

## **Delphi method and nominal group techniques in family planning and reproductive health research**

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### **Introduction**

Both the Delphi method and Nominal Group Technique offer structured, transparent and replicable way of synthesising individual judgements<sup>1</sup> and have been used extensively for priority setting and guideline development in health-related research including reproductive health.<sup>2-4</sup> Within evidence-based practice they provide a means of collating expert opinion where little evidence exists.<sup>1</sup> They are distinct from many other methods because they incorporate both qualitative and quantitative approaches. Both methods are inherently flexible; our paper also discusses other strengths and weaknesses of these methods.

### **Consensus methods**

Delphi Methods and the Nominal Group Technique are two of the most common so-called 'Consensus Methods', commonly used to synthesise information from conflicting evidence. Consensus methods are primarily concerned with deriving quantitative estimates through qualitative approaches. This means a greater flexibility

as it allows for a wider range of study types to be considered than is usual in statistical reviews (Box 1). Delphi Methods concentrate on measuring consensus whereas the Nominal Group Technique can be used to develop consensus but without the limitations of more informal methods of reaching consensus such as committees, which are prone to domination by powerful individuals and influenced by personalities.<sup>5</sup> A recent example of the use of the nominal group technique for consensus developed was the adaptation of the World Health Organization's *Selected Practice Recommendations for Contraceptive Use* for use in the UK.<sup>2</sup> This formed the basis of the Faculty of Family Planning and Reproductive Healthcare's guidance for practice.<sup>6</sup>

## Box 1 about here

### ***Delphi Method***

The Delphi method aims to gather consensus of opinion, attitudes and choice about a topic from a selected panel without the need for people to meet. Although the Delphi method is often used with experts, it can also be used in eliciting patients' views.<sup>7</sup>

It is important to consider the Delphi method as a process involving several phases or stages rather than a single data collection event. Typically, questionnaires are posted to individual panel members; the questions are initially open-ended and seek individual responses. The open-ended responses are then analysed to generate a series of statements, which are compiled into another questionnaire and sent back to the individual participants who are asked to rank their agreement with each. This process (see Figure 1) can be repeated several times and the re-rankings analysed to ascertain the degree of consensus.<sup>8</sup> After round 2, the rankings from different participants are summarised and included in a repeat version of the questionnaire. Participants can then see how others ranked items and decide whether they want to reconsider their own ranking. Delphi studies typically involve three rounds,<sup>9-10</sup> but the number needed will depend on the research question and time available.<sup>11</sup> Involving more rounds may be beneficial in reaching consensus but is time consuming and difficult to maintain high response rates.

Figure 1 about here

### *Strengths of Delphi Method*

The main advantage of the Delphi method is that there is no need for participants (e.g. busy professionals or managers) to meet up<sup>12</sup> and, hence it is a relatively inexpensive method of gaining a large number of responses. It also allows the involvement of participants from disparate geographical areas and has been used in international health research. For example, Wang *et al.* involved nationally and internationally known reproductive health experts in their study to generate reproductive health indicators for China's areas.<sup>3</sup> Participants are generally contacted by mail, but increasingly the Internet is used, which also facilitates international research.<sup>13</sup> Also, as the participants are consulted on a number of occasions, they have the flexibility to change their statements and suggestions or withdrawn some altogether as period of 'considered thought' is allowed. The anonymity of the process means that more controversial issues could be raised. A further advantage of the Delphi method is that it overcomes the problem of a few individuals dominating discussions.<sup>14</sup>

### *Weaknesses of the Delphi Method*

There has been little research in assessing the validity or reliability of the Delphi method.<sup>15</sup> Some argue that consensus methods should not be viewed as scientific methods for creating new knowledge and, therefore, should not be judged using these criteria.<sup>5</sup> One of the problems in using any criteria is that little detail is usually published about design, inclusion criteria, sampling or methods of analysis.<sup>16</sup>

This said, there are some limitations commonly associated with the Delphi method, primarily concerning poorly conducted studies rather than fundamental critiques.<sup>17</sup> Many of these can be minimised if considered at the outset and by taking a rigorous approach. In evaluating the credibility or quality of a Delphi study, it would be useful to examine whether the following issues have been considered. Although researchers can minimise the workload for the Delphi participants it is often a considerable amount of work, which is likely to affect the method's acceptability. Response rates can be low and often decrease as the rounds progress.<sup>18</sup> Considerable effort may be needed beforehand to get professionals to 'buy in' to the process. Charlton *et al.*<sup>14</sup>

experienced non-response because it was decided, in order to minimise costs, that no initial meeting be held explaining the study to those targeted; this meant that there was a lack of knowledge about the objectives of the study and in turn led to a large number of invitees not participating.

