

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The purpose of this chapter is to describe the research methodology. The research design, method and the plan for data collection and analysis will be discussed.

3.2 SUMMARY OF THE RESEARCH METHODOLOGY

The research methodology is summarised and presented in Table 3.1 on the next page.

3.3 RESEARCH DESIGN

According to different authors, a research design is an overall plan or blueprint with which to address the research problem. It covers all aspects of the organisation of the study (De Vos 1998:123; Mouton 2001:55; Polit & Hungler 1995:32,135). An explorative, descriptive study was done, using qualitative methodology. Experiences of critical care nursing students implementing theory into practice were explored and described through the facilitation of guided reflection.

3.3.1 Qualitative research

Qualitative research is a systematic, subjective approach to describing life experiences and giving them meaning (Burns & Grove 1997:27). Brink (1996:119) defines qualitative research as a research approach that explores the meaning or describes and promotes the understanding of human experiences, such as pain, hope and caring.

TABLE 3.1	
SUMMARY OF THE RESEARCH METHODOLOGY	
Design	Explorative and descriptive, qualitative methodology
Population	Critical care nursing students registered with a university in a city in Gauteng
Sample	Purposive sample criteria: <ul style="list-style-type: none"> • Second-year critical care nursing students registered at a university • Employed in a private hospital in Gauteng
Data collection	<ul style="list-style-type: none"> • Unstructured interviews – an adaptation of Johns’s Framework (a guideline to reflection as teaching strategy) • Tape recording • Narrative descriptions • Field notes
Data analysis	<ul style="list-style-type: none"> • Open and axial coding • Development of themes, categories and subcategories • Description of experiences of the theory implemented into practice • Conducting a literature control
Trustworthiness	<ul style="list-style-type: none"> • Prolonged engagement • Accurate description • Triangulation • Reflexivity • Member checking • Interview technique • Structural coherence • Authority of the researcher • Representativeness • Dense description • Recoding by panel of experts • Confirmable audit • Consensus discussions with experts

In this study, a qualitative research approach was applied because the researcher’s purpose was to attempt to understand the experiences of participants related to the implementation of theory into practice. Qualitative researchers are interested in discovering and generating knowledge about the meaning of people’s experiences, in this case, critical care nursing students’ experiences when implementing theory into practice (Burns & Grove 1997:29).

The idea that multiple realities play a role in creating meaning in the life of individuals was taken into account. Qualitative researchers do not subscribe to one truth but rather to many truths (Streubert & Carpenter 1999:16). It is believed that many aspects can contribute to the way that participants implement theory into practice.

According to Streubert and Carpenter (1999:17), the emic view, or the insider's perspective, is an important aspect in qualitative research. The emic approach refers to patterns found in a particular culture or the way in which members of a specific culture see their world (De Vos 1998:283; Polit & Hungler 1995:197). In this study, the participants' descriptions of their experiences were the main source of information, therefore obtaining an insider's view of the critical care nursing culture.

A typical characteristic of qualitative research is the important role the researcher plays in the collection and analysis of data (Burns & Grove 1997:29; Streubert & Carpenter 1999:17). In qualitative research, the researcher could be the observer, interviewer and the interpreter of various aspects of the investigation. As a result, qualitative researchers have to accept the subjectivity of the research. However, this characteristic also has the potential to add to the richness of the data collection and analysis (Streubert & Carpenter 1999:17). Through interviewing the participants, the researcher not only gains an insider's view, but can also incorporate his or her own clinical expertise when the data is interpreted. The data obtained in this study was analysed by means of coding and the developing of themes, categories and subcategories from the descriptions the participants gave of their experiences.

Unlike quantitative research, qualitative research does not make use of numbers to illustrate findings. Rather, it uses a rich literacy style and attempts to understand the meaning of a phenomenon in a particular situation in order to understand similar phenomena in other similar situations (Burns & Grove 1997:29; Streubert & Carpenter 1999:17). In this study, the researcher attempted to describe with words the experiences of the participants relating to the implementation of theory into practice. In order to interpret the data, the researcher needed to apply various reasoning strategies, such as analysis, inductive reasoning, synthesis, bracketing and intuiting (Poggenpoel 1998:336). These reasoning strategies required that the researcher take all the data as a whole and break it up into parts. Furthermore, the researcher attempted to discover the relationships between data through close scrutiny and then, by means of synthesis, identify the relationships between data. Through bracketing, the researcher attempted to remove preconceived ideas and reconstruct the data. Finally, the researcher, by means of intuition, focused on the phenomenon being investigated.

