

Effectiveness of Medical Massage in Reducing Neck Pain Among Multiple Occupational Groups: A Longitudinal Study

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Background: Neck pain is a common complaint affecting people across various professions, especially those involving prolonged sedentary activities.

Purpose: This study aimed to evaluate the efficacy of medical massage in reducing neck pain among diverse occupational groups in North Macedonia over a 3-year period (2019–2022).

Methods: A total of 127 participants from various professions such as information technology professionals, bank accountants, textile workers, business sector employees, and secretaries were subjected to one or two massages per month. Pain intensity was measured using a numerical rating scale at the start and throughout the study. The statistical methods in this research study included descriptive statistics for summarizing demographic data, comparative analyses to assess the effectiveness of massage therapy on pain reduction, and inferential statistics to determine significance levels and correlations within the data.

Results: At the beginning of the study, participants reported an average pain intensity level of 7 on a numerical rating scale from 1 to 10. Over the study period, consistent massage therapy led to a significant reduction in neck pain, with participants reporting an average pain level of 2 in the final months. Crucially, the research revealed that discontinuation of massage sessions, as observed in a subset of respondents who abstained for approximately 4 months, resulted in an escalation of pain intensity. This finding draws attention to the importance of regular massage therapy in sustaining pain relief benefits.

Conclusion: The study's outcomes focus on the effectiveness of medical massage in

managing neck pain across various occupational backgrounds. This research provides valuable perception in the potential long-term benefits of massage therapy, accenting the need for continued treatment to maintain pain relief among people exposed to neck and back pain. These findings offer essential guidance to health-care professionals and individuals seeking non-pharmacological interventions for chronic neck pain management.

KEYWORDS: Massage therapy; neck pain; treatment; rehabilitation; medical massage

INTRODUCTION

In today's fast-paced world, neck and back pain have become everyday challenges, affecting people across multiple age groups and occupations. The increasing prevalence of sedentary lifestyles and prolonged hours spent in front of computers or repetitive tasks has contributed significantly to the rise of musculoskeletal issues, particularly in the neck and back regions. This discomfort not only declines the quality of life but also poses a substantial burden on health-care systems worldwide.⁽¹⁾

Neck pain remains a common problem with a huge negative impact on the lives and efficiency of millions globally. With the modern lifestyle of working for long hours slouched at computers and various other electronic devices, neck pain has appeared among many other contributing factors.⁽²⁾ The most common ones are related to work requirements and occupational stresses. Chronic neck pain is

a common problem among people who engage in various types of careers—from information technology (IT) specialists to accountants who deal with bank activities, textile workers, personnel of any kind of business, and secretaries.⁽³⁾

Research into possible ways of eliminating or reducing the effect of neck pain at work is motivated by the widespread nature of this health problem. Although prescription solutions are available, health-care professionals are increasingly recognizing the potential disadvantages, including adverse effects that may come with prolonged drug usage.⁽⁴⁾ As such, non-pharmaceutical approaches have gained momentum in which therapeutic massage is one of the possible ways for management of neck pain.⁽⁵⁾

Massage is often considered a broad area with Swedish massage, deep tissue massage, and trigger point therapy components, which have received popularity due to their holistic healing process. Massage can be very helpful for neck pain sufferers as it targets muscle tightness, helps with relaxing the body, and boosts blood circulation.⁽⁶⁾ In response to the growing demand for effective pain management strategies, medical massage has appeared as a promising therapeutic approach, offering relief to those suffering from neck and back pain.⁽⁷⁾

Unlike conventional massages offered in spas and wellness centers, medical massage is a specialized form of therapy administered by trained physical therapists with a deep understanding of anatomy, physiology, and the underlying causes of musculoskeletal pain. This targeted approach distinguishes medical massage as a potent intervention in pain management.⁽⁸⁾

The complex interaction between muscles, nerves, and soft tissues in the neck and back demands a modulated approach, and medical massage serves precisely to these complexities. By engaging a variety of techniques, such as trigger point therapy, myofascial release, deep tissue massage, and joint mobilization, medical massage therapists address specific areas of discomfort, releasing tension, reducing inflammation, and promoting natural healing processes within the body. The result is not simply a temporary relief from pain but a comprehensive, holistic approach to addressing the root causes of neck and back pain.⁽⁹⁾

METHODOLOGY

Study Design and Ethics

The study, conducted in Skopje, North Macedonia, involved participants experiencing chronic neck and back pain. The research design included massage therapy interventions administered twice per month by an experienced and certified physiotherapist. Ethical guidelines were strictly attached throughout the research process. Informed consent was obtained from all participants, highlighting their voluntary participation and the confidentiality of their personal information.

