

PARTNER DELIVERED MESSAGE: “AN EFFORT TO REDUCE STRESS AND BOOST THE IMMUNE SYSTEM”

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Abstract

Background: Being a stay-at-home mom is already a psychosocial risk factor that can lead to chronic fatigue and stress. The stress response is a biological process mainly mediated by the sympathetic nervous system (SNS) and the Hypothalamic- Pituitary - adrenal (HPA) axis. Activation of the SNS and HPA axis leads to the release of neurotransmitters and hormones such as catecholamines and glucorticoids. These molecules mediate many biochemical and physiological changes (e.g. increased heart rate, rapid breathing and sweating). Given its adverse effects on the human body, finding ways to cope with stress is very important nowadays. In the field of health, massage is a well-known way to achieve relaxation. *Methods:* The methodology for this review followed the JBI scoping review methodology guidelines. Searches were conducted in several databases: MEDLINE (PubMed), Scopus (Elsevier) and Sage Journals. The data collected was then extracted by the reviewers, synthesized and presented in the form of tables and narratives. *Results:* Eleven studies involving a total of 447 people across eight countries were identified in the search that met the criteria set for this review. Of these, four were experimental studies, six were randomized control trials (RCTs), and one was a feasibility study. *Conclusions:* The application of massage as a non-pharmacological method to reduce stress and boost the immune system varied between the studies reviewed. Differences are identified in terms of the body parts massaged, the duration and intensity of the massage, the level of pressure and the combination of massage with other methods. All studies show positive results in reducing stress and boosting the immune system. Therefore, the methods used in massage should be practical, accurate and safe.

Keywords: “Stress, Immune System, Partner Massage”.

BACKGROUND

Housewives play an important role in improving the quality of life of their families and communities ¹. Stay-at-home mothers are prone to serious psychological difficulties related to their role. More family members mean more work for housewives, making them vulnerable to physical and mental stress ². Working as a housewife is one of the gender roles imposed on women, causing mental problems ³. According to Brooks and sujatha, Housework activities include daily household tasks (e.g. cooking, laundry, cleaning, washing dishes, and shopping) that require a lot of physical and emotional activity ⁴

Being a stay-at-home mom is already a psychosocial risk factor that can lead to chronic fatigue and stress. The stress response is a biological process primarily mediated by the sympathetic nervous system (SNS) and the Hypothalamic- Pituitary - adrenal (HPA) axis. Activation of the SNS and HPA axis leads to the release of neurotransmitters and hormones such as catecholamines and glucorticoids. These molecules mediate many biochemical and physiological changes (e.g. increased heart rate, rapid breathing, and sweating) ⁵.

Chronic stress induces activation of the sympathetic nervous system (SNS) and hypothalamic-pituitary-adrenal (HPA) axis. The sustained release of stress hormones such as catecholamines (norepinephrine [NE] and epinephrine [Epi]) and cortisol in response to chronic stress is known to modulate immune cell populations ⁶. According to Segeström and Miller, he found that stress causes atrophy of the thymus, an important organ for adaptive cellular immunity.

Stress activates the hypothalamic-pituitary-adrenal (HPA) axis represented by increased blood glucocorticoids and adrenal hypertrophy because glucocorticoids suppress various immune cell responses, stress is considered immunosuppressive ⁷.

Enhanced humoral immunity occurs only when stress is weak and does not elicit glucocorticoid release, so it does not occur with stress restraint accompanied by glucocorticoid release. Thus, humoral immunity is differentially regulated depending on stress conditions. Stress may also affect non-immune peripheral organs, as acute stress is reported to increase IL-6 release from brown adipocytes through direct sympathetic actions ⁸.

Stress and dysregulation of the Hypothalamic-Pituitary-Adrenal (HPA) axis play a major role in various pathophysiological processes associated with mood disorders and suicidal behavior ⁹ Stress plays an important role in suicidal ideation, suicide attempts, and suicide risk ¹⁰.

In 2023, 44 percent of the 23,274 respondents cited mental health as the health disorder that needs the most attention (WHO, 2023). As many as 55% of people with depression and stress have a sense or desire to make a suicide attempt (WHO 2020). In 2019, 1 in every 8 people, or 970 million people worldwide were living with a mental disorder, with anxiety and depression disorders being the most common (WHO, 2019). In Indonesia, it was found that 16.1% of mothers experienced stress in caregiving due to the absence of support from their husbands and the environment for mothers in caring for children, doing other jobs ¹¹.

