How should interventions to treat hand oedema be delivered? An online Delphi Consensus Method.

Short title: A Delphi study on hand oedema.

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Abstract

Introduction

Hand oedema (swelling) is a common consequence of hand trauma or surgery but there is little agreement on how interventions to treat hand oedema should be delivered in practice. The purpose of this study was to engage a group of self-identified hand therapy experts to develop consensus on how four commonly used oedema management treatments should be implemented, which could be used in clinical practice or future clinical trials.

Method

A web-based Delphi study was conducted with eight volunteer hand therapists who met the pre-defined eligibility criteria for an 'expert' and were members of the British Association of Hand Therapists (BAHT). An a priori level of agreement was set at 75%. Interventions requiring consensus were decided on as a result of a previous national survey of practice and consisted of compression, elevation, massage and kinesiology tape.

Results

A total of 25 items were discussed across 3 rounds. This ranged from 23 items in round 1, to three items in round 3. In round 1, consensus was reached on 7/23 (30%) items. The required 75% consensus was reached on 14 items in round 2 and 1/3 items achieved consensus in round 3. Massage was the only treatment that required a third round.

Discussion

Consensus was reached on intervention description for three of the four modalities including the materials used (what), method of application including duration and frequency (when and how much) and tailoring or modifications. Two questions relating

to massage did not reach the required consensus threshold and a majority agreement was accepted. The small panel size is a limitation and may affect the credibility of the consensus reached.

Keywords

hand swelling, massage, compression, elevation, kinesiology.

INTRODUCTION

Oedema is a normal physiological reaction to an injury. However, oedema in the hand has the potential to impact joint and soft tissue mobility, function, strength and aesthetics. For these reasons, managing oedema is a key component of a therapists' treatment of hand injuries designed to restore joint movement, soft tissue glide and functional use. Several treatment modalities to reduce hand oedema are available. Often a 'multi-modal' approach is used, meaning several treatment modalities are combined; for example, elevation and compression, or elevation, compression and massage. A recent systematic review of the existing literature identified 16 different oedema management interventions [1]. There was no standardisation of interventions across studies, with variations observed in the terminology used, frequency, duration and technique. There is little consensus in the literature regarding how these treatment modalities are applied even in so-called 'standard' interventions [1].

This lack of consensus was also reflected in the results of a previous online survey of UK hand therapy practice of oedema management [2], with disparities between clinicians in the advice they give to patients on managing their oedema. In addition, the

limited research evidence to support one treatment over another indicated a need to develop consensus on the content and implementation of oedema management. A standardised ‘one size fits all’ approach to oedema management may not be feasible, or desirable by clinicians. However, the wide variation in how these are implemented in practice needs addressing so they can be replicated in the context of a clinical trial whilst allowing clinicians to tailor the treatment to the individual needs of the patient.

The purpose of this study was to engage a group of self-identified hand therapy experts to obtain consensus on how four commonly used treatment modalities for hand oedema should be delivered. Although 16 oedema management interventions were identified in the literature [1], this study focused on four of these interventions. Three of these interventions, that is compression, elevation and massage were identified as the most commonly used treatments for sub-acute hand oedema in a survey of UK members of the British Association of Hand Therapists (BAHT) in 2015/2016 [2]. Kinesiology tape was also included as it was a novel intervention growing in popularity amongst therapists and patients at the time of this study, but it also had many variations in how it was implemented as a treatment for hand oedema.

METHODS

The Delphi method is a consensus development approach, which facilitates a group through an iterative multi-stage process to transform individual opinion into group consensus [3-5]. It has been widely used in nursing and midwifery research [6-11] and is a useful technique for situations where individual judgements must be tapped and

combined to address a lack of agreement or incomplete state of knowledge [12-13]. The Delphi method was chosen for this study due to its benefits in terms of cost, time, convenience and anonymity of experts. It was designed and reported according to the Conducting and Reporting Delphi Studies (CREDES) recommendations [14].

The objective of this Delphi study was to develop consensus on how commonly used treatments for oedema, namely elevation, massage, compression and kinesiology tape, should be delivered, including frequency, duration, safety and contraindications.

Expert panel

As this Delphi method focused on UK practice, the British Association of Hand Therapists (BAHT) was the most appropriate special interest group to approach for experts.

