



Course Instructions

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The Practice of Massage Therapy – Final Exam

1. **Massage has a long tradition in several medical cultures.**
 - a. True
 - b. False

2. **Considering *Uncontrolled Data, Traditional Use*, when an adverse drug reaction occurs with a frequency of 1 in 2000, one needs to monitor _____ users to have a 95% chance that the adverse reaction will be observed at least once:**
 - a. 1000
 - b. 20,000
 - c. 50
 - d. 6000

3. **Regarding *Controlled Clinical Trials*, the need for controlled studies to evaluate the effectiveness of a treatment is often:**
 - a. overstated
 - b. misunderstood
 - c. understated
 - d. disregarded

4. **With respect to Blinded versus open studies, blinding relates to the fact that the two, three or more parties involved in a clinical trial are masked as to the intervention (i.e. active or control).**
 - a. True
 - b. False

5. **Considering the *results of the survey of training and practice patterns*, most massage therapists were _____ (85%), white (95%), and had completed some continuing education training:**
 - a. women
 - b. older
 - c. less than 30 years old
 - d. men

6. As per Table 1, *Demographic and training characteristics*, _____ of practitioners in Washington State had training in pregnancy massage:
- 10%
 - 3%
 - 1%
 - 22%
7. As per Table 4, *Massage techniques emphasized*, the data was obtained in _____ and Washington:
- Vermont
 - Oregon
 - Kentucky
 - Connecticut
8. Considering *Meaning and challenges in the practice, Conclusions*, the training received, the number of therapies trained in, and the practice descriptors of TMB practitioners are all highly variable.
- True
 - False
9. As per Figure 1, *Meaning and challenges in the practice*, depicts:
- the total number of therapies in which a practitioner has trained
 - the total number of practitioners participating in the study
 - the number of hours of training received
 - the total number of licensed massage therapists in Texas in 2010
10. *Theme 4: Clinical practice treatments are the same as the treatment protocols used in research.*
- True
 - False

Section 1

The Practice of Massage Therapy

(4 CE credits)

- *Evidence-based massage therapy: a contradiction in terms?*
- *A survey of training and practice patterns of massage therapists in two US states*
- *Meaning and challenges in the practice of multiple therapeutic massage modalities: a combined methods study*

Evidence-based massage therapy: a contradiction in terms?

Edzard Ernst

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INTRODUCTION

Massage has a long tradition in several medical cultures. In the USA, it is presently experiencing a most remarkable boost in popularity (Eisenberg et al., 1998). Unfortunately, research has significantly fallen behind this development. This chapter is aimed at discussing issues related to research methodology as they pertain to testing the effectiveness of any form of massage therapy. In tackling some of the most common problems, I will take a pragmatic approach. This chapter is not about dry statistical formulae, it is about simple, common sense aimed at novices to medical research.

AUDIT

Practitioners often confuse audit with research and this has caused much confusion in the area of massage therapy. Clinical audit is the systematic evaluation of clinical activity in its broadest sense (Abbot & Ernst, 1997). It involves the identification of a problem and its resolution through various audit cycles. This can involve examination of the structural aspects of the delivery of care, of the processes involved in delivering care, and of the outcomes of care. The essential quality of clinical audit is that it brings about change, and this aspect is generally under-emphasized. The principal concern of clinical audit, and the outcome indicators integral to it,

should be to determine whether treatment, already shown to have a specific effect (efficacy), does so in practice (effectiveness), and whether the resources spent on it are being used to best advantage (efficiency). Thus clinical audit can be usefully applied wherever improvements are to be made in the clinical practice of massage therapy. It is, however, not strictly a research tool, and thus it is excluded from further discussion.

UNCONTROLLED DATA

Traditional use

Massage is amongst the oldest treatment known to mankind (Westhof & Ernst, 1992). Therefore, can anyone doubt that it works? The 'test of time' relies exclusively on experience. While experience is, of course, part of the basis of any clinical medicine, it can be highly deceptive. The history of medicine provides many examples for this to be true. Take blood letting for example; it represented the undisputed panacea for centuries. Its widespread practice must have killed thousands more than it ever benefited (Bauer, 1996). When it was finally discovered to be ineffective, through controlled trials, it was not the intervention but the new (and therefore suspect) method of the controlled trial that was doubted (Lilienfield, 1982). Today we know that blood letting in the form of haemodilution only helps in a few, defined conditions (Ernst et al., 1987).

Traditional use also tells us less about the safety of a therapy than we intuitively assume. But let us assume that a given traditional treatment is *not* burdened with frequent adverse events, which sooner or later make alarm bells ring. It might still be associated with rare or delayed and therefore not immediately obvious yet clinically relevant complications. The 'rule of three' tells us that the number of subjects studied must be three times as high as the frequency of an adverse drug reaction to have a 95% chance that the reaction will actually occur in a studied population (Hanley & Lippman-Hand, 1983). When an adverse drug reaction occurs with a frequency of 1 in 2000, one needs to monitor 6000 users to have a 95% chance that the adverse reaction will be observed at least once. To have a 95% chance that the reaction will occur twice or three times, one has to enroll 9600 and 13,000 patients respectively. The bottom line is that the experience of massage therapists is an unreliable tool to determine either the effectiveness or the safety of their therapy.

Case reports

A clinical research idea often starts with an interesting observation concerning the treatment of a particular patient. A therapist might report: 'I have treated condition X with massage and my patient improved dramatically'.

When put in writing, this initial observation is called a case report (Ernst, 1995). By definition, such case reports are anecdotal evidence; they are essential in clinical medicine as they generate new ideas and constitute experience, but they can never be conclusive. The patient might respond in a different manner or might even have improved without any treatment at all.

Case series

Case series are accumulated case reports evaluated either retrospectively or (more rigorous) prospectively (Ernst, 1998b). They can vary considerably in quality (have better defined inclusion/exclusion criteria, more sensitive endpoints, etc). Case series seem an attractive research tool to many therapists as they do not require informed consent, pose no problem in terms of treatment denial, and fit comfortably into clinical settings. Their most important methodological drawback is the lack of a control group. Thus they have no place in the evaluation of clinical efficacy: their results simply do not tell us whether an observed change was indubitably due to the treatment or to any of the following factors, each of which can influence the clinical results (Ernst, 1998b):

- placebo effect
- natural history of the disease
- regression to the mean
- patient's desire to please the therapist
- therapist's desire for a positive result
- concomitant therapy
- other nonspecific effects.

This, however, is not to say that case series are of no value; the opposite is the case. They are certainly useful, even essential for formulating a hypothesis. In turn, this hypothesis requires testing by other methods, e.g. randomized controlled trials.

Observational studies

Observational studies are very similar to case series. In fact, they are large and well-organized studies without a control group. Because of their size, they may allow comparisons of sub-groups and some inference as to whether or not the observed clinical effect was associated with the therapeutic intervention. For instance, one could conceive a large study of massage therapy where perhaps 1000 consecutive patients with a given condition are treated and the outcome (say pain) is determined. Sub-group analyses could then determine whether patients who were more severely affected or those who received more treatments responded better in terms

of pain relief than the rest of the group. The principal drawback does, however, remain: there is no control group that received a different (or no) therapy. Thus observational studies can hardly answer the question whether the perceived effect was caused by the therapy (specific effect) or some other factor (nonspecific effect) (Pocock & Elbourne, 2000).

CONTROLLED CLINICAL TRIALS

The need for controlled studies to evaluate the effectiveness of a treatment is often misunderstood. The 'effectiveness' observed in uncontrolled studies is really the 'perceived effectiveness', which is composed of the specific therapeutic effect plus other, nonspecific factors (see later). Whenever one wants to be certain about the relative importance of these factors and aims at defining the specific effectiveness of the therapy, one has no choice but to conduct controlled trials and compare the results of an intervention group with those of a carefully chosen control group (Fig. 1.1).

When scientifically investigating whether or not a given therapeutic intervention is effective, one essentially asks whether there is a *causal* relationship between the treatment and the outcome. Some may (rightly) argue that most if not all conditions have more than one cause and that therefore this approach is naïve and simplistic. Even though the multicausality of disease is an indubitable fact, this argument is wrong. By definition, medical treatments are aimed at providing the cause for the clinical benefit quite regardless of multicausal etiologies — a massage therapist treating low back pain treats the patient under the assumption and with

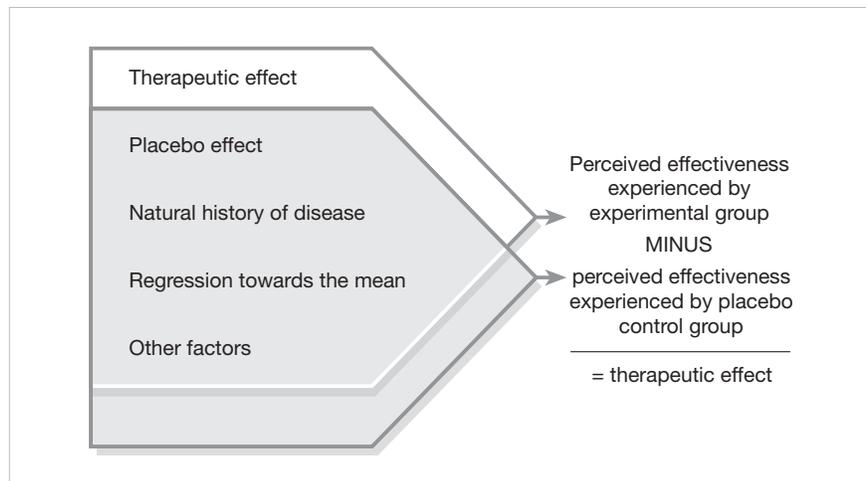


Figure 1.1 Therapeutic effect in relation to other factors determining outcome.

the hope that the massage will ease the pain (which would represent a cause–effect relationship) irrespective of the fact that back pain clearly has many causes. To *not* be interested in the cause–effect relationships in therapeutics means to disregard one of the most essential ingredients in medical therapy (Ernst & Resch, 1996).

Typically, controlled clinical trials are prospective investigations. Yet it is often easier, faster and less expensive to do research retrospectively, for instance, by looking at a number of case notes in an attempt to define which treatment helped best in a given condition. For several reasons this approach is substantially inferior to prospective investigations. There are always several factors that influence the outcome in addition to the treatment given, e.g. the natural history of the disease (Fig. 1.1). Since retrospective investigations are restricted to the data available which, of course, have not been gathered for the purpose of the study, they normally have not been produced under standardized conditions nor do they follow a rigorous predetermined protocol. Inclusion-exclusion criteria (see later) are difficult or impossible to implement on a post-hoc basis because of lack of relevant information, and because randomization (see later) cannot be achieved. Therefore, neither suitability nor validity of the data can be reliably established. Yet, to provide conclusive information on therapeutic effectiveness of a given treatment, all these factors would need accounting for. This can be done reliably *only* with prospective research designs.

Parallel group versus cross-over designs

In trials with parallel groups, participants are split into several (typically two) sub-groups. These receive two different treatments (see later) and the changes that occur in group 1 are compared with those of group 2 (Fig. 1.2). Thus different individuals are compared with each other. This creates numerous confounding factors, and the hope is that, provided both groups are large enough, these will cancel each other out, particularly if the trial was randomized (see later).

In an attempt to reduce confounding, it is tempting to compare one study participant with him/herself. This is the basic concept of cross-over studies (Fig. 1.2). In such trials all participants are treated with two different approaches (e.g. with massage therapy versus drug treatment). To minimize bias, one can randomize the sequence of the two approaches (see later). Essentially the clinical changes in one treatment phase are then compared with those that occur in the other phase.

While cross-over designs have highly attractive features, they are also burdened with numerous problems (Ernst, 1998b). Generally speaking parallel group designs are today considered to be more rigorous.

