Language and Rehabilitation

Exploring physiotherapy students' responses to patients' questions

Christine Barry
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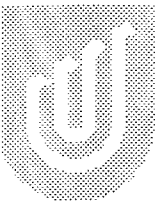
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Glossary

Clinical reasoning — The thinking process which underlies clinical practice and guides decision making. Includes a number of clinical reasoning strategies (Jones 1995, Flemming 1991a).

Clinical reasoning strategies — Ways of organizing the clinical reasoning process. Strategies include hypothetico-deductive reasoning, pattern recognition and narrative reasoning (Elstein 1995, Flemming 1991a, Mattingly 1991b).

Narrative — A story as interpreted according to a person's experience (Chamberlain 1997). In this study, the narratives are the students' responses to the patient's questions. These responses build a story, which is the student's interpretation of what has happened, what the current situation is and what will happen regarding the patient's problem.

Narrative analysis — A from of qualitative research which involves the systematic examination of narratives (usually written or spoken) for its structure and function (Bailey 1996). A number of methods may be used (Mishler 1995).

Narrative category — Categories by which elements of the narrative may be classified. Five narrative categories are examined in this study: nomenclature, etiology, time course for rehabilitation, perception of dependency and sense of alienation (see appendix 6 for definitions for each category).

Narrative element Sections of the narrative (e.g. a word or a phrase). In this study relevant narrative elements are classified according to the following:

- **Negative element (Rating = 1)**
  Narrative element which, when forming part of a person's injury narrative has been found to be associated with a negative rehabilitation outcome (Borkan et al 1991).
  Rated one when identified in students' narratives.

- **Ambiguous element (Rating = 2)**
  Narrative element which, while belonging to a narrative category relevant to this study, could not be considered as either positive or negative.
  Rated two when identified in students' narratives.

- **Positive element (Rating = 3)**
  Narrative element which, when forming part of a person's injury narrative, has been found to be associated with a positive rehabilitation outcome (Borkan et al 1991).
  Rated three when identified in students' narratives.

Use of the terms *positive* and *negative elements* in this study aims solely to facilitate clarity for the reader. It is not intended to imply that any particular element forming part of a physiotherapy students' narrative would inevitably be integrated into the patient's own interpretation of their problem, or that such an element expressed by the patient would itself determine a positive outcome.

Narrative reasoning A clinical reasoning strategy described by Mattingly (1991b) and used by therapists to understand a patient's problem in the context of their life story and to structure therapy appropriately.

Narrative theory The theory underlying narrative based research and therapy. Principle ideas included in this theory are that:

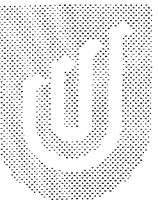
- A narrative (such as a person's life story as told by themselves) is constructed (interpreted) from a number of possible stories
- therefore distinctions may exist between narrative truth and historical truth.
- Language has a fundamental role in the interpretation of experience (Bailey 1996, Chamberlain et al 1997, Guze 1988).

Narrative therapy A psychotherapeutic approach based on the reinterpretation of meaning to facilitate preferred outcomes (White 1998).

Students' narratives The responses of the 52 undergraduate and 6 postgraduate students participating in this study to the hypothetical patient's questions.

Yellow flags Psychosocial risk factors for developing long-term disability and work loss (Kendall et al 1997).

Abstract



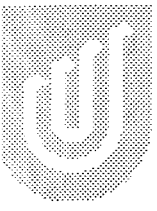
Abstract

Back pain is a common problem in our society with enormous associated medical, psychological and social costs. Recent research regarding back pain and other musculoskeletal injuries has indicated that psychosocial factors, including the meaning ascribed to an injury, may be better predictors of rehabilitation outcome than the injury itself. The meaning of a person's injury is interpreted and expressed through the telling of the story of their injury (their injury narrative). Many factors may influence this interpretation. One of these factors may be the response given by a health professional in reply to the injured person's questions.

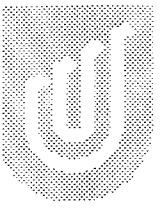
This study investigates the responses of 52 undergraduate physiotherapy students to a series of questions from a hypothetical patient with back pain. In addition six postgraduate physiotherapy students were asked to give responses to the same questions. Responses are analyzed for components (narrative elements) relevant to the five categories found by Borkan et al (1991) to be significantly related to rehabilitation outcome. These categories are Nomenclature, Etiology, Time Course for Rehabilitation, Perception of Dependency and Sense of Alienation from the world. The first three of these categories are related to a person's explanatory model (understanding of what their problem actually is). The remaining two categories are related to a person's perception of their disability following an injury.

Results of the analysis indicated that almost all students' responses contained relevant narrative elements in all categories. The majority of these elements compared favorably with those found by Borkan et al (1991) to be associated with positive rehabilitation outcomes. Some categories contained a higher number of positive elements than others; the categories Etiology and Perception of Dependency contained the highest number of elements whilst the categories Nomenclature and Sense of Alienation contained the lowest. The proportion of elements associated with a positive rehabilitation outcome was highest for Etiology and lowest in the category Sense of Alienation.

Results of the postgraduate and undergraduate student groups were remarkably similar in many aspects. However those differences that were revealed indicate that further research into the quality and applications of narratives in physiotherapy may be of value. This study suggests that narrative analysis methods may be a useful tool for reflecting on aspects of physiotherapy practice that as yet appear not fully explored. As the link between patients' injury-related beliefs and explanations given by health professionals becomes better understood, narrative based research may assist physiotherapists to develop responses that will facilitate beliefs associated with positive rehabilitation outcomes.



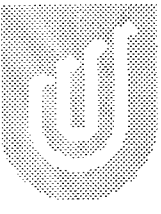
Chapter 1



1 Introduction

Back pain is a common problem in our society with enormous associated medical, psychological, social and economic costs (De Luca 1997). Studies have found that following an injury or accident, people's appraisal of their disability tends not to be proportional to their level of physical injury, but rather to the meaning they ascribe to the incident (Jurkovich et al 1995, Malt and Olafson 1995). Recent research regarding back pain and other musculoskeletal disorders has indicated that psychosocial factors, including the meaning ascribed to an injury, may be better predictors of rehabilitation outcome than the injury itself (Borkan et al 1991, Kendall et al 1997).

The meaning a person ascribes to their injury may initially appear somewhat removed from the most central concerns of health professionals such as physiotherapists. However the consequences of various injury-related beliefs indicate that they are of significant concern to those involved in rehabilitation. For example time off work following an injury has been found to be not related to injury severity (Lusted 1993) but has been related to various factors related to diagnosis and management (Kendall et al 1997).



Information from health professionals is one factor influencing a person's understanding of their injury (Borkan et al 1991). The way people understand their problem can change over time and appropriate intervention can facilitate beliefs associated with more

favorable outcomes (White and Epston 1990). Therefore it appears important that health professionals working with people with problems such as back pain understand both the process by which people develop the meaning of their problems and the type of injury-related beliefs that will facilitate and not hinder rehabilitation (Borkan et al 1991).

According to narrative theory (see glossary) the meaning of a person's injury is not only expressed but also interpreted through the process of telling the story of their injury (Chamberlain 1997). In the process of giving meaning to an incident, the story chosen is selected from amongst many possible interpretations and historical accuracy does not dictate how a person will make sense of events (Bailey 1996). Many factors may influence the interpretation selected (White and Epston 1990). One of these factors, and the subject of this study, is the responses given by health professionals in reply to an injured person's questions.

The quality of responses given by a physiotherapist in reply to a patient's questions will be a product of the therapist's clinical reasoning process (see glossary). This process is defined by Jones et al (1995 p.18) as "the thinking underlying clinical practice". It is the process used by physiotherapists to obtain clinical data, analyze this data to formulate decisions regarding diagnosis and management and reflect upon these decisions and their outcomes (Higgs 1997, Higgs and Jones 1995). Various ways of organizing the reasoning process, termed clinical reasoning strategies (see glossary) may be employed to enhance its effectiveness (Flemming 1991a, Jones et al In press).

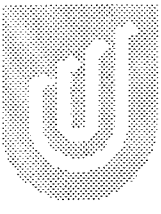
"Reasoning guided by multiple hypotheses" (Barrows and Feltovich 1987 p. 90) has been argued as the most appropriate and effective approach for medical practice because many unknown factors accompany each presentation. Hypothetico-deductive and pattern recognition methods have been described as the dominant modes of clinical reasoning used in medical and physiotherapy practice (Elstein 1995, Gale 1982, Jones 1995). The use of pattern recognition tends to increase with experience (Bordage and Limieux 1991). Reasoning strategies that focus on the biological sciences, such as diagnostic reasoning, may not be helpful for managing aspects health related problems that exist in a social context (Waitzkin et al 1994). Competent clinical reasoning processes require critical and open inquiry (Jones 1995) and a range of strategies, including narrative reasoning (see glossary), that can be used within the above model to guide various aspects of practice (Flemming 1991a, 1991b, Jones et al In press, Mattingly 1991a, 1991b).

Whilst interest in narratives has grown recently among a number of disciplines including the health professions (Waitzkin et al 1994), a search of the literature suggests that very little research investigating narratives in physiotherapy encounters has been published. An understanding of narrative theory and research using narrative-based methods may offer physiotherapists new ways of reflecting on their clinical practice. The language used by physiotherapists may have offer ways to facilitate for patients an interpretation of their injury that will favor and not hinder the rehabilitation process. This is an area for further research. A preliminary step may be an exploration of language currently used by physiotherapists in the clinical setting when, for example, responding to patients' questions regarding their injury.

Research methods based on narratives (see glossary) have been used to investigate clinical reasoning in medicine (Mishler 1995), the discourse of medical encounters (Waitzkin et al 1994) and the meanings people ascribe to their injury or illness (Borkan et al 1991, Osborn and Smith 1998). Narrative analysis (see glossary) is a classification of narrative based research and includes a number of methods (Chamberlain et al 1997).

Using narrative analysis to analyze the stories patient's told of their injury (a hip fracture) Borkan et al (1991) found certain narrative elements (see glossary) were significantly related to ambulatory ability six months following the injury. These elements fell into five narrative categories (see glossary):

1. Nomenclature (the name they gave their problem)
2. Etiology (the cause they gave for their problem)
3. Time Course for Rehabilitation (the length of time expected for recovery to take)
4. Perception of Dependency (the patient's fear of becoming dependent on others)
5. Sense of Alienation (whether they perceived their social role and status as continuing).



This study aims to:

1. Examine the responses of first year undergraduate physiotherapy students to five questions asked by a hypothetical patient suffering from a problem with which patients frequently present to physiotherapists: acute back pain.

2. Determine if these responses contain narrative elements relevant to the five narrative categories (Nomenclature, Etiology, Time Course for Rehabilitation, Perception of Dependency and Sense of Alienation) found by Borkan et al (1991) to be significantly related to rehabilitation outcome.

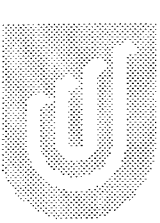
3. Compare the quality of these narrative elements with those found by Borkan et al (1991) to be associated with a favorable rehabilitation outcome.

4. Consider areas of strength and weakness in students' responses based on the number and quality of elements in various categories.

5. Compare the responses of a small sample of postgraduate students to the same questions, in order to obtain a preliminary indication of areas where responses may be similar or different to those of undergraduates.

6. Consider the possible applications of this method of narrative analysis as a tool for further research in physiotherapy education and clinical practice.

Chapter 2



2 Review of the Literature

2.1 Introduction

This chapter considers the relevance of psychosocial variables, in particular the meaning a person ascribes to an injury, to rehabilitation outcome for problems such as back injury. The relevance of a person's story of their injury (their injury-narrative) in revealing these variables will be explored. The research method narrative analysis, as a way of analyzing these stories will be discussed, including its theoretical basis and applications in health research. Therapeutic interventions that include a focus on narratives will be described. Finally, possible implications for physiotherapy education and practice will be considered.

2.2 Back Pain: Factors Affecting Prognosis

Back pain is a common and significant problem in our society with considerable associated medical, psychological, economic and social costs involved (De Luca 1997, Hagben and Thune 1998). Personal costs may include negative effects regarding self-image, increased dependency on others and social isolation (Orchison 1997, Osborn and Smith 1998).

For many years there has been a great deal of research aiming to determine anatomical, physiological and biomedical factors that may be linked to prognosis (Bogduk 1997, Grieve 1988). Highly regarded journals such as "Spine" devote considerable attention to research investigating factors such as the patients' age, the area of symptoms, the anatomical site of the lesion and treatment strategies on the

prognosis for people with back injuries (Hides et al 1994, McColloch 1998, Smedley et al 1998, Zitting et al 1998).

Psychological and social factors have also been investigated for their possible influence on the rehabilitation outcome of people with back pain and other musculoskeletal injuries or disorders (Borkan et al 1991, Gifford 1998, Kendall et al 1997). A number of studies have linked outcomes of health related problems to social supports and pre-existing coping mechanisms (Hall et al 1992, Malt 1992). Negative outcomes have also been linked to external locus of control (Furstenberg 1988 in Borkan et al 1991) and also to extreme internal locus of control (Malt 1992). Orchison (1997) also raises issues of locus of control. She claims that the social context for chronic pain sufferers is such that they may perceive that "*failure to recover is the responsibility of the individual, while any success belongs to the medical system*" (Orchison 1997 p. 32).

Research has indicated that the meaning that a person gives to an injury is an important factor determining functional outcome (Borkan et al 1991, Kendall et al 1997, Malt and Olafson 1995). Kendall et al (1997) identified risk factors for a poor outcome for back-injured workers. A number of these yellow flags (see glossary) were related to the meaning that the person interpreted from his or her experience of back pain and these factors are listed below in Table 2.1.

Table 2.1 Indicators for risk of developing negative outcome (chronic pain): Attitudes and beliefs about pain and dysfunction (Kendall et al 1997)

- Belief that pain is harmful or disabling resulting in fear-avoidance behavior
- Belief that all pain must be abolished before attempting to return to work or normal activity
- Expectation of increased pain with activity or work, lack of ability to predict capability
- Catastrophiseing, thinking the worst, misinterpreting bodily symptoms
- Belief that pain is uncontrollable
- Passive attitude to rehabilitation

Many of these important psychosocial predictors may be uncovered in the clinical situation as the patient tells the story (or narrative) of their injury. These stories can be analysed by research methods such as narrative analysis, which will be described below.

