Journal for Re Attach Therapy and Developmental Diversities
eISSN: 2589-7799
2023 November; 6 (1): 1931-1936

Effect of marma therapy on Musculoskeletal health and Psychological wellbeing of computer operators

Mr. Amit Kumar[1], Dr. Ashutosh Kumar Pathak[2*]

[1]Ph.D Scholar, Department of Rachana Sharir, Faculty of Ayurveda, IMS,BHU
[2*]Assistant Professor, Department of Rachana Sharir, Faculty of Ayurveda, IMS, BHU

***Corresponding Author:** Dr. Ashutosh Kumar Pathak
[*]Assistant Professor, Department of Rachana Sharir, Faculty of Ayurveda, IMS, BHU

Introduction -

The prevalence of musculoskeletal and psychological conditions among computer operators is a significant concern, as these professionals are often exposed to prolonged periods of sedentary work and repetitive tasks, which can lead to various health issues. Musculoskeletal disorders (MSDs) are notably prevalent among computer operators. Research indicates that these individuals frequently experience discomfort and pain in the neck, shoulders, and upper limbs due to prolonged computer use and poor ergonomic practices like a study highlights that computer operators often report neck and shoulder pain, which is attributed to sustained static postures and repetitive movements.[1–4] Specific studies report neck pain (51-64%), shoulder pain (30-41%), and lower back pain (42%) as common issues. [3–6]
Studies reported that there are Psychosocial Factors and Job Strains like High job strain and negative working atmosphere are significant risk factors for developing musculoskeletal symptoms, especially in the neck and shoulders. Researches are also of opinion that Stress and psychosocial factors, such as job demands, lack of job control, and emotional exhaustion, are also linked to higher incidences of MSDs.[5–8]

Malińska's study points out that computer operators are at an increased risk of developing stress-related conditions due to the high cognitive demands and lack of physical activity associated with their work. [3] Mental disorders, including stress and anguish, are reported among computer operators, though at lower rates compared to musculoskeletal issues. [2,7]Psychological stress is often intertwined with physical symptoms, exacerbating the overall health burden[7–9].
Anareh and ZohoorAlinia further elaborate on the psychological strain experienced by these workers, noting that prolonged exposure to computer screens and the pressure to meet deadlines can exacerbate feelings of anxiety and depression [10]. Moreover, the interplay between musculoskeletal and psychological conditions is significant. For example, Serbia Jelena's research suggests that the physical discomfort from MSDs can lead to increased stress levels, creating a vicious cycle that affects overall well-being [5]. This is supported by findings from Rana et al., who report that the presence of musculoskeletal pain can negatively impact mental health, leading to decreased job satisfaction and productivity.[11] Additionally, Bugajska et al. point out that individual factors such as age, gender, and pre-existing health conditions can influence the prevalence and severity of these disorders, suggesting the need for personalized interventions[12]

Traditional medical treatments, including pharmacological and surgical interventions, are often recommended for managing MSDs. However, these approaches can have limitations, such as side effects and incomplete pain relief [13,14]. Due to this complementary therapies are often explored which offer a non-invasive alternative that can enhance symptom management and potentially prevent the need for surgery.[13] These therapies include a range of interventions such as myofascial trigger release, icing, infrared therapy, pulsed electromagnetic field therapy, stretch release, aqua therapy, taping, acupuncture, Marma therapy , yoga, naturopathay, etc. which have shown significant pain reduction and improved functionality in patients and potentially preventing or postponing surgeries for musculoskeletal complaints[13–15] Moreover, Naturopathy and yoga, focusing on lifestyle correction, therapeutic fasting, diet modifications, hydrotherapy, mud therapy, massage, and exercise therapy, have been effective in managing various musculoskeletal conditions, including rotator cuff tendonitis and knee osteoarthritis, by improving pain, functional status, and quality of life.