Criteria for therapists to be included as an expert were at least 10 years working in hand therapy and/or upper limb neurology services (regardless of their banding/grade), working currently as a hand therapist (full or part-time, NHS, primary care, community or private sector) and treating at least five patients per week with sub-acute oedema post-trauma. Eligible participants also had to feel confident to discuss and justify oedema management interventions and share their clinical reasoning for these interventions. In this study experts were either occupational therapists or physiotherapists specializing in hand therapy from a range of clinical settings and with varying levels of experience of using hand oedema interventions. In Delphi studies heterogeneity is preferred to homogeneity, to encompass all relevant aspects of the topic from different viewpoints

[15]. Hong et al.[16] advise the need for the full range of stakeholders to be included in a panel, as their differing opinions will enrich the procedure. In this case, differences in professional background, clinical setting, years of experience and place of work were all factors which could create differences in opinion within the group. However, their shared specialty in hand therapy could increase the likelihood of homogeneity. We defined ‘stakeholders’ as being clinicians with relevant skills and knowledge who regularly use oedema treatments. Jones and Hunter [17] recommend that studies that are concerned with clinical interventions should use specialists in that area.

Members who completed a previous online survey of oedema management practice were informed of the planned Delphi consensus study and were invited to contact the first author via email if they wished to take part. Although a purposive sampling technique was employed for the online survey which preceded this Delphi by targeting BAHT members, a voluntary response sample was used for this Delphi. Based on the number of BAHT members who accessed the online survey (n=156) we anticipated 10-20 members may volunteer to take part.

There is no agreement regarding the ideal size for a panel or the sampling techniques used to recruit experts to a panel [19]. More recently, Okali and Pawlowski [20] report that the literature recommends between 10 and 18 experts for a Delphi panel.

Online Delphi questionnaire

The content of the online questionnaire for the first round of this Delphi study was developed based on the results of a previous online UK survey on oedema management completed by BAHT members.

This internet-mediated Delphi study was completed using the gold package of SurveyMonkey® which is an online survey development, cloud-based, password-protected survey platform. The survey responses were submitted anonymously with no personal identifiable information required from the respondent.

Ethics and consent

Ethical approval was granted from the University of East Anglia's Faculty of Medicine and Health Sciences Research Ethics Committee. All clinicians volunteering to take part in the Delphi were e-mailed with a participant information sheet (PIS), eligibility criteria of an 'expert' and the consent form which was signed and returned electronically to the first author.

Piloting

Each round of the Delphi was piloted with the second author (CJH) to check for any errors and to ensure the question-skip logic and functions of the survey directed respondents to the appropriate page/section of the survey. Following any amendments, a final check was made before the link was emailed to participants. Okali and Pawlowski [20] support the use of pre-testing, stating it is an important reliability assurance for the Delphi. However, piloting test-retest reliability is not relevant in a

Delphi process, since researchers expect the respondents to revise their responses in light of the feedback from previous rounds.

Delphi rounds

Each round of questions was designed to elicit specific details on how each modality should be used, including the frequency, duration, method, precautions, contraindications and instructions given to patients. Responses from each round were used to inform the content of the subsequent round. Experts were given one month in which to complete and return their responses to each round, with a reminder e-mail being sent after 2 weeks.

There is a little scientific rationale for the optimal number of rounds with most recommending two to three rounds [21]. Whilst two or more rounds are likely to result in convergence of individual judgements, it is unclear whether this increases the accuracy of the group's decision making [22]. Others [23] report that a classic Delphi technique has four rounds, however, this included an initial survey of responses which helped to form the options which were subsequently iteratively rated, in the same way, that the BAHT survey assisted in the development of the questions in round 1. However, to reduce responder fatigue, evidence has shown either two or three rounds are preferred [24-26]. The number of rounds may also depend on what criterion has been used to define 'consensus.' It was anticipated that at least two rounds would be used to seek consensus on the delivery of different oedema treatment modalities, due to the complexity of the topic (modality, mode of delivery, duration and frequency).

Definition and attainment of consensus

There is no agreed threshold on what constitutes consensus in a Delphi round. A 75% agreement level was set *a priori* for this study to ensure a definite majority agreement.