As the Delphi is a consensus method, it tries to obtain consensus and to 'centralise opinion' and important minority issues may be missed due to nonconformity of general opinion.<sup>19</sup> Loss of objectivity and researcher bias in analysing findings and generating questions are also possible.<sup>18,20</sup> In a study looking at GPs' information needs, Green *et al.* outline the problems involved in refining earlier responses to move towards consensus.<sup>209</sup> Whilst the researchers envisaged a respondent-led process in which verbatim responses were fed back, it became clear that participants needed help to be able to move on to their next assessment. For the third round they included only high-consensus statements and reduced the number of categories, in the process losing the minority views.

Sampling as with any research method is crucial, as the representativeness of the group is another potential weakness of the Delphi method. For example, asking a too specific group to participate could limit the scope of opinion and expertise; it might be more appropriate to involve a multidisciplinary team than a highly specialised team.<sup>7</sup> A study conducted in Kenya identified potential representative Delphi panel members after: "the project leader interviewed teachers in local schools and consulted members of the twelve communities in search of local individuals generally enjoying the trust of most villagers."<sup>21</sup> Campbell *et al.* concluded that both panel composition and types of feedback influenced the judgements made.<sup>22</sup> Given that response rates for Delphi Method can be low, it may be pragmatic to select participants who have an interest and involvement in the question being explored; however, this should be balanced with seeking relative impartiality.<sup>23</sup>

### ***Nominal Group Technique***

The nominal group technique is based on highly structured meetings to gather information from experts about a particular issue.<sup>17</sup> It has been used as a means of

prioritising health problems within communities and health indicators for use in reproductive and family planning research.<sup>2-3,24</sup> This method was developed to avoid the problems of group interaction that may occur in focus groups.<sup>25</sup> Different modifications have been made to the nominal group technique and it may be used solely as a ranking exercise<sup>26</sup> or with the aim to obtain consensus.<sup>27</sup> The group is highly controlled and discussion is restricted to the later stages of the group process, hence the it is a group in name only, that is, nominally.<sup>28</sup>

Although modifications are made to suit the purpose of the study, there are generally four or five stages involved in the nominal group technique (see Box 2).<sup>17</sup> Unlike the Delphi method, participants attend structured meetings facilitated by a third party moderator. After setting the key nominal group technique question, participants are typically asked to record ideas, independently and before meeting the group, about the question of interest. These ideas are then shared one by one within the group and discussion ensues where clarification is required. The ideas are collated and summarised and each group member is asked to rank these. The combination of discussion and ranking allows qualitative and quantitative data to be gathered and analysed. In the second round, members receive the rankings, which are discussed and re-ranked. Moderators should refrain from adding their own opinion during the meeting.

Similar considerations concerning the facilitator and participant selection are required for the nominal group technique as for other consensus methods.<sup>22</sup> The facilitator may be a topic expert or a non-expert who has credibility with the participants,<sup>28</sup> either way they should be facilitating not leading or directing the group. It is important to select appropriate experts to participate in the nominal group technique, as there is a high potential for selection bias and the mix of participants can have an effect on the final outcomes.<sup>17</sup> However, with a growing emphasis on the importance of health services users views ('consumers') in health policy making, patients and/or their relatives have been included as 'experts', for example, in a study on breast cancer services in Australia.<sup>29</sup>

There is also the potential for false consensus to be obtained, especially in situations where there is diversity of opinion on priorities.<sup>300</sup> Studies showing agreement among

different groups in the same study and with outside agencies have shown the method to have validity.<sup>290</sup> The strengths and weaknesses of the nominal group technique and Delphi method are summarised in Box 3.

