

Effect of Foot Reflexology as an Add-on Intervention on Pain Among Women Having Undergone Mastectomy

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Abstract

A single group quasi-experimental study was conducted among 40 women on the first day after they underwent mastectomy. Subjects were selected by convenience sampling technique. A single session foot reflexology was administered among post-mastectomy women. Pain was assessed at baseline, post-test I (immediately after foot reflexology) and post-test II (30 minutes after foot reflexology). The findings revealed that there was a statistically significant difference between the pain scores at baseline and both the post-tests ($t_{(39)} = 2.9, p < 0.05$ and $t_{(39)} = 4.418, p < 0.05$). A statistically significant reduction in physiologic parameters was also observed from the baseline (systolic BP at post-test I ($t_{(39)} = 2.470, p < 0.05$)).

Breast cancer is the most prevalent cancer among women worldwide which comprises 22.9 percent of invasive cancers in women and 16 percent of all female cancers. It is the most common cancer in women in all urban areas in India. Surgery is considered as the primary treatment for breast cancer. Nearly every woman with breast cancer undergoes some kind of surgery as a part of their treatment. Severe pain after surgery remains a major problem, occurring in 20-40 percent of patients. The current practice of using post-operative analgesics with a focus on patient's demands may not be adequate. Drugs such as IV paracetamol, IV diclofenac and opioids may not be meeting all the requirements of post-surgical patients. Reflexology, a complementary approach to pain relief, is a form of bodywork that focuses primarily on the feet. To overcome post-surgical pain along with the medical management, nursing intervention plays an important role. The researcher sought to assess the effect of complementary and alternative therapy like foot reflexology in reducing the pain among women having undergone mastectomy.

Review of Literature

Tsay L, Luan S, Chen, Ling H, Chiu S, Ru H (2008) in a randomised controlled trial among 61 patients on effect of foot reflexotherapy on acute post-operative pain and anxiety in Taiwan revealed that less pain ($p < 0.05$) and anxiety ($p < 0.05$) over time were reported by the intervention group compared with the control

group. Study concluded that patients in the intervention group required significantly less opioid analgesics than those in the control group ($p < 0.05$).

Stephenson NL, Swanson M, Dalton J, Keefe FJ, Engelke M (2000) conducted an experimental study to examine the effectiveness of a single reflexology treatment for pain and anxiety among patients ($n=23$) with breast or lung cancer at in-patient oncology unit of Southeastern United States. Patients received one 30-minute reflexology treatment and a 30-minute control without reflexology using a crossover design. Results showed significant decrease of pain in these patients following foot reflexology ($m=0.41, SD=0.71, p=0.048$) and a significant decrease in anxiety, following foot reflexology for patients with both breast cancer ($n=13, m=17.38, SD = 21.29, p=0.01$) and lung cancer ($n=10, m= 21.6, SD = 25.49, p=0.02$). Study concluded that 11 of the 13 breast cancer in-patients reported pain. Researcher couldn't retrieve any study on assessing the effectiveness of foot reflexology among patient having undergone breast cancer foot reflexology.

Methodology

Quantitative approach using quasi-experimental one group pre-test post-test design was adopted for the present study conducted in selected surgical wards of a selected tertiary care hospital, Kochi. The study subjects were 40 women who underwent mastectomy. The socio-demographic and clinical data were assessed using a structured interview schedule, and pain using Numerical Pain Rating Scale and the interview schedule respectively. After the interview, height, weight and physiological parameters (blood

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Table 1: Association between pain and selected variables (n=40)

| S.No. | Socio-demographic variable | Pain score | | | | d.f | χ^2 value | p value |
|-------|----------------------------|--------------------------|------|----------|------|-----|----------------|---------|
| | | Mild | | Moderate | | | | |
| | | f | % | f | % | | | |
| 1 | Marital Status | | | | | | | |
| | a. Married | 17 | 63 | 10 | 37 | 1 | 0.304 | 0.836 |
| | b. Widowed/ Separated | 07 | 53.8 | 06 | 46.2 | | | |
| 2 | Stage of the disease | | | | | | | |
| 2 | a. Stage I | 13 | 54.2 | 11 | 45.8 | 1 | 0.851 | 0.553 |
| | b. Stage II | 11 | 68.8 | 05 | 31.3 | | | |
| | 3 | BMI (kg/m ²) | | | | | | |
| 3 | a. < 25 | 09 | 64.3 | 05 | 35.7 | 1 | 0.864 | 0.571 |
| | b. ≥ 25 | 16 | 61.5 | 10 | 38.4 | | | |

