Conducting Qualitative Research in Physiotherapy
A methodological example

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Key Words
Qualitative research, physiotherapy.

Summary
This paper provides an introduction to the subject of qualitative research and a practical approach to conducting this type of research through a detailed description of the design and methodology used in a specific study. The purpose of qualitative research is to describe and interpret issues or phenomena from the point of view of the individual or population being studied, and to generate new concepts and theories. The choice of methodology is directed by the questions being raised.

The purpose of the described study was to explore individual concepts of the experience of spinal cord injury. The method chosen for this study draws from phenomenology and is interpretive in nature. A preparatory framework and elements of design and methodology (selection of participants, pilot studies, data collection and analysis, and findings) used in the study are described in detail, and issues of ensuring the merit or trustworthiness of this type of research are discussed.

Physiotherapy research to date has been primarily conducted using a quantitative approach. The qualitative tradition offers physiotherapists an alternative research approach to questions arising from clinical practice, and is increasingly supported in the physiotherapy literature and included in academic programmes.

Introduction
This paper provides an introduction to the subject of qualitative research and a practical approach to conducting this type of research through a detailed description of a preparatory framework, design and methodology used in a specific study. The purpose of the study was to explore individual concepts of the experience of spinal cord injury from the perspective of adult learning (Carpenter, 1994). It is my hope, in writing this paper, to facilitate discussion and encourage physiotherapists to consider incorporating qualitative research into their professional practice.

Research questions in health care begin from personal clinical experience, publications and from conflicting theories of practice. The majority of research studies published in Physiotherapy Canada, Physiotherapy, and Physical Therapy use a quantitative research approach, and the research question posed arises from a physiotherapist's observation, assessment or treatment of a physical problem. This focus on the quantitative or 'positivist' approach to research owes much to the influences which have shaped our profession. Physiotherapy has grown - from its roots in massage and remedial exercise - as a practical therapy, and in this sense is empirical in nature. The empiricist's position is that conclusions and beliefs are based on first-hand evidence, observation and experience. Learning in physiotherapy was achieved in the past almost entirely by practical experience. The effectiveness or non-effectiveness comes from within the task itself. Hence 'hands-on' experience and an 'action-oriented' approach were of paramount importance in developing entry level competence and specialist expertise (Carpenter, 1996). In addition, professional linkages between physicians and physiotherapists have been strong. As a result, the theoretical framework for physiotherapy practice has been loosely based on the (bio)medical or 'scientific' model of practice and few theories specific to the profession (Hislop, 1975; Dean, 1985; Pratt, 1989; Roberts, 1994; Cott et al, 1995) have been developed to date. Broadly speaking, quantitative research approaches are deductive (Clifford, 1997). Researchers begin with something - an idea, hypothesis or theory - that they know about and want to explore further. The 'scientific' approach is by definition reductionist in nature, focusing our assessment of practice on cause-and-effect relationships, objective measurement and the generalisation of results. Quantitative research represents one way of thinking and exploring the world around us (Clifford, 1997).

The Qualitative Tradition
There is, however, another approach known as qualitative or 'interpretive' research which approaches the world from a different perspective. The roots of qualitative research lie in social and cultural anthropology but its potential was recognised in health care (primarily nursing, social work and occupational therapy) only in recent years. Domholdt (1993) describes the goal of the qualitative tradition as a 'deep understanding of the particular'. The purpose of qualitative research is systematically to describe and interpret issues or phenomena from the point of view of the individual or population being studied, and to generate new concepts and
theories. Qualitative research is inductive in nature. The researcher generally explores meanings and insights or identifies the concepts in a given situation. Research questions are formulated to explore phenomena in their complexity and in context, and from a desire to understand behaviour from an individual's frame of reference.

The qualitative tradition adopts a different set of underlying assumptions from those usually associated with research, ie, those of facts, truths and causal relationships. It accepts that all inquiry is value-bound and therefore no attempt is made to control or eliminate variables, remove the data from the natural context or maintain the objectivity of the researcher. From the qualitative perspective, each individual perceives and interprets reality differently based on the context of past experiences. Multiple realities exist, not a finite number of objective truths. Actions and ideas – human behaviour – can therefore be understood only in context.

Qualitative research is an umbrella term used to refer to a number of theoretical perspectives, for example ethnography, symbolic interactionism, phenomenology and grounded theory. Some understanding of these perspectives is needed in order to choose the most appropriate design and data collection methods to address a specific question. A number of resources provide useful overviews of these theoretical perspectives (Bogdan and Biklen, 1982; Clifford, 1997; Hammersley and Atkinson, 1993; Morse, 1992; Strauss and Corbin, 1990).