2.3 Narrative Analysis: A Method of Exploring Psychosocial Variables

2.3.1 Definition of Narrative Analysis

Narrative analysis has been defined by Bailey (1996 p. 187) as *"the systematic study of stories"*. It is a qualitative research approach useful for exploring meaning and experience. This relatively new form of qualitative research is still developing (Bailey 1996). Narrative analysis is not a single method. Various approaches have been used depending on aim of the research (Mishler 1995). All narrative research,

however, is a process in which *"texts are examined for narrative structure and function on the basis of narrative theories"* (Chamberlain et al 1997).

The definition of what constitutes a narrative is broad but the general understanding is that narratives are stories, as interpreted according to a person's experience, where events occur in a sequence over a time (Chamberlain 1997, White and Epston 1990). While expressions through painting or dance etc. may be considered narratives, words, either written or spoken, usually provide the texts for narrative analysis (Chamberlain 1997). Interest in narratives has grown recently among a number of disciplines including the health professions, psychology, social work, education, anthropology, literary criticism, history and law (Waitzkin et al 1994).

Narrative analysis is particularly useful in health related research, because in contrast to other scientific disciplines, *"medicine can be characterized by its dependence on narrative"* (Hunter 1986 in Mishler 1995 p. 112). This form of research has enabled investigation of the meaning and experience of health and illness, with the social context considered also (Chamberlain et al 1997). These phenomena within medical encounters have been difficult to analyze by quantitative research methods (Waitzkin et al 1994).

2.3.2 Contrast to Quantitative Research Methods

The qualitative paradigm includes over 20 different approaches (Leininger 1992 in Chamberlain et al 1997) and narrative analysis is only one of these. While proponents of one paradigm have argued for its superiority over the other (Neuman 1994), qualitative and quantitative research methods may be seen as complementary, as they

are able to address different research questions (Chamberlain et al 1997). Many researchers use an approach that includes both qualitative and quantitative components (Borkan et al 1991).

Qualitative research aims to discover meaning in data and not necessarily test hypotheses set at the onset of research as is the case with quantitative research (Neuman 1994). In qualitative research, the researcher aims to elicit the participant's subjective meaning, experience or perception (Chamberlain et al 1997). Underlying values and contexts are included in the investigation, while in quantitative methods, attempts would be made to control these as contaminating variables (Chamberlain et al 1997).

In qualitative research data tends to be in the form of words and in the process of analysis themes or motifs are extracted. Distinct variables are measured in a standardized manner (Neuman 1994). In qualitative approaches theory is built during the course of research and the inquiry process is often interactive. In quantitative research the process is typically deductive in order to test a previously stated hypothesis.

2.3.3 Assessing the Quality of Narrative Analysis Research

Because the nature of the knowledge gleaned from qualitative research is different from that gained by quantitative research, the criteria for assessing the quality of the research are very different (Bailey 1996). The quality of quantitative research has traditionally been assessed via the validity and reliability of the research methods and research findings (de Vet et al 1997), however these concepts cannot be adequately

applied to qualitative research (Bailey 1996). The ability of research findings to be replicated and generalized to a wider population do not apply to qualitative research, which is concerned with understanding and meaning (Chamberlain et al 1997).

Endeavors have been made to make the systematic nature and methodological rigor of qualitative research more apparent to researchers involved in the more traditional, positivist research methods but these may not recognize its different theoretical basis (see section 2.3.4 below). For example the experimental model assumes the existence of an objective and measurable truth, whereas the narrative model seeks to discern meaning. Research findings are now evaluated for factors such as trustworthiness and authenticity (Chamberlain 1997). Explicit criteria by which to identify authenticity are yet to be identified and evaluation and assurance of quality are yet to be fully resolved although the paradigm of qualitative research continues to develop (Bailey 1996).

In narrative analysis the strategy researchers generally use to enable readers to discern if the narrative interpretation is credible and valuable is to *"make the research process visible, allowing systematic scrutiny"* (Bailey 1996 p. 191). This may include procedures such as presenting clear descriptions and examples of raw data, describing methods by which findings are made and interpretations drawn and making raw data or transcripts available to other researchers.

These processes mean the researcher's interpretations are open to evaluation by readers. Where there are no set rules for establishing credibility, by making the process visible/ auditable, the researcher can persuade trustworthiness (Bailey 1996).

What can be noted is that when reporting narrative research, clear descriptions of methods used should be reported in some detail (Bailey 1996, Reissman 1993 in Waitzkin et al 1994). Regarding the issue of subjectivity in the interpretation of findings from qualitative research, researchers do not necessarily aim to eliminate subjectivity. According to the theory that underlies narrative analysis, eliminating subjectivity may be an impossible goal even in quantitative research (Waitzkin et al 1994).

2.3.4 Theory Underlying Narrative Research: The Construction of Meaning

Narrative research theory deems that people reconstruct reality in the process of giving meaning to life experiences (Bailey 1996). This means that people who experience a particular series of life events or a particular set of physiological symptoms may have vastly differing life or illness experiences, depending on the meaning of these experiences for the individuals concerned. *"In creating meaning from experience, individuals organize encounters and events which are often non-systematic into stories that are coherent and appropriate within their social context"* (Chamberlain 1997 p. 699). In narrative analysis the historical accuracy in a person's story is not as important as the way the person makes meaning of the events (Bailey 1996).

Examples of research that illustrate the implications of this include Riessman (1989) who interviewed three people who had all experienced apparently similar life events (the divorce of their spouse prompted by the partner's infidelity). Narrative analysis revealed that the way these people had constructed meaning around these events resulted in their experiences being very different, with associated positive and

negative effects on their sense of well being. In the same way, peoples' social context and the way they construct meaning of an illness or injury will impact on their experience.

According to the social constructionist perspective, language is fundamental to the interpretation of experience and the creation of self-identity (Chamberlain 1997). Language does more than transmit thoughts; thoughts and language depend on each other for existence and it is *"a vain enterprise to say which is the more basic"* (Bruner 1991 in Chamberlain 1997 p. 700). These concepts regarding the construction of meaning being interdependent with both language and social context are not new. In 1912 James Stephens described the same philosophy through the story of a young girl living a solitary life, who was unable to interpret the meaning of her experience because she could not name it:

> *"Very slowly there was growing in her consciousness an unrest, a disquietude to which she had hitherto been a stranger. Sometimes an infinite weariness oppressed her to the earth. A thought was born in her mind but it had no name. It was growing and could not be expressed. She had no words wherewith to meet it, to exorcise or greet this stranger who, more and more insistently and pleadingly, tapped upon her doors and begged to be spoken to, admitted and caressed and nourished. A thought is a real thing and words are only its raiment, but a thought is as shy as a virgin; unless it is fittingly appareled we may not look on its shadowy nakedness: it will fly from us and only return again in the darkness crying in a thin, childish voice which we may not comprehend until, with aching*

minds, listening and divining, we at last fashion for it those symbols which are its protection and its banner"

(Stephens 1915 p. 39).

The disquietude and weariness associated with the search for a name, and therefore a meaning, for her experience appear in contrast to the discovery, revealed later in the story, that her thought was *"Happiness"* (Stephens 1915 p. 80).

A project reported by Pennybaker (1994) appears to support the concepts of narratives and storytelling as a vehicle by which people not only express but also develop meaning and make action plans. The researcher was involved in a program with retrenched, skilled workers all of whom had failed to find employment six months after their positions within a large company had been abruptly terminated. He gave participants the task of writing their story of the events surrounding their retrenchment. When followed up after six months the number in the writing group who had found gainful employment was significantly higher than a 'control group' who had been instructed in time management techniques. Through this apparently simple task, many of the workers seemed to have been able to interpret the meaning of their experience and recognize and overcome barriers to further employment (Pennybaker 1994).

Regarding the significance of the social context in which interpretations are made, Chamberlain et al (1997 p.692) noted *"It is difficult to resist the arguments from social psychology that meanings are constructions. For example, rather than viewing*

illness representations as individual cognitive entities, they are better viewed as socially constructed". The social constructionist perspective deems that the way an individual understands an experience is socially mediated (Chamberlain 1997). White (1998 p. 1) notes that *"expressions have a cultural context, and are informed by the knowledges and practices of life that are culturally determined"* and *"the meanings of experiences that are, in the first place, ambiguous and/ or uncertain are negotiated in communities of people according to established procedures".* Diverse belief systems, demonstrated in the narratives of patients' and in their explanatory models were found by Kleinman (1988 in Waitzkin et al 1994) to be related to different cultural backgrounds.

The relevance of the above for health professionals is twofold. Firstly to understand a patient's illness-related beliefs and behaviour one needs to be aware of the influence of the person's social and cultural background. Secondly health professionals should be aware that they are a part of that cultural context and patients may look to them for cues regarding normal behaviour in the context of their problem.

2.4 Psychosocial Variables revealed by Narrative Analysis

As noted above, researchers have used narrative analysis to reveal psychosocial variables relevant to rehabilitation. For example Borkan et al (1991) interviewed elderly women in hospital following a hip fracture. They found an association existed between the stories told by the women in the first few days after the fracture and their walking ability six months later. Five variables within the injury-narratives were significant. The authors called these variables *Nomenclature, Etiology, Time Course*

of Rehabilitation, *Perception of Dependency* and *Sense of Alienation from the World.* Each of these variables will be defined and discussed below.

Nomenclature was defined by the authors as the reason or name given by the subject for being in the hospital. Women who, when interviewed by the researchers, stated they were in hospital for a *"broken bone"* tended to have a more a positive outcome (walking ability six months later) than those who replied they were in hospital because they were *"sick"* or had *"osteoporosis"*.

Etiology was defined as the subject's model for the cause of the hip fracture. For example women who described the cause of their hip fracture as *"I fell and broke my hip"* or *"I slipped and fell"* tended to have a more positive outcome. The group who described *"internal degeneration"* or replied *"it disintegrated"* and those who described another cause as primary, such as a seizure, did not have outcomes as favourable.

Time Course of Rehabilitation was the time the subject expected the rehabilitation process to take. Women who reported *"I think I'll be up and around before you know it"* had more positive outcomes than those whose replies reflected perceptions like *"I think it will take a long time."*

Perception of Dependency described the subject's fear of becoming more dependent on others for care or assistance. Examples of responses associated with positive outcomes included *"I can't imagine having to depend on anyone"*. In contrast, responses such as *"I liked doing so much for myself and now I'm stuck"* were associated with negative outcomes.

Sense of Alienation from the World was the term used to describe the subjects' sense of continuity of their social role and social status. Those who gave responses such as *"I'll get around visiting people"* had more positive outcomes. Responses such as *"I have no visitors so I don't know who I belong to"* were associated with less positive outcomes.

A person derives the meaning of an injury or illness from a combination of words, situations, symptoms and feelings associated with it (Good 1977 in Borkan et al 1991). The components from which the meaning is derived include a person's system of medical knowledge (including information regarding etiology, mode of onset, course, pathophysiology and treatment). This knowledge may come from many sources and may include images that have no scientific basis (Sontag 1991). From their interpretation of this knowledge a person determines what their problem actually is and this component of meaning has been termed a person's "*explanatory model*" (Kleineman 1980 in Borkan et al 1991).

Three of the variables that Borkan et al (1991) found to be significantly related to outcome for the subjects in their study were components of the explanatory model. These were Nomenclature (how the person named their problem/ reason for their

admission to hospital), Etiology (the cause of the hip fracture) and the expected Time Course for Rehabilitation. Those who had a more positive outcome tended to describe each of these three elements from a mechanistic point of view.

An example of a mechanistic explanatory model is of a *'fall'* leading to a *'break'* and an expectation of *'recovery and a return to walking'*. An explanatory model that was organic as opposed to mechanistic was associated with a more negative outcome. An organic explanatory model may include components such as *'osteoporosis'* and a fall resulting from a hip that *'disintegrated'* and an expectation that walking will not return to normal. It is interesting to note that other areas of health, such as psychiatric medicine, an organic model of illness has been reported as increasing a patient's sense of well-being in contrast to periods in which no satisfactory explanatory model could be conceptualized (Lees 1998).

The other two categories of elements that Borkan et al (1991) identified within the injury-narratives and found were associated with outcome, were both related to the patients' perception of disability. These were Perception of Dependency and Sense of Alienation from the World.

Narrative has been proposed as an *"organizing principle for human action"* (Chamberlain 1997 p. 699) and according to the explanatory models of illness, the creation of both meaning and models of reality and the formation of action plans occur simultaneously during an illness episode (Borkan et al 1991). These claims appear to be supported by the findings of Pennybaker (1994) noted above, strengthening the argument that illness related beliefs associated with positive

outcomes will themselves encourage patients to take action that will enhance their own well being.

2.5 Critique of Clinical Practice using Narrative Analysis

It has been argued that in clinical decision making it is important to appreciate the role of narrative and that narrative research enables critique of diagnostic reasoning (Hunter 1986 in Mishler 1995). Support for this argument is found in research by Waitzkin et al (1994), who performed a narrative analysis of encounters between older people and primary care medical doctors. They found the narrative structure was such that certain problems were marginalized or incompletely expressed.

These researchers reported that while psychosocial factors are critical to the achievement of patient management goals, such issues are often pushed to the periphery in encounters between patients and doctors. They found this occurred via characteristic narrative structuring and sequencing which they observed when analyzing transcripts of the encounters. Even when doctors acknowledged components such as depression contributing to a patient's problem and gave time to discourse related to the patient's social concerns, social issues tended not to be discussed in detail and tended to be left unresolved. Instead *"the structure of discourse tends to cut off, to interrupt and ultimately to marginalize their discussion, even though these issues may create substantial day-to-day suffering"* (Waitzkin et al 1994 p. 341).

Recommendations from Waitzkin et al (1994 p. 342) include that health care workers allow patients to *"tell their stories with far fewer interruptions, cutoffs or returns to*

technical matters. Patients should have a chance to present their narratives in an open-ended way. When patients refer to personal troubles that derive from contextual issues, doctors should try not to marginalise these connections by reverting to a technical track". Other recommendations by Waitzkin et al are listed in Table 2.2.