$\chi^2(1) = 3.84, \chi^2(2) = 5.99$

pressure, heart rate, respiratory rate) of the samples were assessed. Then one time foot reflexology was given on both legs for 20 minutes (10 minute for each leg). Foot reflexology pain score (NRS-11), blood pressure, heart rate and respiratory rate were assessed (Post-test I), at 30th minute of foot reflexology (Post-test II). There were three tools for data collection. *Tool I:* Structured interview schedule to collect socio

demographic data and clinical variables. After the interview, height, weight and physiological parameters (blood pressure, heart rate, respiratory rate) of the samples were assessed. *Tool II:* Numerical Rating Scale to assess patient's pain level. *Tool III:* Structured interview schedule to assess effect of pain on psychosocial aspects of the patient who underwent mastectomy.

Selection Criteria

Inclusion criteria: Female patients who underwent surgical procedures of breast like wide local excision, lumpectomy, simple mastectomy and modified radical mastectomy; women above 18 years; women on their first post-mastectomy day.

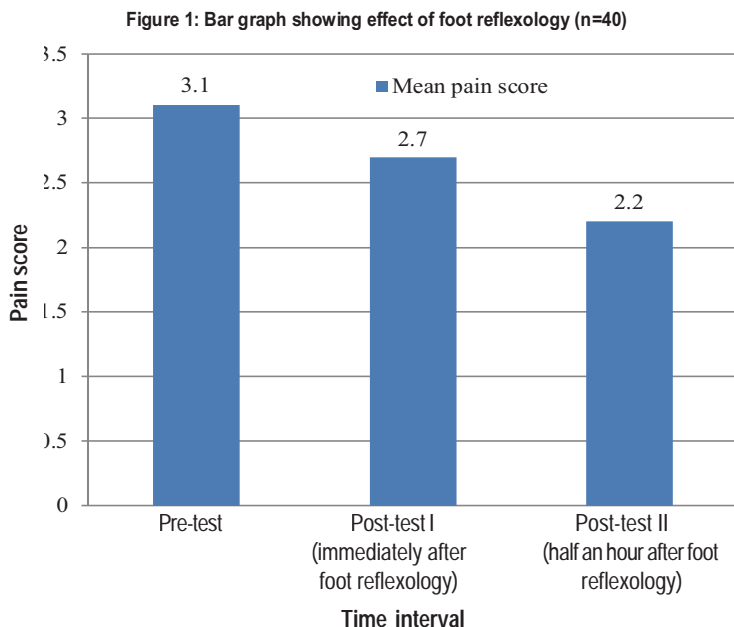
Exclusion criteria: Post mastectomy patients who underwent amputation of lower extremities; post-mastectomy patients with any injury or conditions affecting sole of foot; patients who were quadriplegic or paraplegic patients or those having areflexia.

Results

Table 2 : Comparison of mean pain scores in experimental group at three time periods of application of foot reflexology

| Group / variable | Pain score | | | t-value | | |
|------------------|------------|-----------------|-------|--|---|--|
| | Mean | Mean difference | SD | Pre-test & post-test I (t ₁) | Pre-test & post-test II (t ₂) | Post-test I & post-test II (t ₃) |
| Pre-test | 3.1 | 0 | 1.336 | | | |
| Post-test I | 2.7 | 0.4 | 1.381 | 2.9* | 5.6* | 4.416* |
| Post-test II | 2.2 | 0.9 | 1.159 | | | |

t(39) = 2.02, p<0.05



There was a statistically significant difference between the pain scores at baseline and both the post-tests (t₍₃₉₎ = 2.9, p < 0.05, t₍₃₉₎ = 5.6, p < 0.05 and t₍₃₉₎ = 4.416, p < 0.05 ie, between pre-test and post-test I, pre-test and post-test II and between post-test I and II), which indicate that the foot reflexology is effective in reducing pain among women having undergone mastectomy.