These theoretical perspectives do share certain characteristics. These are that:

- Research is grounded in people's everyday lives; how they experience and make sense of phenomena occurring in their lives.
- Research is conducted in 'real life' and day-to-day settings, not in controlled or laboratory settings.
- The data are presented in a narrative form, ie, in the words of the individuals participating.
- Research seeks to establish a holistic perspective of a given situation.
- The researcher is an integral part of the research process. The issue is not one of minimising the influence of the researcher, but of knowing how the researcher was involved in data collection and analysis in order to assess better the information they provide.
- The researcher is usually motivated to do research by clinical 'dilemmas' or 'foreshadowed problems' (Hammersley and Atkinson, 1983) which derive from the researcher's own experience, review of literature or observations. These clinical 'dilemmas' form the basis of a framework (see figure) which can be used to identify the research design elements, guide the data gathering and provide a context for the research question(s).

Qualitative Research and Physiotherapy

It is becoming imperative that potential clinical researchers have a thorough understanding of both quantitative and qualitative research methodologies, in order that they can appropriately select whatever method or combination of methods will best address the identified problem or question. Until the last ten years there was little information about qualitative research avail-
able in the physiotherapy literature or education courses. More recently authors have been discussing the potential role of qualitative methods in physiotherapy (Schmoll, 1987; Jensen, 1989; Parry, 1991; Shepherd et al., 1993; Carpenter, 1994). The subject has also been introduced into academic courses and textbooks (Domholdt, 1993). The qualitative tradition offers physiotherapy an alternative approach to clinical research. The choice of methodology is directed by the questions being raised. Clinical questions related to a client’s perspective, the meanings made by an individual of an experience or particular phenomenon, the impact of contextual factors, and the complexity or power dynamics of interactions lead the researcher to choose a qualitative method.

The choice of a quantitative approach versus a qualitative approach has been frequently presented in the literature (Carr, 1994) by comparing and contrasting the two approaches. To some degree this type of argument has contributed to the idea that one approach should be considered superior to the other and adopted by a specific health care profession. This line of thinking is, in my opinion, non-productive as it fails to recognise that the two research traditions, quantitative and qualitative, are fundamentally different, address different types of research questions, and represent radically different ways of investigating phenomena and acquiring knowledge.

**An Example Study**

**Design and Methodology**

The clinical dilemma which triggered the study described as an example of a qualitative design in this article, arose from my practice in spinal cord injury rehabilitation. I became increasingly aware, through my contact with individuals many years after their injury, of a discrepancy between the perception of spinal cord injury and its consequences held by health care professionals, and those people who experience the injury over many years. A review of the relevant literature from sociology, psychology and rehabilitation sciences (Carpenter, 1994) revealed that research in rehabilitation had been focused primarily on provision of care issues and treatment outcome measures. The input of the clients involved had not been solicited in a systematic way. The framework outlined in this paper was used to guide the preparatory work involved in clearly identifying the research question, design and methodology. The question to be addressed by the study was: ‘How do individuals make meaning of the experience of spinal cord injury and how do these meanings influence assimilation of the consequences of the injury in the long term?’ A qualitative research methodology, drawing from phenomenology and interpretive in nature, was chosen as appropriate to address the identified research question.

**Research Participants**

In the interest of standardisation of data collection and the reduction of bias, researchers using quantitative methods maintain an indirect researcher-subject relationship. The subjects are rarely informed about the study results or their contribution to the process and, it has been said in criticism of this research approach, are treated as merely sources of data. The term ‘subject’ has been replaced in qualitative research by the alternative terminology of ‘participant’ or ‘co-researcher’ to reflect the interactive nature of the relationship between the researcher and those individuals who consent to share information.

In the study being described, initial access to a network of potential participants was gained through the sponsorship offered by a personal acquaintance, himself a tetraplegic, working as a social worker with a peer support group. His explanation of the study to the group resulted in three people volunteering to be involved. The participant selection criteria were simply that they were self-defined as ‘successful’ or ‘back on track’ in their lives, and had sustained a complete spinal cord injury three to five years ago. Because of the in-depth nature of qualitative research, studies require small select samples and specific sampling methods have been developed for this approach (Clifford, 1997). The participant sampling technique used in this study is described as ‘snowball sampling’ (Bogdan and Biklen, 1982) whereby the initial participants are asked to recommend others whom they would define in a similar way. In this manner a total of 12 people became involved with the study, and I was able to focus on their self-definitions rather than on my own opinion or judgements. All the participants signed informed consent forms fulfilling the ethical requirements of the University of British Columbia, but because the direction that the research takes is largely unknown in qualitative methodologies, I undertook to provide further explanation as necessary during and after the interviews. Initial contact was made with the participants by an explanatory letter, followed by a phone call confirming their involvement and making interview arrangements.