Table 2.2 (from Waitzkin et al 1994 p.343)

Criteria to Guide Responses to Contextual Concerns in Medical Encounters

- When patients initiate discussion of contextual issues, physicians should pursue this discussion rather than marginalizing it and should offer contextual interventions

- When patients do not initiate discussion of contextual issues that clearly are present, physicians should inquire briefly if the patient wishes to discuss these issues and to take part in contextual interventions. Variability in patient's preferences, as well as patient's autonomy to refuse discussion and/ or interventions, should be recognized

- In decisions about the time and costs devoted to contextual discussion, physicians and patients should consider evidence that contextual conditions affect outcomes of care, such as prognosis, functional capacity, or satisfaction

- Practitioners should consider referral to social workers, psychologists or psychiatrists, in addition to the option of dealing with contextual issues in the primary care setting

- Physicians should try to avoid the "medicalization" of social problems that require long-term reforms in social policy

2.6 Focusing on Narratives in Health Care

2.6.1 Narrative Reasoning

In her research with occupational therapists, Mattingly (1991b) noted that there were two methods by which therapists in clinical practice used narrative reasoning. The first was storytelling. In this she included both listening to the stories elicited from patients as well as telling stories about patients. The other way in which she found therapists used narrative reasoning was story creation. This she called *therapeutic emplotment*: a process in which therapy is structured to form a story of its own that will fit into the patients' lives.

The therapeutic emplotment process transforms therapy from a series of tasks to an integrated process that is shaped and motivated by an image of where the patient will be at the end of therapy. Therapeutic emplotment is illustrated by a story from a therapist (O'Reilly 1990 in Mattingly 1991b) of the transformation of what had been a poorly attended "Upper Extremity Group" for resident head injured patients. The therapist recognized that for therapy to be meaningful, patients needed to perceive it not as just a series of therapeutic tasks for them as patients, but as part of a life story in which they were participants. Recognizing that all members of this group were from New York and all wished to return home, she created a therapy around this theme.

Therapy came to consist not of putting pegs in holes, but, for example, writing graffiti. Therapy focused on the broader life experiences of the residents rather than on their illness. The process had a number of desired outcomes beyond those anticipated. Residents were able to creatively express their feelings about being away

from home, they chose their own name for the group, they interacted with each other, had fun, and were motivated to perform tasks therapeutically beneficial (for example writing).

Mattingly (1991a p. 999) noted *"narratives make sense of the reality by linking the outward world of actions and events to the inner world of human intention and motivation"*. Storytelling focuses not on the physical problem itself but on the patient's experience, coping, motivations and commitment. This includes the patient's understanding of the disease/ disability and the social context in which the patient lives. In narrative reasoning, these are the focus of the therapy and the disability is the background context (Mattingly 1991b).

2.6.2 Narrative Therapy

Whilst it can be appreciated that effective treatment involves appreciation of the disease experience of the patient, teaching how to actually treat the illness experience effectively is very difficult (Mattingly 1991b). The reinterpretation of meaning to facilitate healthier outcomes is the basis of the psychotherapeutic approach used in narrative therapy (see glossary). The advocates of this therapeutic approach propose that it is the meaning that people attribute to events that determines their behavior (White and Epston 1990).

An underlying philosophy in narrative therapy is that *"meaning does not pre-exist the interpretation of experience"* (White 1998 p. 54). Instead, as people express their experiences in life, this very action causes them to engage in interpretive acts. Through these interpretations people give meaning to their experiences. Expressions

are constantly being produced and will shape life, because interpretation and meaning are developed through expression, and meaning determines action (White 1998).

One of the techniques used in narrative therapy is *externalization*: separation of the problem from the person (Tomm 1990). This enables examination of the dynamics between the person and their problem, so that the question of whether the person has influence over the problem or vice versa can be addressed (Tomm 1990). Such a process has been advocated in the management of chronic back pain (Orchison 1997).

White and Epston (1990) have noted that the manner in which people typically describe problems is oppressive in the sense that the problem is characteristically described as having some aspect of control over the person's life. Moreover, they argue that the stories people construct about their lives are selected aspects and do not fully encompass all lived experience. The authors quote Bruner (1986) who wrote, *"Life experience is richer than discourse. Narrative structures organize and give meaning to experience, but there are always feelings and lived experience not fully encompassed by the dominant story"* (White and Epston 1990 p. 40).

Externalization of a problem enables people to separate themselves from the dominant story guiding their life and identify important, previously neglected aspects of experience. Through these processes, people may be able to interpret new meanings from prior experiences and *"re-authoring"* of their problem-related stories might be facilitated (White and Epston 1990 p. 41).

Comparing the philosophies of the positivist and narrative based approaches White and Epston (1990) describe a positivist approach as perceiving society mechanistically. Problems are viewed as a mechanical breakdown and solutions found by analyzing and isolating the precise cause and correcting or reconstructing the machine. A narrative based approach looks for metaphors in the story of the person's problem and views problems as the action of a dominant story. This dominant story is recognized as being confining or negative and opening a space for the authoring of alternative stories forms the solution.

2.7 Possible Implications for Physiotherapy Education and Practice

In the discussion above a number of points relevant to physiotherapy education and practice are raised. These include the following:

- The meaning a person ascribes to an injury is crucial in determining functional outcome (Borkan et al 1991, Kendall et al 1997, Malt and Olafson 1995).

- The problems most important to patients are often not central to the technical goals of medicine (Waitzkin et al 1994).

- According to the philosophical basis of narrative therapy, meanings can be reinterpreted to facilitate preferred outcomes (White and Epston 1990).

Regarding the first of these points, physiotherapy educators already recognize the importance of the psychosocial history, including screening for yellow flags, in the

clinical reasoning process in relation to assessment, management and prognosis (Jones et al In press). However guidelines regarding how physiotherapists can contribute to the management of the psychosocial component of patients' problems are less explicit, in particular what physiotherapists might be able to do to facilitate beliefs associated with positive rehabilitation outcomes. For patients with chronic pain, a cognitive-behaviouralist approach in physiotherapy management has been recommended (Harding and Williams 1995). However, by this stage a patient may have held unhelpful injury-related beliefs for some time. Earlier intervention may have limited the escalation of the development of such beliefs. Kendall et al (1997) identified a number of risk factors for poor outcome for back-injured workers that are related to health care provider intervention. These factors are listed below in Table 2.3.

Regarding the second point, the guidelines for medical practitioners (Table 2.2) recommended Waitzkin et al (1994) might be relevant for physiotherapists also. Ignoring the social context of a problem may result in it being reduced to a medical diagnosis. This could mask potential solutions to the problem if in fact what is required is social or political change (Crawford et al 1995).

Table 2.3 Indicators for risk of developing negative outcome (chronic pain): Factors related to diagnosis and management (Kendall et al 1997).

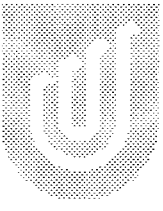
- Health professional sanctioning disability, not providing interventions that will improve function
- Experience of conflicting diagnoses or explanations for back pain, resulting in confusion
- Diagnostic language leading to catastrophising and fear
- Dramatisation of back pain by health professional producing dependency on treatments and continuation of passive treatment
- Number of times visited health professional in last year
- Expectation of a techno-fix e.g. requests to treat as if the body were a machine
- Lack of satisfaction with previous treatment for pain
- Advice to withdraw from job

The third of the above points implies that potentially, physiotherapists may be able to influence a person's injury-related beliefs in a way that will facilitate rehabilitation. Clinical practice will be enhanced when competencies in diagnostic reasoning and technical skill are complimented by awareness that psychosocial variables impact significantly on outcomes of care. Narrative reasoning is therefore an important clinical reasoning strategy for physiotherapists to utilize. Research methods based on narratives in physiotherapy encounters may increase physiotherapists' awareness regarding the language they use in the clinical situation and other factors that may influence patients' injury-related beliefs. How the physiotherapy encounter may impact on a person's understanding of their problem is an area for further research.

2.8 Summary

Psychosocial variables are important predictors of rehabilitation outcome (Borkan et al 1991, Kendall et al 1997). A patient's story of their injury may reveal these variables. As these stories are not simply determined by historical events but are a person's interpretation of the meaning of these events, the stories are fluid, are influenced by many factors and can be reinterpreted with retelling. Exploration of these stories by research methods such as narrative analysis indicates certain components of the story of an injury are associated with positive rehabilitation outcomes. Further research may determine if physiotherapists are able to facilitate injury-narratives for their patients that will facilitate rehabilitation.

Chapter 3



3 Methodology

3.1 Introduction

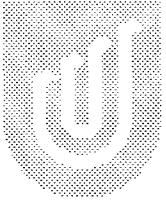
This study uses narrative analysis methods to examine the responses of physiotherapy students to questions from a hypothetical patient. Three main research questions were addressed:

1. Do the explanations given by physiotherapy students contain narrative elements that correspond to those identified by researchers such as Borkan et al (1991) as being significantly related to rehabilitation outcome?

2. How does the quality of these narrative elements compare with those found in previous research to be associated with a favourable outcome?

3. Do responses contain more narrative elements in some categories, and do categories differ in their proportion of positive and negative elements (see glossary)?

In addition, responses of a small group of postgraduate students are compared to those of the larger cohort of undergraduates, who form the principle group of participants in the study.



In this chapter the participants in the study, along with the setting in which the study took place, is described. An account of the data collection process and the method of data analysis is also given.

3.2 Participants and Setting

Two cohorts of physiotherapy students participated in this study. Both were recruited from the University of South Australia. The larger group consisted of first year undergraduate students enrolled in the subject *Physiotherapy Studies 101*. The second, smaller group consisted of postgraduate students.

At the beginning of the second semester of the 1998 academic year, information sheets (Appendix 1) outlining the aims of the study, along with consent forms (Appendix 2) were distributed to the 88 students enrolled in *Physiotherapy Studies 101*. In the following two weeks, 53 students (60 per cent) returned signed consent forms indicating their agreement to participate. One student was excluded from the study, as that data set copied was incomplete. The remaining 52 students were included.

During the same fortnight, six postgraduate students were given information sheets and consent forms. This sample of convenience was selected from 37 students enrolled in the research component of the Masters degree by coursework in the area of Manipulative Physiotherapy, Sports Physiotherapy or Orthopaedic Physiotherapy. All had a minimum of two years postgraduate clinical experience prior to commencing further study. The six postgraduate students all agreed to participate. The only

inclusion criteria for all subjects were enrolment in the relevant course and subject and consent to participate.

3.3 Data Collection

Undergraduate and postgraduate physiotherapy students were given versions of the patient scenario appearing below in Table 3.1. The patient scenario was chosen as being a common problem and one typically encountered by a clinical physiotherapist working in areas related to the management of musculoskeletal problems. Two academic staff at the University of South Australia originally wrote the scenario for the purposes of the clinical reasoning assignment, one of several completed by students in fulfilling assessment requirements for the subject *Physiotherapy Studies 101* as noted above.

The questions asked by the hypothetical patient were modified for the purposes of this study by the researcher and one of the supervisors, who also coordinated the undergraduate subject. Two qualities were considered necessary in the formulation of the patient's questions. Firstly that they represented questions which physiotherapists frequently encountered in clinical practice. Secondly, that questions had potential to elicit responses containing the narrative elements found by Borkan et al (1991) to be related to rehabilitation outcome.

To strengthen the face validity of the questions as fulfilling the first of these criteria, the questions were initially reviewed by a group of eight postgraduate physiotherapy students. This group was drawn from the cohort of postgraduate students but did not include the same students who later participated in the main study. All eight

physiotherapists in this group agreed that the questions did represent those typically asked by patients during physiotherapy encounters.



Table 3.1 Patient Scenario and Questions to which Students Responded

Your 40 year old Aunt, who knows you are studying physiotherapy rings you up one Monday night and says "I did a bit of gardening on Saturday afternoon and now I feel like an old woman – I just can't move. I don't know whether it's just sore muscles or whether I've done my back in like Gran did several years ago. I wasn't doing anything very difficult; it wasn't hard work like it is when we spend an afternoon hiking the Heysen trail!"

On questioning her you discover she has pain down her back from T9 level, posterolateral hips, backs of her thighs and calves. She had spent 4 hours pulling out weeds ("too good an opportunity to miss after the rain"). She had spent most of the time bending over from the hips, although she interspersed periods of squatting as well.

She has no history of back/ hip/ knee problems.

She felt

- Tired but not sore on Saturday night
- Sore and stiff Sunday morning Really enjoyed a long hot shower and felt better after that
- Was not too bad for the rest of Sunday until the night. She had been sitting talking to visitors for a few hours and when she went to get out of the lounge chair, she could hardly move because of the pain.
- Monday morning was really terrible. She felt "sore all over".

After answering your questions to her, your aunt asks you the series of questions below. What do you say to her in answer to each of these? (***write the actual words*** you would use to her.)

A. " Why should I be so sore? Is it just a strain or is my back weak or something?"

B. "So do you think this happened because I over did it or is it because bad backs run in our family?"

C. "Well I'm feeling pretty miserable with the pain. I'm supposed to be going out with friends the next few days, but no-one will want to have me around whinging and slowing them down. Do you think I should just rest in bed and keep to myself until I feel better?"

D. "We are meant to be going on a week's hike in a few months time. Do you think I'll be able to? I'm worried I might have done my back in for good."

E. "You know my garden is a pretty big one. Should I get someone in to help me in the future"?

As a normal component of the subject *Physiotherapy Studies 101*, undergraduate physiotherapy students were given two weeks to complete the clinical reasoning assignment based on this patient scenario. Responses to the patient's questions comprised one of six components of the total assignment. The assignment appears in its entirety in Appendix 3. The sections of completed assignments that were copied to obtain part of the raw data for this study are highlighted in bold type.

Only after all assignments were completed and submitted for assessment, as part of the normal procedure for this subject, were students informed of the research project and invited to participate. This process was intended to limit the likelihood of knowledge of the project to influence students' responses. Relevant sections of the assignments of students who signed and returned the consent forms were then photocopied and coded (see section 3.4 for an explanation of the coding methodology). Students' names did not appear on the photocopied response sets. Those responsible for assessing the students' work were not aware which students had signed consent forms. This process aimed to ensure that students felt equally free to give or withhold their consent to participate.

The almost identical version of the patient history and questions, which was given to the group of six postgraduate physiotherapy students, is shown in Appendix 4. Students were given this form during a postgraduate research seminar, one of a series of fortnightly meetings during which students preparing a minor thesis as part of their postgraduate physiotherapy studies at the University of South Australia meet to informally present and discuss their work-in-progress. A brief description of the broad aims of the project was given to the students, without particular reference to, or

identification of, the specific narrative elements of interest in the study. Students were then given 10 to 20 minutes during which they recorded in writing their responses to the same questions presented to the undergraduate students.