### **Box 3 about here**

#### *Consensus?*

It is important to consider what is usually measured as 'consensus'. Some set out very explicit percentage cut-off points for consensus at the beginning of their study, <sup>6,30,6</sup> some do not <sup>31</sup> and others use an arbitrary cut off simply to limit the number of items considered.<sup>32</sup> The requirement for consensus has been set as high as at 70% agreement for items,<sup>33</sup> but McKenna reported a much lower 51% in an earlier paper.<sup>34</sup> It is advisable to agree before hand what will happen if no consensus can be reached, i.e. which treatment(s) will be recommended, if any; which guideline will be recommended. For example, the above mentioned Nominal Group Technique addressing *Contraceptive Use* for use in the UK agreed before hand that "if no consensus was achieved in favour of any panellist's suggested alternative wording on a given topic, then the WHO Recommendation would be adopted 'by default' (unless there was consensus specifically against the WHO Recommendation)". <sup>6</sup>

Sometimes of course consensus might not exist, or might not even be needed. There are many examples from everyday practice where different clinical practices exist in parallel, used by different professionals in the same field, each with its own proponents - for example the question whether or not one should clean the cord of a new born baby with water or not at all. Lack of evidence either way means there is little common ground for consensus.

#### Conclusion

Both techniques can be useful in situations where little evidence exists but where, nevertheless, decisions about service provision need to be made. Similarly, they can

be used to synthesise diverse evidence. The nominal group technique is also used to rank priorities and reach consensus but requires a physical meeting of participants and as such is open to group processes that do not affect the Delphi Method. The inherent flexibility, as participants can moderate/change their opinion throughout the process of both methods, is a great advantage over more fixed methods such one-off questionnaire studies. But one has to remember that the research can be affected by the selection of the panel members, response rates and way of dealing with minority responses. The literature suggests that it may be necessary to spend a little more and invest in an initial explanation of purpose and expected time commitment so as to increase the chances of participation. This in turn will increase the validity and generalisability of a study and fulfil the acceptability to participants. As with all methods the more information provided by the researchers the better the reader is able to assess the quality of outcomes. For example, being informed of response rate among experts to the invitation to participate; the proportion of experts who changes their views through the Delphi Method of nominal group technique; the size and strength of minority views would all help in the appraisal of the research.

