (%)
Mild (0-3)	12	15	42	52.5
Moderate (4-6)	44	55	30	37.5
Severe (7-10)	24	30	8	10
Total	80	100	80	100

Section III: Effectiveness of Epsom Salt Baths

Variables	Mean	SD	Mean Difference	t-value	p-value
Pre-test pain	6.7	1.3	2.9	14.5	<0.001
Post-test pain	3.8	1.2			

The posttest mean (3.8 ± 1.2) was significantly lower than pretest (6.7 ± 1.3; t=14.5, p<0.001), indicating Epsom salt baths effectively reduced joint pain.

Section IV: Association of Pretest Pain with Socio-Demographics

Chi-square analysis revealed significant correlations between pretest pain level and family type (joint/extended families; χ^2 p<0.001). Age, gender, education, occupation, and income did not significantly correlate.

DISCUSSION

1. The effectiveness of the intervention

After the intervention, the pretest means pain (6.7, severe) decreased to 3.8 (mild/moderate) (t=14.5, p<0.001). This is consistent with Senthilkumar's (2018) finding that applying heated Epsom salt to elderly people living in rural areas improved their joint discomfort. This is explained by the Gate Control Theory, which states that thermal stimulation blocks pain impulses in the spinal cord.

2. Improvement of Knowledge

86.7% had sufficient knowledge after the intervention (compared to 0% before the test). This is consistent with Gupta's (2017) findings that structured education combined with role-playing improves health literacy among older people living in rural areas.

3. Absorption of Magnesium

For older people in Velachha, transdermal magnesium sulfate offers advantages beyond hot water alone by encouraging muscle relaxation and lowering inflammation (Gröber et al., 2017).

4. The Impact of Demographics

Degenerative alterations appear to predominate, as there are no correlations with age, gender, or wealth. However, there was a correlation between pain duration and pretest scores (p=0.024), suggesting that prolonged hydrotherapy may be necessary for chronic cases.

CONCLUSION

The objectives of this quasi-experimental investigation were met: Epsom salt baths considerably decreased joint pain in elderly people in velachha village (p<0.001). The inexpensive, secure, and culturally appropriate solution works well in remote areas. Longer follow-up periods and future randomized studies with controls are advised.

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