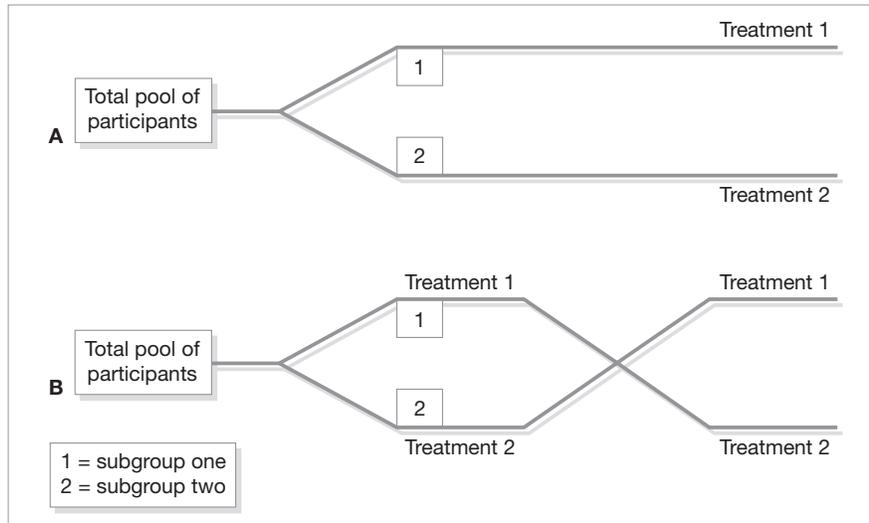


Figure 1.2 Schematic design of parallel group trials (A) and cross-over studies (B).

Placebo controlled trials

The placebo issue is also often misunderstood. No one doubts that the placebo effect can be very powerful indeed (Ernst & Resch, 1994). While in clinical practice we should do everything to make the patient benefit from nonspecific treatment (placebo) effects, we need to exclude them in research aimed at defining specific effectiveness of therapeutic interventions. This is achieved adequately by introducing a parallel group of patients who receive a treatment identical to the treatment under investigation except for the supposed specific treatment effect (i.e. a placebo group). One argument often voiced against this approach is that this neglects the importance of nonspecific treatment effects. This is, of course, not true. The fact that one eliminates a given determinant of a clinical outcome does not mean that one does not appreciate its importance — by eliminating the natural history of the disease in a controlled trial, one by no means disregards its importance. All one attempts is to create a set of circumstances where outcomes and results can be interpreted in a straightforward manner (i.e. 'causality' of the factor under investigation is confounded as little as possible by other factors or circumstances). The trial situation differs critically from the therapeutic situation in this way.

In contrast to what is often said, one can do placebo-controlled trials with *any* form of treatment, even with massage therapy — for instance, one can give sugar pills (placebo) to one group of patients and treat the experimental group with massage therapy. With several therapies (including

massage) it is, however, exceedingly difficult or even impossible to find placebos that are *indistinguishable* from the active treatment for the patient and/or therapist, and only such placebos can be used for patient-blinded studies.

In such situations one is often left with the second-best option to an ideal placebo, i.e. an intervention that mimics the active therapy as closely as possible (but not completely), e.g. superficial massage in a trial of Swedish massage of muscular pain. Admittedly these options represent compromises between the feasible and the desirable. Further features can enhance the credibility of such 'imperfect placebos' — for instance, one can make sure that only patients who have no previous experience with the type of massage under investigation are included in a trial. They are therefore less likely to tell the real thing from the imperfect placebo. The development of a credible placebo crucially depends not only on experience but also on creativity and fantasy.

There may be many situations where other controls are adequate or even superior to placebo controls. For instance, whenever a 'gold standard' (accepted form of therapy for a given condition with proven effectiveness) exists, ethical considerations demand to test a given therapy (e.g. massage) against this 'gold standard'. The research question then would be whether massage is as effective as or superior to the standard treatment.

It is also essential that any control treatment (placebo or other) is comparable in terms of factors relating to the clinical setting: identical environment, same team of caretakers, similar length of patient/therapist contact, similar therapeutic relationship, etc.

Blinded versus open studies

Blinding relates to the fact that the two, three or more parties involved in a clinical trial are masked as to the intervention (i.e. active or control). Blinding the evaluator is usually no problem: the assessor (that is, the investigator who quantifies the results, e.g. pain reduction) does not need to know what type of therapy the patient had been submitted to. Blinding patients in trials of massage therapy is probably not achievable. The same obviously applies to the therapist. In essence this means that in clinical massage research only evaluator-blinded trials are feasible.

Randomized versus non-randomized trials

Randomization is the cornerstone of an unbiased assessment of therapeutic effectiveness. A vivid example of how things can go badly wrong is the Bristol Cancer Study (Bagenal et al., 1990), where the lack of randomization was the main reason for flawed results and the confusion that followed. Randomization means that one sample of patients is divided into

two or more subgroups through pure coincidence. *Only* this method can achieve that both groups are comparable in terms of known *and unknown* potential determinants of outcome (provided the sample is big enough). Non-randomized trials are wide open to bias. This has several reasons. For instance, investigators might intuitively put the more ill patients into that treatment group for which they hope treatment is more effective, or certain other characteristics render a patient more suitable for one of the two forms of treatment tested. This and the fact that one cannot account for factors that are presently unknown, are crucial reasons why only randomization will guarantee that all treatment groups within a study are comparable and that we are prevented from comparing 'apples with pears' (Schulz et al., 1995).

Inclusion-exclusion criteria

'In view of the differing diagnostic criteria on conventional medicine and complementary therapy, it does not appear possible to define a population which can be randomized for a controlled clinical trial of one form of therapy against another...' (Watt, 1988, p. 151). This quote reflects the notorious problem of inclusion-exclusion criteria and emphasizes the different views held by orthodox and complementary therapists. Yet the problem is not insurmountable. Firstly there is no absolute need to insist on strict inclusion-exclusion criteria (i.e. 'define a population'). They are desirable in order to achieve optimally homogeneous patient samples, which in turn, reduces the 'background noise' in the experiment. Yet they are not mandatory — all we face when relaxing these criteria is the need to increase our sample size. Secondly, one can sometimes use orthodox plus unorthodox criteria in sequence. For instance, one could conceive a trial on patients with rheumatoid arthritis diagnosed by an orthodox physician where the patients are subsequently seen by a therapist who defines the suitability of each patient for the massage therapy under investigation. This 'definition' can be based on anything from reproducible variables to personal intuition. Only if a patient passes both 'filters' will he/she be included in the study. Undoubtedly, this would make any study more tedious, yet it would not render it impossible.

Outcome measures

One often gets the impression that medical research has opted to measure what is measurable instead of what is relevant. Proponents of complementary medicine frequently claim that the known criteria to evaluate success or failure of therapy are not meaningful in their field. Actually this is also true for much of mainstream medicine where surrogate endpoints

abound — for instance, blood pressure or serum cholesterol: is it relevant to lower these variables or to prevent a heart attack? The latter is not *a priori* a consequence of the former. What we really want to know is often difficult to measure.

In certain clinical situations encountered by massage therapists there may not be any hard and validated endpoints at all. Yet other meaningful, 'soft' endpoints have been and are being developed — for instance instruments to measure quality of life or well-being (Cella & Tulsky, 1990). Even simple patient preference can be quantified, for instance, in crossover trials. These can be used, depending on the research question, in conjunction with other endpoints like visual analogue scales or 'hard' physiological variables.

SYSTEMATIC REVIEWS

If we accept that the randomized clinical trial is the least biased (yet by no means perfect) method to test for therapeutic effectiveness known today, we still have to admit that one such study is rarely fully convincing. In medical research, one always wants to see independent replications. A single trial could be wrong by chance, through some undetected bias or even through fraud. Where more than one study exists, they often yield different results. For instance, it is conceivable that, for one given indication (say, depression) five studies suggest that massage is effective while five imply that it is not. In such a situation proponents of massage could publish a (apparently evidence-based) review of the positive trials. An opponent could do the same with the negative trials.

This example demonstrates the importance of systematic reviews (and meta-analyses — which are systematic reviews that include statistical pooling of data). Such research projects have to include a detailed explanation where the authors explain what they did and how. They have to demonstrate, for instance, that they included all the data (not just those they liked). This renders a review of this type reproducible and minimizes selection and random biases.

For these reasons, systematic reviews provide, according to the accepted standards of evidence-based medicine (Cook et al., 1997), the most compelling evidence for or against a given therapy (Fig. 1.3). In the realm of massage, several non-systematic (e.g. Callaghan, 1993; Tidius, 1997; Buss et al., 1997) and systematic (e.g. Ernst, 1998a; 1999a,c) reviews have been published.

Systematic reviews are perhaps the best evidence, yet they too are not flawless. Problems can arise when the primary studies are of poor quality (garbage in, garbage out) and when certain (e.g. negative) results never get published (publication bias).

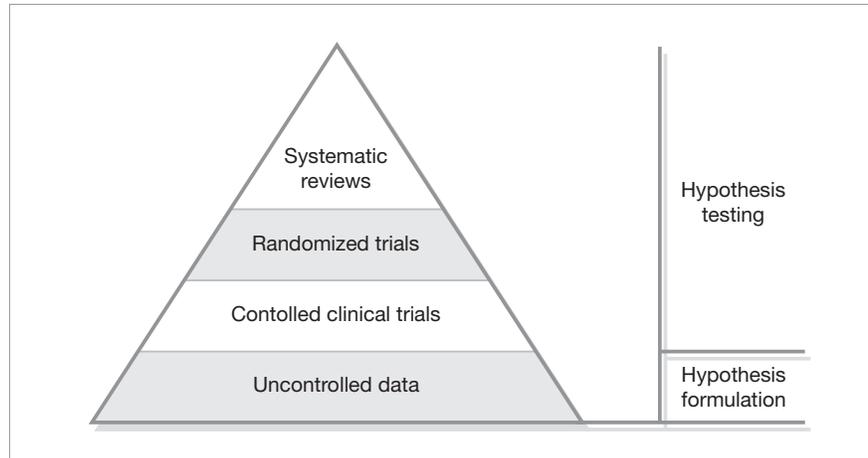


Figure 1.3 Hierarchy of evidence.

THE ‘OPTIMAL’ TRIAL DESIGN

From the discussion so far it follows that there is no such thing as an ‘optimal’ trial design. A study can only be optimal in that it answers the question it set out to answer. All types of investigation discussed above can be optimally matched to a research question. In other words, it is the match not primarily the design one should try to get right. Or, to put it bluntly, there are in principle no faulty designs only bad matches (Fig. 1.3).

If, for instance, one wants to generate or strengthen a hypothesis (which would require testing later), case reports or case series are optimal. If one wants to determine whether massage is more effective than no treatment, a randomized, evaluator-blinded study with two parallel groups — one receiving massage and the other no such therapy — is probably ideal. If one requires to know whether massage is superior to another (e.g. gold standard) treatment, the same design but with a different comparison group would be ideal.

It should be re-emphasized that the entire discussion above is directed towards testing the effectiveness of massage therapy. Obviously there are many other areas of research (Table 1.1). It is clear that for all these areas of research, different methods have to be used and the above discussion does not apply.