Mothers who experience stress will affect themselves in terms of immunity, quality of life and disruption of parenting in the family (Kaplan, 2023). It has been confirmed that work as a housewife is a risk factor for stress and burnout, which impacts physical and psychological health, as well as emotional disorders, anxiety and depression ¹².

Given its adverse effects on the human body, finding ways to cope with stress is very important nowadays. In the field of health, massage is a well-known way to achieve relaxation ⁸. Relaxation massage is one solution by providing a low-cost, accessible, and effective intervention to improve mental health. Massage therapy provided by a partner may provide an acceptable management strategy for some women, without the risks posed by pharmacologic interventions ¹³.

It is noteworthy that massage programs with brief education (one hour times three weeks) can provide lay couples with sufficient skills and confidence, so that they can perform massage and have a significant positive. The results show that these skills can be included as part of dyadic coping strategies. Dyadic coping strategies in the real world can empower couples and be a solution for couples experiencing stress, especially when considering the potential for chronic daily stress accumulation that can lead to frailty, dysfunctional relationships, and even accelerated aging ¹⁴.

According to Goats (1994) Massage therapy is known to improve circulation, boost immunity, reduce pain, increase metabolism, strengthen muscles, reduce stress, improve overall health and well-being ¹⁵.

In hall., et al research, found that the results of a secondary study on the impact of self-reported general psychological distress (anxiety, depression, stress) measured using the short Depression, Anxiety and Stress Scale (Dass-21) showed that one or two 20-minute massage sessions per week in the third trimester of pregnancy can help reduce the severity of symptoms of anxiety, depression and stress in pregnancy. Both massage sessions and self-stress management strategies showed significant effects in reducing anxiety symptoms.

There were moderate to large effect sizes for stress subscale scores in both groups (Intervention: $d = -0.82$; control: $d = -0.71$). As such, both practices have similar effects in reducing stress ¹³. Relaxation massage is related to mental health for mothers with toddlers because relaxation massage is used by some psychiatrists in complementary therapy for stress. Based on the various background descriptions above, it attracted the attention of researchers to conduct a Scoping Review on “Partner Delivered Massage: An Effort to Reduce Stress and Improve the Immune System”. So that this study was conducted to determine the benefits of massage on housewives and evaluate the support provided for the management of stress experienced by housewives.

Structural Equation Model

A framework model is proposed based on the literature review in the introduction of this journal, as illustrated in Figure 1. This framework model involves several housewife hypotheses, including housework-stress-massage-enhanced immune system.