Marma therapy, an ancient Ayurvedic practice, involves stimulating specific anatomical points known as Marmas, which are considered vital for the flow of life energy (Prana) in the body. These points are intersections of muscles, veins, ligaments, bones, and joints, and their stimulation is believed to have therapeutic effects on both psychological and musculoskeletal conditions [17,18]. In terms of musculoskeletal conditions, particularly osteoarthritis of the knee (Janu Sandhigata Vata), Marma therapy has shown promising results. Studies have demonstrated that integrating Marma therapy with other Ayurvedic treatments like Janu Basti (a localized oil treatment) can significantly alleviate symptoms such as pain (Shoola), swelling (Shotha), stiffness (Stabdhata), and crepitus (Atopa)[19–21]. These studies involved applying Marma therapy to specific points on the legs, which resulted in improved subjective and objective measures, including the WOMAC Index, range of motion, and walking time. The therapy not only provided short-term relief but also facilitated long-term self-management of symptoms, as evidenced by follow-up studies where patients continued to experience

benefits from self-administered Marma therapy and massage.[21] Psychologically, Marma therapy is suggested to have benefits due to its holistic approach, which aligns with the principles of Ayurveda that emphasize the balance of body, mind, and spirit. Although specific studies on the psychological effects of Marma therapy are limited, the general therapeutic benefits of Marma stimulation in alleviating pain and improving physical function can indirectly enhance mental well-being by reducing stress and improving quality of life.[18] The ancient texts and recent studies suggest that Marma therapy can be effective in treating various physical and mental disorders, although more focused research is needed to substantiate these claims specifically for psychological conditions [17]. To address this issue the study is planed with following aim and objectives.

Aims and Objectives of the study

Following objectives were designed in this study:
1. To access the status of musculoskeletal health and psychological well-being of computer operators of University.
2. To evaluate the effect of Marma therapy on musculoskeletal health and psychological well-being of computer operators of University.

Hypothesis
Marma therapy may have significant potential in alleviating the pain, sign, and symptoms of musculoskeletal ailments as well as in improving psychological wellbeing.

Type of Study and its registration
- It is randomized controlled, parallel group trial to access the effect of marma therapy
- CTRI Registration No. CTRI/2023/07/055324
- Ethical Committee clearance reference no. Dean/202l/EC/2855

Clinical study -
Computer operators of age group 25 to 50 yrs from University campus, Varanasi were randomly recruited. The consent of the computer operators was obtained for participation in the study then they were registered on a pre-designed Proforma. The demographic profile, personal history, family history, physical parameters like -height, weight, B.P, Pulse, etc., along with musculoskeletal health as well as psychological wellbeing was recorded in predesigned proforma at initiation of study. These persons was assessed at interval of 1 month for 2 months.

These registered patients were divided into 2 groups randomly by using random number generation in excel sheet. These groups will be as follows –
Group 1 (Control Group)- This group of patients neither given any intervention, nor any dietic modification be advised to them. This group of patients were advised to follow their routine.
Group 2 (Intervention Group)–This group patients were advised to do marma therapy daily in morning and evening as per technique described below for 3 months. The effect on sign, symptoms and on objective parameters were assessed in both the groups and analysed.

Technique of Marma Therapy
Preparation for Marma therapy:-
Pre therapy exercises: - It comprises of the following steps: -
1. Total relaxation of body.
2. Deep breathing exercise.
3. Perception of body as whole.
4. Perception of *marma* points.

Marma therapy:
The two marma of upper limb viz. **kshipra and talahridaya marma** were pressed with thumb of opposite hand for 15-18 times with each pressure lasting for 0.8 sec.

Avoid:
It was informed to participants and attendant to avoid rubbing of Marma because excessive rubbing of this Marma may lead to tendonitis, synovitis.

Tools -
The musculoskeletal health has been assessed by MSK-HQ – Questionnaire for joint, back, neck, bone and muscle symptoms and psychological wellbeing has been assessed by RYFF Scales Of Psychological Well-Being.

Inclusion Criteria

The study was limited to the Computer Operators of Banaras Hindu University within age group of 25 to 50 years.