PRAGMATIC PROBLEMS

In this last section, I would like to give some practical guidance to those who are new to research and would like to give it a try. Many researchers

Table 1.1 Examples of research question matched with adequate research design

Research questions	Examples of possible design
How prevalent is massage therapy?	Surveys
Who uses massage therapies?	Surveys
What are the main indications?	Surveys
What are reasons for using massage therapy?	Personal interviews, postal questionnaires
Are there adverse effects?	Literature review
How frequent are these adverse effects?	Large scale observational study
Does massage offer value for money?	Cost-benefit, cost-utility studies
Which treatment will help a given patient?	Single case study
Which mechanism brings about a given clinical effect?	Investigations using physiological variables
What expectations do patients have?	Personal interviews/qualitative methods
What experiences do patients report?	Personal interviews/qualitative methods
Does massage offer value for money?	Cost evaluation studies

(including myself) have learnt research ‘the hard way’, e.g. by making all the mistakes themselves. Perhaps the following paragraphs will prevent others from making my mistakes all over again.

Why do research?

There are many reasons to do research, and some are clearly better than others. Enthusiastic novices often want to prove that their therapy works. This is probably one of the worst reasons for doing research. An investigation should *not* set out to *prove* a point but rather to *test* a hypothesis. An investigator with an ‘axe to grind’ is hardly an objective researcher. Clinical research, in particular, must be patient-centered. Unquestionably, the best reason for doing research is the hope of coming one step closer to the truth and to help (future) patients.

Preconditions

Certain items are essential because, without them, there is no use in even attempting research. It is worth remembering that bad research can be unethical (Emanuel et al., 2000). It can mean not only a waste of resources but also the needless suffering of patients.

An adequate knowledge of research methodology and of the subject area under investigation — for example of treatment modality (e.g. the form of massage therapy to be tested) and disease — are absolute prerequisites. To some degree expertise can be ‘bought in’ (see later), but the project leader must have at least a minimal understanding of all the issues involved. If you do not have this expertise, acquire it — or do not embark on research.

It almost amounts to a platitude to state that certain infrastructures are also essential. By this I mean things like the time to carry out the work, access to a library, electronic databases and computers as well as the (prospect of) funds to finance all the work and equipment involved. Before you even start planning a research project it might be a good idea to draw up a simple checklist of all the preconditions required in your particular case and go through it one by one.

Background reading

You may want to embark on a subject, say a study of Swedish massage to treat back pain, and not be fully aware of what has been published on this subject already. Yet it is mandatory that you are! Thus it is highly advisable to conduct an in-depth search for all published articles, read all of them thoroughly and make sure you understand all aspects (if you do not, seek help). Failure to do this background research properly might seriously embarrass you and your colleagues later on. You (or someone else) might, for instance, find out that the study you have just done has already been conducted in a more definitive way by someone else. This would obviously render your work redundant and a waste of time, energy and money.

Define your research question

Using the above example, you may have started out with the idea of studying massage for back pain. Now that you have read the published articles on the subject, you will almost certainly have found that the question you are asking is much more complex than originally anticipated. Do you want to formulate or test a hypothesis with your research? What type of patients do you want to study? What type of back pain? What type of massage do you want to test? How do you want to recruit your patients? Do you need to conduct a controlled trial or an observational study? What should the control treatment be (if any) — a 'placebo' or a standard treatment? Can you randomize the treatment groups? Is the treatment under investigation representative for its class? Do you need one therapist or more? What should their qualifications be? Are all conditions optimal for the treatment to work? And so on. Only when you have answered such questions (they will invariably come up when you do your background reading and they will differ according to the nature of your project) will you be able to define the research question. Doing this is essential for deciding which methodology is the best for what you have in mind. It is also a decisive step towards developing a protocol (see 'Recruit a research team').

Check the logistics

This preparatory work will have led you to a more concise idea of what may be coming up. Certain things will have become clear to you and you might, at this stage, what to (re)check whether the logistic preconditions for your research project are fulfilled. For instance, do you have access to the type (and adequate numbers) of patients you need to study? How large should your patient sample be? Is it realistic for you to obtain sufficient funding? Is it likely that you can obtain patient consent for what you plan to do? Is the evolving proposal ethical? Do you have the necessary rooms, help (secretarial back up, research nurses), etc? There will almost certainly be other questions to ask. My advice is, again, to draw up a checklist and tackle one problem at a time.

Recruit a ‘research team’

You will probably find that your general research knowledge and experience are not enough to cover all aspects of your project competently. It is therefore usually mandatory to assemble a team for developing a sound protocol of your study and guide you through its experimental phase. Depending on the type of your investigation this team will vary in size and composition. In the example of massage for back pain, it might include a statistician (almost invariably advisable), a clinical expert in back pain (for example, a rheumatologist) and an experienced massage therapist. Make the team as small as possible but as large as necessary.

Within this team you should now organize a series of discussions to evolve a protocol. Subsequently, you might take the lead and draft an outline and circulate it within the team until every team member is satisfied. The team should supervise the entire investigation. Once the protocol is finalized, the planning phase is (almost) finished. All that is needed now is to submit it to the appropriate ethics committee, and secure funding. During this process several (hopefully small) revisions of your protocol may prove necessary.

Obtain funding

Funding is, of course, very often the real obstacle (Ernst, 1999b). Research funds are invariably limited and rejection rates are often high, particularly if you have to compete with applications from mainstream research. Rejections can be extremely disappointing, but you must not be deterred. To succeed you have to try over and over again and learn from the criticisms of those who review your application. Here, too, you should seek expert advice. Establish contact with patient organizations, try all the charities you can think of, use your imagination and leave no stone

untuned. If research in massage therapy is ever to get anywhere, I strongly feel that some dramatic changes to the all too miserable present funding situation have to be brought about.

At present there are few funds especially dedicated to such research. Thus we find ourselves competing with mainstream scientists for a more and more limited amount of money. This means that our applications are judged by panels who usually have little understanding of (or sympathy for) complementary medicine. This in turn results in the undeniable fact that very little money is spent on such research (Ernst, 1999c).

I have said and written it before, and I will carry on doing so: in view of the high popularity of complementary medicine (Eisenberg et al., 1998), it is quite simply unethical not to research the subject systematically — and this, of course, requires adequate research budgets.

CONCLUSION

Massage therapy remains grossly under-researched. In particular, clinical trials need to test the effectiveness of defined types of massage for defined conditions. The methodology for doing this is similar to clinical research in other areas. Existing trials of massage therapy are often burdened with significant limitations (Cawley, 1997). Lack of research expertise and research funds are probably the two main reasons for the paucity of reliable evidence in this area. We should find ways of overcoming these obstacles.

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Research article

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A survey of training and practice patterns of massage therapists in two US states

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Abstract

Background: Despite the growing popularity of therapeutic massage in the US, little is known about the training or practice characteristics of massage therapists. The objective of this study was to describe these characteristics.

Methods: As part of a study of random samples of complementary and alternative medicine (CAM) practitioners, we interviewed 226 massage therapists licensed in Connecticut and Washington state by telephone in 1998 and 1999 (85% of those contacted) and then asked a sample of them to record information on 20 consecutive visits to their practices (total of 2005 consecutive visits).

Results: Most massage therapists were women (85%), white (95%), and had completed some continuing education training (79% in Connecticut and 52% in Washington). They treated a limited number of conditions, most commonly musculoskeletal (59% and 63%) (especially back, neck, and shoulder problems), wellness care (20% and 19%), and psychological complaints (9% and 6%) (especially anxiety and depression). Practitioners commonly used one or more assessment techniques (67% and 74%) and gave a massage emphasizing Swedish (81% and 77%), deep tissue (63% and 65%), and trigger/pressure point techniques (52% and 46%). Self-care recommendations, including increasing water intake, body awareness, and specific forms of movement, were made as part of more than 80% of visits. Although most patients self-referred to massage, more than one-quarter were receiving concomitant care for the same problem from a physician. Massage therapists rarely communicated with these physicians.

Conclusion: This study provides new information about licensed massage therapists that should be useful to physicians and other healthcare providers interested in learning about massage therapy in order to advise their patients about this popular CAM therapy.

Background

Although massage is one of the oldest healthcare practices in the world, with references to it found in ancient Chinese medical texts as well as in the writings of Hippocrates, medical doctors in the US have not practiced therapeutic massage for nearly 100 years [1]. In the 1930's and 1940's, massage fell out of favor with nurses and physical therapists as well. However, since the 1970's, interest in massage therapy has burgeoned and it is now one of the most popular complementary and alternative medical (CAM) modalities. In the US, Eisenberg, et al. [2] found 11% of randomly surveyed Americans had used massage for treating common medical conditions in 1997, with 62% of these receiving massage from a trained massage therapist. They found that the number of visits to massage therapists exceeded that to all other CAM providers except chiropractors, with trained massage therapists providing an estimated 114 million massage sessions to Americans in 1997. Eighty percent of randomly surveyed US adults with health insurance claimed they would be "likely" to use massage, making it the most popular of the 11 therapies included in the survey [3]. Palinkas [4] reported that massage was the third most commonly used type of CAM among primary care patients, with 17.2% of CAM users reporting use of massage within the last year for the same reason they were seeking primary care.

Despite this growth in the popularity of massage, little is known about the practices of licensed massage therapists. We included massage therapists in our study of random samples of licensed CAM practitioners and their practices [5,6]. In this report, we present new information about the demographic and training characteristics of licensed massage therapists, the reasons patients seek their care, the assessment process massage therapists use during visits, and the treatments and self-care recommendations they provide. We have included information about massage efficacy and safety and communication between massage therapists and physicians in the Discussion section to assist biomedical healthcare providers in placing our findings in the broader context of patient care.

Methods

Original study

The data presented in this paper were collected as part of a larger study of four licensed CAM professions, including massage therapy. The methods are described in detail elsewhere [5,6] and summarized here. Our goal was to obtain data on 20 consecutive visits to 50 randomly selected massage therapists in one Northeastern state (Connecticut) and one Western state (Washington) who gave at least 10 massage treatments per week. Massage therapists were randomly sampled from state licensure listings in Washington (1998) and Connecticut (1999). In both states, licensing requirements for massage therapists including

having 500 hours of education and a passing score on the national examination. We excluded providers without identifiable telephone numbers and those not currently practicing. The proportion of ineligible practitioners was 47% in Connecticut and 33% in Washington. About 84% of ineligible Connecticut massage therapists lacked identifiable phone numbers, while in Washington ineligible therapists were about equally divided between those who were not practicing and those who lacked identifiable phone numbers.

All participating massage therapists were interviewed about their demographic, training, and practice characteristics. Those with at least 10 visits in a typical week were then invited to participate in visit-based data collection. A sample of those seeing 5 to 9 visits per week were also invited to collect data on patient visits. Massage therapists with less than 5 visits per week were not asked to collect visit data and provided about 2% of all massage visits [6].

We obtained approval from the Group Health Cooperative, University of Washington, and Beth Israel Deaconess Medical Center Institutional Review Boards. Visit data were collected between May and September in 1998 in Washington and between June 1999 and March 2000 in Connecticut. Massage therapists were given visit forms marked with unique identification codes and were asked to record data on 20 consecutive visits (even if the same patient was seen more than once). Practitioners were randomly assigned weekdays to begin data collection.

Visit form

The one-page visit form was modeled after those used in the National Ambulatory Medical Care Survey (NAMCS) [7] and a copy of the visit form is found in Additional File 1. Whenever possible, questions were worded identically to those in the NAMCS (e.g., demographic characteristics, smoking status, reason for visit, referral source, source of payment, visit duration, visit disposition). New questions asked if the patient was receiving care from a conventional medical provider for the primary problem and if the massage therapist had communicated about this problem with a conventional provider who also provided care for the patient's main problem. We also designed special questions to capture information about massage treatments, including information on use of specific assessment techniques, massage techniques, and lifestyle recommendations. We asked practitioners to record up to five "complaints, symptoms, or other reasons for this visit" using the patients own words, listing the most important complaint or reason first. These data were classified using the NAMCS Reason for Visit Classification System, which distinguishes among symptoms, diseases, diagnostic/screening/preventive interventions, treatments, and injuries [7]. Individual reasons for visit were

then clustered into larger categories that correspond to *International Classification of Diseases, Ninth Edition* (ICD9) chapters. No information was collected on adverse experiences as part of this study.