Participants

The research study was conducted in Skopje, North Macedonia, spanning from 2019 to 2022, with a sample size of 127 individuals within a home area. Participants were selected from various occupational sectors, including secretaries, IT professionals, and other related jobs, chosen based on their willingness to participate in the study voluntarily. The participants' identities remained anonymous, with only their gender, age, and pain scale information recorded for research purposes.

Data Collection

Data collection involved recording participants' demographic information, including gender and age, as well as pain scale ratings before and after the massage intervention. Pain scale ratings were assessed on a numerical scale, providing quantitative data on the severity of participants' neck and back pain. Pain scale assessments were conducted at regular intervals throughout the study period to track changes in pain intensity over time.

Interventions

The massage therapy intervention implemented in this study was carefully designed to address the specific needs of participants suffering from chronic neck and back pain. The therapy sessions, administered twice per month throughout the study period, were structured to provide targeted relief, relaxation, and mobility improvement. The intervention was carried out by an experienced and certified

physiotherapist, ensuring consistency and quality in the application of techniques.

Duration and Frequency

Each massage session lasted for half an hour, allowing for a focused and intensive therapeutic experience. Massages were conducted twice a month to maintain regularity, ensuring that participants received consistent care to manage their neck and back pain effectively.

Targeted Areas

The massage therapy sessions specifically targeted the neck and back areas, bordering the entire spinal region from the lumbar region to the cervical spine. By concentrating on these areas, the physiotherapist aimed to address muscular tension, knots, and discomfort that often contribute to chronic pain conditions.

Massage Techniques

Gentle strokes

The massage protocol began with gentle strokes, starting from the lumbar region and moving gradually upward toward the head of the participants. These strokes served to relax the muscles and prepare them for more focused techniques.

Caudal direction strokes

Following the upward strokes, caudal direction strokes were applied, increasing blood circulation and promoting muscle relaxation in the targeted areas.

Frictions on the scapular region

Specific friction techniques were employed on the scapular region to release tension and improve mobility in the shoulder blades, a common area of discomfort for individuals with neck and back pain.

Muscle energy techniques

The therapist included muscle energy techniques involving vibrations and stretching maneuvers, particularly focusing on the scapular region. These techniques aimed to release deep-seated tension, improve muscle flexibility, and increase overall mobility in the neck and back muscles.

Trunk stretching with forearms: A unique aspect of the intervention involved utilizing the upper arms of the therapist to stretch

the trunk muscles gently. The technique involved the therapist using their forearms to gently stretch the upper trunk, especially applying pressure to the trapezius muscle for 5–10 seconds. Also, applying pressure for 10 seconds between the scapulae contributed to upper pain relief in participants. This method facilitated a deeper stretch, targeting specific muscle groups and promoting relaxation in the entire spinal area.

Use of menthol massage oil and gel: Menthol massage oil and menthol gel were integral components of the intervention, carefully chosen for their therapeutic properties. Menthol is known for its cooling effect, which helps in numbing pain receptors, reducing inflammation, and providing a soothing sensation.⁽¹⁰⁾ The application of menthol massage oil and gel increased the overall massage experience, amplifying the therapeutic effects of the session.

By adding this comprehensive and adaptive intervention approach, the study aimed to assess the impact of these specific massage techniques and products on the participants' neck and back pain. The design of the intervention protocol ensured that participants received a standardized and effective massage therapy, setting the stage for a systematic evaluation of its outcomes and benefits in managing chronic musculoskeletal pain.

Statistical Analysis

Quantitative data obtained from pain scale ratings were analyzed using methods including descriptive statistics and comparative analyses between the main group and the control group. In the provided research, various statistical functions and analyses were conducted to identify patterns within the data. First, the pain scale ratings before and after the massage therapy were compared to assess the effectiveness of the interventions; second, the relationships between variables, such as age, gender, occupation, and pain scale ratings, were examined to identify potential correlations or associations. Also, the relationship between predictor variables (e.g., frequency of massage sessions) and the outcome variable (pain scale ratings) was investigated to identify factors that may influence pain reduction.

RESULTS

In this study, a total of 127 participants were enrolled in the research, with a diverse representation across genders. Out of 127 participants who wanted to participate in this study, there were 68 participants who did not want to participate in this study. The decision not to participate among the 68 individuals was influenced by various factors, including geographical distance from the massage location, personal preferences regarding the frequency of massages, and also scheduling constraints. Among the 127 participating individuals, 93 participants chose to receive two massages monthly, while 34 chose to receive one massage monthly. The choice of massage frequency was driven by differing considerations among participants. Some favored receiving two massages monthly to optimize therapeutic benefits. Others were due to logistical reasons, such as time constraints or financial considerations, while still seeking therapeutic intervention.