**Data Collection**

Data collection took the form of in-depth semi-structured interviews. This type of interview has been described as a ‘purposeful conversation’
(Hammersley and Atkinson, 1983) involving open-ended, broad and non-directive questions. Examples are ‘What would you describe about your experience to someone newly injured or to someone who knows nothing about spinal cord injury?’ and ‘Imagine the years as a journey. Could you describe what has been most significant to you during that journey?’ A interview schedule consisting of a list of potential questions was developed from which a few could be selected during each interview (Carpenter, 1994). The extensive background knowledge and personal experience held by the researcher is considered an important advantage in interpretive analysis (Bogdan and Biklen, 1982). During the interview the researcher can use this experience to probe more deeply on specific topics and issues that the participant may initiate as a result of a particular question, a technique that Hammersley and Atkinson (1983) describe as ‘reflexive interviewing’.

Pilot Studies

Pilot studies involving two individuals were conducted, which gave me the opportunity to assess the effectiveness of the interview questions and process, and to identify response biases. All the participants were aware of my professional interest and knowledge of spinal cord injury, and several knew me from the rehabilitation centre where they received treatment. My detailed knowledge of spinal cord injury and its consequences facilitated a level of trust which would not otherwise have been possible. The participants were assured of my genuine interest from the outset and were not self-conscious. It became apparent, however, after reviewing the pilot study interview transcripts, that the participants had redefined the direction of the interview, assuming that my primary interest as a physiotherapist was their rehabilitation in the institutionalised setting. It was not my intention to explore in this study their experiences during hospitalisation in either the acute care or rehabilitation settings. As a result of the information gained from the pilot studies, I revised the interview schedule, being careful to omit terms like ‘rehabilitation’ or ‘treatment’ and emphasised instead my connections with adult education for the purpose of this study. The pilot study interview results were audiotaped, transcribed and reviewed by the participants to refine the interview process further. The information gained from the pilot studies proved invaluable. They served to familiarise me with interviewing, gave me an opportunity to collect data, do an initial data analysis, receive feedback from my peers and the participants, and alerted me to biases I held about the broad topic.

Data Collection

Interviews, using the revised interview schedule, were conducted in locations (home, office, a restaurant) chosen by the participants and each lasted between 1½ and two hours. All the interviews were transcribed. The transcripts formed the main ‘data’ for the study. In addition, two forms of field notes were used to supplement the data: those made on re-listening to the taped interviews, and ‘analytic memos’ (Hammersley and Atkinson, 1983). The field notes recorded directly on the transcripts enabled me to capture the meaning and context of the interviews and they allowed me to reflect on my own participation in each interview. Throughout the process of interviewing and reading transcripts and related literature I experienced, in an ongoing fashion, new theoretical insights and ideas which were recorded in the form of ‘analytic memos’. The compilation of such memos represents the sort of ‘internal dialogue or thinking aloud’ (Hammersley and Atkinson, 1983) that is the essence of this type of research. These memos enabled me to trace the way my intellectual process was shaping the data analysis.

Qualitative Data Analysis

Qualitative data analysis is complicated by the volume of data generated, and the challenge for the researcher is to conduct an in-depth analysis and yet present the findings in a concise and logical way (Clifford, 1997). The data generated vary according to the type of design being used; however, they are generally subject to the same principles of analysis. Data analysis is actually a dynamic process weaving together recognition of emerging themes, identification of key ideas or units of meaning and material acquired from the literature. The process often begins before all the data are collected. Each transcript is read thoroughly in its entirety. The aim at this stage is to use the data to think with, and one looks to see whether any interesting patterns can be identified (Hammersley and Atkinson, 1983). These emerging patterns are identified by the researcher because they appear to illuminate the research question and the literature reviewed. As the data analysis continues these patterns begin to be developed into a number of thematic categories of description. Each transcript is then examined closely for phrases, sentences or paragraphs, ie, participant quotes, which stand out for the researcher as central to the broader area of interest. These quotes were described in this study as units of meaning, for example:

‘I’d go somewhere else in my mind, go to a happy place. If they had a problem, it would snap me back to reality. Eventually, I began to realise that it was still my body and I had better attend to it a bit more’ (R, 8:48).

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The quotes are kept intact and can be traced back at any time to the participant and to the location in the transcript. This requires a systematic method of data organisation described by Hammersley and Atkinson (1983) as ‘physical sorting’, and can be achieved in a variety of ways; by mounting data on large sheets of paper, by recording on file cards or in computer files, or by drawing a concept map.

