

Massage therapy for cancer palliation and supportive care: a systematic review of randomised clinical trials

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Abstract

Introduction Massage is a popular adjunct to cancer palliation. This systematic review is aimed at critically evaluating all available randomised clinical trials of massage in cancer palliation.

Materials and methods Six databases were searched to identify all trials of classical massage for cancer patients. Studies of other types of massage, e.g. reflexology, aromatherapy, were excluded. Fourteen trials met all inclusion criteria.

Discussion Collectively, they suggest that massage can alleviate a wide range of symptoms: pain, nausea, anxiety, depression, anger, stress and fatigue. However, the methodological quality of the included studies was poor, a fact that prevents definitive conclusions.

Conclusion The evidence is, therefore, encouraging but not compelling. The subject seems to warrant further investigations which avoid the limitations of previous studies.

Keywords Massage · Effectiveness · Systematic review · Cancer palliation · Alternative medicine

Massage therapy is one of the oldest therapeutic interventions known to mankind. It can be defined as a method of manipulating the soft tissue of whole body areas using pressure and traction [1]. Many variations of the theme exist and most cultures have developed their own massage techniques, e.g. shiatsu, Indian head massage, reflexology.

Massage brings about a range of psychological and physiological changes including improvements in blood and lymph flow, reduction in muscle tension, increase in pain threshold, improvement of mood, reduction of blood pressure and relaxation of the mind [1–7]. It is thus used frequently for a range of symptoms including anxiety and stress, back pain and other musculoskeletal conditions [8].

Massage is also increasingly popular in cancer palliation. A recent US survey of 4,139 cancer survivors suggested that 11.2% of them used massage therapy [9]. A large ($n=1,290$) observational study suggested that massage therapy can reduce symptoms of cancer patients by about 50% [10]. Most patients experience massage as agreeable and relaxing.

The aim of this article is to summarise and critically evaluate the evidence from randomised clinical trials (RCTs) of classical massage therapy as an adjunct in supportive and palliative cancer care.

Materials and methods

The following databases were searched from their inception to November 2008: MEDLINE, EMBASE, CINAHL, British Nursing Index, AMED and the Cochrane Library. In our experience, this selection suffices in order to locate clinical trials. The search terms are given in Table 1. In addition, our departmental files were hand-searched and the bibliographies of the located studies were scanned for further relevant studies. No language restrictions were imposed and no limits were applied to the search strategy. Search results were downloaded into Endnote and duplicates were removed.

This strategy obtained 272 abstracts which were read. To be considered for inclusion, a study had to be randomised and tested for the effectiveness of classical massage in a supportive palliative cancer care setting. As a control

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intervention, any type of treatment or placebo or no treatment at all were allowed. Articles were excluded if they were not randomised [e.g. 11, 12] or were concerned with reflexology, hand massage, shiatsu, acupressure, lymph drainage or other forms of non-classical massage. If in doubt, i.e. if the abstract was unclear about randomisation or the nature of the intervention, the full text version of the article was obtained and analysed. Studies were excluded if they were not related to supportive or palliative cancer care or if they did not report clinical trials or if they did not employ clinical outcomes. Trials which combined the use of massage with similar treatments (e.g. acupressure or healing touch) in the experimental group and trials where lay people were taught to perform massages were also excluded.

The key data from all included RCTs were extracted according to predefined criteria (Table 1). Their methodological quality was evaluated according to the Jadad score [13] by two independent reviewers. This score is a validated instrument to estimate the likelihood of bias by assessing items such as appropriateness of randomisation, blinding or reporting of drop-outs and withdrawals. Because therapist-blinding is not an option in trials of massage therapy, studies were considered double-blind if the evaluator and the patients were blinded. A meta-analysis was anticipated but, due to heterogeneity of the primary data, turned out to not be feasible.

For the purpose of this review, supportive or palliative cancer care was defined as the application of a treatment not aimed at preventing or curing cancer nor used for the purpose of rehabilitation. Classical massage was defined as a manual treatment using effleurage (long, slow strokes), friction (small circular strokes), percussion (chopping and drumming motions) and petrissage (kneading action on muscles) [14].

Results

The searches identified 14 RCTs [15–28]. Their key data are summarised in Table 2. The results are in agreement

with the hypothesis that massage therapy is an effective adjunct to cancer palliation or supportive care. They seem to suggest that it can achieve reductions in pain [15, 18, 23, 24], nausea [19, 25], anxiety [17, 21, 23, 25, 26], depression [15, 21, 26], anger [21], stress [25, 28], fatigue [25] and quality of life [15]. The only trials that failed to show significant inter-group differences were the one by Soden et al. [22], which compared two different massage techniques, and the one by Paterson et al. [16], which was a pilot study and reported only qualitative results.