Analysis

In the massage therapist analyses, Chi-square and Fisher Exact tests were used to compare proportions, and Kruskal Wallis tests were used to compare medians. Even though standard errors are not presented, they are always within 5 percentage points of the estimate. Analyses were performed using SAS version 8 (SAS Institute, Cary, NC).

In the visit analyses, each visit in the sample was weighted by the inverse of its sampling probability, which reflected both the chance that the particular provider participated and the estimated proportion of that provider's annual visits included in the study. Consequently, our results represent estimates of all visits made to massage therapists in each state, except for the 2% of visits made to providers with fewer than 5 visits per week or visits to therapists who were not licensed. Because of the two-stage sampling design, we used SUDAAN software (Research Triangle Institute, Research Triangle, NC) to calculate standard errors and confidence intervals using Taylor series linearization. Because of the large sample sizes (965 and 1040 visits) the weighted percentages presented in the tables have small standard errors, generally between 0.5 and 2.5 percentage points and rarely exceeding 3 percentage points. As a result, moderate to large differences between the states are also statistically significant. Therefore, the standard errors are not included in the tables.

Results

Participation rates

Participation rates for the massage therapist interview were 86% (114 of 133) in Connecticut and 84% in Washington (112 of 134). Of the massage therapists who saw enough clients per week to be eligible to collect visit data, 66% in Connecticut (61 of 93) and 70% in Washington (65 of 93) complied. Data were collected on 965 visits in Connecticut and 1040 visits in Washington.

Characteristics of the massage therapists

In both states, massage therapists were typically white, female and had a median age of 42 years (Table 1). Virtually all of them received their basic training in the US, with most having trained in the state where they were currently practicing. A small fraction had no formal training. In both states, massage therapists reported training a median of about 600 hours. Massage therapists reported a median of 4 to 5 years in practice, with only 18% in Connecticut and 13% in Washington reporting more than 10 years.

Most massage therapists (82% in Connecticut and 89% in Washington) reported additional hours of training after graduation, receiving a median of 60 hours. Nearly 80% of the massage therapists in Connecticut and about half in Washington reported "specialty or advanced training" (i.e., continuing education), with 43% and 31%, respectively, reporting multiple types of such training. Continuing education was extremely heterogeneous, with practitioners noting 56 different types of training in Connecticut and 37 types in Washington. However, only 4 types of training were received by more than 10% of practitioners in Connecticut (meridian-based therapies, craniosacral, myofascial release and Reiki) and only one type of training was received by more than 10% of practitioners in Washington (craniosacral therapy) (Table 1). Ten percent of massage therapists in Connecticut and 8% of those in Washington held other healthcare profession licenses. All but one of those (acupuncture) were in biomedical areas, most commonly nursing.

Connecticut massage therapists reported a median of 10 patient visits per week and 12 hours of direct patient care per week, compared with 15 patient visits per week and 17 hours of direct patient care, for massage therapists in Washington ($p < 0.02$ for hours of direct patient care).

Reasons for visits to massage therapists

Visits to massage therapists were for a limited number of conditions. About 60% of visits were for musculoskeletal symptoms, particularly back, neck, and shoulder symptoms (Table 2). Visits for "wellness" (i.e., relaxation) accounted for another 20% of visits and mental health concerns, largely anxiety and depression, for another 6 to 9% of visits. Virtually all other visits were for general body symptoms (mostly generalized pain) or "nervous system" symptoms (most commonly headache).

Most visits were for chronic problems, either problems that were ongoing (41% in Connecticut and 32% in Washington) or for flare-ups of chronic problems (12% in Connecticut and 15% in Washington). About a quarter to a third of all visits were for non-illness care (32% in Connecticut and 27% in Washington) and the remainder of visits were for acute problems (15% in Connecticut and 17% in Washington).

Interaction with other healthcare providers and insurance

Most massage visits resulted from self-referrals (64% or 75%) but 4% in Connecticut and 11% in Washington resulted from referrals by medical or osteopathic physicians (virtually all for musculoskeletal symptoms). Although massage therapists discussed the care of the patient with another provider in 22% of visits in Connecticut and 30% in Washington, that provider was a medical or osteopathic physician less than one-third of

Table 1: Demographic and training characteristics of massage therapists

	State		p value
	Connecticut	Washington	
	(N = 114 practitioners)	(N = 112 practitioners)	
<i>Demographic Characteristics</i>			
Women	85%	85%	
White	95%	95%	
Hispanic	4%	4%	
Median Age	41.5 yrs.	41.5 yrs.	
<i>Basic Training</i>			
Formal Schooling	93%	94%	
US – other states	12%	8%	
US – same state	81%	85%	
Foreign	1%	1%	
No Formal Schooling	6%	6%	
Median Years in Practice	5 yrs.	4 yrs.	
<i>Post-graduate Training</i>			
Any	79%	52%	***
Craniosacral	14%	12%	
Neuromuscular	10%	10%	
Reflexology	10%	6%	
Reiki	13%	6%	
Polarity	5%	5%	
Lymph Drainage	3%	5%	
Meridian – based (Shiatsu, Tuina, acupressure)	22%	10%	*
Myofascial Release	14%	3%	**
Pregnancy Massage	6%	1%	

* p < 0.05; ** p < 0.01; *** p < 0.001

the time. The most frequent consultations were with chiropractors. Massage therapists indicated that medical or osteopathic physicians were treating their patients for the same condition for 24% (Connecticut) or 32% (Washington) of visits. Massage therapists noted that they had discussed their patients' care with the physicians of 29% (Connecticut) or 49% (Washington) of their physician-referred patients compared with only 12 – 14% of their other physician-managed patients. Two percent of visits in both states ended with a referral to a medical or osteopathic physician.

Insurance covered only 8% of visits in Connecticut and 26% of visits in Washington, and almost all the remainder were paid for by the patient.

Care during visits to massage therapists

Massage therapists performed assessments in about two-thirds to three-quarters of the visits (Table 3). The most common methods were tissue assessment via palpation, range of motion, and postural assessment. Multiple assessments were used in 38% (Connecticut) or 48% (Washington) of visits.

Virtually all visits included a massage that emphasized at least two techniques (Table 4). The most commonly emphasized techniques were Swedish massage, deep tissue, and trigger point/pressure point techniques. Massage therapists in both Connecticut and Washington emphasized five other techniques in between 14% and 25% of visits: energy work, hot/cold therapy, movement re-education, craniosacral, and reflexology. Massage therapists in Connecticut were more likely to emphasize Oriental bodywork (i.e., meridian based techniques such as shiatsu) while those in Washington were more likely to emphasize neuromuscular therapy. Definitions of some of the most commonly emphasized techniques are provided in Additional File 2.

More than 80% of visits included self-care recommendations (Table 5), with 50% (Connecticut) or 64% (Washington) of visits including multiple recommendations. Increasing water intake, movement (especially active movement), body awareness, and breathwork were the most common recommendations. Visits lasted a median of 60 minutes.

Table 2: Most common reasons for visits to massage therapists licensed in Connecticut (1999) and Washington (1998) by broad and specific categorization

Connecticut			Washington		
(N = 965 visits)			(N = 1040 visits)		
Broad Categories*	% with Primary Reason		Broad Categories*	% with Primary Reason	
1. Musculoskeletal Symptoms	59.2		1. Musculoskeletal Symptoms	63.0	
2. Wellness**	19.5		2. Wellness**	18.7	
3. Psychological and Mental Health Symptoms	8.8		3. Psychological and Mental Health Symptoms	5.7	
4. General Symptoms	4.5		4. Nervous System Symptoms	4.9	
5. Nervous System Symptoms	3.7		5. General Symptoms	3.7	
Top 5 Categories	95.7		Top 5 Categories	96.0	
	% with			% with	
Specific Reasons	Primary Reason	Any Reason	Specific Reasons	Primary Reason	Any Reason
1. Back Symptoms	20.4	34.4	1. Back Symptoms	20.2	39.8
2. Massage Wellness	19.5	25.8	2. Neck Symptoms	20.0	38.5
3. Neck Symptoms	13.0	24.1	3. Massage Wellness	18.7	26.5
4. Shoulder Symptoms	8.4	23.1	4. Shoulder Symptoms	7.4	26.6
5. Anxiety or Depression	8.8	17.4	5. Anxiety or Depression	5.2	12.3
6. Leg Symptoms	5.0	10.0	6. Headache	3.7	8.4
7. Unspecified Muscle Symptoms	4.0	6.3	7. Leg Symptoms	2.6	6.3
8. Generalized Pain	3.1	4.5	8. Generalized Pain	2.1	3.5
9. Headache	1.6	5.2	9. Hip Symptoms	1.9	6.7
10. Unspecified Joint Symptoms	1.4	2.2	10. Arm Symptoms	1.8	5.6
Top 10 reasons	85.2		Top 10 reasons	83.6	

* Broad Categories of Primary Reason for Visit Codes correspond to ICD chapters

** Wellness was not originally part of the NAMCS Reason for Visit Classification. Most of these visits are for relaxation.

Table 3: Diagnostic assessments performed by massage therapists licensed in Connecticut (1999) and Washington (1998)

Diagnostic Assessment	Connecticut	Washington
	(N = 965 visits)	(N = 1040 visits)
	Percent Using	
At least one	67.2	74.0
Applied Kinesiology	2.0	5.8
Postural Assessment	19.8	30.7
Range of Motion	34.9	46.0
Tissue Assessment	56.3	60.8
Other (e.g., acupressure point assessment)	7.1	2.7

Discussion

To our knowledge, this is the first study that describes the demographic and training characteristics of US massage therapists and uses systematically collected visit data to describe their treatment patterns. Strengths of the study are the collection of data from licensed massage therapists practicing in geographically separated parts of the country where CAM use is relatively common, random sampling

of providers from state licensing lists, relatively high response rates, and large sample sizes. The main limitation is that we collected data from only two states, which may not be representative of massage practice in other states.

However, licensure requirements in Connecticut and Washington are similar to those in most other states with

Table 4: Massage techniques emphasized during visits to massage therapists licensed in Connecticut (1999) and Washington (1998)

Techniques Emphasized	Connecticut	Washington
	(N = 965 visits)	(N = 1040 visits)
	Percent Using	
Any	99.4	99.9
Craniosacral	15.3	15.1
Deep Tissue	62.8	65.3
Emotional Bodywork	5.7	4.0
Energy Work	24.9	17.2
Guided Imagery	5.3	4.7
Hot/Cold Therapy	19.9	24.2
Manual Lymph Drainage	3.8	6.3
Movement Re-education	19.2	24.2
Neuromuscular Therapy	5.8	20.5
Oriental Bodywork	16.6	8.6
Pregnancy Massage	1.4	0.7
Reflexology	15.0	15.4
Somatherapy	1.2	5.0
Swedish Techniques	80.6	76.8
Trager	6.7	14.1
Trigger Point/Pressure Point	51.5	45.6
Other (e.g., Esalen, Thai)	7.1	4.2
Two or more techniques	86.7	92.5

Table 5: Self-care recommendations given by massage therapists licensed in Connecticut (1999) and Washington (1998)

Self-Care Recommendations	Connecticut	Washington
	(N = 965 visits)	(N = 1040 visits)
	Percent Using	
Any	81.1	84.6
Body Awareness	37.2	37.7
Breathwork	28.4	25.2
Hot/Cold Therapy	29.0	33.2
Movement – any	39.2	44.6
Movement – active	26.6	35.1
Movement – passive	17.3	13.5
Movement – resisted	7.2	7.8
Visualization	8.3	8.7
Water Intake, Increase	48.4	56.1
Other (e.g., self-massage, relaxation)	5.6	3.4

licensure requirements. As of December, 2004, 33 states and the District of Columbia had passed legislation regulating massage practice. Of those, 21 require exactly 500 hours of training for licensure and 12 require between 570 and 1000 hours [8]. Licensure in both Connecticut and Washington requires 500 hours of training plus a passing

score on the national certification exam administered by the National Certification Board for Therapeutic Massage and Bodywork (NCBTMB). The latter is required for licensure in 24 states and is an option for licensure in another 5 states. In some states, including Massachusetts and California, massage regulations vary within the state (i.e.,

between townships, cities or counties). By contrast, the two provinces in Canada with regulatory requirements mandate that massage therapists receive 2500 hours (Ontario) or 3300 hours (British Columbia) of training.