Copies of each transcript were made so that an original could be kept intact. After several thorough readings of the transcripts in their entirety, units of meaning – coded by participant initial, line and page number – were identified and extracted from each transcript. This reduction of the data involves choices on the part of the researcher and constitutes the first step of the interpretive process. The units of meaning are assigned physically to a number of emerging themes or concepts, initially in file folders and later on large sheets of paper mounted on my living room walls. This had the advantage of portraying the data as a whole and the themes side by side for comparison. Some of the themes arose ‘spontaneously’, being used by the participants themselves, for example the use of jail terminology in their descriptions of experience in the rehabilitation centre. The interpretive process continued as the initial eight or nine themes were developed into three interconnected thematic categories (Carpenter, 1994):

- Rediscovering self.
- Redefining disability.
- Establishing a new identity.

The thematic categories are in this way grounded in the data. They are both constructed by the researcher and abstracted from the language used by the participants. Detailed definitions were developed for each of these thematic categories and the units of meaning assigned to each theme were re-examined for commonalities and differences. The disadvantage of ‘preconceived ideas’ which might flaw or limit the interpretive process was anticipated. A colleague who possessed knowledge of spinal cord injury and qualitative research was asked to identify units of meaning from intact transcript copies and to assign them to the categories using the definitions established. Discrepancies which arose between our respective decisions caused me to reflect on and more clearly define the categories. The data analysis process I experienced was circular in nature rather than sequential. Each transcript brought new information and insights, caused me to re-evaluate the emerging themes and my definitions of the final three thematic categories, and sent me back to the literature.

Findings
In qualitative research the findings are presented in as concise and logical a manner as possible, illustrating the category definitions through detailed use of the data and incorporating additional relevant literature. The scope of this article allows only a brief description of the actual findings. The three categories of description identified in this study – rediscovering self, reddefining disability, and establishing a new identity – by which meaning was made of the injury, represented commonalities but also revealed the complex and multi-dimensional nature of each individual’s experience. The continuity of ‘self’ was of primary importance to the ongoing experience of disability, and the learning strategies involved were diverse and intensely personal. The learning was described as a continuous process by which reintegration of the pre-injury self and external self (radically altered after injury) was facilitated. The key, it seems, is perceiving disability as just a part of the picture of a person’s life, not the whole (Carpenter, 1994).

Evaluating Qualitative Research
The issue of maintaining the integrity and rigour of qualitative research is an ongoing and important one. Krefting (1991) suggests that too frequently qualitative research is evaluated against criteria like ‘reliability’ and ‘validity’ which have been developed in relation to quantitative research, and as a result, qualitative research is found to be lacking. Qualitative researchers (Gliner, 1994; Guba, 1981; Krefting, 1990; Lofland and Guba, 1985; Parry, 1991) contend that because the nature and purpose of the two research traditions are different it is erroneous to apply the same criteria of worthiness or merit. However, without question the importance of applying rigorous standards by which the worth of qualitative research can be assessed cannot be overstated. The strategies used in this study to ensure merit included:

- Adequately recording at all stages of the research process the degree of involvement of the researcher.
- Consistently keeping field notes and analytic memos as a method of supporting the data analysis.
- Involvement of an ‘expert’ colleague in units of meaning and category checking.
- Soliciting pilot participant and peer input in the data collection stage.
- Using a consistent interview process and question schedule.
- Establishing my authority as a researcher by documenting my familiarity with the
phenomenon being studied and established interview skills, demonstrating a strong theoretical background through a comprehensive multi-disciplinary literature review, and by conducting conscientious pilot studies.

- Providing a detailed description of all aspects of the research process including a profile of the participants within the limits of confidentiality and the data collection and analysis methods.
- Extensive use of the data in reporting the findings.

**Conclusion**

There is an important place for qualitative research in physiotherapy practice. Questions which arise in the clinical setting, and are of interest to individual physiotherapists, may be best addressed using a qualitative methodology. The nature of the question should guide the choice of an appropriate methodology, not ideas about the superiority or relative worth of one methodology over another. The question asked in this study arose from an identified discrepancy in perception of the experience of spinal cord injury over time between health care professionals and those with first-hand experience of the injury and its consequences. This focus on the individual's perspective could be explored more effectively using a qualitative method. The goal of the qualitative method is to generate concepts, develop new models of practice and theories. This study concluded that although the contribution of the rehabilitation instruction, and particularly that of individual clinicians, was acknowledged by the participants, the adequacy of the preparation of health care professionals for their role as adult educators in the rehabilitation process was questioned (Carpenter, 1994). These conclusions had implications for future practice. A theory of transformative learning was introduced as a possible explanatory model for the study findings, application of which may facilitate a more client-centered approach to rehabilitation practice. It is hoped that this brief overview of qualitative research, the use of an example study in describing the research methodology, and the references provided will encourage physiotherapists reading this paper to consider using qualitative research in their clinical settings.

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