Postgraduate students were also asked to record factors which they felt may influence the way that they give explanations to patients, such as years of clinical experience, place of undergraduate education and areas of professional interest as indicated in Appendix 4. Immediately following this, a discussion was held among group members. During this discussion participants raised a number of points. They were asked to record these on their papers, which were then handed to the researcher and are referred to in the discussion section (5.3).

3.4 Data Analysis

The responses given by the physiotherapy students to the patient's questions were the narratives analyzed in this study. An individual student's collection of responses to the six questions was termed a *narrative* or *response set*. In the process of analysis both qualitative and quantitative methods were used.

Narratives (response sets) were examined to identify significant words or phrases *(narrative elements)*, within the five categories listed below in Table 3.2. These are the five categories of narrative elements which, when forming part of a patient's explanatory model or perception of disability, were found by Borkan et al (1991) to be significantly related to rehabilitation outcome. Definitions of these narrative categories, along with examples of each, were given in Chapter 1.

Table 3.2 **Narrative Categories Significantly Related to Rehabilitation Outcome**
(adapted from Borkan et al 1991 p. 953)

Category I	Explanatory Model
	1. Nomenclature
	2. Etiology
	3. Time course for Rehabilitation
Category II	Perception of Disability
	4. Perception of Dependency
	5. Sense of Alienation from the World

For each of the significant narrative categories, a narrative analysis encoding sheet, including rating scales and an explanatory key was constructed (Appendix 5). Narrative elements were rated according to a three-point scale, with equivocal statements being rated as two and more polar statements rated as one or three. Narrative elements related to variables associated with positive rehabilitation outcomes were rated as 3 and those associated with negative rehabilitation outcomes were rated as 1. If no evidence of a relevant narrative element was found a rating of 0 was given. All relevant elements in each response section were rated, so that from a single student's work more that one rating in each category may have been obtained.

To establish reliability, initially a random series of three response sets were analyzed and rated by the researcher and one of the project supervisors. Where discrepancies occurred there was discussion of the reasons for this, the coding sheets were refined and the process repeated with another three response sets until a satisfactory level of ratings agreement was obtained. Initially all sections of these responses were examined for all significant narrative elements. From the first two sets of three

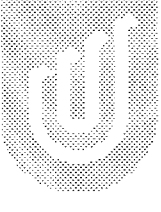
randomly selected response sets, two things became apparent. Firstly, the narrative elements related to nomenclature, time course for rehabilitation, perception of dependency and sense of alienation appeared exclusively in sections A, D, E and C respectively. Secondly, narrative elements related to etiology were numerous and, within a single response set, almost all were found to have the same rating. The majority of narrative elements relating to etiology were found in sections A and B. Therefore it was decided that examination for each narrative element would be limited to one or two relevant sections. The appropriate sections for each were recorded on the encoding sheets (Appendix 5). The researcher then analyzed the total number of response sets.

The frequency of each rating for each significant narrative element was calculated for both the undergraduate and postgraduate groups. The results of the two groups were compared with the type of narrative elements that, when forming part of a patient's explanatory model or perception of disability, are found to be associated with a positive rehabilitation outcome. In addition, comments made by the postgraduate students in the group discussion, which immediately followed the completion of their written responses, were considered in relation to the interpretation of the analyzed data.

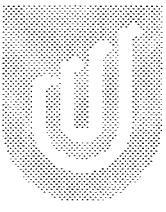
3.5 Summary

The setting in which this study took place and characteristics of participants have been described. The data analysis process detailed above enabled qualitative examination of students' responses in relation to narrative elements associated with rehabilitation outcome. Rating of responses and calculation of frequency of types of responses

within the narratives provided quantitative measures of the narrative elements, enabling comparison between responses from undergraduate and postgraduate students. In addition, the quantitative methods enabled an appreciation of the overall quality of student responses in relation to the nature of variables associated with a favourable outcome.



Chapter 4



4 Results – Quantitative

4.1 Introduction

In this chapter quantitative aspects of the results of the narrative analysis detailed in Chapter 3 are presented.

During the analysis of students' narratives, relevant elements were identified in each of the five categories (Nomenclature, Etiology, Time Course for Rehabilitation, Perception of Dependency and Sense of Alienation). According to the appropriate coding sheet for each category (Appendix 5), elements were rated one, two or three, as described previously. Examples of elements of each rating for each of the narrative categories are found in Appendix 5. In summary, elements rated three were those which, when forming part of a patient's understanding of their problem, have been found to be associated with a positive rehabilitation outcome. Elements rated one were those which may be expected to influence a patient's understanding of their problem in a way that might be associated with a negative rehabilitation outcome. Where narrative elements were found to be ambiguous they were rated two and where no significant narrative elements were identified a rating of zero was recorded.

The frequency of elements of each rating identified in each category was then calculated. It is this summary of the results that is presented here. Results of the analysis of undergraduate students' narratives are presented first, followed by those related to

postgraduate students. Whilst this chapter presents a quantitative summary of the various types of elements identified in students narratives, the quality of students' responses are explored in more detail in the Discussion section (Chapter 5) which follows.

4.2 Narrative Elements in the Responses of Undergraduate Students

The total frequency with which elements were identified in the narratives of undergraduate physiotherapy students is presented in Table 4.1. In the left of the table, the five narrative categories (Nomenclature, Etiology, Time Course for Rehabilitation, Perception of Dependency and Sense of Alienation) found by Borkan et al (1991) to be significantly related to outcome are listed. Beside each narrative category, the number of elements rated one, two and three identified in the responses of undergraduate students is recorded.

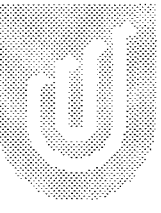


Table 4.1 Frequency of elements in narratives of undergraduate students (n=52)

Narrative Category	Rating 1 negative	2 ambiguous	3 positive	total
Nomenclature	0	6	71	**77**
Etiology	4	2	159	**165**
Time Course for Rehabilitation	1	9	119	**129**
Perception of Dependency	14	29	169	**212**
Sense of Alienation	13	60	53	**126**
Total	**32**	**106**	**571**	**709**

As Table 4.1 illustrates, a total of 709 narrative elements relevant to this study were identified in undergraduate students' responses. The total represents an average of 13.6 elements per undergraduate student. The majority of these elements (571 or 80.5 per cent) were positive (see glossary). In contrast, 32 elements (4.5 per cent) were negative (see glossary) and 106 elements (15 per cent) ambiguous.

The total column to the right in Table 4.1 indicates that the narrative categories that contained the highest number of elements were Perception of Dependency (212 elements) and Etiology (165 elements). For all narrative categories, it can be seen that the majority of elements identified were positive. The categories with the highest proportion of their elements rated three were Etiology, with 159 rated three from a total of 165 elements (96

per cent) and both Nomenclature and Time Course for Rehabilitation, each with 92 per cent of their total number of relevant narrative elements rated three.

The column related to elements rated one reveals that the categories Perception of Dependency and Sense of Alienation contained the highest number of negative elements. Fourteen elements related to Perception of Dependency were rated one as were 13 elements related to Sense of Alienation. These figures represented 6.6 percent and 10.1 per cent of the total number of elements relevant to each category respectively. These two categories also contained the highest proportion of elements rated two. Of the 212 elements related to Perception of Dependency, 29 (13.7 per cent) were ambiguous. Sixty of the 126 elements related to Sense of Alienation (47.6 per cent) were ambiguous.

The majority of students' responses included multiple elements of various ratings within a single category, but some contained few or no relevant elements in some categories. While Table 4.1 indicates the categories which contained the highest and lowest number of elements of various ratings from students as a group, an appreciation of the distribution of elements amongst the group of students gives further information regarding the quality of students' responses. Table 4.2 (below) presents the number of students whose narrative included at least one element in a category for each rating.

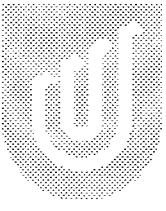


Table 4.2 **Number of undergraduate students whose responses contained at least one relevant narrative element.**

Narrative Category	Rating 0 no elements	1 negative	2 ambiguous	3 positive
Nomenclature	3	0	6	46
Etiology	0	4	2	52
Time Course for Rehabilitation	1	1	5	51
Perception of Dependency	0	12	24	51
Sense of Alienation	1	9	43	31

The first column of numbers in this table (rating = 0) indicates the number of students whose narratives were found to contain no elements relevant to this category. As indicated, three undergraduate students did not give a name to the patient's problem. However all undergraduate students did give a cause or mechanism for the injury, and the responses of all 52 students' contained at least one element rated three for the category Etiology.

Alongside the category Time Course for Rehabilitation it can be seen that one student did not indicate the time it might take, or whether in fact recovery may be expected (see coding sheet, Appendix 5). As the right column of the table illustrates, the responses of the remaining 51 students all contained at least one positive element. In the category Perception of Dependency, a similar pattern is seen in some respects, with 51 students giving responses containing at least one positive element. However 12 students gave

responses containing at least one negative element in this category and 24 students gave responses with at least one ambiguous element.

Finally, for the category Sense of Alienation, one student's narrative included no reference to the advisability of continuing normal activities or social interaction. Thirty-one students gave responses in which positive elements were identified, in contrast to the higher number of students with positive elements for all other categories. It can be seen that this category is characterized by the highest number students (43) with responses containing ambiguous elements, along with nine students with responses containing negative elements.

In summary, Table 4.2 illustrates that the number of undergraduate students with no relevant narrative elements in a category were few compared to the number of students whose narratives were found to contain at least one element rated three. For the categories Nomenclature, Etiology and Time Course for Rehabilitation, the majority of students' responses contained only elements associated with a positive rehabilitation when forming part of a patient's explanatory model. A contrast is seen when considering the categories Perception of Dependency and Sense of Alienation, where there are more students with narrative elements in more than one rating, more students with negative elements and, in the case of Sense of Alienation, fewer students with positive elements.

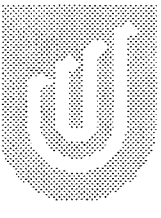


Table 4.3 (below) indicates the number of undergraduate students who had more positive elements in a particular category than their total number of ambiguous and negative

elements. For example a student who had only elements rated three would be included in this table but a student who had, for example one element rated two and one element rated three would not. In cases where students' responses contained a number of elements of various ratings, this table may give the reader an indication of the weighting of student's responses towards or away from the type of response most likely to facilitate a positive outcome.

Table 4.3 **Number of undergraduate students with a majority of positive elements**
(Students with more narrative elements rated 3 than the sum of elements rated 1 or 2).

Narrative Category	**Undergraduates** (n=52)	
Nomenclature	45	(86.5%)
Etiology	52	(100%)
Time Course for Rehabilitation	48	(92.3%)
Perception of Dependency	45	(86.5%)
Sense of Alienation	17	(32.7%)

As illustrated above in Table 4.3, in four of the five categories, most of the narratives from undergraduate students contained a majority of positive elements. This means that for these categories, students' narratives contained more elements associated with positive rehabilitation outcomes than the sum total of those associated with negative outcomes and ambiguous elements. The exception was the category Sense of Alienation in which only a third of the students had a majority of elements rated three.

4.3 Narrative Elements in the Responses of Postgraduate Students

In the responses of postgraduate physiotherapy students, relevant narrative elements were identified in all categories. Table 4.4 presents the total frequency with which the elements were identified and rated. As the right column of this table indicates, the total number of elements identified in responses from this group of students was 52. This represents an average of 8.7 elements per postgraduate student.

The categories containing the highest number of narrative elements were Perception of Dependency with 17 elements identified and Etiology with 16. Nomenclature contained the lowest number of elements with two students giving the patient's problem a name rated three, one student giving a name rated two and three students giving responses that did not contain an actual name for the patient's condition.

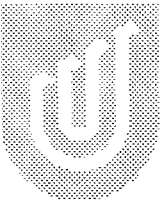


Table 4.4 Frequency of elements in narratives of postgraduate students				(n=6)
	Rating			
Narrative Category	**1** negative	**2** ambiguous	**3** positive	**Total**
Nomenclature	0	1	2	**3**
Etiology	2	1	13	**16**
Time Course for Rehabilitation	1	3	5	**9**
Perception of Dependency	4	4	9	**17**
Sense of Alienation	0	6	1	7
Total	7	**15**	**30**	**52**

Overall, the majority of narrative elements identified were positive. Thirty of the 52 narrative elements identified were positive (57.7 per cent). The proportion of ambiguous elements was half this (28.8 per cent) and that of negative elements was half again (13.5 per cent).

Etiology contained the highest number of positive elements. Perception of Dependency contained the highest number of negative elements, with four elements in this rating. However this category also contained an equal number of ambiguous elements and a majority of positive elements (nine) as noted above. The majority of elements related to Sense of Alienation were considered ambiguous in terms of their quality as either

encouraging a person to interact socially or to withdraw, and so these elements were rated two. Only one element in this category was positive while six were ambiguous.

The distribution of elements of various ratings amongst postgraduate students' narratives is indicated by Table 4.5, which presents the number of postgraduate students whose narratives included one or more relevant elements. As with the corresponding table related to narratives of undergraduate students, the second column of this table column (0 rating) indicates the number of students in whose responses no narrative elements relevant to a particular category were identified. It has been noted above that in the category Nomenclature, three postgraduate students' responses did not contain any relevant elements. In all other categories all students' responses did contain elements which were rated.

Table 4.5 **Number of postgraduate students whose responses contained at least one relevant narrative element** (n=6)

	Rating			
Narrative Category	**0** no elements	**1** negative	**2** ambiguous	**3** positive
Nomenclature	3	0	1	2
Etiology	0	2	1	6
Time Course for Rehabilitation	0	1	3	5
Perception of Dependency	0	4	4	5
Sense of Alienation	0	0	5	1

The furthest right column in Table 4.5 illustrates that the responses of all six postgraduate students contained positive elements in the category Etiology and the responses of five of the six students contained positive elements in the categories Time Course for Rehabilitation and Perception of Dependency. So it can be seen that most students' responses included narrative elements associated with positive outcomes for these three categories. However, as this column also illustrates, a minority of the six postgraduate students who gave responses included positive elements in the categories Nomenclature and Sense of Alienation.

In fact, for the category Sense of Alienation, five of the six students gave responses that only included ambiguous elements, as shown in the column headed rating 2. The number of students whose responses contained ambiguous elements is also relatively high in the categories Perception of Dependency and Time Course for Rehabilitation. However in both cases more students' responses included elements associated with positive rehabilitation outcomes.