Majority of the 62.5 percent subjects reported mild pain (NRS score 1-3) and none had severe pain at baseline (pre-test). Majority of the subjects described pain as 'piercing' (55%) followed by pricking (40%) and reported to occur intermittently (82.5%).

Figure 1 shows that mean pain score rated with numerical pain rating scale among subjects in the experimental arm in pretest observation was 3.1 which decreased to 2.7 and 2.2 immediately after foot reflexology (post-test I) and at 30th minute (post-test II) respectively.

Table 1 indicates that pain is not associated with any of the selected variables at p < 0.05. As there were only 2 subjects in stage III of the disease, stage II and III are categorised as stage II for the purpose of association. BMI is also categorised as < 25 and ≥ 25.

Table 3 : Comparison of physiological measurements at three time periods of application of foot reflexology

| Physiological Variable | Pre-test | | Post-test I | | Post-test II | | t-value | | |
|------------------------|----------|-------|-------------|--------|--------------|--------|------------------------|---------------------------|----------------------------|
| | Mean | SD | Mean | SD | Mean | SD | Pre-test & post-test I | Pre-test I & post-test II | Post-test I & post-test II |
| Systolic BP | 130.70 | 75.53 | 126.25 | 19.803 | 127.15 | 22.561 | 2.470* | 0.273 | -0.564 |
| Diastolic BP | 25.314 | 9.411 | 72.80 | 9.798 | 74.93 | 11.310 | 1.958 | 0.927 | -1.960 |
| Heart Rate | 74.08 | 25.05 | 75.28 | 11.642 | 74.47 | 9.827 | 1.334 | 7.739* | 0.766 |
| Respiratory Rate | 12.171 | 3.178 | 23.25 | 2.648 | 22.83 | 2.459 | -0.683 | 7.059* | 2.136* |

t(39) = 2.02, p<0.05

Table 2 presents the t value computed between the three measurements of pain i.e. pre-test, post-test I and post-test II. From the t value, it is evident that there is a statistically significant difference between the pain experienced by the subjects, p<0.05 is between pretest and post-test 1 ($t_{(39)} = 2.9$); pre-test and post-test 2 ($t_{(39)} = 5.6$), and post-tests 1 and 2 ($t_{(39)} = 4.418$, p<0.05). Thus it can be interpreted that the foot reflexology is effective in reducing the pain after mastectomy. Hence, the null hypothesis H_{01} that there is no statistic significant difference between the pain score before and after foot reflexology is rejected.

Data in Table 3 regarding physiological parameters indicate that the respiratory rate was insignificantly different in each post-test and systolic BP is significantly different in immediate post-test. From this result it can be interpreted that respiratory rate has significantly reduced after foot reflexology. i.e. $t_{(39)} = 7.739, 7.059, 2.136, p<0.05$ repeating before pre-test and post-test 1, pre-test and post-test 2, and post-test 1 and 2 reported. With regard to blood pressure, statistically significant difference in BP was between pre-test and immediately following foot reflexology. Hence it can be interpreted that foot reflexology is effective in reducing respiratory rate significantly and systolic BP to certain extent.

Discussion

In a retrospective study by Amichetti M, Caffo O on pain after quadrantectomy and radiotherapy for early stage breast cancer, authors showed that 141 patients (43.5%) reported pain as a consequence of quadrantectomy and radiotherapy. The main characteristics of pain were (a) localised in the axillary region (61.7%) or on the scar (37.5%), (b) intermittent (75%), and (c) not related to any physical activity (54.6%).

Findings of the study are in line with the present study. The subjects experience pain at chestwall (35%) and scar (38%). In the light of the above mentioned study findings it can be concluded that women having undergone mastectomy may suffer from intermittent pain and pain at scar site on first post-operative day. The ac-

tivity that is totally omitted by majority (80%) subjects is "raising hands up" followed by "combing hair".

In the present study it was observed that pain was experienced by all the subjects in varying degrees, with majority (n=25, 62.5%) of the subjects suffering from mild pain (score 1-3) and none had severe pain. The mean pain score rated with numerical pain rating scale among subjects in pre-test observation was 3.1.

But in a cross-sectional observational study conducted by Salomon AS, Chambine S, Lory Cin (2005) among 625 patients, it was revealed that 64 percent of patients reported severe post-operative pain (visual numerical scale 8-10). Study concluded with the fact that the quality of the analgesic prescription particularly for painful surgical procedures helped to improve the pain management. The findings from the present study may be in part due to the administration of analgesics during pain.