Characteristics of the massage therapists

Our study describes an eclectic group of health professionals. Most massage therapists have taken continuing education training that includes both Western-oriented treatment techniques (e.g., neuromuscular therapy, myofascial release), and non-Western oriented treatment techniques (e.g., Reiki, meridian-based massage). Our finding that most massage therapists are white females with a median age around 40 is consistent with the findings of the only other published study of the characteristics of massage therapists, which surveyed 82 massage practices in the Boston area [9]. However, that study reported that the median length of practice was 7 years (compared to our 4 to 5 years), that providers received a median of 1000 hours of clinical training (compared to our 600 hours), and that practitioners saw a median of 20 patients per week (compared to our 10 to 15 visits per week). The other study used the telephone book in a single urban area to recruit massage therapists whereas we used state-wide licensing lists. Their restriction to an urban area, their recruitment methods and their lower response rate may have biased their sample toward busier practitioners.

Why patients visit massage therapists and evidence for efficacy

The majority of visits to massage therapists focused on musculoskeletal conditions, possibly reflecting the extensive use of massage by physical therapists for rehabilitation during the first half of the 20th century [10]. These are conditions for which Western medical care is often of limited value, which may explain why back and neck pain are the most common reasons why patients seek CAM care in general [2]. While massage as a relaxation technique has received abundant attention in the popular culture, we found that less than one-third of all visits to licensed massage therapists focused on non-illness care.

CAM is also commonly used for self-defined anxiety and depression [2,11]. Among such a group of respondents to a national survey, 5% and 2% of respondents said that they used massage therapy to treat these conditions, respectively [11]. Since massage therapists do not make diagnoses, no information is available on whether patients' visiting for anxiety and depression in our study actually had these disorders diagnosed by physicians.

We could find no other published studies presenting data on patients' reasons for visits to massage therapists from a large population-based sample of visits, so we do not know how comparable these results are. A survey of a rep-

resentative sample of US adults reported that massage therapy was one of the most common CAM therapies used for back problems, neck problems and fatigue [2]. While fatigue was not a commonly listed reason for visiting massage therapists in our study, some patients who received wellness care or care for anxiety or depression could conceivably have had fatigue as a symptom.

The use of massage for treating medical conditions has grown substantially since 1990 [2]. Although massage is one of the most popular forms of CAM care and has been found to have intriguing physiological effects (reviewed by Field [12]), few studies with moderate to large sample sizes have been conducted to evaluate its clinical effectiveness, even for most musculoskeletal conditions, conditions for which massage is frequently sought and for which conventional medicine has few good treatments. Three recent studies, including two that were well designed and had reasonable sample sizes, evaluated therapeutic massage as a treatment for subacute or chronic back pain and all three found positive results [13]. In addition, several studies of acupressure for back pain have also found positive results [14,15]. A recent Cochrane review of massage for back pain [16] concluded that "massage might be beneficial for patients with subacute and chronic non-specific back pain, especially when combined with exercises and education. More studies are needed to confirm these conclusions". While even fewer studies of massage have been conducted for other musculoskeletal pain conditions, there are small studies suggesting that massage may have benefits for patients with fibromyalgia [17], shoulder pain [18] and diffuse chronic pain [19], while Irnich [20] did not find massage effective for neck pain. Most of those studies lacked follow-up after the treatments had stopped, but Hasson found that the benefits of massage did not persist three months after the last treatment.

A recent meta-analysis of randomized trials of massage for various conditions found that massage had its greatest short-term benefits in reducing trait anxiety and depression, but no studies have evaluated these effects after the end of the treatment period [21]. A systematic review of massage for symptom relief in cancer patients found preliminary evidence that massage had short term benefits on psychological well-being and possibly anxiety [22], but called for additional studies to confirm and extend these findings.

The modest evidence base for massage therapy's clinically important effects provides physicians with little information for advising patients about its effectiveness for conditions other than subacute or chronic back pain. However, given the safety profile and preliminary evidence of effectiveness for back pain, physicians should feel comfortable

recommending massage for selected patients with musculoskeletal conditions and, possibly, for mild stress-related anxiety.

Care during visits to massage therapists

Massage therapists in Washington were more likely than those in Connecticut to use postural assessment and range of motion as assessments tools. Such differences likely reflect differences in training. In general, these differences in assessment were not associated with differences in the massage techniques emphasized by practitioners. Swedish, deep tissue, and trigger (pressure) point were by far the most popular techniques in both states. In their survey of massage therapists in Boston, Lee and Kemper [9] found similar results: 90% of practitioners reported using Swedish techniques and more than half reported using trigger point massage, sports massage, myofascial release, and aromatherapy.

A substantial minority of visits included techniques with a non-Western origin, such as some forms of energy work (e.g., Reiki) and meridian-based massage. In addition, this study as well as a previous study [23], found that massage therapists often emphasize self-care (e.g., drinking more water, movement, body awareness). Recommendations often include increasing the patients' awareness of how they are using their bodies coupled with exercises designed to enhance movement and posture, based on the assumption that many musculoskeletal conditions result from poor use of the body. While these recommendations have not been scientifically validated, they are likely to be safe and may enhance the patient's sense of well-being.

Safety of massage

In a review of the safety of massage therapy, Ernst [24] found 16 case reports and 4 case series in the biomedical literature over a 6 year period describing adverse effects associated with various forms of massage. However, only 3 reports (including 7 cases) described adverse effects that were probably attributable to treatments by massage therapists practicing Western forms of massage. These included the displacement of a ureteral stent, a hepatic hematoma after deep tissue massage [25] and the deterioration in hearing among patients who received neck massage. Ernst found three additional reports of adverse events associated with shiatsu, the most serious of which was retinal artery embolism with partial loss of vision after application of shiatsu to the upper neck. Although the rate of adverse effects over this period of time is unknown, in the US alone an estimated 113 million visits were made to massage therapists in 1997 [2], suggesting that serious adverse experiences due to massage are extremely rare.

Despite these scattered reports of adverse experiences, common forms of massage (e.g., Swedish, deep tissue, and neuromuscular) are considered very low risk, especially when massage is tailored appropriately to the individual (e.g., possible pressure or anatomic site restrictions), as massage therapists are commonly trained to do [10]. While it is still generally assumed that patients with deep vein thrombosis should not receive massage to the lower extremities, many previous contraindications, such as proscribing massage to patients with metastatic cancer, are no longer considered warranted. Massage therapists are trained not to massage anatomic sites containing localized conditions such as skin injuries or burns.

Communication between massage therapists and physicians

Massage therapy is an increasingly popular form of care used by patients who are often also being treated by a physician for the same condition. Nevertheless, we found that massage therapists and physicians rarely communicated with each other. Possible barriers to communication include our observation that most patients who see both a physician and a massage therapist for a particular condition were not referred to massage by the physician. Furthermore many massage therapists are not trained in charting language familiar to physicians, nor are they permitted to make "diagnoses". In addition, referring patients to massage therapists has not been part of the training of physicians. Finally, we suspect that most massage therapists, who are typically part-time solo practitioners, lack office staff and record systems to assist with administrative tasks, including routine (and written) communication with other care providers.

We believe that patients may benefit from increased communication between their physicians and massage therapists. Physicians can foster improved communication by asking patients about the care they are receiving from a massage therapist and learning about the treatment plan. Some patients will want to try massage therapy only after consultation with their physician. In these circumstances, physicians can use the framework recommended by Eisenberg [26] to guide patients through the process of selecting a well-trained, therapeutically-oriented massage therapist, jointly negotiating the treatment plan, and monitoring the effects of the treatment over time.

Conclusion

While substantial barriers to the full integration of massage therapy into the healthcare system remain (e.g., variability between states in licensure and practice regulations, lack of widespread insurance reimbursement, lack of solid studies on efficacy for many frequently-treated conditions, ambivalence on the part of massage therapists as to the advisability of mainstreaming)[27],

the information provided in this report should be informative to physicians and other healthcare providers interested in advising their patients about massage therapy.

Competing Interests

The author(s) declare that they have no competing interests.

Authors' contributions

KJS participated in the design of the overall project and the data analyses and drafted this manuscript. DCC was the PI on one of the grants funding the study, designed and directed the data collection and analysis of the overall project. JK helped design the data collection instruments. JE participated in the design of the overall project, directed the data collection, quality control, and participated in the analyses for this paper. AH directed the data collection for Connecticut. RD participated in the design of the overall project and data collection procedures and helped to obtain funding. DME was the PI on one of the grants funding the study and participated in the design of the overall project and data collection procedures. All authors read and approved the manuscript.

Additional material

Additional File 1

Massage Care Survey. The visit form used for each of the massage therapy visits

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Additional File 2

Glossary of Selected Massage Techniques. Definitions of selected massage techniques

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RESEARCH ARTICLE

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Meaning and challenges in the practice of multiple therapeutic massage modalities: a combined methods study

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Abstract

Background: Therapeutic massage and bodywork (TMB) practitioners are predominantly trained in programs that are not uniformly standardized, and in variable combinations of therapies. To date no studies have explored this variability in training and how this affects clinical practice.

Methods: Combined methods, consisting of a quantitative, population-based survey and qualitative interviews with practitioners trained in multiple therapies, were used to explore the training and practice of TMB practitioners in Alberta, Canada.

Results: Of the 5242 distributed surveys, 791 were returned (15.1%). Practitioners were predominantly female (91.7%), worked in a range of environments, primarily private (44.4%) and home clinics (35.4%), and were not significantly different from other surveyed massage therapist populations. Seventy-seven distinct TMB therapies were identified. Most practitioners were trained in two or more therapies (94.4%), with a median of 8 and range of 40 therapies. Training programs varied widely in number and type of TMB components, training length, or both. Nineteen interviews were conducted. Participants described highly variable training backgrounds, resulting in practitioners learning unique combinations of therapy techniques. All practitioners reported providing individualized patient treatment based on a responsive feedback process throughout practice that they described as being critical to appropriately address the needs of patients. They also felt that research treatment protocols were different from clinical practice because researchers do not usually sufficiently acknowledge the individualized nature of TMB care provision.

Conclusions: The training received, the number of therapies trained in, and the practice descriptors of TMB practitioners are all highly variable. In addition, clinical experience and continuing education may further alter or enhance treatment techniques. Practitioners individualize each patient's treatment through a highly adaptive process. Therefore, treatment provision is likely unique to each practitioner. These results may be of interest to researchers considering similar practice issues in other professions. The use of a combined-methods design effectively captured this complexity of TMB practice. TMB research needs to consider research approaches that can capture or adapt to the individualized nature of practice.