Table 4.6 (below) presents the number of postgraduate students whose responses contained a majority of positive elements. As this table illustrates, postgraduate students' responses appeared to be most positive in the area of Etiology and, like the undergraduate students (see Table 4.3) less positive in the category Sense of Alienation.

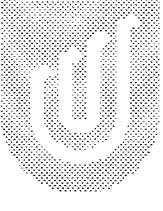


Table 4.6 **Number of postgraduate students with a majority of positive elements**
(Students with more narrative elements rated 3 than the sum of elements rated 1 or 2).

Narrative Category	**Number of Postgraduates** (n=6)
Nomenclature	2
Etiology	4
Time Course for Rehabilitation	3
Perception of Dependency	3
Sense of Alienation	1

4.4 Similarities in Responses of Student Groups

Whilst the methodological differences in data collection from undergraduate and postgraduate students noted previously in Chapter 3 limit the comparisons which can be made between the two groups, several similarities between the groups are interesting to note. Firstly, for both groups, the categories that contained the highest total number of elements were Etiology and Perception of Dependency (Tables 4.1 and 4.4). Secondly, the category in which the highest number of students gave positive responses was the same for both groups (Tables 4.2 and 4.5). This category was Etiology. Thirdly, for both groups, the category where the highest number of students' response included negative elements was Perception of Dependency (Tables 4.2 and 4.5). Finally, two categories which, for both groups, contained both the highest number of ambiguous elements and the highest number of students whose responses included ambiguous elements, were Perception of Dependency and Sense of Alienation (Tables 4.1, 4.2, 4.4 and 4.5).

Table 4.7 **Sense of social alienation: Number of students with responses specifically recommending social interaction**

Total number of students	Students with at least one element rated 3	Students explicitly advising social interaction
Undergraduate (n=52)	31 (59.6%)	21 (40.4%)
Postgraduate (n=6)	1	0

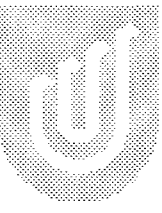
Table 4.7 (above) highlights some qualitative differences found in positive elements in the category Sense of Alienation. Whilst all narrative elements that directed the patient towards continuing her normal activities were rated three, the narrative of some students included elements that directed the patient to participate in activities principally for their social content. Examples of these elements along with further discussion are presented in Chapter 5, where the qualitative nature of elements in all categories is discussed. As Table 4.7 illustrates, 21 undergraduate students, but no postgraduate students included in their narratives, advice specifically recommending social interaction. A number of factors may have contributed to differences in responses of undergraduate and postgraduate students and these are discussed in Chapter 5.

4.5 Summary

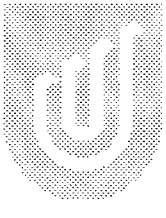
This chapter presents the results of the analysis of the narratives of undergraduate and postgraduate students. The number of narrative elements relevant to this study and identified in students' responses was presented. Ratings from one to three indicated the

quality of various narrative elements, distinguishing those associated with a negative and positive rehabilitation outcomes when forming part of a patient's perception of their injury. The number of elements of each rating was presented for each narrative category. The number of students' whose responses included at least one element for each rating was also given for each category. This indicated the distribution of elements of various ratings amongst the two groups of students. Finally, some similarities in the results of undergraduate and postgraduate students were noted.

Results of the study indicated that the group of students participating included in their narratives mostly positive elements in the categories Etiology and Time Course for Rehabilitation. In the category Nomenclature fewer elements (positive or negative) were identified. The number of positive elements in two remaining categories, Perception of Dependency and Sense of Alienation, was still high, but more negative and ambiguous elements were included compared to other categories. Overall, the Etiology, Time Course for Rehabilitation and Perception of Dependency categories contained the highest number of positive elements. The total number of elements in the Nomenclature and Sense of Alienation categories was fewer, and a lower proportion of these was rated three.



Chapter 5



5 Results – Qualitative and Discussion

5.1 Introduction

This chapter examines the quality of responses given by undergraduate and postgraduate physiotherapy students with comparison to recommendations from recent literature. Elements will be discussed on a category by category basis. Factors that are likely to have influenced the responses of the two student groups will be explored. Finally, the possible implications of the findings of this study will be considered in relation to physiotherapy education and practice.

5.2 Elements Related to the Explanatory Model

As described by Kleineman (1980 in Borkan et al 1991), the explanatory model people use for their injury or illness is their way of understanding what their problem is, based on factors including their medical knowledge. The explanatory model is one detail of many from which people derive a meaning of their illness or injury. Three of the narrative categories researched in this study contained elements that may influence a person's explanatory model. These categories are Nomenclature, Etiology and Time Course for Rehabilitation. They will each be considered below.

5.2.1 Nomenclature

While there were no negative and few ambiguous elements in this category, it was interesting to find three undergraduate and three postgraduate students gave no name for the patient's condition, instead describing the mechanism of the injury. These elements were included in the Etiology category.

Whether this finding is of concern to physiotherapy educators is open to debate. Those arguing against the use of labels for patients' conditions claim social or politically situated problems can be pathologized into a medical diagnosis (Crawford et al 1995). In addition, reducing a disease to a diagnostic label can result in many facets of a person's experience being ignored (Crawford et al 1995). Moreover, metaphors linked to a diagnostic label may be different for the health professional and the patient, and may or may not be psychologically helpful or valid representations of what is understood scientifically about the condition (Sontag 1991).

An argument in favor of naming a condition may be found in the experience related by a young woman in a radio documentary;

'I remember being called mad. It was quite a revelation to be called mad. I said to the psychiatrist, "Look, what's wrong with me, I've been here a month having these terrible things happen to me?" He said, "Oh, well, we think you've got schizophrenia". And in a sense when he gave me the diagnosis, I know it's a label that can be given and Scieff the sociologist says once you have a label you're then forced into the career of that label, but when the diagnosis was made it was almost a relief, because it explained to my friends what I'd been doing and why I'd been doing it, it explained to me what I'd been doing and why I'd been doing it and it set in train a program of treatment' (Jeffs in Lees 1998).

This woman's experience is all the more interesting in light of the fact that her own particular diagnostic label is not mechanical (like those rated positively in this study) but organic (like those rated negatively).

Typical elements identified in students responses and rated positively included:

"It is a muscle injury known as delayed onset muscle soreness" and "it is a reversible injury" (undergraduate student 16).

Where the negative element 'weak back' was negated, as in the following phrase, a rating of three was given, for example

"I don't think the pain you are experiencing now is because you have a weak back" (undergraduate student 26).

These ratings were based on the finding by Borkan et al (1991) that mechanistic rather than organic explanatory models were associated with positive outcomes. A 'weak back' was considered an organic problem, being related to the back itself, whereas a 'strain' or 'delayed onset muscle soreness' was mechanistic, being directly related to causative activity.

5.2.2 Etiology

Students' responses may be considered strongest in this aspect. The highest number of elements identified was in this category for undergraduates, the second highest for postgraduates, and most were positive. In fact all students, from both groups, had

positive elements in their responses. A typical mechanistic description of the condition included in responses was:

"I think the cause of the pain you are experiencing is most likely from a condition known as delayed onset muscle soreness. This often develops after exercise in which the muscles and ligaments are being stretched or lengthened for a prolonged period of time, as would have occurred when you were gardening. This doesn't necessarily mean that you have a 'weak' back, so I wouldn't be too worried about that." (undergraduate student 2).

This student, along with several others, not only supported a mechanistic cause of the problem, but also negated an organic one. Another example of such a response appears below.

"Delayed onset muscle soreness is not carried by genes, so it is not because bad backs run in our family" (undergraduate student 26).

It is interesting to note that a purely mechanistic perspective of a condition is less sophisticated than one than takes into account interactions between factors related to tissue integrity along with the mechanical demands placed on tissues. Borkan et al (1991) noted that while they found the more primitive, mechanistic perspectives of illness appeared to facilitate physical rehabilitation, more research would be required to

determine if these views were adaptive in other respects (such as participation in the health care system).

Physiotherapy education, encouraging students to consider multiple potential causes for an injury, along with any contributing factors, aims to lead students to develop the more sophisticated conceptualizations of etiology described above. More narrative based research may help physiotherapists choose whether certain aspects of an injury's cause and contributing factors should be emphasized when speaking to patients.

5.2.3 Time Course for Rehabilitation

Almost all postgraduate (five out of six) and undergraduate (51 out of 52) students responses included positive elements in this category (Tables 4.2 and 4.5). Two types of narrative elements were rated three. Firstly, elements in which a particular time frame was given, for example:

"The pain is likely to disappear after seven days or so and there's no lasting or chronic damage done to your muscles" (undergraduate student 53).

Secondly, elements assuring that recovery would in fact occur, including assurance that in a few months time the patient would be able to go on a week's hike were considered positive. While no time frame was specified, the assurance that she could participate in the hike implied that recovery would have occurred before three months. In this context, the two elements in the section of narrative below were rated three.

"I think your prognosis is good. You are relatively fit and your body will repair very well" (postgraduate student 2).

Many students included both a time frame and assurance regarding future hiking ability:

"This delayed onset muscle soreness should have subsided completely in a week. You're accustomed to hiking, so your muscles won't get sore after the hike" (undergraduate student 28).

Results are favorable when compared to guidelines from researchers such as Kendall et al (1997) who recommend that in the early management of low back problems, health professionals should "provide a positive expectation that the individual will return to work and normal activity" (p. 9).

5.3 Elements Related to Perception of Disability

Along with the above variables related to explanatory model, Borkan et al (1991) found that certain narrative elements related to perception of disability were also associated with rehabilitation outcome. These elements fell into two categories: Perception of Dependency and Sense of Alienation from the world (in the sense of social alienation).

Results in this study indicated that students responses in these categories were less consistently positive as responses in categories related to explanatory model. Elements

within the two categories related to perception of disability will be discussed in this section.

5.3.1 Perception of Dependency

In many ways responses were very favorable in this category though negative aspects were found also. This category contained the highest number of elements overall and the highest number of positive elements for both student groups (Tables 4.1 and 4.4). Elements were predominantly positive for most undergraduate students (86.5 per cent, Table 4.3) and three of the six postgraduate students (Table 4.6). Nearly all students narratives included at least one positive element (Tables 4.2 and 4.5).

The high number of elements rated positively was bolstered by the decision during analysis to rate coping strategies as three. In cases where several coping strategies were given they were rated as individual elements. This decision recognized that various coping strategies, given as an alternative to becoming more reliant on others for assistance, might facilitate independence. It may be argued this method of analysis over emphasized positive elements. However, the literature regarding management of problems such as chronic pain recommends the development of a number of coping strategies for an individual patient (Harding and Williams 1995, Orchison 1997). Therefore a rating of three was given to each of the five coping strategies suggested in the narrative section below:

"The wheel barrow load can be reduced. Time spent in the garden can be cut down, heavy work can be interspersed with lighter work. The length of the handle of the implement can be increased, getting close to the soil by going on to hands and knees will take most of the strain off the back" (undergraduate student 34).

Some students simply assured that with some of these strategies, the patients' ability to manage her garden by herself would not be diminished:

"I'm sure you'll be able to do the gardening yourself" (undergraduate student 18)

Other students mentioned the option of getting assistance in a way that separated the back problem from the choice to get assistance with gardening:

"That's up to you really, if you feel you don't have time or can't handle it anymore go ahead. But I see no reason physically why you should cut back on your gardening. Instead it might be an idea to look at different ways of doing things" (undergraduate student 21).

Another student, acknowledging that self-discipline would be required on the part of the patient to appropriately pace herself with this activity which she enjoyed, advised:

"If you will have to spend long hours to maintain your garden you might be better off with some help – as long as you understand the problem is not your *back*" (undergraduate student 1).

The finding that almost all of both undergraduate (51 of 52) and postgraduate (five of six) students' responses included at least one positive element supports the claim that responses in this category were strongly positive. In fact only one student from each group had more elements negative than positive elements in this category.

At the same time, the results indicate that narrative elements in this category warrant further investigation. Negative elements were more frequent in this category than any other for both groups (Tables 4.1 and 4.4). Moreover, more students of both groups included at least one negative element in their response than in any other category (Tables 4.2 and 4.5). Examples included:

"I really think it is wise that you get some one to help you in the future to prevent this from happening again and also prevent the risk of hurting your back" (undergraduate student 25).

Many students appeared cautious when giving advice regarding future physical activity. Whilst avoiding future exacerbations is an important objective, equally important is avoiding the development of fear-avoidance behavior (Kendall et al 1997) which could

jeopardize the long-term outcome. Responses such as that given by undergraduate student 1 (above) may enable advice from physiotherapists to support both objectives.

5.3.2 Sense of Social Alienation

Interestingly, this category contained the highest number of ambiguous elements for both groups of students. As there was a close association between normal activities and social interaction for the patient portrayed in the scenario, elements encouraging the continuation of normal activities were considered positive. Therefore the element in the following narrative excerpt was rated three:

'You need to get out and about, it will take your mind off the pain and be a form of treatment' (undergraduate student 44).

Some students recommended rest, which would entail a withdrawal from social interaction and elements in such responses were rated negatively:

"I would suggest you lie down and maybe cancel your dates with your friends" (undergraduate student 15).

Other students suggested modifying the patient's previous plans to enable social interaction to continue:

"Well I think it is a good idea to rest but that doesn't mean you should keep to yourself. Perhaps you could get them to go to your house for coffee and a chat" (undergraduate student 16).

A number of students were even more directive, specifically recommending social interaction. In many of these responses a link between social interaction and health was made explicit:

"Definitely spend time with friends, they are the best medicine for keeping your mind off the pain from your complaining muscles" (undergraduate student 42).

These were also rated positively, as were narrative elements in the responses of a few students, which reassured of the continuation of a social role:

"I'm sure that they (your friends) would prefer to spend time with you, even if they have to go slower, than to miss your company completely" (undergraduate student 42).

This is a particularly interesting category of responses. Advice specifically directing the patient towards social interaction or affirming the continuation of their social role (in comparison to the less specific recommendation of continuing normal activities) appeared in 21 (40.4 per cent) of the undergraduates' narratives, though none of the postgraduates' (Table 4.7). The quality of some of the responses was considered by the researcher to be of a very high standard in terms of advice that might be helpful for patients. However the

response of only one postgraduate student contained a positive element related to Sense of Alienation (Table 4.5). Possible reasons for this are discussed later in this chapter (5.2.2 and 5.2.4). Whilst the 31 undergraduate students whose responses did contain a positive element related to Sense of Alienation does represent a majority, this proportion was the lowest of all categories (Table 4.2).