The methodological quality of most studies, as assessed by the Jadad score [13], was low. Frequent weaknesses are small sample sizes and the lack of any attempt to control for non-specific effects. Furthermore, three of the RCTs [16, 24, 28] were pilot studies not providing meaningful data on effectiveness. Ten of the trials were published during this decade. The most recent study [15] was the largest and most rigorous by far.

This well-reported RCT [15] randomised 380 advanced cancer patients suffering from moderate to severe pain into two groups. One received six sessions of classical massage lasting 30 min each, whilst the other had light touch as a sham intervention. The primary outcome measure was immediate and sustained pain measured with a validated visual analogue scale. The secondary outcome measures included immediate and sustained mood measured with the Memorial Pain Assessment Card. Immediate effects were obtained before and after each treatment whilst sustained effects were obtained at baseline and weekly for 3 weeks. The results show that both groups improved but the patients receiving massage experienced more benefit than those receiving light touch. These differences were statistically significant ($p < 0.001$) for immediate effects and showed a non-significant trend for sustained effects.

Discussion

This systematic review provides encouraging evidence for the role of massage in cancer palliation and supportive care. The data are, of course, not without flaws and problems. In particular, it is difficult to differentiate between specific and non-specific effects of massage therapy. The often poor methodology of massage studies has been noted before [29].

The effect sizes in most RCTs are small to moderate [e.g. 15]. This seems hardly surprising: few experts would expect massage therapy as an adjunct to the usual supportive and palliative care to generate huge effects. It should be stressed, however, that even moderate effects can be valuable for this often severely suffering patient population. Moreover, the almost total lack of adverse

Table 1 Electronic database search strategy

Steps for searching electronic databases	
1	Massage or massotherapy or masso-therapy or self-massage or soft-tissue mobilization or soft tissue mobilisation or soft-tissue manipulation or soft tissue manipulation
2	Cancer or neoplasm
3	Palliat* or support*
4	#1 and #2
5	#3 and #4
6	#5 and randomised or randomized or trial

Table 2 RCTs of massage therapy in cancer palliation

First author (year)	Trial design (Jadad score)	Sample	Experimental treatment	Control treatment	Main outcome measures	Main results	Comments
Kutner [15] (2008)	RCT, 2 pg (5)	380 adults with various types of advanced cancer	6 massage sessions (30 min each) during 2 weeks	Same schedule of session with light touch (as a sham intervention)	Brief Pain Inventory	Immediate pain (10-point VAS) improved in experimental group (−1.87 points [95% CI, −2.07 to −1.67]; control group, −0.97 point [95%CI, −1.18 to −0.76]); inter-group difference $p<0.001$ Participants were pleased with their experience	Non-significant trend also for sustained pain
Patterson [16] (2008)	RCT, 2 pg (2)	44 patients with various types of cancer	2 massage sessions for 6 weeks	(a) Low intensity body work (b) Usual care	Patients' perception of the intervention		Pilot study
Campeau [17] (2007)	RCT, 2 pg (1)	100 patients with various cancers undergoing radiation therapy	10 massage sessions	Attention control	VAS, State-Trait Anxiety Inventory	45% less anxiety directly after intervention compared to control	No such long-term effects were noted
Listing [18] (2007)	RCT, 2 pg (n.a.)	72 women after therapy for breast cancer	One 30-min session of classical massage	No details provided	Subjective stress experience	Long-lasting pain reduction	Only available as abstract
Billhut [19] (2007)	RCT, 2 pg (n.a.)	39 women with breast cancer undergoing chemotherapy	5 massage sessions (20 min each)	Attention control	VAS	Reduction of nausea (73% in EG, 50% in CG)	No sign effect on anxiety or depression
Phipps [20] (2005)	RCT, 3 pg (0)	50 children undergoing stem cell transplantation	3 massage sessions for 4 weeks	(a) Parent massage (b) No massage	VAS	No inter-groups differences for distress or mood disturbances	There were suggestive trends, type II error?
Hernandez-Reif [21] (2004)	RCT, 2 pg (1)	34 women after surgery for breast cancer	3 massage sessions (30 min each) per week for 5 weeks	No massage	State-Trait Anxiety Inventory, Profile of Mood Stages	Immediate effects: reduction of anxiety, depression, anger, long-term effects: reduced depression and hostility. Effect size anxiety: −25% EG vs 0% CG	No attempt to control for non-specific effects
Soden [22] (2004)	RCT, 2 pg (3)	42 hospice patients with any type of cancer	Weekly massages with inert carrier oil	Weekly massages with lavender oil	VAS	No inter-groups differences for pain, anxiety or quality of life	Both groups had similar treatments
Post-White [23] (2003)	RCT, cross-over (2)	230 patients with various cancers receiving chemotherapy	4 weekly massage sessions+usual care	Attention control	VAS	Less anxiety and pain in massage group	There were 2 more intervention groups irrelevant for this review
Wilkie [24] (2000)	RCT, 2 pg (2)	29 hospice patients with any type of cancer	4 massage sessions plus usual care	Usual hospice care	VAS	42% pain reduction EG vs 25% CG control	Pilot study