Background

Therapeutic massage bodywork (TMB) describes any treatment therapy that uses one or more massage techniques (kneading, stroking, pressing, vibrating, holding, etc.) of the soft tissues, viscera, and joints to achieve therapeutic effects. About 170 TMB therapies and variants (e.g., 3 different-differently named variants of Shiatsu)

have been recognized in North America, with most of those available in Canada [1]. Of those, 25 are proprietary and trademarked, such as Trager™ and Onsen™, with tightly controlled training standards. The remaining TMB therapies, including reflexology, acupressure, and massage therapy, have not been uniformly standardized with respect to their definitions, training components or competencies (which can vary in training length and content by jurisdiction or school decisions), or regulation [2]. Longer and more advanced training programs may include a diverse mixture of introductory and full

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competency TMB and non-TMB therapies. Of the TMB therapies, massage therapy (describing basic Swedish to advanced “therapeutic” or “remedial” massage therapy) is the most commonly available and researched form in North America. While massage therapy is regulated in three Canadian provinces (but not the province of this study) and many U.S. states, other TMB therapies are not.

The term “training program” in this article may refer to any of the following *types* of education: apprenticeship; introductions to courses; training courses (certificate programs of a few hours to hundreds of hours) focused on a single therapy; extensive education programs (certificate or diploma programs that run from about 50 hours to 3000 hours) that may include one or more types of therapies and which may also include introductions to additional therapies; or self-study. Many TMB therapies can be learned through more than one of those routes. Within these training programs, the practitioners learn the therapies’ *techniques*, the building blocks of therapy application.

Published TMB studies vary widely in terms of the specifics of the intervention(s) provided as well as the type of outcomes assessed. Often, the results of specific intervention studies do not extend beyond identifying general effects such as stress reduction or change in mood state, or are inconclusive. Few published TMB articles discuss whether the lack of conclusive results arises from using inadequate research methods or outcomes, conjecture, or presupposition caused by (1) lack of comprehension of the myriad forms of TMB; (2) assumptions regarding the definition of a given TMB therapy; or (3) not accommodating the normal adaptation of protocols (assessment and treatment) that are used in clinical TMB practice. An unpublished review of published TMB research by the principal investigator indicates that few studies: (1) report practitioner credentials, which may vary enormously; and (2) discuss the potential impact of practitioner variability on the results. Multiple-therapy training may potentially blur the identity of specific treatments, which causes practice under the name of a specific therapy to be blurred as well. Multiple-therapy training also may increase practitioner variability in treatment provision. Increasing understanding of the training and practice of TMB will facilitate the undertaking and interpretation of research in TMB. Therefore the purpose of this study was to: (1) document the scope of training and practice of manual therapy providers in Alberta, and (2) assess how training in, and provision of, multiple therapies may affect clinical practice. The broad focus of TMB in this study was used to capture information about how practitioners practice in real life.

Methods

Clinical practice is complex involving many inter-related factors. A combined methods design, using both

quantitative and qualitative methods of data collection and analysis in a single study, is ideally suited to capture this complexity [3]. A quantitative survey and semi-structured qualitative interviews were used to gather the data. The survey assessed the scope and length of practitioner training and basic practice characteristics (e.g. place, type of practice, focus of practice treatment and general population treated). Quantitative inquiry does not usually reveal *how* practitioners’ practice characteristics or cumulative training affect treatment provision and decision-making, and thus cannot be used to *understand* actual treatment provision from the practitioners’ perspectives. Therefore, qualitative interviews were used to supplement and enhance understanding of TMB practice. The interviews focused on: (1) how being trained in multiple therapies affects the practice and integration of treatments, and (2) whether practitioners who regularly combine techniques from multiple therapies can consciously isolate and dissociate specific techniques if asked to do so for a given research protocol.

The Conjoint Health Research Ethics Board at the University of Calgary granted ethics approval for this study. Personal identifiers have been removed or disguised to preserve anonymity.

Data Collection

Questionnaires

Questionnaire development began with a pilot project to assess Alberta TMB practitioners’ interest in participation in survey research of their professional practice [4]. Based on the results we developed a four-page questionnaire, informed by previously used massage therapist questionnaires [5-8]. The questionnaire sections comprise work environment descriptors, education and current practice, and practitioner demographics (copy available on request). The questionnaire went through two rounds of pretesting, with ten different TMB practitioners per round. The mailed questionnaire package included the questionnaire, a self-addressed stamped return envelope and a cover letter explaining the participation process, consent and privacy information, and a notice of a draw for a gift certificate for all practitioners returning their completed questionnaire. Consent to participate was implied if a completed survey was returned.

Alberta, Canada has a high number of TMB practitioners (> 5000), practicing a wide variety of TMB therapies, none of which are regulated. Twenty-two TMB organizations with members in Alberta were identified (list available on request). The four largest associations, the Natural Health Practitioners of Canada (NHPC), the Massage Therapist Association of Alberta (MTAA), the Alberta Registered Massage Therapists Society (ARMTS), and the Examining Board of Natural Medicine Practitioners (EBNMP) distributed the questionnaires on our

behalf. Members of the remaining smaller associations were contacted through their on-line membership directories. In this process 5233 eligible practitioners were identified. Additionally, urban and rural spas were contacted to identify practitioners not affiliated with any organization. Managers at three spas distributed questionnaires to 16 TMB providers whom they believed had no organizational affiliation. We contacted the spa managers to verify questionnaire distribution. Whenever possible, an email pre-notification of the questionnaire was sent to questionnaire recipients as well as two follow-up emails, at two weeks and four weeks after the questionnaire mail out. Of the 5249 surveys distributed, seven were returned as undeliverable, (final n = 5242).

Statistical analysis was done using PSAW Statistics 17.0.2 [9] or R (open-source computing language for statistics) [10].

Interviews

Practitioners providing more than one TMB therapy were invited to take part in an interview through completing and submitting the volunteer contact form provided in the questionnaire package. The form assessed participants' gender, municipality population (later categorized into urban, semi-urban, and rural), work environment (clinic type(s)), and the therapies they practiced. These categories were used to purposively select the interview participants and allow for maximum variation. The volunteering form mentioned recruiting twenty-five participants; two hundred eighty-three practitioners

volunteered for interviews. As male practitioners and non-massage therapists are a small minority in the total TMB population, they were oversampled to explore differences in perspectives possibly influenced by these characteristics. Each interviewed volunteer received a \$40 honorarium. Practitioners not interviewed were thanked for volunteering after interviewing was complete.

The interview guide (Table 1) was based on discussions of the principal investigator with TMB practitioners, as well as his personal experience as a multiple-therapy trained TMB practitioner. He conducted all interviews, after obtaining informed consent. The interviews were in-person or by phone and lasted between 30 and 70 minutes. They were audio recorded and transcribed verbatim. Field notes were made at the time of the interviews.

The computer program ATLAS.ti [11], was used to organize and assist content analysis of the qualitative data. Content analysis involves a straight reading of the data, comparing, organizing, and linking concepts and ideas (labelled with representative codes) within and across the interviews [12,13]. As analysis progresses, the coding scheme is progressively modified and refined. In our study, data analysis was ongoing throughout data collection. The interview guide was modified based on the first two interviews and further refined after the tenth, to better explore the developing material. Interviewing continued until data saturation was reached, the point at which new data did not contribute new ideas, concepts, or distinct variations to the findings [14].

Table 1 Interview Guide (final version)

1. Could you briefly describe the manual therapy trainings that you have taken? We'll get to the details of them later.
2. I'd like to get a little more depth on each of those now. Can we start with the first training you did. (prompt for reasons for that training, what it included, how long, practicum/cases studies and clinic time. Importance in practice now.)
3. What about the next trainings you took? (prompt for reasons on why chosen, etc. Importance in practice now.)
4. Did practice setting influence your choice of trainings?
5. Did the initial training influence your style or current approach to your work?
6. How do you use these therapies in your practice? (prompt for defining separation or mixing of therapies, any specific training on combining, attitudes, concerns, reasons, etc.)
7. How do you choose which therapies to use together? What are the influences on your decision to use one technique or therapy over another?
8. What forms of feedback do you use? How do you know when you are done in a specific area or using a specific technique/therapy?
9. What was your process for learning how to use therapies together like this?
10. Have some techniques or your experience changed the way you practice other techniques? Is this common for you? In what ways?
11. Do you think that your later training and experience has changed you such that you could no longer offer your modalities as purely as when you first learned them? Could you provide a pure therapy if you had to?
12. If you are combining therapies like this, how do you negotiate consent?
13. Given what we've been discussing, what do you think about the idea of using a set routine for therapy x in a research project. Does it matter that switching/blending therapies might make it hard to research or evaluate what you do? (If time, explore a bit more about the use of evidence or perceived barriers for use in their practice.)
14. Do you think that research and regulation are linked?
15. My final question is from a result in the questionnaire part of the project where I asked if you treat people who cannot perform activities of daily living without your treatments. I'd like to get a sense of your understanding of what "activities of daily living" means.
16. Is there anything else about the decisions, use, or training in therapies that you'd like me to know before we wrap up?

Results

Questionnaires

Response rate and Demographics

Seven hundred ninety-one completed questionnaires were returned, a 15.1% return rate, with 57% respondents from the NHPC, 14% from the MTAA, 6% from the ARMTS, and 24% who did not indicate their affiliation. Comments on returned questionnaires indicate that the response rate was impacted by the summer distribution and concerns that the questionnaire would be used for the purpose of regulating massage therapy in Alberta. Table 2 compares this survey's results to previously published demographic surveys of the Natural Health Practitioners of Canada (NHPC) (pan-Canada survey of the massage therapy members) [6], the College of Massage Therapists of Ontario (CMTO) (province of Ontario, Canada, Registered Massage Therapists survey) [5], and the American Massage Therapy Association (AMTA) (pan-U.S.A. survey of massage therapy members) [15]. Despite the lower response rate of the present survey, there were no significant differences between the demographics in the surveys' samples.

TMB therapies identified

Respondents were trained in 62 out of the 65 therapies listed in the questionnaire (no practitioners of Aston Patterning, Looyen Work, or Mitzvah Technique). An additional 15 unique TMB therapies, and 36 non-TMB therapies (e.g., energy work, shamanism, counselling, herbology, movement and stretching therapies, acupuncture)

were identified in the 'other' category. Of the total 77 TMB therapies, 22 (Table 3) have been taught to more than 10% of the respondents (complete list of TMB therapies practiced available on request).

TMB Training

Most practitioners (94.4%) are trained in more than one therapy, with a range of 1 to 40 therapies, and a median of 8 therapies (Figure 1). Of the 77 therapies identified, practitioners indicated that for 51 of those therapies, the training programs usually incorporated one or more (median of 3, range 1 to 17) additional therapies. The correlation ($r = 0.115$, $p = 0.001$) between number of years in practice and number of therapies trained in is low.

Training programs

Participants listed a total of 2,477 training programs with one or more TMB components. Length of the training programs varied widely, with no standard length for non-trademarked therapies. Their minimum training length ranged from 1 to 50 hours, with maximum hours ranging from 100 to 4,000. The shorter lengths for some therapies may have been introductory courses providing rudimentary training in some of the therapies' techniques; the questionnaire did not address the extent and depth of a training program. Most trademarked therapies had narrow ranges of training program length, like Hellerwork Structural Integration™ with a range of 1200-1250 hours.