Compared to other categories, there were more elements rated as being either negative or ambiguous and these were distributed amongst a higher number of students (Tables 4.1, 4.2, 4.4 and 4.5). If the number of students with predominantly positive results are considered (Tables 4.3 and 4.6), the category Sense of Alienation is the category containing the lowest number of students (17 of 52 undergraduates and one of six postgraduates). While overall there were more positive than negative elements for both groups, the number of ambiguous elements was even higher (as noted above) and contributed to the low proportion of students with predominantly positive responses.

These findings are interesting in the light of comments made by some postgraduate students in response to the question "Are you happy with the way you are able to give explanations to patients or do you feel this is something you would like to learn to do better?"

One student replied:

"I'd like to learn to do it better. We just gain scientific knowledge in our course but no instruction in how to relate to the patients on a personal level" (postgraduate student 6).

And another:

"We often know how to assess yellow flags but need strategies in how to deal with these" (postgraduate student 3).

5.4 Factors Influencing Responses

All students expressed an explanatory model that was dominantly mechanical. Physiotherapy education and treatment methods with an emphasis on biomechanics may have influenced this. Results related to perception of disability may reflect students' value for the independence of the patient tempered by concern to minimize the likelihood of recurrence. A number of differences in the way the data was collected from the undergraduate and the postgraduate students may be noted from the methodology section (Chapter 3) and are highlighted below along with their possible influence on results.

5.4.1 Size of Groups

The overall size of the groups varied considerably: 52 undergraduates (60 per cent of their class) and six postgraduates (from a group of 37). Whilst results of the postgraduate students are included for interest, findings from such a small group may not be generalized to even their own cohort.

5.4.2 Taken to Complete Responses

The undergraduate students completed their responses to the patient's questions as part of a broader clinical reasoning assignment, which they were given two weeks to complete. Postgraduate students recorded their responses immediately or within a few minutes of reading the patient's history and questions, and did not view the complete assignment given to the undergraduate students.

As postgraduate students' responses were completed in a shorter time, it is not surprising that their responses were briefer and contained a smaller average number of relevant narrative elements (8.7 elements per student) than undergraduate students' responses (13.6 elements per student).

5.4.3 Information Given to Participants

Postgraduate students received only the patient scenario and accompanying questions as they appear in Appendix 4. Additional information given with the assignment to undergraduate students included a reference list and an information sheet on delayed onset muscle soreness (Appendix 3). For the undergraduate students, some background biomedical information was deemed necessary to enable them to complete the required assignment.

The aims of the assignment given to undergraduate students were of course broader than the aims of this study. The assignment was used to assess students' clinical reasoning processes, including various reasoning strategies (such as hypothetico-deductive

reasoning). Reasoning strategies such as pattern recognition (Elstein 1995), which assist the generation of hypotheses and elimination of inappropriate hypotheses, require previous pattern exposure (Bordage and Lemieux 1991). Many first year undergraduate students may not have had exposure to the type of clinical pattern presenting with this patient. Most physiotherapists with at least two years post-graduate experience in neuromuscluoskeletal medicine would have seen patients such as that presented in the scenario.

As the researcher was interested in language used by physiotherapy students responding to patients encountered in clinical practice, information that might unnecessarily bias responses of postgraduate students was not given. Many of the undergraduate students named the patient's problem as delayed onset muscle soreness, whilst none of the postgraduate students did. Obviously undergraduate students may have been biased towards (or in some cases against) this name by the information they were given. Whilst the additional information given to undergraduate students does not affect the validity of results obtained from each group, the ability to compare results between groups is limited.

5.4.4 Relationship of Patient and Physiotherapy Student

In the patient scenario presented to undergraduate students, the person with back pain was portrayed as the student's aunt, whilst for the postgraduate students the patient was presented as a stranger who attended their physiotherapy practice.

This difference in the way the scenarios were presented to the two groups of students aimed to tailor the scenario to one that was likely to be in the realm of the students' experience. A patient presenting to a clinic was considered the most common type of patient encounter for the postgraduate students while the undergraduate students had no formal clinical experience at this stage in their course.

However, the content of a discourse between relatives may be very different to that between a professional and a new patient. This difference may be particularly relevant for responses in the category Sense of Alienation. As Table 4.7 indicates, 21 undergraduate students encouraged social interaction as part of managing the patient's problem, whist none of the postgraduates' responses contained a comparable element. The briefer responses of the postgraduate students may at least partly explain this disparity. However, for the undergraduate students, the phone call from an aunt may have been perceived as a request for familial support and influenced their response. Simply that they were speaking to a relative may have led them to more readily offer advice related to social interaction. If a study aimed to compare results of two groups, the scenario would have to be standardized.

Alternative explanations for the differences in responses of undergraduate and postgraduate students in this category might include that, lacking more comprehensive biomedical knowledge, undergraduates may have been more likely than the postgraduates to rely on their own personal experience and intuition when giving responses. Most postgraduate students were guarded in their advice (this was reflected in the high number

of ambiguous elements in Table 4.4), responding that they would give more detailed advice regarding various questions following further questioning and a physical examination. (As noted, in the postgraduates' patient scenario the patient had attended their clinic, whilst undergraduates had been contacted by phone).

This may reflect a higher number of hypotheses related to factors such as diagnosis and prognosis, which the postgraduate students wished to confirm or negate, before offering advice to the patient. Undergraduate students, with a more limited number of clinical patterns in their knowledge base, may have more readily come to decisions regarding diagnosis, management and prognosis based on the information they were given.

5.4.5 Prior Knowledge of the Study

Unlike the undergraduates, the postgraduate students were aware, before recording their responses, that their responses were to form part of the data for a study related to clinical reasoning. However they were not aware of details of the study such as how the data would be analyzed or narrative categories that would be examined.

How this might have influenced students' responses is difficult to determine. However, as noted above, if a future study aims to compare results between different groups of students, methods of data collection for each group should be standardized, as should other factors such as sample selection. While differences and similarities in responses between groups in this study are interesting to note, no conclusions can be drawn due the differences between groups noted above.

5.5 Implications for Physiotherapy Education and Further Research

The research findings discussed above indicate that a number of areas related to narrative in physiotherapy education and practice may be worthy of further investigation.

5.5.1 Areas of Strength and Weakness in Students' Narratives

If we can assume that a physiotherapist's narrative can influence patients' beliefs regarding their problem, further research may be useful to investigate and address the areas of strength and relative weakness suggested by the results of this study. While responses related to the categories Etiology and Time Course for Rehabilitation appeared favorable, a number of students' responses did not reflect an appreciation of patient's possible benefit from having a name for their problem. Responses related to Perception of Dependency and Sense of Alienation were not as consistently positive as other categories. Research and education addressing areas where language used could be more dominated by positive elements may be beneficial. Physiotherapists may not have fully realized the potential for the language they use to enhance their clinical practice.

5.5.2 The Influence of Physiotherapy Education on Students' Narratives

An investigation of how the narratives of physiotherapy students change over the course of their education may be of interest to physiotherapy educators. This study suggests that the narratives of the first year undergraduate students participating were on the whole

very positive and it appears worthwhile to investigate any changes in the quality of the students' responses over the following years of their degree.

As noted previously, reasoning guided by multiple hypotheses has been advocated as the most appropriate clinical reasoning strategy in medical practice (Barrows and Feltovich 1987). Throughout their education and professional careers, reflective practitioners will incorporate into their knowledge base an increasingly vast and complex array of information related to areas including the diagnoses, pathobiological mechanisms, management strategies and prognoses of the problems they confront clinically. Such knowledge is in contrast to the simplistic, purely mechanistic explanatory models that Borkan et al (1991) found as favouring rehabilitation for the group of patients in their study.

As new knowledge is integrated, a challenge is presented to students and practitioners to continue seeing patients within the context of their life experiences and to respond to patients' questions appropriately. Ideally, explanations given to patients should have both integrity and the potential to facilitate helpful injury-related beliefs, and in turn positive outcomes, for patients.

5.5.3 Narratives of Physiotherapists in Clinical Practice

The narratives of physiotherapists in the clinical setting may differ significantly from the written responses of physiotherapy students. An exploration of patient-physiotherapist

dialogue may enhance the reflection of physiotherapists on their clinical practice in addition to having implications for physiotherapy education.

5.5.4 The Influence of Physiotherapists' Narratives on Patients' Injury-Related Beliefs

The significance of this area of research is of course fundamental to the relevance of research in all areas noted above. The body of research supporting a link between patient outcomes and their injury-related beliefs appears very convincing (Borkan et al 1991, Gifford 1998, Kendall et al 1997, Orchison 1997). However, while patients' injury narratives may indicate their injury-related beliefs, it is unknown to what extent and in what ways a physiotherapist's advice and language may influence these beliefs. The influence of positive, negative and ambiguous elements in responses to patients' questions is not known. Narrative based research investigating the ways in which healthy injury-related beliefs could most efficiently be facilitated may be useful for physiotherapy clinicians and educators.

5.5.5 Investigating the Research Method

The methodology utilized by Borkan et al, upon which the methodology in this project was based, represented a new direction in rehabilitation research (Borkan et al 1991). These authors noted that further research would be required to determine if patient's narratives were reliable as a screening tool, enabling identification of patients with "initial cognitive states that put them at risk of poor outcomes" (Borkan et al 1991 p.

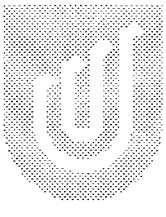
955). Kendall et al's (1997) paper, advocating assessment for yellow flags, indicates that the use of such a (narrative-based) screening tool is now recommended.

5.6 Summary

In this chapter narrative elements found in each of the five categories significantly related to functional outcome when forming part of a person's injury-related narrative (Borkan et al 1991) are discussed. Results of the study are considered in relation to recommendations from research regarding favorable injury-related beliefs. It was noted the majority of elements in students' narratives compared well with injury perceptions favoring rehabilitation. The finding that elements related to explanatory model were more consistently positive than elements related to perception of disability is discussed. The fact that fewer elements (positive or negative) related to Nomenclature were identified was considered along with debate regarding the value of a diagnostic name.

Possible reasons for and implications of the findings are explored. The qualities of responses from physiotherapists that may be helpful in facilitating favorable rehabilitation outcomes are considered. Some similarities and differences in responses of the two groups of students are noted, with possible reasons for these being discussed. Methodological differences that prevent conclusions being drawn from comparison of results of the two groups are acknowledged. Finally, several areas of possible future research, which may enhance physiotherapists' understanding of and attention to narrative in clinical practice are noted.

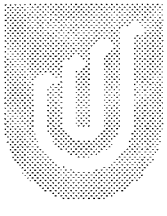
Chapter 6



6 Conclusions

The narratives of the 52 undergraduate students and 6 postgraduate students who participated in this study almost all contained narrative elements in all of the five categories examined. Some categories contained a higher total number of elements than others. The categories containing the highest number of elements were Etiology and Perception of Dependency for both postgraduates and undergraduates. The category with the least number of elements was Nomenclature for both groups of students.

Overall the quality of elements identified compares favorably to those found by Borkan et al (1991) to be associated with positive rehabilitation outcomes. In four categories, Nomenclature, Etiology, Time Course for Rehabilitation and Perception of Dependency, the majority of narrative elements identified were positive. This finding applied to both undergraduate and postgraduate students' narratives. In the remaining category, Sense of Alienation, the majority of elements in the responses of both groups of students were ambiguous. In no category, for either group of students, did negative elements represent a majority.

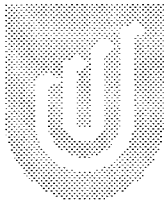


When comparing the number of positive elements in a category to the category's total number of elements it can be seen some categories contained a higher proportion of positive elements than others did. For both groups of students, the proportion of elements in Etiology that are positive is the highest, and all three categories related to the

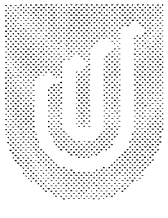
explanatory model contain a higher proportion of positive elements than those related to perception of dependency. Sense of Alienation contains the lowest proportion of positive elements.

The findings noted above indicate a number of similarities in the results of undergraduate and postgraduate students. Whilst differences existed also, the small size of the postgraduate group along with methodological differences in the way data was collected from this group prevent the drawing of any conclusions based on these differences. However, further study comparing physiotherapy students' narratives at different stages in the course of their education may give insights into their clinical reasoning processes and professional development at various stages.

Narrative-based research methods offer physiotherapists a range of avenues by which they can explore their professional education and clinical practice. Before results of this study can be translated into implications for future physiotherapy education or practice, further research may be required. In our society consumers of health care services may obtain information from a number of sources. Only some of this information will be incorporated into their illness- or injury-narrative. An understanding of what components of an explanation given by a health professional do become incorporated and what factors facilitate the incorporation of favorable injury-related beliefs is an important preliminary step towards explanations from physiotherapists that can facilitate favorable outcomes.



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Appendices

Appendix 1 Information Sheet

Project Title: How physiotherapy students give explanations to patients.

Researcher: Christine Barry

Supervisors: Judi Carr
Mark Jones

Information

Research has suggested that recovery from injury or illness may depend on the way a person feels about their injury as much as the injury itself. For example studies have found that the severity of an injury is not proportional to the impact of the injury on a person's life. Another study found that how well people walked months after a hip fracture was related to their beliefs about how bones fracture.

Part of physiotherapy practice is to help people understand their problem, so physiotherapists may be able to affect recovery by influencing client attitude. This project aims to explore the nature of explanations/ advice given by physiotherapy students. The aim of the study is not to judge the worth of students' explanations.

I am asking all Physiotherapy Studies 101 students to give me their consent to read photocopies of answers to question 6 of the *Individual problem 4* assignment. Judi Carr will not know if individual students agree to participate and your grade will not be affected. All data will be anonymous and you will not be identified on the photocopies.

It is hoped this study will assist physiotherapists to help clients understand their problems in a way that will aid recovery.

Please read the consent form below, sign and place in the box labeled **Physiotherapy 101 consent forms**. Thank you for taking the time to read this and for signing the consent form.

.....

Appendix 2 Consent Form

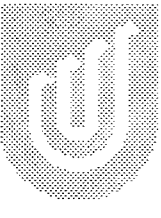
Consent Form

- I have read the information above. The nature and purpose of the research has been explained to me. I understand and agree to take part.
- I understand that I may not directly benefit from taking part in this study.
- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.

