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Defining the Bobath concept using the Delphi technique

SUE RAINE Physiotherapist, Regional Neurological Rehabilitation Centre, Newcastle upon Tyne, UK

ABSTRACT **Background and Purpose**. *The Bobath concept, based on the work of Berta and Karel Bobath, offers therapists working in the field of neurological rehabilitation a framework for their clinical interventions. It is the most commonly used approach in the UK. Although they recognize that over the last half-century the concept has undergone considerable developments, proponents of the Bobath concept have been criticized for not publishing these changes. The aim of the present study was to use the Delphi technique to enable experts in the field to define the current Bobath concept.* **Method**. *A four-round Delphi study design was used. The sample included all members of the British Bobath Tutor's Association, who are considered experts in the field. Initial statements were identified from the literature, with respondents generating additional statements during the study. The level of agreement was determined using a five-point Likert scale. The respondents were then provided with feedback on group opinions and given an opportunity to re-rate each statement. The level of group consensus was set at 80%.* **Results**. *Fifteen experts took part. The response rate was 85% in the first round, and 93% in each subsequent round. Ten statements from the literature were rated with a further 12 generated by the experts. Thirteen statements achieved consensus for agreement and seven for disagreement.* **Conclusions**. *The Delphi study was an effective research tool, maintaining anonymity of responses and exploring expert opinions on the Bobath concept. The experts stated that Bobath's work has been misunderstood if it is considered as the inhibition of spasticity and the facilitation of normal movement, as described in some literature. They agreed that the Bobath concept was developed by the Bobaths as a living concept, understanding that as therapists' knowledge base grows their view of treatment broadens.* *Copyright © 2006 John Wiley & Sons, Ltd.*

Key words: Bobath concept, definition, experts, Delphi study

INTRODUCTION

Physiotherapists working in the field of neurological rehabilitation have a number of approaches available to them that offer a framework on which to base their clinical interventions. The Bobath concept has been reported to be the most commonly used approach within the UK for the management of people with neurological problems

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(Davison and Walters, 2000). At its outset this approach was based on the therapeutic experience of Berta Bobath (1970), with theoretical explanations being sought from the available neurology research.

Shepherd (2001), a proponent of the motor-relearning approach, suggests that the Bobath concept is 'an old-fashioned method', and that health professionals using this approach are reluctant or unable to change. It is recognized that over the last half-century the Bobath concept has undergone considerable developments (Partridge and de Weerdt, 1995). Mayston (2001), one of Bobath's advocates, highlights that it is continually changing and acknowledges that there is a need for therapists to have a common understanding of the concept. Pomeroy and Tallis (2002) suggest that it is impossible to determine how the Bobath approach has developed or changed, and they criticize its proponents for not describing the current approach in detail.

Lennon is a key researcher who has worked to identify the theoretical assumptions of the Bobath concept by employing both surveys and focus groups and using experienced physiotherapists in the field of neurology (Lennon and Ashburn, 2000; Lennon et al., 2001). Unfortunately, collecting statements and opinions from a secondary source is problematic as it is dependent upon the individual therapist's interpretation of information delivered on the postgraduate Bobath courses. The aim of the present study was to facilitate a group of Bobath experts to define the current concept.

The Delphi technique is a recognized research tool that has been used successfully in highlighting consensus in a number of recent allied health studies (Cross, 1999; Deane et al., 2003). The technique maximizes the benefits of surveys and other consultative processes, such as the focus group or interview, while minimizing their limitations (Jairath and Weinstein, 1994). Developed in the 1950s by the Rand Corporation for defence research, it is a method for structuring communication so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem and, at the same time, maintain a high level of anonymity (Linstone and Turoff, 1975). Statements relevant to the problem can either be generated within the first questionnaire by the respondents or developed using the literature (Jairath and Weinstein, 1994). These statements are then distributed to the group in a series of questionnaires, usually between two and four rounds (Walker and Selfe, 1996), which are interspersed with controlled opinion feedback (Ziglio, 1996). It is this feedback that is the unique feature of the Delphi technique and has an important role in the refinement of views and the achievement of group consensus (Scheibe et al., 1975). Linstone and Turoff (1975) recommend the Delphi technique as the method of choice when a problem would benefit from subjective judgements on a collective basis and where there is a need for avoidance of domination by strength of personality or knowledge. Walker and Self (1996) argue that neither the validity nor the reliability of the Delphi technique have been evaluated sufficiently; however, Williams and Webb (1994) suggest that, with the appropriate selection of group members to match the issue, it demonstrates high face validity and, if consensus is achieved, there is evidence of concurrent validity.