On the questionnaire, respondents provided detailed therapy components for 856 training programs that

Table 2 Demographic characteristics, and comparison to past surveys

Question	Category	This Survey	NHPC [6]	CMTO [5]	AMTA [15]	χ^2 (df), significance
Practitioner gender (%)	Male	8.3	14.1	17	15	3.562 (3), $p < 0.313$
	Female	91.7	85.9	83	85	
Years in practice (mean years)		8.3 (s.d. 6.2) (range: 0 to 37 yrs)	NP*	5.5	7	0.566 (2), $p = 0.753$
Mean Hours Worked with client (mean hours)		20.5 (sd: 11.6, range 2 to 80)	18.2	18.9	20	0.168 (3) $p = 0.983$
Top three work settings: Total/Primary** (%)	Private clinic	44.0/32.2	41.8/ NP*	46/ NP*	NC*	3.59(4), $p = 0.464$
	Home clinic	34.3/29.7	42.2/ NP*	25/ NP*	NC*	
	Outcalls	29.7/8.6	32.1/ NP*	29/ NP*	NC*	
Municipality size (%)	Rural/small town settings (under 50,000)	38.8	NC*	NP*	NP*	z test of proportions: $z = 1.383$; $p = 0.168$
	Small cities (50,000 to 100,000)	15.3	NC*	NP*	NP*	
	Cities over 100,000 population	45.8	49.6	NP*	NP*	
Return rate (%)		15.1	39.4***	18.2	NP*	14.437 (2); $p < 0.001$

* NP = information not published; NC = information was published, but the categories were not compatible. ** "Total" is based on all places of work per practitioner, "primary" is a reduction to their single place of the most work. ***included follow-up phone calls to increase participation.

Table 3 TMBs identified during the project practiced by 10% or more of respondents

massage therapy (Western)	89.40%	TMJ therapy (temporomandibular joint therapy)	35.7
Swedish/spa massage	63.2	hot/cold stones massage	30.1
trigger point therapy	58.4	Craniosacral™	27.3
maternal/pregnancy massage	52.7	or cranial sacral therapy	
sports massage	45.9	aromatherapy	22.1
chair massage	45.4	acupressure	21.9
myofascial release	44.5	geriatric massage	15.5
lymphatic drainage massage or manual lymph drainage	43.2	pædiatric massage	15.0
		shiatsu	12.3
hydrotherapy	43.1	Neuromuscular Technique	12.0
reflexology	38.2	Visceral Manipulation™	11.5
PNF (proprio-neuromuscular facilitation)	36.4	Thai Massage/Thai yoga/nuad bo-ram	10.6

included two or more TMB therapies. Massage therapy training programs were the most common (504 out of 856), with a median of four additional therapies in the training programs. For 641 of the 856 training programs, training program length was provided, which allowed checking for possible similar training programs between practitioners. Of those 641 training programs, 622 were unique programs.

Fifty-nine different TMB therapies were identified within the 856 multiple therapy training programs. Of the 12 therapies that appear in 10% or more of the training programs (Table 4), 10 are specialized techniques associated with the practice of massage therapy, either specific approaches (e.g., myofascial release, hydrotherapy) or for specific populations (e.g., sports massage, maternal massage).

Interviews

The 19 interviewees indicated that they practiced between two and ten therapies on their volunteer form. During the interviews most practitioners described being

trained in a greater number of therapies. Many participants also described taking introductory courses for additional therapies in which techniques from those therapies are sampled, as well as taking training in non-TMB therapies. Descriptors of the participants are included in Table 5. Number of years in practice was not a selection criterion for being interviewed, but it is included in Table 5 to show the range of experience covered by the participants.

Interview participants expressed complex and widely different responses to the interview questions. Four key themes emerged from the interviews: 1) the complexity of career and training paths; 2) all treatment is individualized; 3) the practice of therapies evolves over time; and 4) clinical practice and research treatment protocols are different. The first three have components that are relevant to describing the training and practice of TMB practitioners. The fourth theme describes why practitioners

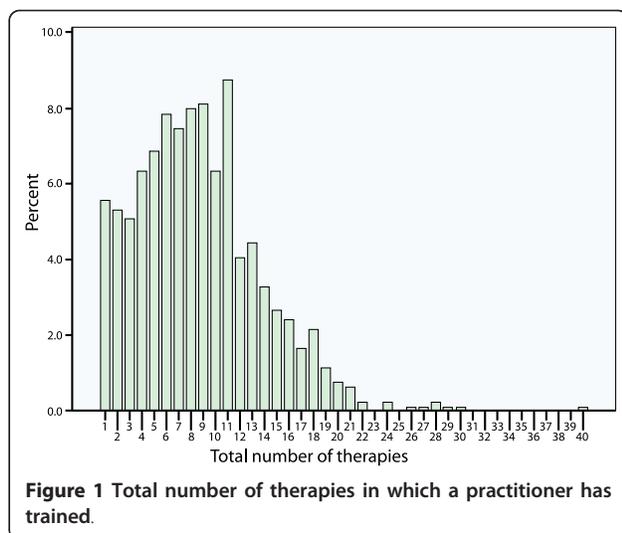


Figure 1 Total number of therapies in which a practitioner has trained.

Table 4 Additional TMB components included in more than 10% of TMB training programs

TMB Training Component	% of TMB Trainings Including the Component
Trigger point therapy*	38.6
Swedish/spa massage*	35.5
maternal/pregnancy massage	31.4
hydrotherapy*	28.5
chair massage	28.3
sports massage	26.3
manual lymph drainage	23.8
myofascial release	23.7
PNF	22.1
TMJ therapy	20.7
aromatherapy*	11.9
acupressure	11.3

*expected as part of a massage therapy training program, based on a review of massage therapy schools and common competency documents

Table 5 Interview participant characteristics, including reported therapies trained in

Gender	F = 15; M = 4
Work setting (n, not exclusive)	Shared clinic (4), private clinic (6), home clinic (4), salon (1), fitness club (1), spa (4), chiropractic clinic (2), medical clinic (1), outcalls (1)
Years in practice	3 to > 30 years
Number of TMB therapies trained in (including TMB course components)	Mean 8, range 1 - 16
Non-massage therapists	2; a third was trained in but did not practice massage therapy
Minimum number of introductory courses to therapies*	Mean 2, range 0 - 5
Number who also practice non-TMB therapies** (n)	12

* if therapists indicated generic introductory courses (e.g., "stuff at conferences"), but not the quantity, they were conservatively counted as one course.

**includes devices, bio-energy treatments (e.g., Reiki), nutrition, ingested/topical products, systems approaches (shamanism, counselling).

reference their clinical experience to distinguish between clinical practice and research-protocol treatments. Interview results from the purposefully oversampled male and non-massage therapist populations compared to the interview results of females and massage therapists, respectively, did not reveal any differences.

Theme 1: Career and training paths are complex

A number of career and training factors emerged in the interviews related to: the practitioner's vision of their work before they began their training; the type of practice environment they desired; the availability, time, and cost of training programs; and the pressures that affected subsequent training choices. Participants followed training pathways that were quite variable right from the start of their careers.

Entry into a TMB profession sometimes came from a long-time desire, or the realization that they were finally coming "home" to the profession, often after receiving some TMB or taking an introductory course. For others, it was a progression from previous employment, or an opportunity that enabled a switch into a new profession.

"My nurse friend said..., 'You really are in the wrong profession. ... you should do it [massage]' and got me an interview with the school. And when I did my first body I knew I had come home." (Practitioner 9)

Some practitioners had pre-conceived ideas of what the style of their first or primary training should be, e.g., focused on injury treatment and prevention relative to general health and well-being treatments, focused on one or a few specific, related TMB therapies, or wanting a program that was "holistic," incorporating multiple therapies and perspectives. Others instead chose their training programs for pragmatic reasons such as availability or because they could accommodate the training program schedule.

"I found this program in Medicine Hat that you could get the reflexology along with the massage

and a whole whack of other stuff, and decided I would give it a try." (Practitioner 3)

Many training programs incorporate two or more therapies. Several practitioners talked about the inclusion of some "extra" introductory versions of therapies added to their primary therapy training program(s), giving them a couple of extra techniques, or a "taster" of the other therapies that they could then pursue at a later date. They often incorporate these introductory courses' techniques into their daily practices, but do not practice under the name of those therapies.

All the interviewed practitioners had taken more training after completing their initial training program. For all of them, the trend was to train in an increasingly diverse and often complex set of therapies over time. They spoke of these training choices as pursuing ideas and therapies of personal interest. This could be to refine or expand skills within their current treatment framework (e.g., remedial service), or to branch out to incorporate completely new therapy forms.

"I often took classes because I felt I needed more, 'cause I didn't have everything. When I first took massage therapy, I was ready to heal the world... And it doesn't. I mean, it's a really nice thing to do, but massage works on muscle, and muscle isn't the only cause of people's pain and dysfunction in this world." (Practitioner 10)

These additional therapies are often referred to as added "tools in the toolbox." The importance of the toolbox concept became clear as practitioners talked about how and why each treatment they provide is individualized (see also Theme 2 below).

"... and then I just go through my tool kit and say okay this is what would work best for that. That's how I fit things together." (Practitioner 4)

Theme 2: All treatment is individualized

The drawing on tools—the many therapies and techniques practitioners have learned—is an important process of individualizing a patient's treatment. Practitioners described three increasing levels of specificity in the individualization of treatment delivery: 1) the *initial treatment plan*; 2) *treatment plan variation*; and 3) *within-therapy variation*.

At the first level, an initial *treatment plan* is developed based on the treatment goals, which come from initial assessments (visual, testing, palpation) as well as dialogue with the clients about their goals, needs, and experiences. A treatment plan outlines the therapeutic intent(s) and treatment(s) for the current session and will map out the planned treatment progression for subsequent sessions, though a reassessment will occur at the start of each subsequent session.

“I start picking up the cues about how they [the patients] are functioning right from the beginning... whatever levels they're describing at: 'My shoulder is painful.' 'It happens when I'm doing these particular things.' ... I watch how their body is in space and I palpate to see what that feels like as they move those parts of the body that we're paying attention to at any particular time and I have certain set of movement check-ins that I do with people... then the next level that I work with, I check in with touch to find out exactly what is going on [in the person's structure]...” (Practitioner 14)

The second level of individualization is *treatment plan variation*, which occurs throughout every treatment session. Complex feedback loops based on palpation (tissue texture, temperature, pliability or tone), visual cues (pain, motion or tension changes, breath patterns), verbal feedback from patients, intuition, and the pressure of time frame are used to gauge the progress of the treatment at any moment. These cues inform awareness of the treatment progress and choices at that moment, suggesting either to continue, to change therapy techniques, or move to a different therapy as they continue to work. They may also pause treatment to do a more deliberate reassessment before continuing treatment. All interviewees, regardless of whether they kept to only one therapy during a treatment (two interviewees) or integrated several therapies into the treatment plan (17 interviewees), described modifying their treatment plans based on in-the-moment assessment.

“If I've been working there for a while and I'm not getting any releases there, then I go from the microscopic, you know, looking at that hip for example, and I broaden my scope and go to macroscopic, and I start looking at what's going on in the low back,

what's going on in the pelvis area—on the front of the pelvis—that could be affecting what's going on in the hip. Or I might need to go down into the leg. So just broadening my scope, and usually the body will draw me to the next place that needs to be addressed.” (Practitioner 12)

“Sometimes I've kicked in three different things back-to-back. Depends on how the body is releasing.” (Practitioner 10)

The final layer of individualizing is *within-therapy variation*. Occurring at any moment during a session, this may be a spontaneous or planned shift in a particular therapy's technique, or the integration of another therapy's technique within the therapy the practitioner is currently applying so as to better address the perceived treatment need. This level includes the described variations on “listening to the hands,” where practitioners let their hands spontaneously react to tissue cues.

“The more I learn the more I know I don't know. (laughs) My hands really have to ... [interrupting herself] I listen to my hands. My hands tell me where to go next, and they don't care what definition the technique is listed under.” (Practitioner 10)

Practitioners consider the strength and healing possibilities in their work to be at the second and third levels of individualizing treatment.

“Palpation is probably the most paramount ingredient to use during the course of the treatment. You're evaluating throughout the course of treatment. You're evaluating the tissue, the texture of the tone, everything like that in the muscle, determining how it's responding.” (Practitioner 5)

Some had critical words for practitioners who would tend to practice using routine patterns with little adaptation or individualizing.