Limitation of Study

The limitations of the study are given as under:

- The hereditary or individual factors which would influence the variables & study.
- Any dietetic behaviour, drugs or exercise not known to researcher influencing the variables & study.
- Day to day life style was not controlled.

Exclusion Criteria

- Persons above 50 years of age are excluded from study.
- Cases of rheumatoid arthritis, gout and inflammatory arthritis were excluded.
- Cases with terminal illness like cancer, HIV, etc

Follow up and assessment

The follow up of both groups was done after at interval of one month for 2 months after initial registration of the participants. On both follow ups, the MSK-HQ questionnaire and Ryff Scale scores were assessed and recorded. The data analysis software SPSS 20 was used for analysis.

Observations -

Table 1: Showing Age Wise distribution of cases (%) in Group1 and Group 2-

Age in years	Group 1 (n=30)	Group 2 (n=30)	Total(n=60)
25-30	6 (20%)	9 (30%)	15 (25%)
31-35	6 (20%)	8 (26.7%)	14 (23.3%)
36-40	7 (23.3%)	11 (36.7%)	18 (30%)
41-45	6 (20%)	1 (3.3%)	7 (11.7%)
46-50	5 (16.7%)	1 (3.3%)	6 (10%)
Total	30 (100%)	30 (100%)	60 (100%)

Table shows that there were total 60 participants in which 30 were in group 1(Control Group) and 30 were in group 2 (Interventional Group) among which majority of participants were of age between 36-40 years in both the groups.

Table 2: Showing Gender Wise distribution of cases (%) in Group1 and Group2-

Gender	Group1 (n=30)	Group2 (n=30)	Total (n=60)
Female	4 (13.3%)	0 (0%)	4 (6.7%)
Male	26 (86.7%)	30 (100%)	56 (93.3%)
Total	30 (100%)	30 (100%)	60 (100%)

The above table depicts that there were total 60 participants in which 30 in group 1(Control Group) and 30 in group 2 (Interventional Group) among which 4 females in group 1 and no female in group 2. Also, there were 26 males in group 1 and 30 males in group 2.

Table 3: Showing Education wise distribution of cases (%) in Group1 and Group2-

Education	Group1 (n=30)	Group2 (n=30)	Total (n=60)
Graduation	10 (33.3%)	8 (26.7%)	18 (30%)
Post Graduation	16 (53.3%)	20 (66.7%)	36 (60%)
Ph.D.	4 (13.3%)	2 (6.7%)	6 (10%)
Total	30 (100%)	30 (100%)	60 (100%)

Table shows that there were total 60participants in which 30 were in group 1(Control Group) and 30 were in group 2 (Interventional Group) among which majority of participantsare Post Graduate (60%) in both the groups.

Table 4 : Showing Weight Wise distribution of cases (%) in Group1 and Group 2-

Weight (in Kg)	Group 1 (n=30)	Group 2 (n=30)	Total(n=60)
51-60	5 (16.7%)	4 (13.3%)	9 (15%)
61-70	10 (33.3%)	12 (40%)	22 (36.7%)
71-80	7 (23.3%)	7 (23.3%)	14 (23.3%)
81-90	5 (16.7%)	6 (20%)	11 (18.3%)
91-100	3 (10%)	1 (3.3%)	4 (6.7%)

Total	30 (100%)	30 (100%)	60 (100%)

Table shows that there were total 60participants in which 30 were in group 1(Control Group) and 30 were in group 2 (Interventional Group) among which majority of participants were of weight between 61-70 (36.7%) years in both the groups.

Table 5: Showing Height Wise distribution of cases (%) in Group1 and Group 2-

Height (in cm)	Group 1 (n=30)	Group 2 (n=30)	Total(n=60)
151-160	5 (16.7%)	2 (6.7%)	7 (11.7%)
161-170	10 (33.3%)	17 (56.7%)	27 (45%)
171-180	13 (43.3%)	10 (33.3%)	23 (38.3%)
181-190	2 (6.7%)	1 (3.3%)	3 (5%)
Total	30 (100%)	30 (100%)	60 (100%)

Table shows that there were total 60participants in which 30 were in group 1(Control Group) and 30 were in group 2 (Interventional Group) among which 27 (45%) participants in both group have height between 161-170 cm.