The success of a Delphi study is largely dependent upon having a representative population which is identified as comprising experts with the necessary knowledge and practical engagement with the issue under investigation (Reid, 1988). They also need to

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have a common awareness of the problem and be motivated and committed to undertake the research process, as high attrition rates influence the validity of the study (Walker and Selfe, 1996). Within the literature there are no agreements on panel size (Williams and Webb, 1994), which can range between 10 and 1685 (Reid, 1988), or acceptable attrition rates (Walker and Selfe, 1996). Ziglio (1996) suggests that where the group is homogenous, such as the present one, good results can be achieved with a small sample ranging between 10 and 15. Reid (1988) found that panels of 20 or less tended to retain membership throughout the study. Group consensus is achieved when a percentage of the votes fall within a prescribed range (Scheibe et al., 1975). Deane et al., (2003) reported that the range used within the literature to be between 60% and 90% and used 80% within their own study.

METHOD

A four-round Delphi study was employed to identify the level of consensus for a number of statements obtained from the literature relating to the Bobath concept, and to provide an opportunity for experts to generate additional statements.

Selection of experts

The current members of the British Bobath Tutors Association (BBTA) were chosen as experts, on the basis that they are responsible for disseminating the current understanding and practice of the Bobath concept on postgraduate courses within the UK. BBTA is a member organization of the International Bobath Instructors Training Association (IBITA). The total population included all 15 tutors nationally and throughout the study a response rate of 80% (13/15) was appointed.

Procedure

The study procedure is illustrated in Figure 1.

The first-round statements were generated from the literature. A systematic review of all the available literature (including internet publications and the most recent Basic Bobath Course Handbook) between 1990 and November 2003 identified a large number of statements (347) that were related to the framework or clinical practice of the Bobath concept. Two senior therapists who had completed Basic Bobath courses and the researcher chose a selection of statements that were representative of those within the literature. Ten statements were identified as defining the Bobath concept and included in the first round of questionnaires. (A further 85 statements relating to the theoretical underpinning of the Bobath concept were also included and will be reported on in a second paper).

A five-point Likert rating scale was used to identify the level of agreement for each statement. This offered two levels to distinguish between strength of view for both agreement and disagreement with a midpoint for a neutral opinion. In the first and second rounds space and prompts were provided to encourage respondents to generate additional statements. All variations of generated statements offered by the respondents were included in the subsequent questionnaire rounds for rating. Four rounds of questionnaires were employed to give the respondents the opportunity to rate the statements from the literature and those generated by the group before and after feedback.

The initial questionnaire was piloted with an independent sample of five therapists.