3.3.2 Explorative research

Polit and Hungler (1995:11) suggest that explorative research be done in order to investigate the dimensions in which a phenomenon manifests itself. Critical care nursing students' implementation of theory into practice was explored and is discussed in Chapter 4.

Explorative research is done for four reasons:

- To satisfy the researcher's curiosity;
- To have a better understanding of the phenomena;
- To test the feasibility of more extensive research; and
- To develop methods to be employed in the subsequent research.

(Babbie 2001:92.)

An explorative approach was followed for this study to gain a better understanding of the manner in which the participants implemented theory into practice.

3.4 POPULATION

A population is a set of individuals that have certain common characteristics (Polit & Hungler 1995:649). This study's population consisted of nursing students who were registered for the critical care nursing course at a university.

A target population is the aggregate of the cases that the researcher would like to investigate (Polit & Hungler 1995:230). The target population for this study was second-year critical care nursing students registered at various universities. Second- rather than first-year critical care nursing students were selected because the first-year students' exposure to the theory and practice of critical care nursing was not considered to be at an adequate level for this study. The total duration of the course for which the participants were enrolled, which ultimately leads to their registration as a critical care nurse, is two years.

An accessible population is that portion of the target population to which the researcher has reasonable access (Burns & Grove 1997:293). The accessible population for this study was critical care nursing students registered for the course critical care nursing at a university in a city in Gauteng.

3.5 SAMPLING

Sampling is the selection of a portion of the population to represent the entire population. Therefore, a sample consists of subjects or units that make up the population (Polit & Hungler 1995:230).

Purposive sampling was used in this study. According to Burns and Grove (1997:306), purposive sampling is a conscious selection by the researcher of certain subjects or elements to include in the study. In this study, the participants were selected according to the following criteria:

- They were second-year students who were registered for the critical care nursing course at a university in Gauteng;
- They were employed in a private hospital; and
- They were working in a critical care unit, therefore providing the researcher with information of the typical experiences of critical care nursing students when implementing theory into practice.

According to Streubert and Carpenter (1999:22), individuals are selected to participate in qualitative research based on their first-hand experience of a culture, social interaction, or phenomenon of interest. In this study, the participants had first-hand experience as students in the field critical care nursing.

The sample consisted of seven participants, which included all the second-year critical care nursing students employed in a particular hospital in Guateng. A small homogeneous sample was selected due to the nature of the research, which was qualitative and labour intensive (Polit & Hungler 1995:299). The purpose of the study was to gain information on critical care nursing students' experiences of the implementation of theory into practice. Qualitative analysis is a time-consuming

procedure that would become unmanageable with a large sample (Polit & Hungler 1995:241). According to Streubert and Carpenter (1999:23), a qualitative researcher looks for repetition of and conformation with previously collected data or saturation of data, in contrast with a quantitative researcher to whom the size of the sample is significant.

3.6 DATA COLLECTION

Strategies and tools, which are meant to be descriptive, can be utilised to generate qualitative research data (Streubert & Carpenter 1999:25). In this study, an unstructured interview, field notes and a narrative description were the data collection strategies used. The interview was tape-recorded.

3.6.1 Unstructured interview

Unstructured interviews were conducted with participants using an interview guide that directed the interviewer and contained questions and themes important to the research (De Vos 1998:299). The main aim of these unstructured interviews was not to receive responses to the questions, but rather to collect information regarding the experiences of the participants. The interviews were conducted in a manner that would put the participants at ease and allowed them to openly share their experiences with the researcher.

In order to allow the researcher to pay full attention to the participant's descriptions, a tape recorder was used to record the data. Due to time constraints, only one interview was conducted with each participant.

In this study, Johns's guideline for the facilitation of reflection as teaching strategy (Annexure I) was adapted and used as an interview guide to obtain retrospective data about the critical nursing care applied during a particular incident, which was chosen by the participant. Questions regarding the participant's knowledge of the theory related to the particular incident and his or her actual experiences were asked.

3.6.1.1 Utilising the guide for unstructured interview as data collection tool

Although an interview guide was utilised, it appeared that some of the questions had to be explained. This could be beneficial to the study because, as Smaling (1998:6) suggests, this allows even more relevant questions to be formulated and reformulated from the original. According to Babbie (2001:258), the interviewer can also serve as a guard against confusing questions. During this study, some of the questions had to be clarified.

The nonverbal communication of the participants was observed during the interviews and noted in the field notes. This was advantageous when participants answered questions that could be perceived as sensitive.