Table 6: Showing Psychological Well Being Wise distribution of cases (%) in Group1 and Group 2-

Group	Psychological Well Being (mean +SD)				Within the Group comparison paired t test
	Base line	Follow up 1st Month	Follow up 2nd month	BL to 1st	BL to 2nd
Group 1	48.23 ±12.317	65.60 ±3.024	59.83 ±3.206	-17.367 ±12.124 t=-7.845 p=0.000	-11.600 ±13.114 t=-4.854 p=0.000
Group 2	45.33 ±11.541	69.40 ±6.657	75.37 ±2.871	-24.067 ±13.683 t=-18.957 p=0.000	-30.033 ±12.546 t=-25.348 p=0.000
Between the Group Comparison unpaired t test	t=0.941 p=0.351	t=-2.847 p=0.000	t=-19.769 p=0.000		

The above table shows that there consistent increase in psychological well-being score of group 2 in comparison to the group 1 and the increase in the score was significantly high in group 2 in comparison to the group 1.

Table 7: Showing Musculoskeletal Health Wise distribution of cases (%) in Group1 and Group 2-

Group	Musculoskeletal Health (mean ± SD)				Within the Group comparison paired t test
	Base line	Follow up 1st Month	Follow up 2nd month	BL to 1st	BL to 2nd
Group 1	22.63 ±8.348	32.57 ±8.190	31.97 ±5.301	-9.933 ±11.847 t=-4.593 p=0.000	-9.333 ±9.714 t=-5.262 p=0.000
Group 2	25.10 ±8.327	37.47 ±1.655	47.47 ±1.592	-12.367 ±8.344 t=-8.118 p=0.000	-22.267 ±8.524 t=-14.372 p=0.000
Between the Group Comparison unpaired t test	t=-1.146 p=0.257	t=-3.212 p=0.002	t=-15.338 p=0.000		

The above table shows that there consistent increase in score of group 2 in comparison to the group 1 and the increase in the score was significantly high in group 2 in comparison to the group 1.

Discussion –

Musculoskeletal and psychological conditions are highly prevalent among computer operators, driven by ergonomic challenges and the psychological demands of their work. Addressing these issues requires a multifaceted approach, including ergonomic improvements, stress management, and promoting physical activity. Due to limitations of modern medical sciences, use of complementary and alternative medicine is prevalent as therapies like yoga and naturopathy are gaining attraction. These methods have demonstrated benefits in managing conditions such as rotator cuff tendonitis, chronic back pain, and knee osteoarthritis, with yoga particularly noted for its role in improving balance, gait, and overall quality of life [3] [7]. Ayurveda is an ancient holistic health science and Marma therapy, a traditional Indian practice rooted in Ayurveda, has been explored for its potential in treating chronic pain. The therapy involves stimulating specific points on the body, known as Marma points, which are believed to influence both physical and mental health. Several studies suggest that Marma therapy can be effective in managing chronic pain and psychological conditions. However, it is important to note that while preliminary findings are promising, more rigorous clinical trials are needed to fully understand the efficacy and mechanisms of these therapies.

The study is an attempt to address the issue and the findings of study showed that the Psychological well-being scores between Group 1 and Group 2 at baseline showed no significant difference, with a p-value of **0.351** ($p > 0.05$) while at 1st month follow-up a significant difference emerged between the groups, with Group 2 showing a higher increase in Psychological well-being compared to Group 1(p-value of **0.000**) further, at 2nd month follow-up: The difference between the groups became even more pronounced, with Group 2 maintaining a higher PWB score than Group 1. (p-value of **0.000**). Therefore, Both groups showed significant improvements in Psychological Well-Being from baseline to both follow-up periods while the Group 2 demonstrated a more substantial and sustained increase in Psychological well-being over the two months compared to Group 1. The significant differences between the groups at follow-up points suggest that marma therapy was more effective in enhancing Psychological well-being.