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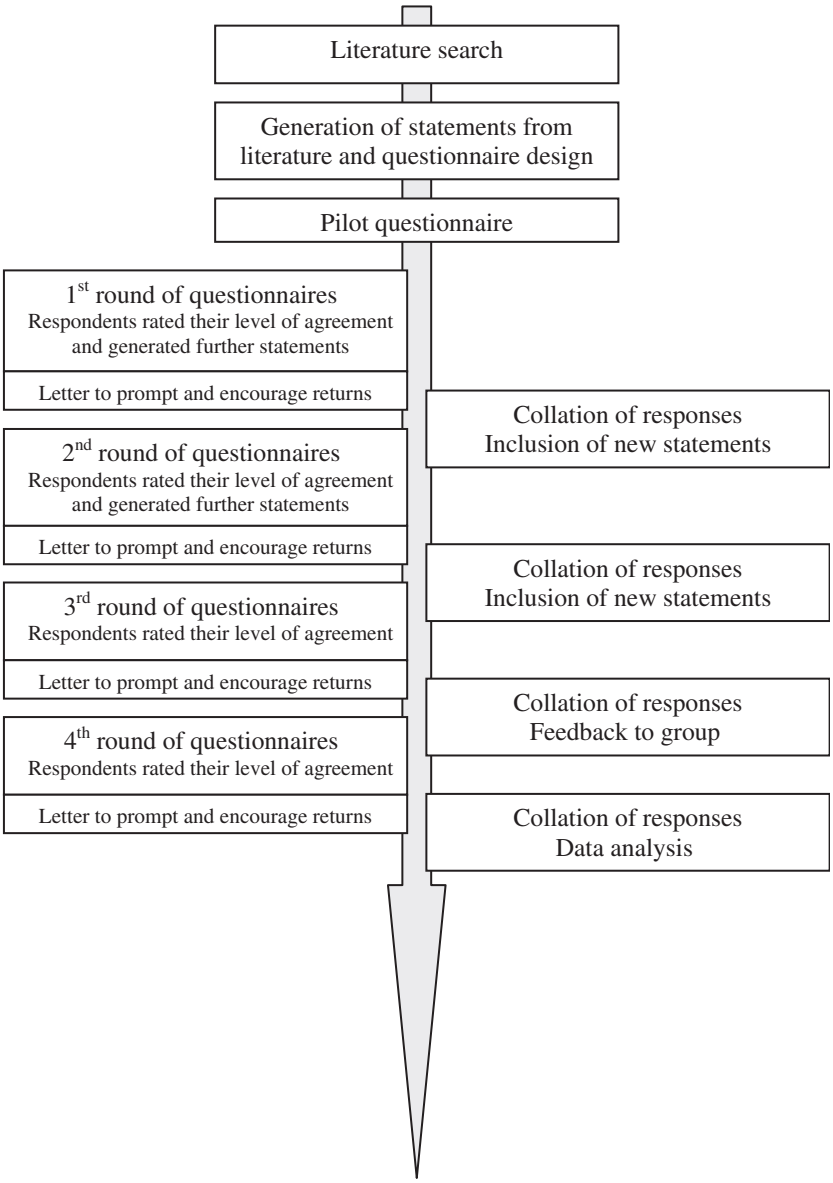

FIGURE 1: The study procedure.

Feedback to respondents

After collation of the responses, individual feedback was provided, highlighting the respondent's own rating for each statement in relation to the group's rating. Respondents were then asked to reconsider their rating for each statement in light of this feedback. Following the third questionnaire, the interim results were presented to the group of experts, with the aim of enhancing their knowledge and understanding of the Delphi process. In the final questionnaire respondents were instructed to indicate through

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their rating a preference between statements with very similar wording or meaning.

A four-week return period between each round of questionnaires was set, with a postal reminder sent out at two weeks.

Analysis of data

Content analysis was used to identify any major themes within and between each questionnaire, and descriptive statistics (percentages and average and dispersion) were used to identify the level of consensus and to rank the statements. Level of consensus was set at 80% (13/15 respondents). The data from both the percentage and average and dispersion methods underwent a sensitivity analysis to assess the reliability of the descriptive statistics.

Anonymity

A research assistant was employed to code the experts' responses in order to maintain anonymity and confidentiality. Consent was obtained from each participant and ethical approval was granted from Leeds Metropolitan University before the study.

RESULTS

Response rate

The required 80% response rate was achieved for each questionnaire, with 85.7% (12/14 respondents) in the first round, 93.3% (14/15 respondents) in the second and third rounds, and 92.9% (13/14 respondents) in the fourth. There was one consistent non-responder throughout.

Statement generation

Round 1 was initiated with 10 statements taken from the literature describing the Bobath concept. Seven additional statements were generated in the second round and five in the third. Eleven of these additional statements were reworded versions of the originals, with only one completely new statement.

Sensitivity analysis and level of consensus

The data from both the percentage and average and dispersion methods of analysis were identical in their ranked order of statements. In the average and dispersion method, however, fewer statements reached the 80% consensus. As the percentage method more appropriately represents the 13/15 respondents (80%) rather than a mean of the distributed scores, the statements presented here are based on the results of the percentage method.

Of 22 statements presented for rating:

- 13 (59%) achieved the 80% level of consensus for agreement
- four (18%) achieved 100% consensus for agreement
- seven (32%) achieved the 80% level for disagreement
- five (23%) achieved 100% consensus for disagreement
- two (9%) did not achieve consensus for either agreement or disagreement.