Table 1 presents a breakdown of respondents based on their gender in a research study involving a total of 127 participants. The data reveal a balanced distribution between male and female participants, with 72 individuals identifying as male, constituting approximately 56.69% of the total sample. On the other hand, there

TABLE 1. Distribution of Respondents by Gender

<i>Gender</i>	<i>Number</i>	<i>%</i>
Male	72	56.69
Female	55	43.31

TABLE 2. Distribution of Respondents by Age

<i>Age (Years)</i>	<i>Number</i>	<i>%</i>
24–30	34	26.77
31–35	29	22.83
36–40	15	11.81
41–45	18	14.17
46–50	15	11.81
51–55	9	7.09
56–60	7	5.51

were 55 female participants, representing about 43.31% of the respondents. This gender distribution shows a diverse and representative sample, allowing for a comprehensive analysis of the study's outcomes across different genders.

Table 2 provides an overview of participants' age distribution in this research study. It categorizes respondents into various age groups, ranging from 24 to 60 years, showing the distinctiveness of the sample. The data highlight that the majority of participants are in the younger age group, with 24–30 and 31–35 years comprising the largest segments. This demographic information is crucial for understanding the study's findings within specific age section, enabling analyses of the research outcomes based on different age groups.

Table 3 provides an overview of participants' occupations in the research study, illustrating the diversity of the sample. The data show a predominant representation from the IT sector, with 58.27% of participants belonging to this occupational group. Secretaries, bank accountants, construction workers, and drivers constitute the other significant segments, accenting a variety mix of professions in the study.

The provided sequence of numbers and a range of numerical values in Table 4 represent a pain scale assessment used at the beginning of the massage therapy

TABLE 3. Distribution of Respondents by Occupational Jobs

<i>Occupation</i>	<i>Number</i>	<i>%</i>
IT sector	74	58.27
Secretaries	21	16.54
Bank accountants	13	10.24
Construction workers	11	8.66
Drivers	8	6.29

IT = information technology.

TABLE 4. Distribution of Pain Scale Measured in the Beginning

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
—	—	—	6	8	26	38	47	2	—

research study. Each number corresponds to a specific level of pain intensity reported by participants. Number 10 is the highest level on the pain scale, whereas number 1 is the lowest.

Table 5 summarizes participants' pain scale ratings after the massage therapy sessions. Out of 127 respondents, 29 participants (approximately 23%) reported minimal discomfort, 34 participants (around 27%) experienced low levels of discomfort, and 40 participants (approximately 31%) had pain on level 3. Nine participants (about 7%) reported various levels of discomfort and seven participants (approximately 6%) experienced mild/moderate pain. This concise overview illustrates the varied impact of massage therapy, emphasizing its effectiveness in reducing pain for a majority of participants while highlighting the challenges faced by some individuals in managing their pain.

In this study, a controlled comparison was made between two groups of respondents based on their frequency of massage sessions. The average pain scale at the end of the research was reached by categorizing participants into two groups based on the frequency of massage sessions they received. The group with an average pain scale of 1–2 consisted of participants who received massages twice per month throughout the entire study period. Conversely, the group with an average pain scale of 3–4 comprised participants who received only one massage per month consistently during the study. The research arrived at these findings by analyzing the pain scale ratings reported by participants at the end of the research period. These

ratings were collected through self-report measures or assessments conducted by trained professionals. By categorizing participants based on their reported pain scale ratings and the frequency of massage sessions they received, it was possible to compare pain outcomes between the two groups and determine the effectiveness of the intervention. The first group, comprising 93 participants, received massages twice a month, while the second group, consisting of 34 individuals, received massages only once a month. Upon analyzing the pain scale ratings at the conclusion of the research, a notable pattern becomes visible. Participants who underwent massage therapy twice a month (93 respondents) reported a lower average pain scale rating, registering at 1–2, at the end of the study. This lower average indicates a significant reduction in pain intensity among this group, suggesting that the more frequent massage sessions were effective in reducing their discomfort (Table 6).

The other group receiving massages once a month (34 respondents) exhibited a higher average pain scale rating, measuring at number 3–4, at the end of the study. This higher average suggests that participants who received massages less frequently experienced comparatively higher levels of pain, highlighting a potential correlation between the frequency of massage therapy and pain relief outcomes. The contrasting pain scale ratings between the two groups emphasize the impact of massage frequency on participants' pain management. Those attending massages twice monthly demonstrated a more substantial reduction in pain intensity, underscoring the potential benefits of more frequent therapeutic interventions. This comparison underscores the importance of regularity in massage therapy sessions, indicating that a higher frequency of treatment may lead to more effective pain relief for individuals with chronic neck and back pain.