Similar observations were found with musculoskeletal health also at baseline, the musculoskeletal health scores were not significantly different between the control group (Group 1) and the treated group (Group 2), as indicated by a non-significant p-value ($p = 0.257$). This suggests that both groups started with relatively similar health statuses. After the 1st month, the treated group showed a significantly higher improvement compared to the control group ($p = 0.002$), suggesting the early effectiveness of Marma Therapy. By the 2nd month, the difference between the two groups became highly significant ($p = 0.000$), indicating that Marma Therapy had a much stronger impact on improving musculoskeletal health compared to no treatment (control). The data suggest that Marma Therapy has a significant positive effect on musculoskeletal health, as evidenced by the greater improvements in the treated group compared to the control group. The effect is not only statistically significant but also grows stronger over time, particularly by the 2nd month of treatment. The findings underscore the potential efficacy of Marma Therapy as an intervention for enhancing musculoskeletal health.

These findings on musculoskeletal health and psychological well-being may be attributed to the rhythmic pressure on marma region along with deep breathing which may have calming effect peripherally as well as centrally. Marma therapy, a traditional healing practice, is posited to influence psychological conditions through several physiological mechanisms. The therapy primarily involves the stimulation of specific points on the body, which is believed to modulate the autonomic nervous system and influence neurochemical pathways. One of the key mechanisms by which Marma therapy affects psychological conditions is through the regulation of the autonomic nervous system. A study states that the therapy can induce a state of relaxation by activating the parasympathetic nervous system, which counteracts the stress response typically mediated by the sympathetic nervous system.This shift towards parasympathetic dominance can lead to reduced anxiety and improved mood, as the body enters a state of rest and recovery. The stimulation of specific points is thought to increase the release of neurotransmitters such as serotonin and dopamine, which are crucial for mood regulation and the alleviation of depressive symptoms. This neurochemical modulation can enhance emotional well-being and reduce symptoms of psychological distress. Additionally, Shivachev et al. discuss the potential impact of Marma therapy on the hypothalamic-pituitary-adrenal (HPA) axis, a central stress response system. By modulating this axis, Marma therapy may help in reducing cortisol levels, thereby mitigating the effects of chronic stress and its associated psychological conditions.[21] Mishra and Shrivastava further elaborate on the holistic benefits of Marma therapy, suggesting that its integrative approach not only addresses physiological imbalances but also promotes mental clarity and emotional stability through improved energy flow within the body.[22] This comprehensive effect is achieved by harmonizing the body's internal environment, which is essential for maintaining psychological health.

Conclusion -

In conclusion, musculoskeletal disorders are highly prevalent among computer operators, with significant contributions from both ergonomic and psychosocial factors. Psychological conditions, while less prevalent, are also a concern. Addressing these issues requires a comprehensive approach as multifaceted strategy is essential to reduce the burden of musculoskeletal and psychological conditions in the computer workers.
Marma therapy appears to be a beneficial complementary treatment for musculoskeletal conditions with potential psychological benefits. However, further research is needed to explore its full potential and limitations in both psychological and musculoskeletal health context.