The slight variation in respondents' ratings allowed some statements to be identified as being preferred over others. Therefore, where there were two similar statements, after rewording the preferred statement was identified by its ranked order. Where more than one version of the same statement reached consensus the lower-ranking statement was removed. One statement had two reworded options that were equally rated by the group. Both statements have been included

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TABLE 1: Statements defining the Bobath concept

• **Gives a framework for practice**
• **Is based on the systems approach to motor control**
• **Focuses on current research in areas such as neurophysiology, muscle and motor learning to promote specificity and individuality in assessment and treatment**
• **Neurodevelopmental treatment/Bobath concept was developed by the Bobaths as a living concept, understanding that as therapists' knowledge base grows their view of treatment broadens**
• Is a problem-solving approach to the assessment and treatment of individuals with disturbances of function, movement and tone due to a lesion of the central nervous system
• The 'neurodevelopmental treatment approach' is the name adopted by some countries and incorporates their interpretation of the teachings of the Bobaths
• Bobath is a concept and therefore should always be changing as new evidence becomes available but not changing for changes sake
• The Bobath's work has been misunderstood if it is considered as the inhibition of spasticity and the facilitation of normal movement; there is no need to leave the name in the past because the name actively promotes a living concept of rehabilitation; a concept that promotes exploring the potential of both patient and therapist in an interactive process

Statements in bold type achieved total consensus.

TABLE 2: Statements taken from the literature which the experts agree are *not* representative of the Bobath concept

• **Focuses on a progression through the developmental sequence, inhibition of primitive reflexes and spasticity, and facilitation of higher-level control**
• **Is based on a reflex hierarchical theory**
• **Is applied preferably to people aged 55–75 years as it is difficult to justify Bobath for people over 80 years of age**
• **The neurodevelopmental treatment approach is a modernized version of Bobath**
• **IBITA cannot alter the theoretical framework without altering the approach and then it ceases to be a Bobath concept**
• **If Bobath is considered as inhibition of spasticity and the facilitation of normal movement as proposed in the Bobath's working years, it might be preferable to leave the name in the past**

Statements in bold type achieved total consensus.

independently. Table 1 provides a list of statements that the experts agreed define the current Bobath concept. Table 2 identifies a number of statements taken from the literature that the experts disagreed with and are considered not representative of the current Bobath concept.

Level of consensus between rounds

In all cases the level of group consensus improved over the four rounds. The main variation in rating between experts was the extent to which they agreed or disagreed with a particular statement.

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DISCUSSION

In the present study, the first of its kind, the total population of BBTA members were facilitated to define the Bobath concept. Unlike previous studies (Lennon and Ashburn, 2000; Lennon et al., 2001), the respondents in this study are each seen as experts within the Bobath concept in the UK. The group maintained high response rates of 85% in the first and 93% in subsequent rounds, which was comparable to similar, recent allied health studies which achieved response rates of between 62% and 91% (Deane et al., 2003; Ashburn et al., 2004). The homogeneity of the expert group, excellent response rate and high level of consensus achieved suggest that this study demonstrated concurrent validity (Williams and Webb, 1994). In the assessment of reliability of the descriptive statistics, the sensitivity analysis demonstrated that the percentage and average and dispersion methods were comparable in the ranking of statements and the identification of consensus.

The unique feature of the Delphi design is its ability to structure group communication to identify consensus. The only independent opinion given to a statement is the first time it is rated. After this, the respondent is potentially influenced by the opinions of the group. In all statements rated, there was a change in opinion towards consensus between rounds, although this was to varying degrees. These shifts in opinion are suggested to be a measure of feedback effectiveness (Scheibe et al., 1975). The present study made no attempt, however, either to encourage or control additional communication between the group members outside the study. Many of the statements generated were reworded from statements presented from the literature. The subtle changes in the wording of statements, and their subsequent meaning, were essential to the achievement of consensus. Five out of the eight statements achieving the greatest consensus for agreement were reworded versions.