This method of data collection enabled the researcher to obtain data that was closely related to the reality and gain insight into the participants' experiences. De Vos (1998:300) describes this phenomenon as obtaining an "insider view". This is especially true for this research, because it allowed other aspects, such as the participants' emotional experiences, that were not part of the interview, to emerge.

A disadvantage of an unstructured interview as a data collection tool is the vast amount of data that has to be dealt with, which complicates the ordering and the analysis of the data (De Vos 1998:300).

3.6.1.2 The process of unstructured interviewing

According to De Vos (1998:301), an unstructured interview could be divided into five phases.

1) Preparing for the interview

According to De Vos (1998:301), reviewing the literature enables the interviewer to define the concepts, assess data and construct an interview guide. The reason for doing a limited preliminary literature review in this case was to obtain information regarding guided reflection (Streubert & Carpenter 1999:20).

2) Becoming acquainted

During this phase, the interviewer should become acquainted with the interviewee to bridge the distance between the two (De Vos 1998:302). In this situation, the interviewer was well known to the interviewees, because of the interviewer's clinical accompaniment of the interviewees during the year. This could be a positive or negative factor. The positive aspect of this relationship is the interviewer's familiarity with the participants' style of communication; therefore, the interviewer could better interpret their responses. A negative aspect is the unease that the interviewer's authority over the interviewees, as a result of the student-clinical facilitator relationship, could have caused them. The aim of each interview was to discover how the participant experienced the implementation of theory into practice. In order to accomplish this, and prevent influencing the data, the interviewer allowed the participants to talk freely about their experiences, even when the interviewer noticed that their description of the theory implemented into practice, was inaccurate.

3) Establishing a contractual relationship

According to De Vos (1998:203), the interviewer should establish a contractual relationship. This was discussed in relation to informed consent in Subsection 3.9.3.

4) The relationship of trust

It is important to establish a relationship of trust in order to obtain quality data (De Vos 1998:303; UNISA 2002). The interviewer found that most of the interviewees shared personal information freely, and therefore assumed that a mutual trust relationship had been established.

5) Termination of the interview

The termination of the interview should be handled with great care because the interview could become lengthy, causing the interviewee to lose concentration (De Vos 1998:304). The interviewer found that, with the interview guide, the interviews

terminated naturally, although in one interview, the interviewee required more time to speak about related issues.

3.6.1.3 Basic principles of interviewing

The interviewer considered the following principles during the interviews:

- **Communication**

An interview is essentially a communication process; therefore, the quality of the communication is determined by the proficiency of the interviewer (De Vos 1998:309). The interviewer should consider verbal communication, as well as the non-verbal communication such as gestures and body language, and should have good listening skills. This implies that he or she should listen to the participant, as well as the information provided. During the first interview, the interviewer found it difficult to observe the non-verbal communication of the interviewee. However, during subsequent interviews, the interviewer felt more at ease and was able to observe the nuances of the interview.

- **Naivety**

Naivety implies being open-minded: the interviewer should set aside assumptions and look for the meaning in what the interviewee says (UNISA 2002). In this study, the interviewer tried to be as open-minded as possible, but due to the nature of the research, in some instances found it difficult not to interfere, for example, if the interviewer realised that the participant's knowledge was not up to date. In these cases, the interviewer gave additional information after the interview.

- **Respect, courtesy and acceptance**

The ethical principles, such as respect, courtesy, acceptance, understanding, and confidentiality, which are discussed in Section 3.9, should be adhered to.

- **Communication strategies to enhance rephrasing**

Communication strategies, such as rephrasing, confirmation and probing, are used to obtain more information in a specific area (Burns & Grove 1997:355; De Vos 1998:310; Polit & Hungler 1995:287). Rephrasing and confirmation are methods to establish the interviewees' meaning (Taylor & Bogdan 1984:97). Probing should always be done in a friendly, non-threatening way. The interviewer found that by using these techniques, relevant data could be obtained.

- **Setting and time schedule**

The interview was conducted in a room without telephones and possible interference from outside. It was not possible to conduct the interview in the clinical setting, because of a lack of quiet places where the participants would feel free to share their experiences with the interviewer. A specific time and date were given to the participants for the interview and they were granted time by the hospital management for the interview, which made them willing to participate.