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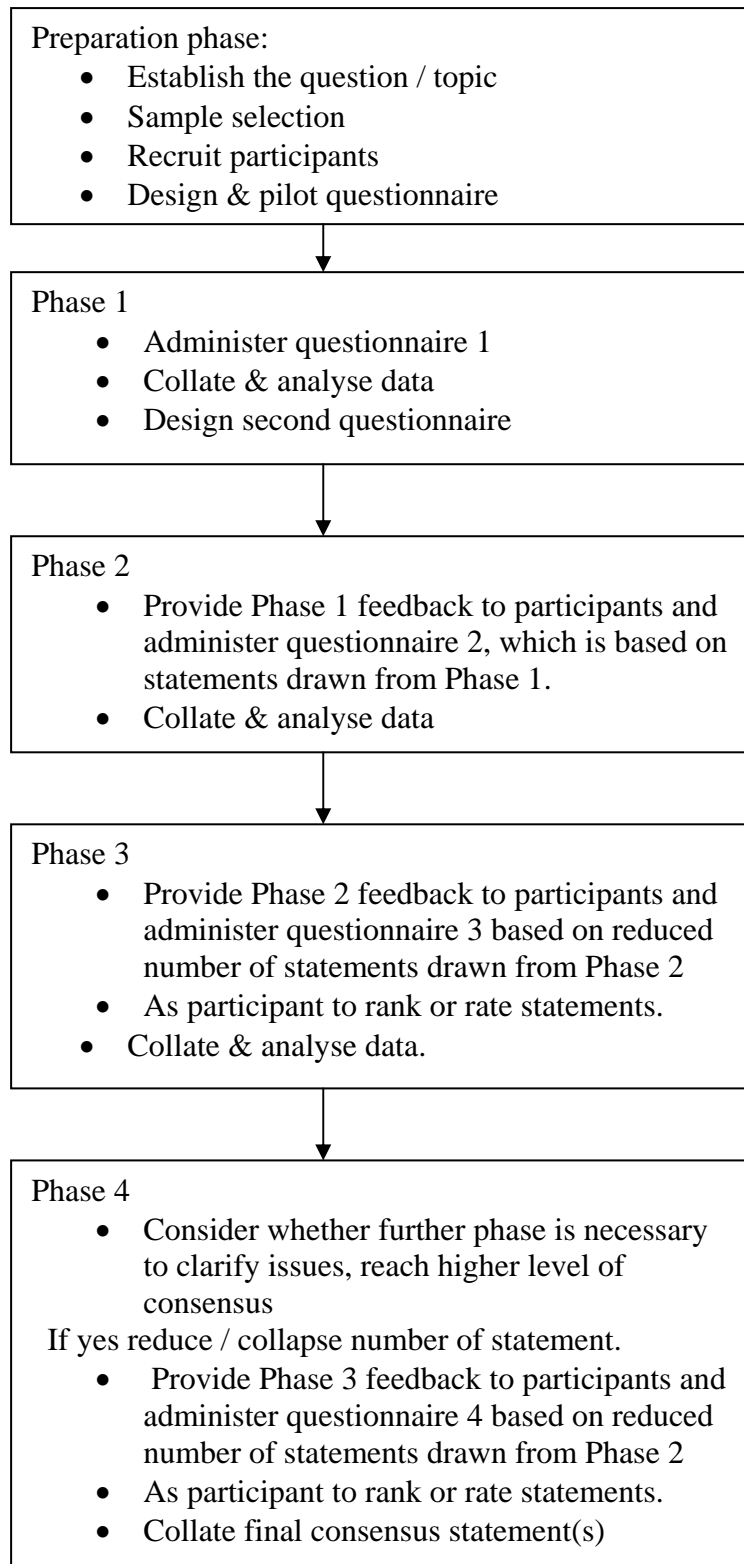
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### **Box 1--Features of consensus methods**

Anonymity	To avoid dominance; achieved by use of a questionnaire in Delphi and private ranking in nominal group
Iteration	Processes occur in "rounds", allowing individuals to change their opinions
Controlled feedback	Showing the distribution of the group's response (indicating to each individual their own previous response in Delphi)
Statistical group response	Expressing judgment using summary measures of the full group response giving more information than just a consensus statement

Adapted from Jones and Hunter<sup>18</sup>

**Figure 1 Using the Delphi Method: An overview**



## **Box 2: Stages of nominal group technique**

STAGE 1: Formulation of the nominal group question.

STAGE 2: Group members independently and privately record ideas and opinions relating to the question or problem of interest.

STAGE 3: Ideas or rankings are recorded, often in a round-robin feedback session

STAGE 4: Discussion to clarify and categorise different ideas to obtain a list of options

STAGE 5: Group members independently rank the different options. The group decision is based on consensus achieved during this ranking process.

**Box 3 Strengths and Limitations of Delphi Method and Nominal Group Technique**

	<u>Strengths</u>	<u>Limitations</u>
<b>Delphi method</b>	<ul style="list-style-type: none"> <li>• Overcomes some problems of group interaction</li> <li>• Participants do not meet in one place</li> <li>• Relatively inexpensive</li> <li>• Encourages minority views to be aired</li> <li>• Allows period of 'considered thought'</li> <li>• Does not allow individuals to dominate</li> </ul>	<ul style="list-style-type: none"> <li>• Reaching consensus can be time consuming</li> <li>• Difficult to maintain high response rate</li> <li>• Important issues may be missed in centralising opinion</li> <li>• Researcher bias can be a problem</li> </ul>
<b>Nominal Group Technique</b>	<ul style="list-style-type: none"> <li>• Overcomes some problems of group interaction</li> <li>• Allows period of 'considered thought'</li> <li>• Encourages minority views to be aired</li> <li>• Produces qualitative and quantitative data</li> </ul>	<ul style="list-style-type: none"> <li>• Potential for false consensus</li> <li>• Selection bias can be a problem</li> <li>• Needs experienced facilitator</li> </ul>