Delphi questions

Questions focused on four commonly used oedema management interventions; compression, elevation, massage and kinesiology tape. Each modality was broken down to establish the ‘key components’ through questions which asked about the frequency, duration, method, techniques, safety precautions and contraindications. For compression, experts were asked when and for how long an oedema glove should be used and under what circumstances or activities the glove should be taken off. Experts were asked about how a limb should be elevated and the frequency, duration and contraindications to limb elevation. For massage, experts were asked about the style or technique of massage (i.e “retrograde” or “effleurage”), which direction massage should be done (i.e distal to proximal or proximal to distal then distal to proximal), the amount of pressure applied (i.e light or firm) and the frequency it should be completed. With regards to kinesiology tape, experts were initially asked if they used the technique or had received any training on it, only those experts who answered yes to this question were directed to further questions on the topic. Further questions comprised the shape in which the tape should be cut, whether the colour of tape influenced its outcome, how and when it should be applied/removed and under what tension and any contraindications or precautions for using the tape.

Data analysis

Agreement with statements was obtained by asking the experts to i) choose one option only from a list/all that apply (depending on the question) which best describes how they would implement a particular treatment; ii) rate their level of agreement with a statement i.e agreeing in full, partly agreeing with suggested alterations, or disagreeing and suggesting an alternative statement; and iii) add additional comments or justification. SurveyMonkey® collated and analysed the responses and presented the results in the percentage agreement for the options in each question. Where experts suggested alternative wordings to statements commonalities were sought between responses and presented as a new statement in the following round. The wording used by the experts was used verbatim as much as possible when analysing and feeding back the results, as recommended by Hasson et al [3]. Additional comments made by the experts were also used to adapt or refine subsequent rounds. Aggregated responses from the previous round were fed back to panellists, as percentages and numbers. Individual comments from experts were labelled 'expert #1, expert #2…….' Although experts may have recognized their own comments, they remained anonymous to the researcher/Delphi facilitator and other experts. Where consensus was achieved for a particular question, the agreed statement was presented to the panellists with the level of agreement, e.g. 75% (n=6).

Procedure

The flowchart in Figure 1 depicts the stages of the Delphi process.

RESULTS

The Delphi method consisted of three internet-mediated rounds held between 3 May and 15 July 2016. A total of nine clinicians identified themselves via email expressing their interest in taking part. All nine clinicians met the pre-defined 'expert' eligibility criteria. There were four occupational therapists (OT) and five physiotherapists (PT). Eight experts (4 OT/ 4 PT) returned their consent forms and were sent the link to the first round. The experts were geographically dispersed across England and Scotland. Seven of the eight experts were based in secondary care or private practice, with one expert being primarily based in hand therapy research. The response rate for the compression, elevation and massage sections in round one was 100% (n=8). The exception to this was the kinesiology tape section which reduced to an 87.5% response rate (n=7), however for one question only n=6 (85.7%) of the seven experts completing this section responded. Round 2 started with 100% in the compression section but reduced to 85.7% with 7 of the 8 experts responding to the elevation and massage section and 85.7% (n=6) responding to the kinesiology tape section in round 2. Seven of the eight enrolled experts completed round three (87.5% response rate).

The total number of items discussed over the three rounds was 25. Round one consisted of 23 questions covering 4 different treatment modalities; compression, elevation, massage and kinesiology tape. Round two was made up of 16 questions covering the 4 treatment modalities, and round three focused on 3 questions relating to massage. In round 1, consensus was reached on 7/23 (30%) items. The required 75%

consensus was reached on 14 items in round 2 (87.5%). Not all panellists answered all the questions in the kinesiology section. Massage was the only treatment that required a third round (see Table 1) whereby the results obtained for round 2 on this topic introduced two new questions which were presented to experts in round three. Questions that focused on pressure and direction of massage technique in round 2 did not meet the *a priori* threshold for consensus of 75%. Comments from panellists highlighted the need to clarify which style of massage was being referred to before the original question could be answered, hence the need to add two questions in round 3 to differentiate between the pressure and direction associated with 'retrograde massage' and massage completed as part of 'Manual Oedema Mobilisation/ Modified Manual Oedema Mobilisation' (MOM).

Consensus was reached on intervention description for each of the four modalities including the materials used (what), method of application including duration and frequency (how) and modifications. An issue with the question skip logic function of SurveyMonkey® meant that two of the questions in the compression section and three questions in the elevation section in round 1 were missed by five respondents. This did not happen in rounds 2 or 3.