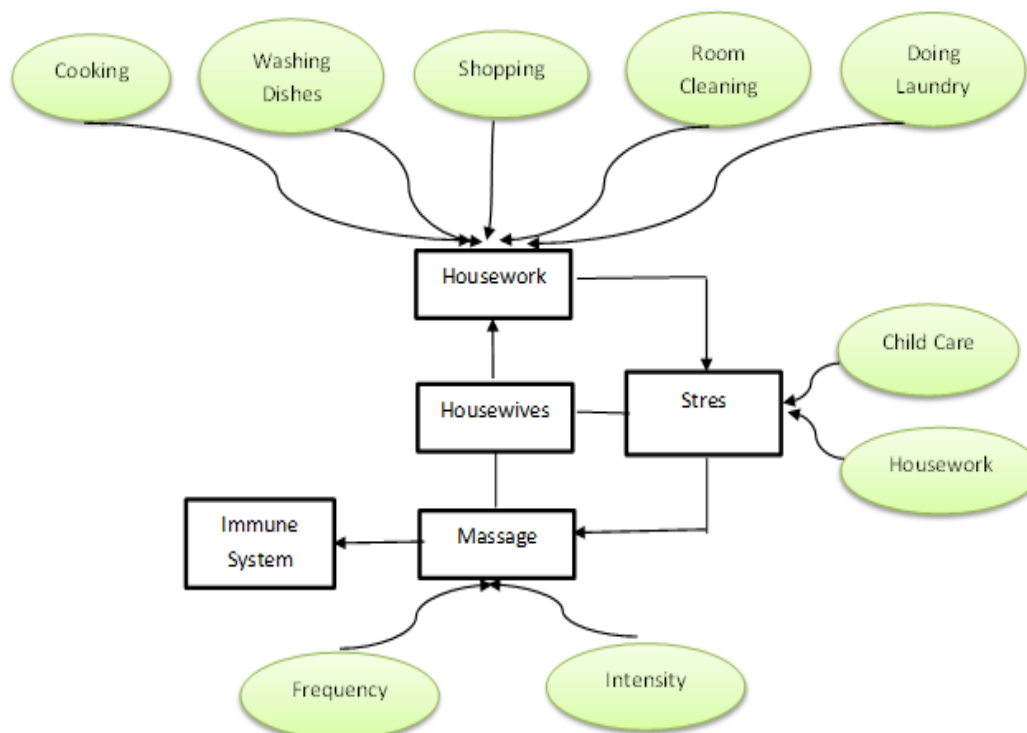


Figure 1: Proposed Framework Model

METHOD

Study Design and Participants

This writing review follows the JBI methodology, using the Preferred Reporting for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) checklist as a writing guide.

Inclusion Criteria

Participants

- This writing review aims to examine all studies that focus on massage in reducing stress and boosting the immune system.

Concept

- Overview This paper focuses on the application of couples massage in reducing stress and boosting the immune system.

Context

- The context of this writing review is housewives who experience stress resulting in a decreased immune system.

Source Type

- The sources considered in this search review consisted of all types of qualitative, quantitative research, including studies that used experimental and observational designs.

Search Strategy

A search strategy was applied to identify key evidence sources and publications. Based on the JBI methodology, the search strategy consists of three stages. The first stage was a limited preliminary search conducted on three online databases. Furthermore, the titles and abstracts of articles with relevant topics were analyzed. The second stage consists of performing a search using all identified keywords and index terms in all included databases. In the third stage, the reference list of identified reports and articles is searched for additional sources.

Source of Information

Databases searched were Medline (PubMed), Scopus (Elsevier), Sage journals.

Study Selection

After the search, the studies were independently selected according to the inclusion criteria based on the title and abstract based on SK, IN, NAM. In case of non-conformity, the systematic review facility is consulted. The review decision process is presented in the PRISMA flow chart (see Fig. 1) which includes search results (research databases and additional sources), removal of double citations, study selection phase (title/abstract and full text), rationale for excluded papers after the full text is read and the final number of included studies. Studies were excluded if they did not meet inclusion criteria and specific intervention protocols.