3.6.1.4 Guided reflection

Foster and Greenwood (1998:168) used Johns's guideline to structure and facilitate reflection during the orientation of recently registered nurses in a neonatal intensive care unit. Elcock (1997:139) applied the same framework to reflect on an incident that occurred between a patient and a tutor in a cardiology unit. This framework was also adapted and used in this research to obtain data on the implementation of theory into practice as discussed in Subsection 2.5.3. The data entailed the participants' experiences of the implementation of theory into practice during a particular incident, chosen by the participants, whilst caring for a critically ill patient. Specific questions regarding the participants' knowledge of the theory related to the incident and their actual experiences were asked.

The participants could select any incident, which they felt was complex or out of their usual sphere of experience, that occurred while caring for a critically ill patient. The only criterion for the incident of their choice was that the incident had to be related to the

caring of a patient who was admitted to an intensive care unit. Some of the questions included in the guideline were based on the theory of nursing interventions. A description of this guideline was provided in Chapter 2 as part of the preliminary review (Subsection 2.5.3).

3.6.1.5 Pre-testing the guideline for the facilitation of reflection as teaching strategy

When a guideline for an interview is developed, it should be tested on persons similar to the participants (Burns & Grove 1997:354). The researcher did not pre-test the guideline for several reasons. To pre-test the guideline, the researcher should have approached a different private hospital, because all the available participants in the hospital where the study was conducted were included in the study. Time constraints were also a factor. The participants were in the middle of their training and, if time were allowed for pre-testing, the participants would advance too much in their training, which could have negatively influenced the data. The researcher learned that careful planning was of utmost importance to research. This aspect is discussed as one of the limitations of this study in Chapter 5.

In order to partly overcome the pre-testing problem, the guideline was given to colleagues, who facilitated similar students, for their input. These colleagues had to assess the guideline for its appropriateness and comprehensibility, and evaluate whether or not the questions were threatening. After consensus was reached, some changes were made, mainly to the questions about theory and practice. These colleagues were critical care experts, as well as experts in the clinical facilitation of critical care nursing students. They were not included in the expert panel that evaluated the coding of the data analysis.

3.6.2 Recording the interview

During each interview, a tape recorder was used to record the data verbatim. Informed consent was obtained from the participants (Burns & Grove 1997:355). Refer to Subsection 3.9.3. When the behaviour of interest is primarily auditory, tape recordings can be obtained and used as a permanent observable record (Polit & Hungler

1995:314). A tape recorder was also used, because it was difficult to take notes during the interview. The taking of notes during an interview could result in incomplete notes and loss of important information (UNISA: 2002). A tape recorder allows the interviewer to capture more information than by just relying on memory (Taylor & Bogdan 1984:103). As for this research, the primary data was the verbatim transcripts of the recorded interviews. The researcher experienced technical problems, which affected the quality of one of the tape-recorded interviews, and was therefore unable to use the data.

3.6.3 Field notes

Although field notes are traditionally not applied with an interview, the researcher made personal and observational notes during the interviews on aspects such as non-verbal communicative elements. The researcher used the observational field notes as reference when the data was analysed.

Field notes can be categorised as observational, theoretical, methodological or personal (De Vos 1998:285; Polit & Hungler 1995:306). Personal notes can be explained as notes taken of the researcher's own feelings, while observational notes are taken of events (De Vos 1998:285; Polit & Hungler 1995:306).

The researcher found it difficult to take notes and actively listen while interviewing. After the interview, the researcher made some observational and personal notes that were used to obtain a better understanding of the data. It is a good practice to note down what was seen and heard during an interview immediately after its completion (Henning 2004:77).

3.6.4 Narrative description

Written narratives, commonly used in qualitative research, can be obtained either through diaries or written descriptions (Polit & Hungler 1995:26; Streubert & Carpenter 1999:25). After the interview, the participants were verbally asked to write a short narrative description of how they experienced the facilitated guided reflection and how

this experience might have impacted on their implementation of theory into practice in the future. These narratives were also coded and analysed.

3.7 DATA ANALYSIS

The purpose of qualitative data analysis is to create order, structure and meaning from a large amount of information in order to reach some general conclusions (Marshall & Rossman 1989:112; Polit & Hungler 1995:520). The analysis of qualitative data is a hands-on process in which the researcher becomes deeply immersed in the data (Streubert & Carpenter 1999:28).

In this study, the transcribed data obtained from the interviews and narrative descriptions was coded into themes, categories and subcategories as they emerged.

Some general considerations were taken into account when the data was analysed. According to Polit and Hungler (1995: 520), these entail the following:

- There are no systematic rules for analysing and presenting data;
- The analysing of data is labour intensive; and
- Unlike quantitative data, qualitative data should not be compressed too much, in order to maintain the integrity of the data.

The process of analysis is discussed below.