“I mean, you know this is the most important thing actually. I mean if you just follow a stupid protocol, you know we just call these people the skin pushers.” (Practitioner 11)

The importance of this complex, adaptive treatment process based on continual feedback from multiple information sources was echoed in ideas expressed about TMB research based on restrictive protocols compared to clinical practice (Theme 4).

Theme 3: Therapy provision will evolve over time

Discussions of within-therapy variation of technique led to a critical question of exploration: does a given therapy,

as practiced, change over time from the accumulating experience of a practitioner, including influences from the multiple-therapy integration that happens as part of the process of individualizing patient care? The practitioners expressed two primary, contrary opinions about this. Most asserted that it would be easy to provide a therapy uninfluenced by techniques from other therapies they had learned, or at least with disciplined focus they could do so.

“I think definitely who I am today, all of that has influenced me. But I also know that if somebody said to me, ‘I want a straight fascial work’ or ‘I want a straight sport massage work’ or ‘I want a straight Swedish massage work’, I could do that. I could pull them apart and still do them.” (Practitioner 1)

However, they all acknowledged that practice becomes refined due to practice experience, exposure to different therapy techniques over time, or both, making every therapist’s application unique. As Practitioner 11 put it, referring to the idea of a generic practitioner practicing a pure, as-trained therapy, “they could, but you know they haven’t learned then.” Several highly self-reflective practitioners speculated that no one fundamentally practices an unaltered therapy. They postulated that any TMB application is likely permanently altered due to practice experience and alteration of perception or techniques from multiple TMB training programs, even if that alteration is not conscious.

“...my hands just can’t operate at the gross [basic] level they used to for massage. When I’m doing a massage... sometimes I’m feeling the lymph and sometimes I’m feeling the energy... some type of an energy cyst, from the Craniosacral perspective. Or I’m feeling that the fluids are not moving from the lymphatic drainage [perspective].” (Practitioner 10)

Theme 4: Clinical practice and research treatment protocols are different

The individualization process underlies the fourth theme, *clinical practice treatments are different from the treatment protocols used in research*. Based on deduction from published research, practitioners insist there is a distinction between the two, which they dichotomize as either individualized clinical practice or pre-defined, restrictive research treatment protocols.

“Well, I think research is research and practice is practice. Research, you’re setting out to find a specific thing. You’re not trying to ...well, you *are* trying to help someone, but you’re more about how this particular thing affects that person or that pathology or

that injury. So you have to be consistent... you can’t change it, or how do you know that it wasn’t one of the other things, right?

Practice is a whole different thing. You’re not there to prove to the client that this technique works. It either does or it doesn’t, and if it doesn’t you need to move onto something else, ‘cause it’s different for every person. So you’re treating the person, whereas with research you’re researching.” (Practitioner 15)

Underlying these comments is a shared practitioner wariness of the clinical usefulness of research results. As described above, clinical practice treatment normally would be individualized to maximize therapeutic outcome. Commonly, applying a research protocol or using a single approach to a symptom is highly constrained; practitioners may not consider such a treatment process as appropriately responsive to what was occurring in the body. Therefore the relevance of treatments in research seems removed from everyday clinical practice.

“I think that when I’ve seen the early research that’s been done with short stroke and all that kind of stuff for tension and pain management, I think that they are flawed because they do not take in [to account] tissue response. ...You would have to do proper assessment of the appropriateness of your approach for the person. As long as you provide massage or any other technique only as a set routine, you always miss the broader lived experience, the organism’s response to what you’re doing. There necessarily needs to be the capacity for ongoing assessment and adjustment of the treatment approach to the person’s response to the treatment as part of getting a proper reading of whether it’s doing what it should be doing.” (Practitioner 14)

Discussion

The results of this study present a complex view of the training and practice within the TMB professions, effectively revealed through the use of combined methods. Therapy training programs are highly variable in length and content, and most practitioners take additional education, resulting in few practicing with similar skill sets. The process of individualizing patient treatment explains how the myriad combinations of therapies are applied in clinical practice.

Given that manual therapies seem highly changeable, adaptable, and evolve differently with each practitioner, the question of what the application of a single therapy during a therapeutic session represents is a critical one that warrants further exploration with the TMB professions. Considering this study’s combined quantitative and

qualitative results reveals that almost all TMB practitioners 1) have training in multiple therapies, 2) use unique combinations of therapies and have unique experience, and 3) preferentially practice by individualizing treatment. This leads to the conclusion that most TMB treatments, even provided within the framework of a specific therapy, will be unique to the practitioner.

The number of therapies trained in may be under-reported

There was a possible bias to under-reporting the number of therapies taught in multiple-therapy training programs in this survey. Some therapists reported that their two- to three-year education contained only a single therapy: massage therapy. However, the Canadian standard and published school curricula of these long, non-standardized programs indicate they provide training in multiple therapies. This could indicate that there is greater under-reporting than is recognized within the data. In addition, the number of therapies in which practitioners receive training will not represent all therapies used in practice. Some of the interviewed practitioners asked whether to discuss “introductions” to therapies within training programs or as part of continuing education opportunities, and some talked about self-education. As this training could affect practice, the potential impact was explored. The practitioners explained that while they may regularly use these additionally learned techniques during their practice, they do not consider themselves as having formally learned the therapy, and therefore did not report them in the survey question regarding the therapies in which they are trained. Hence the reported number of therapies the practitioners are trained in may actually under-represent the true total number of therapies or therapy techniques being used in practice.

Skill sets vary widely between practitioners

The questionnaire results indicate high variability in program length and limited duplication in the multiple-therapy programs, implying that very few therapies have similar training programs. Few practitioners limit themselves to learning only one or two therapies. Additionally, most TMB practitioner associations require on-going education and upgrading of skills, which encourages learning a wide variety of therapies and techniques (e.g., NHPC, CMTO, Reflexology Association of Canada [16-18]). On their websites, many associations provide listings and internet links to a broad range of TMB training courses (e.g., NHPC, MTAA [19,20]). Over time, it seems likely that even practitioners of standardized therapies will acquire additional therapies and techniques and refine their skills through experience, therefore changing their techniques and their experience of applying therapies. Thus, while recent graduates of a program may

acquire similar skills and techniques, through experience and later training, very divergent skill sets and idiosyncratic practice will evolve.

Of critical importance in the interviews was the disagreement between practitioners regarding the provision of pure “as trained” therapies. While some practitioners believed they could provide an “as trained” therapy, they also discussed how they had learned from experience, and most described having “refined” or “enhanced” their therapeutic skills via new awareness from other therapies’ techniques or skills. This accords with the strong comments from other practitioners that the practice of therapies is likely irrevocably changed from practice experience and learning new therapies. It is unlikely that a researcher will find multiple practitioners who all practice any therapy in precisely the same way, or may be able to apply a protocol in precisely the same way. There is little mention of these issues in the TMB literature. The reporting of practitioner qualifications and expertise, along with intervention standardization and tailoring, are identified explicitly in the 2008 Consolidated Standards of Reporting Trials (CONSORT) Statement extension for Non-Pharmacological Treatment Interventions (internationally adopted publication guidelines for clinical trials) [21]. This inclusion indicates a growing awareness that practitioner variability may be affecting clinical trial results of many healthcare procedures, such as, “surgery, technical procedures (for example, angioplasty), implanted devices (for example, pacemakers), nonimplantable devices, rehabilitation, physiotherapy, behavioral therapy, psychotherapy, and complementary and alternative medicine” (page W60 [21]).

The contrast of research and practice treatments

This lack of treatment process uniformity should be accommodated within a research project design or analysis for any therapy where variability in practitioner experience or cross-training is common. Practitioners made strong statements about the perceived differences between clinical practice treatments and those provided during the research process. They do not seem to value research results in practice, as it does not reflect how their therapies are *applied* in practice, implying that current research methods and knowledge translation are failing the TMB community. This phenomenon has been addressed by Schön [22], who reflects on the “artistry” of practice versus research in reflective-responsive professions, including similar health professions such as nursing and physiotherapy [22-24]. Given that traditional clinical trial research methods do not seem to effectively capture clinical practice, effectiveness and comparative research methods that may use practice-based adaptive protocols, and observational research, seem most likely to accommodate the realities of clinical practice as revealed in this study [25-27].

Study limitations

Both the qualitative and quantitative data were internally consistent, and triangulated well. The primary limitation of this study is the survey's low response rate and therefore whether the survey's results are generalizable to TMB populations in general. A low response rate was somewhat expected given (1) the respondents' comments as described in the results section (summer distribution and concern regarding use of the survey results to influence massage therapy regulation), (2) the pilot project result that 23.7% of participants were not interested in or did not have the time to complete surveys longer than two pages, and (3) feedback from three North American massage therapy organization executives that "if you are getting a 15% response rate, you're doing well in this profession." Of importance, there is high concurrence between the demographics from different surveys (Table 2), suggesting similarity to other North American TMB populations.

A second concern is whether the practitioners responding to this survey differ from TMB practitioners in general, i.e., if non-respondents train in more, fewer, or different therapies, or have very different work habits or environments. The NHPC Membership, Credentialing, and Education Manager, Laura Finley (personal communication, June 1, 2011), confirmed that the survey results correspond to the NHPC Alberta TMB membership as well as its pan-Canada TMB membership regarding: (1) the vast majority of practitioners train in multiple programs and therapies, especially if the components of education programs and continuing education are considered, and (2) there is high variability in the training programs and in what therapies practitioners choose to learn. As well, the extreme variability within the survey practice and training program data suggests that a wide variety of practice variations have been captured in this survey. The interview data from the nineteen diverse practitioners were also highly congruent with the survey data. Therefore, even if a greater response rate had been achieved, the conclusions here would remain important considerations for research in the TMB professions.

Conclusions

The training programs, number of therapies trained in, and practice descriptors of TMB practitioners are all highly variable. Further, with clinical experience and continuing education, therapy techniques will likely alter or will be enhanced, increasing the degree of individualized client care possible during practice. That on-going individualization process, at commencement and during treatment, is an essential element of a practitioner's practice.

Implications for research

A concern arising from the data is that projects based on single therapy, non-adaptive protocols will likely

continue to produce non-conclusive results for all but the most general of outcome effects such as reduction of stress or depression (two common positive TMB research outcomes) because of the high practitioner variability in training and experience, and the possibility that the strength of TMB treatments comes from their adaptive process. Therefore, TMB research design and results interpretation should include careful consideration of the limitations of implementing results from study designs that do not reflect the very complex reality of clinical practice. It also seems likely that issues of training, experience, and practice are not limited to the TMB professions. Complex systems methodology, based on mixed methods with their ability to capture the complex outcomes inherent in the practice of TMB, is recommended for TMB research. Comparative effectiveness research designs may best capture TMB treatment complexity, especially pragmatic trials and similar practice-based research methods that replicate daily practice within a controlled framework [25,26]. Preference trials, and observational research could also be used. These research designs have the potential to focus on real life practice and to capture the complexity of treatment packages.

List of Abbreviations

AMTA: American Massage Therapy Association; ARMTS: Alberta Registered Massage Therapists Society; CMTO: College of Massage Therapists of Ontario; CONSORT: Consolidated Standards of Reporting Trials; EBNMP: Examining Board of Natural Medicine Practitioners; MTAA: Massage Therapist Association of Alberta; NHPC: Natural Health Practitioners of Canada; TMB: therapeutic massage bodywork.

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Authors' contributions

AP conceived of the study, participated in its design, carried out the data collection and primary analysis, and drafted the manuscript as part of his doctoral thesis. MJV participated in the design, oversaw the progress of the data collection, reviewed the data analysis, and helped draft the manuscript. HB and SP participated in designing the project, and editing manuscript drafts. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

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