Name: _____

Signed: _____

Dated: _____



PHYSIOTHERAPY STUDIES 101

INDIVIDUAL PROBLEM 4

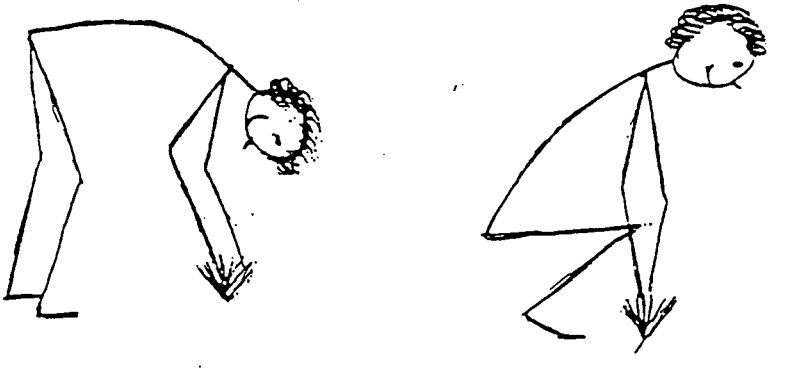
NAME:

DATE SUBMITTED:

Trigger

Your 40 year old aunt, who knows you are studying physiotherapy, rings you up one Monday night and says "I did a bit of gardening on Saturday afternoon and now I feel like an old woman- I just can't move. I don't know whether it's just sore muscles or whether I've done my back in like Gran did several years ago. I wasn't doing anything very difficult; it wasn't hard work like it is when we spend an afternoon hiking the Heysen trail!"

On questioning her you discover she has pain down her back from T9 level, posterolateral hips, backs of thighs and calves. She had spent 4 hours pulling out weeds ("too good an opportunity to miss after the rain"). She had spent most of the time bending over from the hips, although she interspersed periods of squatting as well.



She has no history of back/hip/knee problems.

She felt tired but not sore on Saturday night

sore and stiff Sunday morning: really enjoyed a long hot shower and felt better after that

was not too bad for the rest of Sunday until the night: she had been sitting talking to visitors for a few hours and when she went to get out of the lounge chair, she could hardly move becauseof the pain

Monday morning was really terrible: she felt "sore all over".

1. What cues give you the *most important information* about your aunt and her problem, and what inferences can you draw from these? (DO NOT just repeat all the information in the trigger!)

2. What is your "client"/problem summary?

   The main hypotheses for her symptoms would include:

   Musculoskeletal injury (i.e. injury to muscles, bone, joint capsules, ligaments or other structures associated with joints) causing referred pain

   A nerve injury caused by compression or traction

   Delayed Onset Muscle Soreness (DOMS)

3. What do you need to find out in order to decide what your aunt's problem is i.e. what are your learning goals?

   (A brief information sheet on DOMS and referred pain is attached).

4. After you have completed your research you will have some extra information as well as the answers she gave to your previous questions (i.e. information given in the trigger). Now what do you think is the cause of your aunt's symptoms? i.e. what do you think is the specific diagnosis?

5. On the basis of:
   a) area of pain
   b) behaviour of pain and stiffness
   c) activity that apparently caused her symptoms

   explain in detail your clinical reasoning/ problem clarification i.e. the reasons for your diagnosis and your reasons for excluding other hypotheses suggested above.

   (There is no need to suggest other questions to ask her, or things you would like to look at in this question).

6. After answering your questions to her, your aunt asks you the series of questions below. What do you say to her in answer to each of these? (*write the actual words* you would use to her!)

A. " Why should I be so sore? Is it just a strain or is my back weak or something?"

B. "So do you think this happened because I over did it or is it because bad backs run in our family?"

C. "Well I'm feeling pretty miserable with the pain. I'm supposed to be going out with friends the next few days, but no one will want to have me around whinging and slowing me down. Do you think I should just rest in bed and keep to myself until I feel better?"

D. "We are meant to be going on a week's hike in a few months time. Do you think I'll be able to? I'm worried I might have done my back in for good."

E. "You know my garden is a pretty big one. Should I get someone in to help me in the future"?

J. Carrr and C. Barry
Revised July 1998

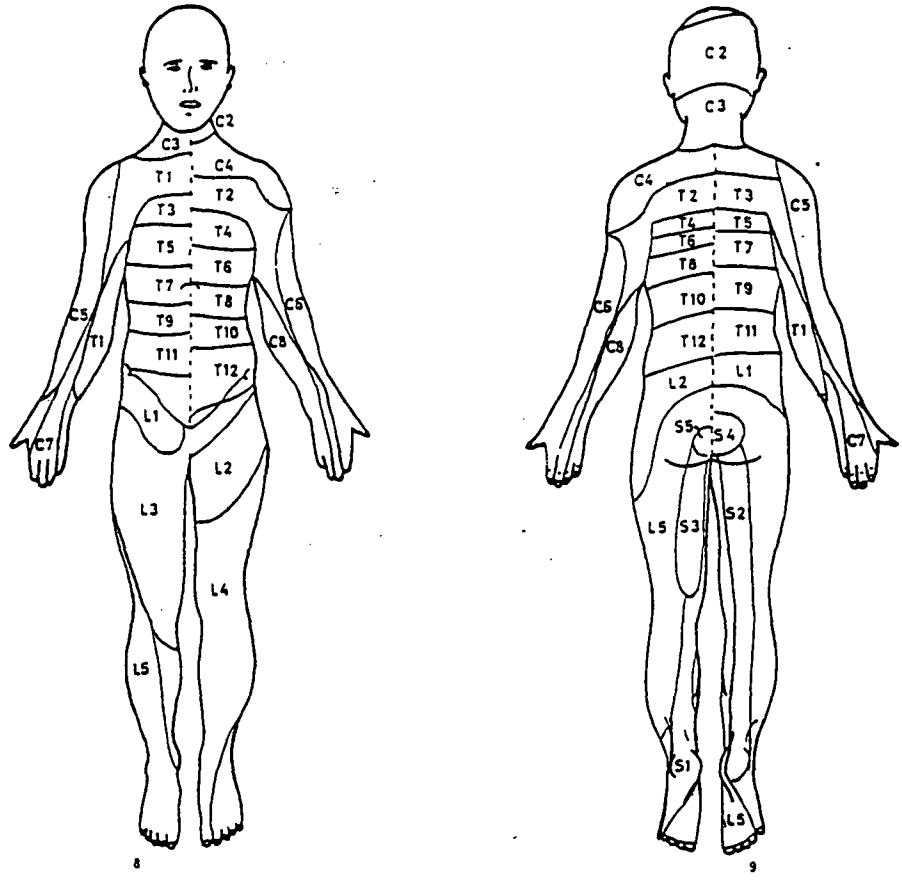
First produced with the assistance of an ANZAME research grant, May 1990

REFERRED PAIN

Referred pain is defined as pain in a part other than that in which the cause of the pain is situated.

Referred pain can be "visceral", where the source of the pain is within one of the viscera but the pain is felt somewhere else on the body wall. An example of this is when someone suffers a heart attack, pain is usually felt in the left arm and chest wall.

Referred pain can also be "somatic", where the source of the pain is a musculoskeletal structure. An example of this is headache felt with a cervical spine problem. The mechanism for this phenomenon is thought to be the convergence of sensory (afferent) pathways in the central nervous system, either in the spinal cord or at a higher level. The brain is unable to distinguish which region the pain is coming from, and may interpret the signal as arising from the true source, from the dermatome(s) related to the nerve supply of the source, or from both.



DELAYED ONSET MUSCLE SORENESS

Delayed onset muscle soreness (DOMS) is characterized by a latent onset of soreness in the skeletal muscles, 12 to 48 hours after the conclusion of an activity. It has been found that DOMS occurs predominately with exercise involving unusual or prolonged eccentric muscular contractions.

There is diffuse soreness in the muscle, tenderness on palpation, increased muscular stiffness and a decreased range of movement (Solomonow, 1987). The symptoms can last for 4 to 12 days but will gradually decrease and eventually disappear over that time.

There have been several theories put forward to explain DOMS.

1) Torn Muscle Tissue Theory

This theory was initially postulated at the beginning of this century. Hough (1902) suggested that DOMS was due to structural damage to muscle fibres. A study done later by Abraham (1977) showed that myoglobin (a substance which indicates muscle cell damage) was found in the urine of subjects both with and without DOMS, suggesting that muscle fibre damage can occur without muscle soreness.

Further research into this theory by Friden et al (1983) showed myofibrillar damage did occur after exercise when there was DOMS present.

Other studies have revealed further biomechanical and ultrastructural changes in muscle following eccentric exercise. A specific muscle breakdown product, creatine phosphokinase, was found to be elevated after eccentric exercise by Schwane et al (1983).

2) Torn Connective Tissue Theory

Hough (1902) also believed that torn connective tissue fibres may be responsible for some of the pain experienced in DOMS. Abraham (1977) found that urinary excretion of hydroxyproline, a specific indicator of collagen breakdown, was found to be positively correlated with DOMS.
In a more recent study, looking at the distribution of tenderness within the muscles suffering from DOMS, Newham et al (1983) found that the areas of musculo-tendinous junctions were the main sites of pain and tenderness.

3) Muscle Spasm Theory

It was suggested by De Vries (1966) that with exercise there occurred a build up of pain producing substances which stimulated nerve endings within the muscle causing muscle spasm which itself led to pain.
Other studies done since by Abraham (1977) and Bobbert et al (1986) used EMG (electromyography) equipment in their research to dispute the validity of this theory.

4) Oedema Formation

As well as using EMG equipment, Bobbert et al (1986) tested for an increase in volume in the calves of subjects who had performed strenuous eccentric activity and found that the volume increase was greatest when the soreness was at its worst. They went on to suggest that this volume increase was due to oedema (but not a true inflammatory process) and may be the cause of DOMS.

A popular lay theory for the cause of DOMS is the accumulation of lactic acid in the muscles. However, Lamb (1984) found that blood lactate levels are back to normal within two hours of activity and therefore cannot be producing soreness after this.

Adapted from Gaffey A (1987) Delayed onset muscle soreness and stretching prior to exercise. Unpublished Graduate Diploma thesis, SA Institute of Technology

by R. Gill
June, 1990

REFERENCE LIST

These references are listed because they were referred to in the information sheet. It is not expected that you look them up.

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Med. Sci. Sports and Exerc. 9(1): 11-20.

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Pain and fatigue after concentric and eccentric muscle contractions
Clin. Sci. 64: 55-62.

Schwane, J.A., Johnson, S.R., Vandenakker, C.B. and Armstrong, R.B. (1983)
Delayed onset muscle soreness and plasma CPK and LHD activities after downhill running
Med. Sci. Sports and Exerc. 15(1): 51-56.

Solomonow, M. and D'Ambrosia, R.
Biomechanics of muscle overuse injuries: A theoretical approach
Clin. Sports Med. 6(2): 241-257.

Terry, L. (1985)
Stretching and muscle soreness
Unpublished Graduate Diploma thesis, S. A. Institute of Technology.

If you are interested, here are some more recent journal articles on DOMS
NB These are **not** required research material for this assignment. Textbook material is at an adequate level for this, and there is lots on the Internet (so I've been told)

DOYLE JA, SHERMAN WM & STRAUSS RL. Effects of eccentric and concentric exercise on muscle glycogen replenishment. Journal of Applied Physiology 74(4) April 1993, 1848-55.

RODENBURG JB, BAR PR & BOER RW. Relations between muscle soreness and biochemical and functional outcomes of eccentric exercise. Journal of Applied Physiology 74(6) June 1993, 2976-83.

BALNAVE CD & THOMPSON MW. Effect of training on eccentric exercise-induced muscle damage. Journal of Applied Physiology 75(4) October 1993, 1545-51.

WESSEL J & WAN A. Effect of stretching on the intensity of delayed-onset muscle soreness. Clinical Journal of Sport Medicine 4(2) April 1994, 83-7.

SMITH LL et al. The impact of a repeated bout of eccentric exercise on muscular strength, muscle soreness and creatine kinase. BJSM 28(4) December 1994, 267-71.

CRENSHAW AG et al. Knee extension torque and intramuscular pressure of the vastus lateralis muscle during eccentric and concentric activities. European Journal of Applied Physiology & Occupational Physiology 70(1) January 1995, 13-9.

ESTON RG, MICKLEBOROUGH J & BALTZOLOPOUS V. Eccentric activation and muscle damage: biomechanical and physiological considerations during downhill running. BJSM 29(2) June 1995, 89-94.

MacINTYRE DL, REID WD & McKENZIE DC. Delayed muscle soreness: the inflammatory response to muscle injury and its clinical implications. Sports Medicine 20(1) July 1995, 24-40.

BJSM = British Journal of Sports Medicine

Appendix 4 Postgraduate Scenario and Questions

A 40 year old woman attends your physiotherapy clinic one Monday evening and says "I did a bit of gardening on Saturday afternoon and now I feel like an old woman – I just can't move. I don't know whether it's just sore muscles or whether I've done my back in like my mother did several years ago. I wasn't doing anything very difficult; it wasn't hard work like it is when we spend an afternoon hiking the Heysen trail".

On questioning her you discover she has pain down her back from T9 level, posterolateral hips backs of her thighs and calves. She had spent 4 hours pulling out weeds ("too good an opportunity to miss after the rain"). She had spent most of the time bending over from the hips, although she interspersed periods of squatting as well.

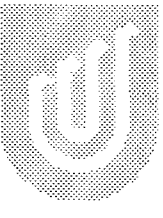
She has no history of back/ hip/ knee problems.

She felt

- Tired but not sore on Saturday night
- Sore and stiff Sunday morning. Really enjoyed a long hot shower and felt better after that
- Was not too bad for the rest of Sunday until the night. She had been sitting taking to visitors for a few hours and when she went to get out of the lounge chair, she could hardly move because of the pain.
- Monday morning was really terrible. She felt "sore all over".

After the subjective examination, she asks you the series of questions below. What do you say to her in answer to each of these? (***write the actual words*** you would use to her).

A. " Why should I be so sore? Is it just a strain or is my back weak or something?"



B. "So do you think this happened because I over did it or is it because bad backs run in our family?"

C. "Well I'm feeling pretty miserable with the pain. I'm supposed to be going out with friends the next few days, but no-one will want to have me around whinging and slowing them down. Do you think I should just rest in bed and keep to myself until I feel better?"