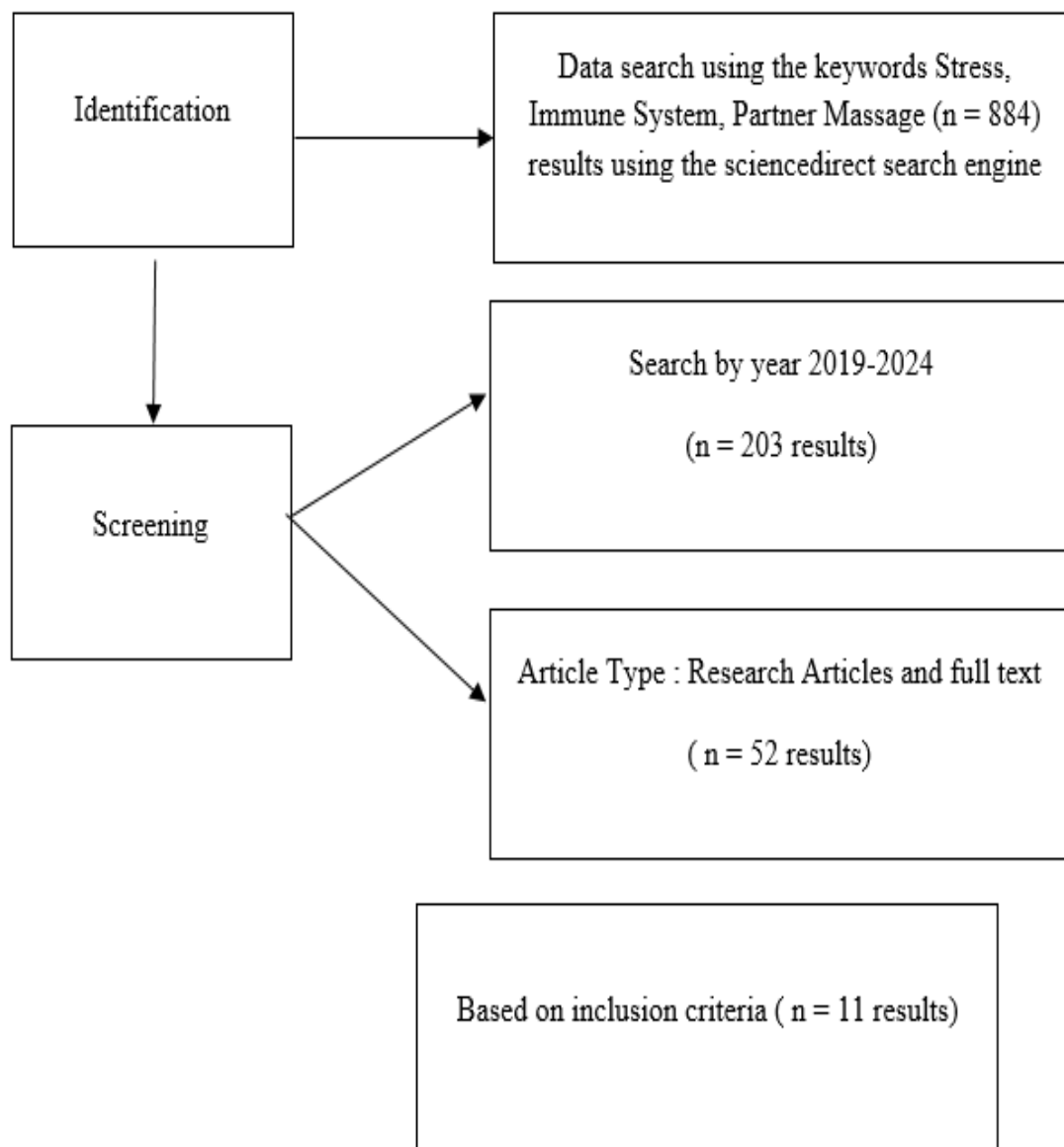


Figure 2: Scoping Review Chart

Data Extraction

The extracted data was included in the scope review by NAM and IN. The extracted data consisted of specific details of the included studies regarding population, concepts, context, methods and key findings relevant to the review objectives according to the domain of the extraction tool. The data extraction tool was modified and revised as necessary during the data extraction process for each journal included.

No	Author/Year	Title	Country	Objectives	Sample	Methods	Massage	Results	Doi
1	16	Effects of Psychoactive Massage in Outpatients with Depressive Disorders: A Randomized Controlled Mixed-Methods Study	Germany	To determine the effects of specially developed affect massage therapy (ARMT). treatment of individuals with standard relaxation procedures, progressive muscle relaxation (PMR)	The ARMT group consisted of 30 participants. The PMR group consisted of 27 participants	The study was designed as a two-group, monocentric, randomized controlled intervention study with a fixed number of cases.	4 weeks massage, 60 minutes duration	<p>Massage therapy results</p> <ul style="list-style-type: none"> <input type="checkbox"/> Better body awareness and deep relaxation ; <input type="checkbox"/> Increased motivation in daily activities <input type="checkbox"/> Useful in daily life and as a sleeping pill ; <input type="checkbox"/> Relaxation and better immunity. 	10.3390/brainsci10100676
2	17	Effect of effleurage massage therapy on sleep disturbance, fatigue, pain, and anxiety in patients with multiple sclerosis: A quasi-experimental study	Mesir	To determine the effect of Effleurage massage therapy on sleep disturbances, fatigue, pain, and anxiety in multiple sclerosis (MS) patients	60 participants	Quasi-experimental pretest and posttest	Effleurage massage three times a week for two weeks, and each session lasts about 20 minutes	<ul style="list-style-type: none"> <input type="checkbox"/> Efficient effleurage massage reduces fatigue levels <input type="checkbox"/> Reduces pain <input type="checkbox"/> Improves sleep quality <input type="checkbox"/> Lowers anxiety, which has a positive effect on immunity. 	https://doi.org/10.1016/j.apnr.2023.151719
3	18	Positive psychological effects of seated acupressure massage are associated with a rise in plasma oxytocin without affecting CGRP levels or circulating IL-6	Francis	To determine the effectiveness of Amma massage	59 people :33 people received massage, and 26 controls just sat on the massage chair	Experimental Design	Amma massage for 17 minutes	<ul style="list-style-type: none"> <input type="checkbox"/> Our results show the beneficial effects of a 17-minute Amma massage on the psychological parameters of young people <input type="checkbox"/> Perceived stress and anxiety scores decreased and self-confidence scores 	10.1016/j.cpnec.2023.100220