Table 1. Round in which consensus was achieved for each item

Topic	Round 1	Round 2	Round 3
Compression			
When to wear an oedema glove	Consensus not achieved* 25% (n=2/8)	**75% (n=6/8)**	
When to remove an oedema glove for certain activities	**75% (n=6/8)**		
Duration of wearing oedema glove	Consensus not achieved* 25% (n=2/8)	**75% (n=6/8)**	
Precautions when wearing an oedema glove	Consensus not achieved 25% (n=2/8)	**75% (n=6/8)**	
Elevation			
Method of limb elevation in day	**75% (n=6/8)**		
Method of limb elevation at night	Consensus not achieved 25% (n=2/8)	**85.7% (n=6/7)**	
Level of limb elevation	Consensus not achieved 62.5% (n=5/8)	**100% (n=7/7)**	
When the hand should be elevated	Consensus not achieved* 25% (n=2/8)	**100% (n=7/7)**	
Duration of hand elevation	Consensus not achieved* 66.7% (n=2/8)	**100% (n=7/7)**	
Stopping or amending hand elevation	**100% (n=3/3)***		
Massage			
Technique of massage (combined pressure and style)	Consensus not achieved 37.5 (n=3/8)	Consensus not achieved 42.9% (n=3/7)	**New questions added****
Direction of massage	Consensus not achieved 62.5% (n=5/8)	Consensus not achieved 71.4% (n=5/7)	Consensus not achieved 71.4% (n=5/7)***
Frequency of massage	Consensus not achieved 37.5% (n=3/8)	**85.7% (n=6/7)**	
Duration of massage	Consensus not achieved 37.5% (n=3/8)	**100% (n=7/7)**	
Pressure of massage**			Consensus not achieved. 71.4% (n=5/7)***
Style of massage** (i.e retrograde or Manual Oedema Mobilisation)			**85.7% (n=6/7)**
Kinesiology tape			
Shape of tape	Consensus not achieved 71.4% (n=5/7)	**100% (n=6/6)**	
Preparation of skin	**100% (n=7/7)**		
Colour of tape	**85.1% (n=6/7)**		
Tension of tape at anchor point	**100% (n=6/6)**		
Tension of central portion of tape	Consensus not achieved 57% (n=4/7)	**80% (n=4/5)**	
Duration of wearing tape	Consensus not achieved 42.9% (n=3/7)	**100% (n=6/6)**	
Rest day between applications of tape	Consensus not achieved 50% (n=3/6)	**100% (n=6/6)**	
Reasons to discontinue tape	Consensus not achieved 33.3% n=2/6)	**100% (n=6/6)**	
Contraindications of kinesiology tape	**83.3% (n=5/6)**		

Figures in brackets represent the number of respondents who agreed with the topic (n=) by total number of respondents for that question.

*items with question-skip logic meant some respondents skipped questions which they should have answered.

** In round 3 questions related to the method of massage were adapted based on comments from previous rounds to include the pressure and style of massage.

*** 75% consensus level not met, therefore majority accepted.

A summary of the consensus reached for each of the four modalities is given in Figure 2.

DISCUSSION

This Delphi study aimed to develop consensus on how four commonly used oedema management interventions should be delivered in practice, including the frequency, duration and instructions given to patients, to minimize variation in practice and ensure that interventions are replicable when used in research. Interventions that have been shown to be useful need a complete published description for clinicians to advise their patients how to implement the interventions reliably, and to aid replicability and treatment fidelity in clinical trials. For these reasons, the Template for Intervention Description and Replication (TiDieR) checklist and guide exist [27].

The *a priori* level of consensus (75%) was met over two rounds, for three of the four modalities: compression, elevation and kinesiology taping. The required 75% consensus level was not achieved on two of the 3 items relating to the pressure and direction of massage in round three. With 5 of the 7 panellists agreeing the level of consensus level fell just short of this at 71.4%. We decided to accept a majority agreement instead of taking these 2 questions into a fourth round as the burden of further rounds increases the risk of attrition, especially from those expressing dissent or may create false consensus because respondents feel pressured to conform.

Consensus was reached on the frequency, duration, instructions and potential methods of delivering these interventions to reduce sub-acute oedema.