The mean pain score rated with numerical pain rating scale (NRS 11) among subjects in the experimental arm in pretest observation has a statistically significant reduction immediately after foot reflexology (post-test I) ($t_{(39)} = 2.9, p<0.05$) and at 30th minute of foot reflexology (post-test II) ($t_{(39)} = 5.6, p<0.05$).

The investigator found no study to find the effect of foot reflexology on post-mastectomy pain. But there are few studies that had been conducted among the general surgery patients. All the studies supported the present study result where the post-operative pain had significantly reduced time period with foot reflexology.

This study revealed the effect of foot-reflexology as an add-on intervention on pain among women having undergone mastectomy which proved that there was a significant reduction in pain score among the women immediately after and at 30th minute of

administering foot reflexology.

Implications

The findings of the present study has bearing on nursing practice, education, administration and research.

Nursing practice: Nursing practice has direct, significant impact on human health. Nurses can give foot reflexology as an independent nursing intervention to the patients with pain after mastectomy. Foot reflexology is a way to enhance the nurse-patient relationship as a nurse can easily and skillfully perform it with training. Nurses can also teach the family members and relatives of patients about foot reflexology and instruct them to do it in their home settings regularly.

Nursing education: If adequate importance is given to foot reflexology in the nursing curriculum, nurses can utilise this as an effective intervention is practiced in the hospital and community. The effectiveness of reflexology has been proved and hence can be utilised as an effective complementary therapy.

Nursing administration: The nurse administrator can plan various training programmes by professional trainers to create awareness among health professionals on complementary therapies like foot reflex-

ology. Health care institutions can also encourage the development of patient care protocols that facilitate practice of complementary therapies like foot reflexology for health promotion of clients.

Nursing research: The findings of the present study can be utilised by nurse researchers to contribute to the profession by accumulating new knowledge, and can also do new research studies and interventions in reducing post-surgical conditions like nausea and vomiting through complementary therapies like foot reflexology.

Conclusion

The study results show that foot reflexology is effective in reducing post-mastectomy pain. Hence, it can be suggested as one of the complementary and alternative therapy.

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Workshop on Nursing Administration & Supervision for Effective and Efficient Patient Care

August 29 - September 02, 2016

TNAI is organising a National Workshop on "Nursing Administration and Supervision for Effective and Efficient Patient Care" during 29 August - 02 September 2016 at TNAI's Central Institute of Nursing Education & Research and Elderly Care Home (CIN&R and ECH), Plot No. 37 and 37/1, Knowledge Park III, Greater NOIDA-201308 (UP), Email: tnai.cin.ech@gmail.com, Mrs Sangtamitra Sawant, Assistant Secretary-General, Ph: 09971453721.

The overall purpose of the workshop is to update and strengthen the managerial skills of nurse professionals working at various levels to enable them to render efficient and effective nursing care.

Request for registration will be considered on a first-cum-first serve basis as there are only limited seats (40). All costs for attending the workshop will be borne by the sponsoring authorities (Institutions/ Governments) or by concerned individuals as the case may be.

Participation fee:

- | | |
|---|------------|
| 1. Registration fee for all participants | Rs. 5000/- |
| 2. Boarding & Lodging charges for outstation participants | Rs. 5500/- |
| 3. Lunch and refreshments for local participants | Rs. 1500/- |

The fee, in the form of demand draft in favour of "The Trained Nurses' Association of India" and payable at New Delhi should be enclosed with the Application.

Kindly note that in case of any cancellation, an amount of Rs. 5000/- (being the registration fee) will not be refunded. Outstation cheques will NOT be accepted.

Send a mail to tnai.in.ech@gmail.com, Mrs Sanghamitra Sawant, Assistant Secretary-General, Ph: 09971453721 to get your registration form (or) the registration form can be downloaded from the TNAI website (www.tnaionline.org). Last date for receiving duly filled-in form is **16 August 2016**.

Credit Hours: TNAI will award 40 credit hours for participation in the 5 days workshop.

Note: Confirmation of seat will be done only after receiving the payment.

Mrs Evelyn P Kannan
Secretary General & Director CEP, TNAI