								<p>increased after the massage</p> <p>□ Heart rate and diastolic blood pressure appeared to decrease but CGRP was not released in sufficient amounts to infer its role.</p> <p>□ Plasma oxytocin levels are significantly increased through massage.</p>	
4	19)	Traditional Thai Massage Promoted Immunity in the Elderly via Attenuation of Senescent CD4+ T Cell Subsets: A Randomized Crossover Study.	Thailand	This study aimed to investigate the effects of multiple rounds of TTM on aging CD4+ T cell subsets in elderly people	12 volunteers	Randomized controlled	Traditional Thai massage (TTM) applied in a total of six 1-hour/week sessions all over the body (T)	After receiving TTM for 6 sessions, the cell population of the high group decreased significantly (P<0.001) but the low group had no significant change. In conclusion, multiple rounds of TTM may enhance immunity through attenuating aberrant CD4+ T subsets.	10.3390/ijerp118063210
5	20	Kampumasatsu self-massage with a dry towel to enhance relaxation and immune function.	Amerika Serikat	Kanpumasatsu aims to improve immune function	Randomly assigned 12 healthy adult men to the kanpumasatsu group and 12 to the control group	<u>Randomized controlled trial with two groups</u>	<p>Massage 5-10 minutes</p> <p>The direction of rubbing is from the distal part to the proximal part (e.g. hand, forearm, then upper arm)</p>	This author postulates that kanpumasatsu's mechanism of enhancing immune function is due to stimulation of the skin and lymphatic vessels	https://doi.org/10.1016/j.xjep.2023.100609
6	21	Effects of couples positive massage programme on wellbeing, perceived stress and coping,	Hongkong	1. Improve welfare in daily life	48, randomly allocated 24 to group A (intervention	Experimental Quantitative Study	Massage your back, arms, neck, head and face. For 15 minutes	□ Mental well-being, and perceived stress and coping with stress improved significantly	10.1080/21642850.2019.1682586

		and satisfaction relation) and 24 to group B (delayed intervention)			from before to after the Positive Massage program.	
				2. For measurement of physiological parameters (cortisol and oxytocin)				<input type="checkbox"/> No significant decrease after discontinuation of the massage program.	
				3. Psychological factors (closeness, support, empathy and self-efficacy)				<input type="checkbox"/> Relationship satisfaction showed no significant change from the initial assessment	
7	22	Partner delivered relaxation massage to support mild antenatal anxiety : views of participants	Australia	To determine the effect of massage as a technique to manage mild antenatal anxiety	44 Pregnant Women	<u>Feasibility study</u>	Relaxation massage for 20 minutes	<input type="checkbox"/> Coping with mild anxiety in pregnant women <input type="checkbox"/> Supports mental health <input type="checkbox"/> Provide useful skills for participants to apply in life after birth <input type="checkbox"/> Supports the mother's mental health and relationship with her partner	https://doi.org/10.1016/j.midw.2021.103229
8	13	Maternal mental health and partner-delivered massage: A pilot study	Australia	To assess the feasibility and acceptability of partner-delivered relaxation massage for pregnant women, and its impact on symptoms of anxiety, stress, and depression	14 women/pair group and 13 women in the self-management stress group	Eksperimental	The total duration of massage during the interval showed a similar pattern, with an average of 20 minutes in the early weeks and up to 30-40 minutes in the weeks leading up to the	<input type="checkbox"/> Able to reduce anxiety of pregnant women and improve midwifery practice <input type="checkbox"/> Reduces symptoms of anxiety, depression, and stress in women	https://doi.org/10.1016/j.wombi.2020.05.003