Delphi findings should be compared with other relevant evidence in the field and verified with further research, to enable findings to be tested against observed data to enhance confidence [3, 28]. As no previous Delphi studies have looked at the management of sub-acute hand oedema, it may be appropriate to compare the Delphi findings to results of published literature. Some of the findings on massage were in keeping with results of the systematic review, which found low to moderate quality evidence to support the use of manual oedema mobilization (MOM) massage for stubborn oedema only, and that it should not be used routinely [1, 29, 30]. Other oedema interventions discussed in the Delphi (compression, elevation and kinesiology taping) have not been described in detail with regards to frequency, method, duration, and have limited evidence to support their effectiveness [1]. Despite the Delphi relying on expert opinion or judgement to form consensus, the experts in this study may have been aware of or revisited, the existing literature when completing the Delphi questionnaire to ensure their responses were consistent with published literature. There was limited evidence of this from this Delphi, as the results were only marginally consistent with the published literature.

Strengths and limitations

There are limitations to our study: firstly, the virtual nature of the online method precluded discussion and clarification. Secondly, the small panel size could mean that despite consensus being achieved within this particular group of experts, the results may not be representative. A lack of detail regarding the exact experiences of the ‘expert’ panel may also affect the credibility of our findings, as disagreement with a statement, or not answering the section on kinesiology tape, due to relative inexperience with that particular oedema technique reduced the number of responses

further. The panel size was smaller than anticipated. All experts shared the same inclusion criteria for an ‘expert’, indicating a degree of homogeneity within the panel, which could have justified the smaller sample size. However, the heterogeneity of their individual experiences with the oedema treatments discussed was an unknown quantity and although this could be seen as a strength in that it may bring a diversity of opinions, this should have been taken into consideration when deciding on the panel size.

Thirdly, despite each round of questions undergoing pilot testing, the issue with the question skip logic function in round one not only potentially delayed consensus being achieved, as some questions had to be taken into the second round, where 100% (n=7) consensus was achieved, but also posed a threat to the methodological rigour of this study [3, 28], as errors which occurred due to using an online approach may have contributed to inaccuracies in the results/level of agreement in round 1. As a result of the issue with the question skip logic only three of the seven panellists answered the question relating to stopping or amending hand elevation, and despite all 3 experts agreeing (which gave a 100% agreement level), this only represents a 43% agreement based on 3 of the possible seven panellists responding, therefore this question should have been taken into round two. Conducting a pilot test with a test panel may have identified technical issues as well as the need for further questions regarding massage as an intervention.

Massage was the only topic that required a re-rating of agreement in a third round. This could indicate that it was a potentially contentious topic, either because of a lack of knowledge amongst the experts, or because there are greater uncertainties due to a lack of evidence. This topic elicited further questions in round 3, which we had not

previously considered. Based on the responses in rounds one and two on the ‘method’ of massage, this topic was broken down further in round 3 to ask experts specifically about the pressure and style of massage. Consensus on this topic reached 71.4% but fell short of the 75% *a priori* level, even after round 3. This highlights that massage is a more difficult intervention for which to achieve consensus, due to the numerous variables associated with its delivery e.g. depth, pressure, direction, style.

A classic Delphi Consensus method traditionally has an unstructured first round allowing respondents to identify the issues themselves [29, 31] however, in this Delphi study the questions in round one were developed by the facilitator based on the results of an online survey of UK practice of oedema management and previous systematic reviews [3, 28]. This could be viewed as a limitation of the ‘modified’ Delphi method used in this study as the questions in the first round may have been biased and therefore have influenced the experts. Using a structured first round implies that the facilitator has already completed the problem identification process. However, this also risks not identifying potentially important problems requiring discussion. Campbell et al., [24] argue, however, that a traditional first round may create ambiguous, broad statements which could also lead to bias from the outset. Campbell et al., [24] and Hsu and Sandford [32] recommend using a modified Delphi (close-ended) method to verify content and face validity.

A further limitation of this Delphi study was the decision to accept a majority decision for questions in round 3 instead of proceeding to a fourth round to achieve the a *priori* level of 75%. A majority decision meant that 5 of the 7 experts (71.4%) reached agreement on questions relating to massage in round 3, and was taken on pragmatic grounds.

One of the strengths of the Delphi method is anonymity as panellists are not known to each other which eliminates participant bias. However, in the case of a small Delphi study such as this, where panel members from a special interest group contacted the facilitator to take part, some of the panel members were known to the facilitator and vice versa. In this respect, it is thought to be quasi-anonymous. The facilitator was not able to identify panel members' responses. However, lack of anonymity may have influenced the respondents in an attempt to help the facilitator with her study which was being conducted as part of a doctorate. On the other hand, complete anonymity between panellists may lead to a lack of accountability for the views expressed [33, 34] and could potentially give rise to ill-considered judgements. One expert stated: "There is no published evidence to suggest that K tape [sic] is effective…", yet reported they used kinesiology tape for oedema and agreed with the majority of statements relating to its application.