Table 2 (continued)

First author (year)	Trial design (Jadad score)	Sample	Experimental treatment	Control treatment	Main outcome measures	Main results	Comments
Ahles [25] (1999)	RCT, 2 pg (2)	35 cancer patients undergoing bone marrow transplants	One session (20 min) of massage	No massage	State-Trait Anxiety Inventory, Beck Depression Inventory, Brief Profile of Mood States	Reduction of stress, anxiety, fatigue, nausea	No attempt to control for non-specific effects
Comer [26] (1995)	RCT, 2 pg (1)	34 patients with various forms of cancer	1 massage per week for 8 weeks	1 aromatherapy per week for 8 weeks	Hospital Anxiety and Depression Scale	Anxiety and depression was reduced in both groups	Both groups received similar massage
Weinrich [27] (1990)	RCT, 2 pg (2)	28 patients with various types of cancer	One session (10 min) of back massage	Attention control	VAS	Pain decreased in males but not in females (effect size in males: from 4.2 to 1.9)	Results based on post hoc analysis
Sims [28] (1986)	RCT cross-over (1)	6 patients receiving radio therapy for breast cancer	3 back massages on 3 days	No massage	Symptom Distress Scale	Less distress in massage groups but not significant (15% improvement EG vs 2% deterioration CG)	Pilot study

CG control group, EG experimental group, RCT randomised clinical trial, pg parallel groups, VAS visual analogue scale, n.a. not applicable (published as abstract only)

effects associated with massage deserves to be considered [30].

Previous reviews have also concluded in favour of massage as an effective intervention in cancer palliation [31, 32]. However, these reviews have focussed on slightly different subject areas. Hughes et al. reviewed the data solely relating to paediatric populations [31], and Wang et al. paid particular attention on reflexology massage techniques [32]. The recent review of Myers et al. [33] apparently covers the same ground as the present article. However, Myers et al. also reviewed observational and non-randomised studies and did not include all the RCTs that are currently available. Specifically, they did not mention five RCTs reviewed here [15, 16, 18, 20, 28].

If our research question is whether massage generates effects beyond a placebo response, we should focus on RCTs that attempt to control for non-specific effects. This is clearly not an easy task when testing treatments such as massage. There are major limitations in the evaluation of therapies for which patient- and/or therapist-blinding is difficult or impossible, particularly if the judgement about the effectiveness of that intervention depends on the knowledge or ability of the practitioner delivering the treatment. In this context, it is relevant to note that even those RCTs that include an attention control [17, 19, 23, 27] or a sham intervention [15] do report encouraging findings.

This systematic review has several limitations. Even though a thorough research strategy was implemented, we cannot be certain that all relevant trials have been located. Positive publication bias might have led to the disappearance of RCTs with negative results. This would, in turn, have generated a false-positive overall impression. The paucity of high-quality studies renders any conclusion based on these data less than reliable.

Future research should, in my view, focus on the quality of the studies. They should be designed such that bias is minimised. The field of massage is not known for its research expertise. It would, therefore, be advisable that this type of expertise is recruited into the planning team of a clinical trial. Particular challenges are to adequately blind patients and evaluators (therapists cannot be blinded) and to design suitable control interventions [34]. The latest high-quality trial by Kutner et al. [15] provides a most useful model for future research. Rigorous research in this field is, of course, particularly difficult because research funds are rarely available. It is, therefore, important to raise the awareness of the therapeutic potential of massage therapy so that adequate research funds may be generated.

In conclusion, the best data available to date suggest that massage can be an effective adjunct to cancer palliation. There are, however, important caveats that prevent definitive conclusions. Considering the potential of massage therapy, further rigorous study seems warranted.

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