							expected due date		
9	(Robin B Thomas 2019)	23	Amerika Serikat	This study examined the influence of wellness on mood, anxiety, and perinatal pain, by teaching pregnant women (PGs) couples chair massage	12 women	Randomized control	2x a week for 10 minutes over an 8-week period	<input type="checkbox"/> Statistically significant improvement in perinatal mood and anxiety <input type="checkbox"/> There is a tendency to decrease pain, with moderate effect strength ($p = 0.071$; $d = 0.58$) <input type="checkbox"/> Birth results show a healthy baby with no complications	PMC6542572
10		24	Iran	To determine the effect of acupressure on stress, fasting blood glucose (FBG) and glycosylated hemoglobin (HBA1C) in patients with type 2 diabetes.	60 patients	Randomized control	Each hand and foot takes 5 minutes and a total of 20 minutes for 1 month	Acupressure can reduce fasting blood sugar (FBG) and stress in patients with type-2 diabetes	https://doi.org/10.1016/j.ctc.p.2021.101393
11		25	Iran	The aim is to determine the effect of foot reflexology on stage IV labor after pain and postpartum hemorrhage.	40 per group	Randomized control with two groups	4 minutes each leg	<input type="checkbox"/> Reflection to control postpartum and post-pain bleeding <input type="checkbox"/> Reduces pain <input type="checkbox"/> Increases secretion of endorphins and enkephalins <input type="checkbox"/> Boosts the immune system	https://doi.org/10.1016/j.ai.med.2020.06.004

RESULT

Literature Search/Study Selection

An initial search of the database using the keywords “Stress, Immune System, Partner Massage” yielded 884 journals. After correction from 2019-2024, 203 results remain. Of these, 153 were excluded after screening of titles and abstracts. The remaining 52 journals were retrieved for full-text review. Of these, 41 journals were excluded, the remaining 11 journals met the inclusion criteria and were included in this review.

Study Characteristics

A total of 11 studies were included in this scoping review. Of these, 4 were experimental, 6 were randomized control trials, and 1 was a feasibility study. The study was conducted in 8 countries. Year of publication ranges from 2019-2024. The procedure performed is massage.

Implementation of Massage Therapy

The parts of the body that receive massage include from the distal to the proximal parts (e.g. hands, forearms, then upper arms), back, neck, head, face, legs and the whole body. The terms used also vary: Therapeutic massage, effleurage massage, amma massage, traditional Thai massage, kampumasatsu massage, and acupressure massage. The duration of the massage also varies from five minutes to 60 minutes.

The hands of the masseuse move from professional to layperson, setting the application of massage at home, not in a public or specialized facility²¹ Massage given at weeks 1, 2, and 4. No learning activities conducted during week 3 Study visits are scheduled in 20-minute increments during day shifts on Tuesdays and Thursdays, allowing for a 15-minute massage and 5 minutes to organize activities. This schedule supports the ability of the team's licensed massage therapists to provide 14 massages in one 8-hour shift a day²⁶.

The Effect of Massage Therapy on Stress and the Immune System

In all studies, various massage approaches were shown to have positive effects on reducing stress and boosting the immune system. Massage stimulates parasympathetic action, stabilizes heart rate, blood pressure and increases relaxation hormones. Positive Massage is a simple massage sequence that adapts the unique fusion style of the East and West. The focus of Positive Massage (PM) is not as a therapy for specific problems, but rather on enhancing well-being as a coping strategy with the goal of daily prevention.

The skills are relatively simple, but include acupressure point and trigger point techniques that are essential for the effective application of massage. Participants are also guided to be sensitive to their partner's body and feelings while giving massage with the help of verbal and nonverbal communication²⁷. There is a significant effect of time point on RISC Stress and Coping scores, Stress $F(2, 14) = 6.62, p = .009, \eta^2 = 0.49$, and Coping $F(2, 14) = 5.63, p = .016, \eta^2 = 0.45$. Bonferroni pairwise comparisons revealed that there was a significant decrease in Stress between baseline (T1, mean = 18.0, SD = 3.5) and after the massage exercise (T2, mean = 14.5, SD = 4.0) $p = .006$ ²¹.