Another strength of this Delphi is that experts identified themselves to the facilitator, volunteering themselves based on the *a priori* expert criteria. Goodman [8] states that the use of participants with an interest and knowledge of the topic may help to increase the content validity of the method, with the use of successive rounds assisting to increase the concurrent validity. Lincoln and Guba [35] propose that whilst participants should be experts who reflect current knowledge and perceptions, they should be relatively impartial to the findings. In this study, the justification for conducting a Delphi method was to gain consensus on how oedema treatments are delivered, with a view to using this in a future pilot RCT.

CONCLUSION

A three-round Delphi has established consensus on the frequency, duration, method, precautions and advice to patients on three of four interventions used to manage oedema. Questions relating to how massage should be implemented in the management of sub-acute hand oedema did not reach the required consensus threshold of 75%. This is likely due to the many variables in the delivery of massage, such as direction, pressure and style. Our findings may help to standardize oedema management interventions for clinical practice and allow these interventions to be compared in the context of a clinical trial. As a result of this Delphi process, a fully manualized treatment protocol has been devised which includes written oedema management leaflets for patients which were used in a subsequent pilot RCT.

These resources can be accessed and used under a creative commons license from https://www.uea.ac.uk/about/school-of-health-sciences/research/projects/how-should-hand-swelling-be-treated

Tables and Figures:

Figure 1. Flowchart showing stages of the Delphi process.

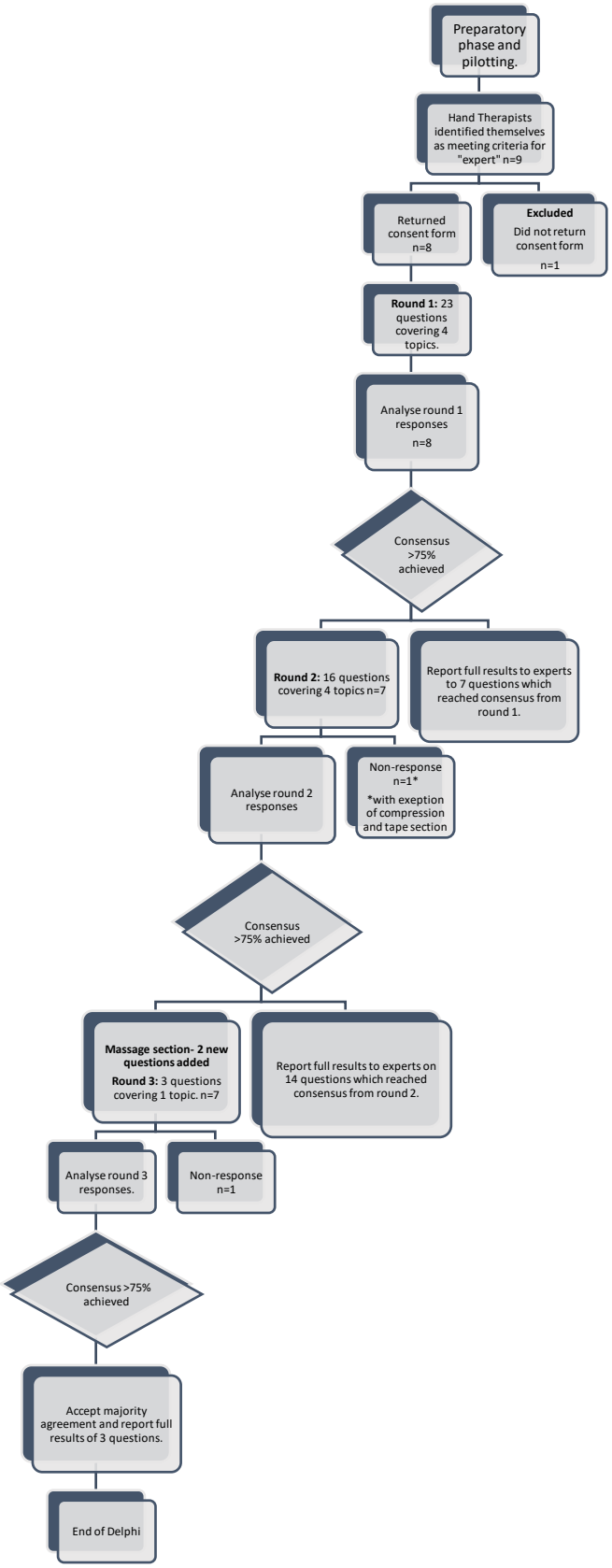
Preparatory phase and pilotting.
Hand Therapists identified themselves as meeting criteria for "expert" n=9
Returned consent form n=8
Excluded
Did not return consent form
n=1
Round 1: 23 questions covering 4 topics.
Analyse round 1 responses
n=8
Consensus >75% achieved
Round 2: 16 questions covering 4 topics n=7
Report full results to experts to 7 questions which reached consensus from round 1.
Analyse round 2 responses
Non-response n=1*
*with exeption of compression and tape section
Consensus >75% achieved
Massage section- 2 new questions added
Round 3: 3 questions covering 1 topic. n=7
Report full results to experts on 14 questions which reached consensus from round 2.
Analyse round 3 responses.
Non-response n=1
Consensus >75% achieved
Accept majority agreement and report full results of 3 questions.
End of Delphi