Statements defining the Bobath concept

The experts were in agreement that the Bobath concept gives a framework for practice, and that it is a problem-solving approach to the assessment and treatment of individuals with disturbances of function, movement and tone due to a lesion of the central nervous system (Panturin, 2001; Brock et al., 2002). They also strongly agreed that the Bobath concept is based on the systems approach to motor control. All experts, however, disagreed strongly with Langhammer and Stanghelle (2000), who stated that the Bobath concept was still based on a reflex hierarchical theory, and Mathiowetz and Haugen (1994), who suggested that it focused on a progression through the developmental sequence, inhibition of primitive reflexes and spasticity, and facilitation of higher-level control. The group was also strongly opposed to the suggestion that the approach is applied preferably to people aged 55–75 years and not to those over the age of 80 (Barrett et al., 2001).

There was total agreement that the concept focuses on the importance of current research in areas such as neurophysiology, muscle and motor learning, expanding on the findings of Lennon et al. (2001), which suggested that it was mainly neurophysiological literature that was incorporated into practice.

The relationship between neurodevelopmental therapy and the Bobath concept was considered during the four rounds of questionnaires. The experts strongly disagreed that the neurodevelopmental theory approach

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was a modernized version of Bobath (Wagenaar et al., 1990) and stated that the neurodevelopmental therapy approach is the name adopted by some countries, and incorporates their interpretation of the teachings of the Bobath's. There was further exploration of statements made within the literature that challenged the evolution of the concept (Langhammer, 2001; Mayston, 2001). The respondents disputed the statement made by Langhammer (2001), who insisted that 'IBITA cannot alter the theoretical framework without altering the approach otherwise it would cease to be the Bobath Concept'. They also disagreed with Mayston (2001), who suggested that it might be preferable to leave the name in the past if Bobath is considered as inhibition of spasticity and the facilitation of normal movement. The group strongly acknowledged that the Bobath's work has been misunderstood if it is considered as the inhibition of spasticity and the facilitation of normal movement. They agreed that there is no need to leave the name in the past because the name actively promotes a living concept of rehabilitation. It is a concept that promotes exploring the potential of both patient and therapist in an interactive process.

There was total consensus that the neurodevelopmental therapy/Bobath concept was developed by the Bobaths as a living concept, understanding that as therapists' knowledge base grows their view of treatment broadens. The experts strongly agreed that Bobath is a concept and therefore should always be changing as new evidence becomes available, but not changing for the sake of change.

It is recognised that there is no evidence to prove that using the Delphi technique is reliable (Reid, 1988), and it would be expected that using a different population of experts or the same experts at a different time would provide a variation in the results. The results of the present study are relevant to this group of experts at this point in time, and give a snapshot of the current Bobath concept, which is continually developing. It is acknowledged that BBTA signifies only a small proportion of the IBITA organization which represents the Bobath concept worldwide. Achieving consensus using a sample from the international group would allow greater generalization of the results.

As a Bobath instructor candidate, it may be considered that, the researcher demonstrated a vested interest in defining the Bobath concept. All attempts to reduce bias were taken, including: use of a research assistant, use of two independent therapists in the selection of the statements from the literature and all statements generated by the respondents were included in the questionnaires in their entirety.

IMPLICATIONS

Using a four-round questionnaire the Delphi technique has been shown to be an effective research tool to structure the communication process of a group of experts to enable the current Bobath concept to be defined. Many statements generated from the literature went through a process of rewording and re-rating post-feedback before being identified as those with which the Bobath tutors were in agreement. This highlighted that subtle changes in the wording of statements, and their subsequent meaning, were essential to the achievement of consensus.

At its inception the work of the Bobath's was considered revolutionary, and, although developments have been ongoing, Bobath proponents have been criticized for not describing in detail the changes in the approach. The Bobath concept was developed as a living concept, understanding that

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as the therapists' knowledge base grows their view of treatment broadens. It is essential that these developments are not only defined, but also acknowledged and updated within current research, so that the Bobath concept can be accurately represented. The current definition, up-to-date theoretical assumptions and treatment interventions need to be employed within research studies to enable a true reflection of the concept, as it is practised today, to be evaluated for its clinical effectiveness and comparisons to be made to other approaches in the treatment of neurological patients. It is important to establish a process to identify the ongoing developments in the Bobath concept, in order to support and evaluate the advances in clinical practice.

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Address correspondence to: Sue Raine MSc BSc, Team Lead Physiotherapist, Regional Neurological Rehabilitation Centre, Hunters Moor, Newcastle upon Tyne NE2 4NR, UK (E-mail: sue.raine@nap.nhs.uk).

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