DISCUSSION

This review aims to identify the literature on massage as a method to reduce stress and boost the immune system. The use of massage as a non-pharmacological method of reducing stress and boosting the immune system varies widely. Eleven journals on massage as a non-pharmacological analgesic to reduce stress and boost the immune system that have been identified. Based on a review of these journals, massage therapy is a widely practiced complementary and alternative medicine therapy that can reduce physical discomfort and improve overall well-being¹⁵. The neural system of social and affective touch suggests a potential mechanism of action for touch-based interventions in geriatric psychiatry²⁸

Massage reduces perceived stress and anxiety levels and boosts self-confidence. Massage significantly increased subjective relaxation while decreasing subjective stress. These results highlight the potential of short relaxation periods to reduce psychological tension and increase subjective relaxation¹⁸. Meanwhile, the effects of massage therapy on cortisol and immune cells vary according to the amount of pressure, body location, and the duration and timing of the massage²⁹. Unlike other ways of medical treatment, such as pharmacological or surgical approaches, touch-based medicine is not limited by the availability of pharmaceutical products or surgical instruments, making it easy and widely available. This may explain why touch-based treatments are often developed outside or despite the confines of the medical profession and academic institutions²⁸. In the study of Florentine, et al. Showed that long-term massage therapy given to 14 people in the workplace, showed a reduction in blood pressure. Cardiac frequency, as well as diastolic and systolic pressure, are primarily regulated by the autonomic nervous system (ANS), and more precisely by the interaction between the sympathetic and parasympathetic nervous systems. Given that this system may be stimulated by massage, the effect is consistent with physiological rules¹⁸. Although the parts of the body that receive massage vary (i.e. local and general areas), the effects of massage on pain reduction are equally positive²⁹.

Such physiological and psychological mechanisms may explain not only the effects of professional therapeutic massage but also the effects of reciprocal massage between partners aiming to improve well-being in daily life. In order to clarify the mechanisms behind these massage effects, measurements of physiological parameters (e.g. cortisol and oxytocin) and psychological factors (e.g. closeness, support, empathy, and self-efficacy)²¹. Massage performed by a partner will provide a sense of comfort, build emotional connection, and can stimulate the hormones endorphins, dopamine or increase a woman's feelings of excitement. They can forget their fatigue and feel cared for³⁰⁻³². Couples' massage can enhance each other's well-being and strengthen coping mechanisms among stressed couples. The importance of making interventions fun and achievable when trying to gain 'buy-in' from those already experiencing high levels of stress in everyday life²¹.

Couples massage offers a low-cost and accessible option³³. In Sayuri M. Naruse and Mark Moss' study, there were significant improvements in mental well-being, stress perception, and coping between groups A and B at T2, and there appeared to be a sustained effect of the Positive Massage (PM) program on mental well-being, stress perception, and coping at week 6. Participants in the PM program also practiced PM more than once (giving massage and receiving massage) per week at home during

the program and continued to exchange massages afterwards. About three-quarters of participants expressed their intention to continue practicing massage, and 94% of participants expressed their willingness to recommend PM to their friends and family. Therefore, it can be concluded that the PM program provided a significant improvement in mental well-being as well as providing a significant reduction in perceived stress and a significant improvement in coping among couples²¹. These results indicate that performing a relaxing massage can reduce stress and improve the immune system in housewives given by their spouses.

CONCLUSION

Numerous studies have shed light on massage in reducing stress and boosting the immune system. This review shows that the application of massage as a non-pharmacological analgesic. These variations include the part of the body receiving the massage; the duration and intensity of the massage, the level of pressure and the combination of massage with other methods. In terms of pressure levels, not all studies describe the type of pressure applied, although this is important. Nonetheless, all studies show positive results in reducing stress and boosting the immune system.

It is important for future research to include more detailed and accurate massage protocols used in reducing stress and boosting the immune system. Relevant details of this protocol include the duration and intensity of the massage, the level of pressure and the body part receiving the massage. It is necessary to consider massage methods that are practical, safe, effective and efficient and can be done easily by health care providers.

Recommendations

This can be further considered in addressing stress and boosting the immune system by combining massage and husband support.

Abbreviations: SYRF : Conceptualization, method, original draf, review, editing. SK : Selection studi, data extraction, review, editing. IN : Selection study, data extraction, review, writing. NAM : Data Extraction, review.

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