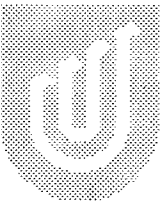
D. "We are meant to be going on a week's hike in a few months time. Do you think I'll be able to? I'm worried I might have done my back in for good."

E. "You know my garden is a pretty big one. Should I get someone in to help me in the future"?

Where did you complete your undergraduate physiotherapy degree? (country and university)

Have you any particular area of interest/ work experience in physiotherapy/ other than physiotherapy?

What influences the way you give explanations to patients (e.g. undergraduate education, post grad education, experience as a physio, other experience, other education...?)



Are you happy with the way you are able to give explanations to patients or do you feel this is something you would like to learn do better?

Appendix 5 Narrative analysis encoding sheets

Ratings of elements in all categories:

0 = no element in this category identified in response

1 = narrative element associated with negative rehabilitation outcome (when forming part of patient's explanatory model/ perception of disability) identified

2 = ambiguous element identified

3 = narrative element associated with positive rehabilitation outcome (when forming part of patient's explanatory model/ perception of disability) identified

Nomenclature

Definition: Section of narrative in which a name (noun) is given to the condition
Descriptions of the injury mechanism are rated in the category Etiology)

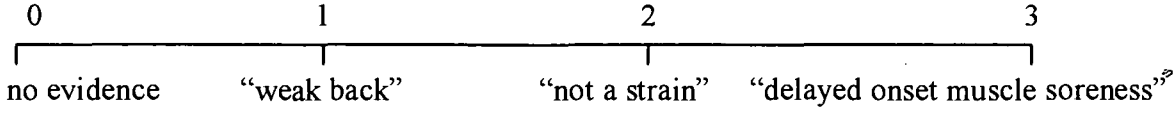
Data found in section: A.

Examples

1 "weak back"

2 "not a strain"
"not especially weak"
"inflammatory reaction"
"nothing wrong"

3 "delayed onset muscle soreness"
"torn fibres in muscle or connective tissue"
"a reversible injury"



Etiology

Definition: Section of narrative in which a mechanism of injury or cause of symptoms is described.

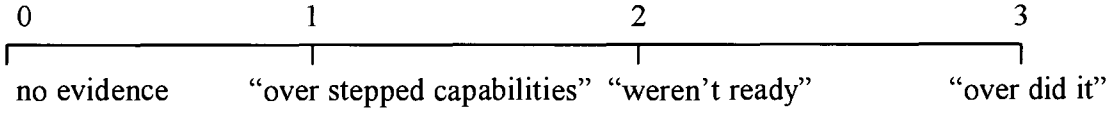
Data found in sections A and B.

Examples

4 "you outstepped your capabilities"

5 "your muscles weren't ready for, or used to 4 hours of constant contraction"

6 "injuring your muscles"
"you over did it"
"I don't think family history has any thing to do with it"
"don't think you are weak' getting to old or different to everyone else"
"that posture isn't good for your back"
"your exercises caused it"
"bad backs are not inherited"



Statements such as "60-80% of the population at some point during their lifetime experience backpains, most of them caused by sprained ligaments or strain in muscles and tendons" were rated as if the physiotherapy student had implied a sprain or strain was the most likely cause of the person's pain.

Statements implying cause and effect, including the combination of a number of factors as a cause, were considered as a single unit when ranked. For example "Four hours of hard work caused strain" or "a long time in an unusual position" would be considered one unit.

Time Course for Rehabilitation

Definition: Sections of narrative in which some indication is given as to whether recovery is expected and how long this will take.

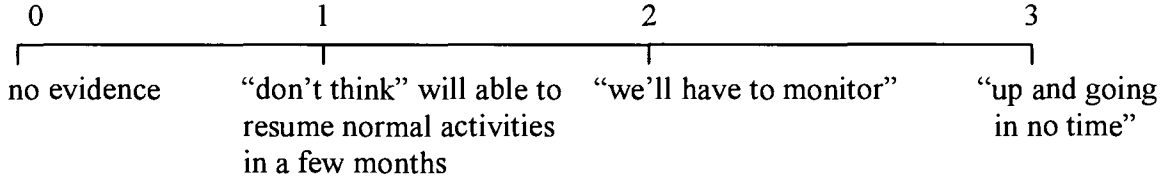
Data found in section D.

Examples

7 "I don't think so" (that you will be able to go hiking in a few months)

8 "we'll have to monitor this as we go along"
"you'd probably be alright to go hiking in a few months time"

9 "usually wears off in a few days"
"you will be up and going in no time"
"I don't think you have done your back in for good"
"you'll definitely be able to go on the hike in a few months time"



Perception of Dependency

Definition: Sections of narrative indicating whether the student feels the problem may result in the person becoming more dependent on other's.

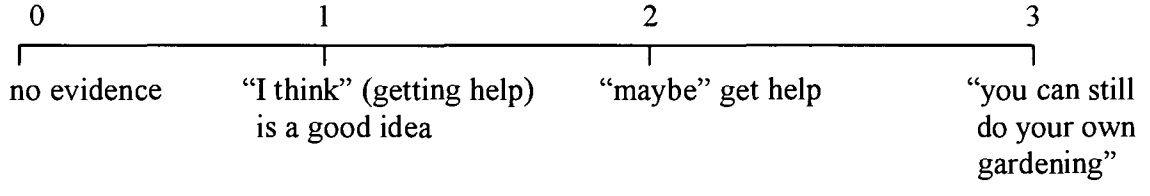
Data found in section E.

Examples

10 "I think(getting help in the garden) is a good idea for you at this stage"

11 "maybe"
"if you don't think you can manage then by all means get someone in to help you"

12 "you can still do your own gardening if you want to"
"you're still a fit woman, you shouldn't need hired help"
"do little bits at a time"
"you'll be fine on your own"



Coping strategies, such as "do little bits at a time", given as an alternative to getting help were considered as assisting the person gain control over their problem as opposed to becoming dependent, and were rated as 3.

Multiple coping strategies in one sentence were rated individually.

Sense of Alienation

Definition: Sections of narrative that address the person's social role or make recommendations regarding activities with reference to social context.

Data found in section C.

0 = no element in this category identified in response

1 = narrative element associated with negative rehabilitation outcome (when forming part of a patient's perception of disability) identified: recommendation to withdraw from activity

2 = ambiguous element identified: non-directive responses regarding interaction vs withdrawal from social activity

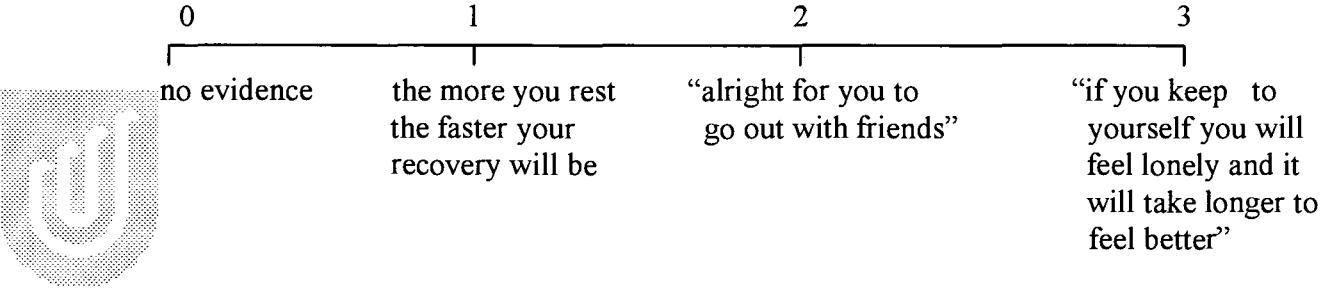
3 = narrative element associated with positive rehabilitation outcome identified: response directive towards social contact or normal activity.

Examples

13 "the more you rest the faster your recovery will be"
"you should rest in bed"

14 "it should still be alright for you to go out with friends"
"resting in bed wouldn't help at all"
"there is no reason why you shouldn't go out with friends"

15 "I don't think you should let this pain stop you from going out with friends"
"if you keep to yourself you will feel lonely and take longer to feel better"
"to keep to yourself is depressing when you don't feel Okay"
"I suggest you continue with your normal activities"



Appendix 6 Data Summary Sheets

Nomenclature - Undergraduate Students

STUDENT	0	1	2	3	3>2+1
undergraduate 1				2	1
2				2	1
3				1	1
4			1	2	1
5				2	1
6			1	1	
7				3	1
8			1	2	1
9			1		
10				2	1
11				1	1
12				1	1
13				1	1
14	excluded				
15				1	1
16				2	1
17				2	1
18				3	1
19				2	1
20				1	1
21				1	1
22				1	1
23				2	1
24				2	1
25				2	1
26				2	1
27				2	1
28				1	1
29				1	1
30				2	1
31				2	1
32				2	1
33	1				
34				1	1
35				1	1
36				2	1
37				1	1
38	1				
39				1	1
40			1		
41				1	1
42				2	1
43				1	1
44				1	1
45				2	1
46				2	1
47				1	1
48				1	1
49				1	1
50				1	1
51			1		
52	1				
53				1	1
TOTAL	3	0	6	71	45

Data Summary - Etiology - Undergraduate Students

STUDENT	0	1	2	3	3>1+2
undergraduate 1				4	1
2		1		3	1
3				4	1
4				4	1
5				2	1
6				3	1
7				2	1
8				2	1
9				2	1
10				3	1
11				4	1
12				2	1
13				3	1
14	excluded				
15				4	1
16				2	1
17				2	1
18				3	1
19				2	1
20				3	1
21				2	1
22				3	1
23				4	1
24				4	1
25				2	1
26				2	1
27		1		4	1
28				3	1
29				5	1
30				5	1
31				3	1
32				2	1
33				2	1
34				3	1
35				2	1
36			1	3	1
37			1	3	1
38				2	1
39				2	1
40		1		4	1
41				2	1
42				3	1
43				4	1
44				3	1
45				5	1
46		1		4	1
47				4	1
48				3	1
49				3	1
50				3	1
51				2	1
52				5	1
53				4	1
TOTAL	0	4	2	159	52

Data Summary - Time Course for Rehabilitation - Undergraduate Students

STUDENT	0	1	2	3	3>2+1
undergraduate 1				3	1
2				3	1
3			2	5	1
4				2	1
5				1	1
6			1	3	1
7				4	1
8				3	1
9	1				
10				4	1
11				5	1
12		1		2	1
13			2	1	
14	excluded				
15			2	2	
16				1	1
17				2	1
18				3	1
19				2	1
20				2	1
21				2	1
22				3	1
23				5	1
24				4	1
25			2	1	
26				4	1
27				3	1
28				3	1
29				3	1
30				2	1
31				1	1
32				2	1
33				2	1
34				3	1
35				2	1
36				1	1
37				2	1
38				2	1
39				2	1
40				1	1
41				2	1
42				3	1
43				1	1
44				3	1
45				3	1
46				1	1
47				2	1
48				1	1
49				1	1
50				1	1
51				2	1
52				1	1
53				2	1
TOTAL	1	1	9	119	48

Data Summary - Perception of Dependency - Undergraduate Students

STUDENT	0	1	2	3	3 > 1+2
undergraduate 1				4	1
2			1	5	1
3			2	2	
4			2	3	1
5			2	1	
6				3	1
7			1	1	
8				4	1
9			1	2	1
10				2	1
11		1	1	4	1
12				4	1
13		2		3	1
14	excluded				
15		1		6	1
16			1	2	1
17			1	5	1
18				6	1
19			1	4	1
20			1	4	1
21				3	1
22		1		2	1
23		1		2	1
24			2	4	1
25		2			
26			1	5	1
27				3	1
28				3	1
29		1		5	1
30		1		2	1
31		1		4	1
32				4	1
33				2	1
34			1	7	1
35		1	1	3	1
36			1	4	1
37			1	2	1
38				2	1
39			1	3	1
40			1	3	1
41				4	1
42			1	4	1
43				5	1
44				4	1
45			1	4	1
46			2	2	
47		1	1	2	
48				3	1
49				3	1
50				3	1
51				4	1
52		1	1	3	1
53				4	1
TOTAL	0	14	29	169	45

Data Summary - Sense of Alienation - Undergraduate Students

STUDENT	0	1	2	3	3 > 1+2	social activity recommended
undergraduate 1			1	1		
2		1	1	1		
3			1			
4			2	3	1	1
5				2	1	1
6			1	1		
7			2			
8		1		2	1	
9			1	2	1	1
10			3	1		1
11			2	1		1
12			1			
13				2	1	1
14	excluded					
15		4		1		
16			1	2	1	1
17			1	1		
18			1	4	1	1
19				2	1	1
20			2			
21			2			
22			2			
23				1	1	1
24			1	2	1	1
25		1	2			
26			1	1		
27			1			
28			2			
29		1	3			
30		1	2			1
31			1	1		
32			1	1		1
33	1					
34			1			
35			2	3	1	1
36		1	1	1		1
37			2	1		
38				1	1	
39				2	1	1
40		1	1			
41			1	1		1
42			2	3	1	1
43			1			
44			1	3	1	1
45			1	2	1	1
46			1			
47			1	3	1	1
48			3			
49			1			
50			1	1		
51			1			
52		2	1			
53			1			
TOTAL	1	13	60	53	17	21

Data Summary - Postgraduate Students

Nomenclature

STUDENT	0	1	2	3	3 >1+2
postgraduate 1	1				
2				1	1
3			1		
4				1	1
5	1				
6	1				
TOTAL	3	0	1	2	2

Etiology

STUDENT	0	1	2	3	3>1+2
postgraduate 1				2	1
2			1	4	1
3		1		1	
4		1		1	
5				3	1
6				2	1
TOTAL	0	2	1	13	4

Time Course for Rehabilitation

STUDENT	0	1	2	3	3>1+2
postgraduate 1			1	1	
2				1	1
3				1	1
4		1	1		
5				1	1
6			1	1	
TOTAL	0	1	3	5	3

Data Summary - Postgraduate Students

Perception of Dependency

STUDENT		0	1	2	3	3>1+2
postgraduate	1		1	1	1	
	2			1	2	1
	3		1	1	1	
	4		1	1		
	5		1		2	1
	6				3	1
TOTAL		0	4	4	9	3

Sense of Alienation

STUDENT		0	1	2	3	3>2+1	social activity recommended
postgraduate	1			1			
	2			1			
	3			1			
	4			2			
	5			1			
	6				1	1	
TOTAL		0	0	6	1	1	0