Figure 2. Details of what consensus was agreed on for each of the four treatment modalities

Compression: oedema glove

- ✓ ***Frequency***: 20-24 hours a day
- ✓ Initially to be worn during the day and extend to overnight if no circulatory concerns
- ✓ ***Remove*** for hygiene, scar massage, exercise and dirty tasks.
- ✓ ***Duration***: 12 weeks post trauma
- ✓ ***Remove*** the glove if it causes discomfort, impedes safe use of the hand, if fingertip vascularity is compromised, if skin becomes irritated or if sensation becomes impaired/deteriorates.
- ✓ Wearing the glove should be reviewed in hand therapy appointments
- ✓ ***Discontinue*** when oedema subsides- this should be a mutual agreement between therapist and patient.

Elevation

- ✓ ***Acceptable methods of hand elevation during day***: active hand elevation. During day and/or night: Bradford sling, pillow/s.
- ✓ ***Unacceptable methods*** of hand elevation: triangular cloth sling, collar and cuff.
- ✓ ***Stop or alter elevation*** if capillary refill compromised, hand sensation deteriorates from baseline, other MSK issues increase, if safe functional use is prevented.
- ✓ ***Level*** of hand: must be above level of heart (unless concerns with vascular perfusion)
- ✓ Perform joint range of motion exercises of uninvolved upper limb joints.
- ✓ ***Duration/frequency:*** Elevate as much as possible during day and overnight when hand is not being used for function, hygiene or exercise.
- ✓ ***Discontinue*** elevation when the patient and therapist mutually agree the oedema

Kinesiology Taping

- ✓ Tape should be ***applied*** to clean (no oils/creams, hair shaven if needed) dry and unbroken skin.
- ✓ ***Colour*** of tape: does not influence its effects
- ✓ ***Shape*** of tape: fan with proximal anchor or volar to dorsal strips with slots for fingers.
- ✓ ***Tension*** of tape: 0-25%
- ✓ ***Duration*** of tape: full time until it peels off skin naturally (~3-5 days) sooner if tape is soiled.
- ✓ ***Remove*** if irritation occurs.
- ✓ Regular monitoring required.
- ✓ A rest day can be given in between applications but is not essential.
  Tape worn until therapist and patient agree the oedema has subsided/tape no longer needed

Massage

- ✓ ***Duration (minutes)*** : ~5-10
- ✓ ***Duration (times per day):*** 3-6 times
- ✓ ***Frequency:*** At least 2 weeks or until oedema has resolved, longer depending on severity/responsiveness to treatment.
- ✓ ***Retrograde massage*** should be used for: small localised area of isolated oedema and sub-acute hand oedema.
- ✓ ***Manual Oedema Mobilisation*** (MOM) massage should be used for stubborn oedema which does not respond to conventional therapy or significant global hand and /or wrist oedema.
- ✓ ***Pressure*** of massage: Retrograde = deep (defined as an effleurage stroking action with some pressure which mobilises or skims the skin, often referred to as skin traction) MOM = light (defined as a firm milking action creating pressure on the skin and underlying tissues.
- ✓ ***Direction*** of massage: Retrograde- distal to proximal, MOM- clear proximal channels first then massage distal to proximal.

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