TABLE 5. Distribution of Pain Scale at the End of the Research

1	2	3	4	5	6	7	8	9	10
29	34	48	9	7	—	—	—	—	—

TABLE 6. Distribution of Massages Monthly

	<i>Number of Respondents with Two Massages per Month</i>	<i>Number of Respondents with One Massage per Month</i>
	93	34
Average on pain scale at the end of the research	Number 1–2 on the scale	Number 3–4 on the scale

DISCUSSION

The findings of this research study confirm the effectiveness of medical massage therapy in managing chronic neck and back pain among multiple groups of participants from various occupational sectors. The comprehensive analysis of the data provides valuable insights and prompts discussions about several critical aspects related to pain management and massage therapy efficacy.

One of the key observations from this study is the significant impact of the frequency of massage sessions on pain relief. Participants who received massages twice a month reported substantially lower pain scale ratings compared to those attending sessions only once a month. This highlights the importance of regular and consistent massage therapy in achieving optimal pain reduction.

One study investigates the effectiveness of deep tissue massage, supervised strengthening and stretching exercises, and a combined therapy (exercise followed by massage) compared to advice to stay active (control group) in the context of subacute or persistent neck pain. The study found that massage and combined therapy led to short-term improvements in pain intensity compared to the control group.⁽¹¹⁾ Exercise also showed higher improvement of pain intensity at 26 weeks. However, at the 12-month follow-up, none of the index therapies were more effective than advice in terms of pain intensity in the long term or in terms of pain-related disability in the short or long term. This research found out that neck massage techniques can help in reducing pain, measured by a numerical pain scale.^(12,13)

One research aimed to assess the existing evidence on the effectiveness of massage therapy for various painful conditions. A systematic review of 49 studies was conducted, with a focus on pain outcomes and the quality of systematic reviews. The study identified 32 high-quality systematic reviews, highlighting areas where massage therapy showed potential benefits. Common pain indications studied included cancer pain, low back pain, and neck pain. However, the study revealed a lack of strong evidence due to limited primary studies with large sample sizes and rigorous methods. Key factors such as the specific type of massage, provider characteristics, and

co-interventions were identified as crucial aspects affecting the outcomes, and primary studies often lacked sufficient details regarding these elements. The research concluded that there are gaps in the evidence, particularly concerning the specific types of massage for distinct pain conditions, accenting the need for more rigorous studies to inform future research priorities in the field of massage therapy for pain management.⁽¹⁴⁾

One study concludes that the cervical and scapula-focused resistance exercise (CSRE) program is effective in reducing pain, improving cervical range of motion, increasing upper trapezius tone, reducing disability, and increasing quality of life in patients with chronic neck pain. However, the need for more extensive and longer-term studies is emphasized to fully comprehend the potential effects of the CSRE program in managing chronic neck pain.⁽¹⁵⁾

CONCLUSION

The research conducted in North Macedonia from 2019 to 2022 provides valuable insights into the effectiveness of medical massage in managing chronic neck pain among multiple occupational groups. The study demonstrates that regular, twice-a-month massage therapy significantly reduced participants' pain intensity, emphasizing the importance of consistent treatment. Participants receiving massages twice a month reported lower pain levels (1–2 on the scale) compared to those receiving massages once a month (3–4 on the scale). These findings underline the positive correlation between massage frequency and pain relief, highlighting the significance of regular therapeutic interventions in reducing chronic neck pain effectively.

RECOMMENDATIONS AND FUTURE DIRECTIONS

Moving forward, there are several directions for future research that could be built upon the understanding gained from this study. Firstly, researchers could search into long-term follow-up studies to assess the durability of the benefits observed in this study. By tracking participants over an extended period, we can gain a

better understanding of the sustained effects of massage therapy on neck pain management.

Comparative studies could be conducted to evaluate how medical massage connects up against other non-pharmacological interventions for neck pain. Understanding the relative efficacy of different treatments can inform clinical decision-making and help adapt interventions to individual patient needs. Mechanistic studies represent another promising area of research, where researchers could explore the physiological mechanisms through which massage therapy exerts its therapeutic effects on neck pain. By explaining these mechanisms, we can improve our understanding of how massage works and potentially identify new targets for intervention.

Investigating patient preferences and perceptions regarding medical massage can provide valuable insights into treatment satisfaction. Qualitative research methods could be employed to explore patient experiences and preferences, helping to adapt massage interventions to better meet the needs of people with neck pain.

Cost-effectiveness analyses could also relieve economic implications of incorporating medical massage into neck pain management protocols. By comparing the costs and benefits of massage therapy to conventional treatments, we can better understand the potential value of investing in massage services.

Special population studies could focus on specific subgroups of people with neck pain, such as older adults or athletes, to adapt massage interventions to their needs and challenges. Implementing massage therapy programs in various health-care institutions and exploring the use of technology to increase access and delivery of services represent additional areas of exploration. By following these future directions, we can continue to advance our understanding of medical massage as a therapeutic intervention for chronic neck pain, ultimately improving outcomes and quality of life for people affected by this condition.

CONFLICT OF INTEREST NOTIFICATION

The author declares there are no conflicts of interest.

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