Reference

1. Blagojević L, Petrović B, Blagojević J. Risk Factors for Health Disorders in Computer Operators in Telecom Serbia. International Journal of Occupational Safety and Ergonomics [Internet]. 2012;18:321–7.
2. Hannan L, Monteilh C, Gerr F, Kleinbaum D, Marcus M. Job strain and risk of musculoskeletal symptoms among a prospective cohort of occupational computer users. Scand J Work Environ Health [Internet]. 2005;31 5:375–86.
3. Malińska M, Bugajska J. The Influence of Occupational and Non-Occupational Factors on the Prevalence of Musculoskeletal Complaints in Users of Portable Computers. International Journal of Occupational Safety and Ergonomics [Internet]. 2010;16:337–43.
4. Eltayeb S, Eltayeb S, Staal JB, Hassan AA, Awad S, Bie RA de. Complaints of the arm, neck and shoulder among computer office workers in Sudan: a prevalence study with validation of an Arabic risk factors questionnaire. Environmental Health [Internet]. 2008;7:33.
5. Collins J, O'Sullivan L. Musculoskeletal disorder prevalence and psychosocial risk exposures by age and gender in a cohort of office based employees in two academic institutions. Int J Ind Ergon [Internet]. 2015;46:85–97.
6. Oha K, Animägi L, Pääsuke M, Coggon D, Merisalu E. Individual and work-related risk factors for musculoskeletal pain: a cross-sectional study among Estonian computer users. BMC Musculoskelet Disord [Internet]. 2014;15:181.
7. Cail F, Aptel M. Incidence of Stress and Psychosocial Factors on Musculoskeletal Disorders in CAD and Data Entry. International Journal of Occupational Safety and Ergonomics [Internet]. 2005;11:119–30.
8. Wahlström J. Ergonomics, musculoskeletal disorders and computer work. Occup Med (Chic Ill) [Internet]. 2005;55 3:168–76.
9. Woods V. Musculoskeletal disorders and visual strain in intensive data processing workers. Occup Med (Chic Ill) [Internet]. 2005;55 2:121–7.
10. Anareh Z, ZohoorAlinia Z. Musculoskeletal Disorders among Computer Operators: a study in one of the governmental organizations in Kerman city, Iran. Health and Development Journal [Internet]. 2016 Nov 5(3):216–25.
11. Rana B, Athole Y, P SS, Soni PA. Prevalence of work-related musculoskeletal disorders and its risk factors among computer workers. J Emerg Technol Innov Res [Internet]. 2021;8(7).
12. Bugajska J, Żołnierczyk-Zreda D, Jędryka-Góral A, Gasik R, Hildt-Ciupińska K, Malińska M, et al. Psychological factors at work and musculoskeletal disorders: a one year prospective study. Rheumatol Int [Internet]. 2013;33(12):2975–83.
13. Pugazhendi S, Rajamani P, Daniel AS, Pugazhendi K. Non-invasive Complementary Therapies in Managing Musculoskeletal Pains and in Preventing Surgery. International Journal of Therapeutic Massage & Bodywork: Research, Education, & Practice [Internet]. 2020;13(2):9–18.
14. Bhoi D, Jain D, Garg R, Iyengar KP, Hoda W, Vaishya R, et al. Complementary and Alternative Modalities (CAM) for pain
15. Vitetta L, Cicuttini FM, Sali A. Alternative therapies for musculoskeletal conditions. Best Pract Res Clin Rheumatol. 2008;22(3):499–522.
16. Mishra A, Shrivastava V. Exploring the Science of Marma - An Ancient Healing Technique: Its mention in Ancient Indian Scriptures. 2021;17:43–51.
17. Mishra A, Shrivastava V. Exploring the Science of Marma - An Ancient Healing Technique: Definition and Properties of Marma. 2021;18:46–63.
18. Use of an Integrative Approach Including Marma Therapy with Janu Basti for the Management of Janu Sandhigata Vata (Osteoarthritis of Knee) - Case Study 2 [Internet]. 2023.
19. Use of an Integrative Approach Including Marma Therapy with Janu Basti for the Management of Janu Sandhigata Vata (Osteoarthritis of Knee) - Case Study 3 [Internet]. 2023.
20. Mishra A, Shrivastava V. Evaluation of Efficacy of Marma Therapy with Janu Basti in the Management of Janu Sandhigata Vata (Osteoarthritis of Knee). 2020;15:29–45.
21. Shivachev Y, Ivanova A, Bulatova C. Therapeutic possibilities of marma therapy. Journal of Varna Medical College. 2022;
22. Mishra A, Shrivastava V. Exploring the Science of Marma - An Ancient Healing Technique: Marma in Yoga and Other Ancient Indian Traditions. Dev sanskriti : Interdisciplinary International Journal [Internet]. 2022;19:61–74.