3.7.1 Data management and organising

Data management involves those activities that prepare the data for subsequent analysis (Polit & Hungler 1995:521). It consists of activities aimed at accomplishing a systematic, coherent manner of data collection, storage and retrieval (Poggenpoel 1998:334).

Schurink (1996), as stated by Poggenpoel (1998:335), proposes the creation of three types of files to ensure accessibility. In this study, master and analytic files were used, due to the duration of the data collection process. Master files, which consisted of the

transcribed interviews and narrative descriptions, and analytic files, which consisted of the themes, categories and subcategories derived from the data, were used. The transcribed data was stored electronically and the field notes were stored on the hard copies of the interview guide. The themes, categories and subcategories were stored electronically, which enabled the researcher to sort the data easily.

3.7.2 Transcribed interviews

Polit and Hungler (1995:521) suggest that it is important to check that all data is of reasonably good quality. Taylor and Bogdan (1984:130) state that data should be read and reread in order to learn the data inside out. Initially a typist was asked to transcribe the interviews, but when the researcher began reading the transcripts, it was discovered that some data was missing. This forced the researcher to re-transcribed the data. Although time consuming, it enabled the researcher to become familiar with the data. Annexure II displays an example of the transcribed data.

3.7.3 Strategies considered for data analysis

According to Poggenpoel (1998:338), there are three main strategies for data analysis:

- Constructing typologies;
- Analytic induction; and
- The grounded theory approach.

In this research, the strategy of constructing typologies was used, as well as the coding method proposed by the grounded theory approach. The phenomena were classified in terms of common elements. The etic approach was followed. This approach entails connecting other typologies to the researcher's own concepts (Poggenpoel 1998:338). Taylor and Bogdan (1984:133) quote Blumer (1969) and Bruyn (1966) who state that concepts provide a general sense of reference in qualitative research. Therefore, they describe the concepts used in qualitative research as sensitising instruments. The researcher grouped together words and phrases with more or less the same meaning.

3.7.4 Developing codes and categories

The analysis of qualitative data is a process that already starts with the data collection process (Streubert & Carpenter 1999:28). Developing categories and codes is that phase of data analysis where the data is reduced to smaller, more manageable units (Polit & Hungler 1995:522). Category generation entails noting regularities in the setting or people chosen for the study (Marshall & Rossman 1989:116).

According to Tech (1990), cited by Poggenpoel (1998:343), the researcher needs to carefully read through the transcriptions in order to make sense of the data. In this research, the researcher was introduced to the data by means of transcribing the data, implying a deep involvement in the data. An interview should be analysed while considering the underlying meaning of the information and pinning down some of the researcher's own thoughts (Poggenpoel 1998:343; Taylor & Bogdan 1984:131). Once the underlying meaning of all the transcripts and narrative descriptions was obtained, important statements and phrases were arranged into major topics. From the list compiled of the statements and phrases, the researcher organised the data into themes, categories and subcategories. After this, the data was left for a while and then reread. The interrelationships between the major categories and subcategories were then identified.

There are three different ways of coding, namely: coding according to pre-determined categories, open coding and axial coding (De Vos 1998:271). According to Babbie (2001:366), open coding pertains specifically to the naming and organising of phenomena through close examination of data. By breaking data down into manageable pieces, and closely examining and comparing the pieces for similarities and differences, the researcher's own and other assumptions about the phenomena are questioned or explored, which can lead to new discoveries. In this research, a combination of open and axial coding was utilised. De Vos (1998:273) describes axial coding as a set of procedures whereby data, after open coding, is put back together in new ways. Connections are then made between categories.

The researcher commenced by taking apart a sentence or a paragraph, analysing the underlying concept, and providing it with a name. Simultaneously, a number, for

example, data unit 2 or 3, was assigned to the concept. According to De Vos (1998: 272), this process is called categorising the phenomenon. Similar incidents, ideas or events were given the same names and each concept was analysed to determine whether only theory or practice or both were applicable. This process was applied to each transcribed interview. The researcher manually coded the data. The themes, categories and subcategories are presented in a table format in Chapter 4.

The meaning of the concepts guided the names given to the categories and, from the categories, subcategories developed. According to De Vos (1998:272), categories could be dimensionalised in terms of their properties. The categories and subcategories were grouped into major themes, namely: 'description', 'critical analysis of knowledge', 'critical analysis of feelings' and 'developing a new perspective'.

After coding, the data was set aside for two weeks and then recoded in order to compare the results. The idea behind this was to approach the data with an open mind and to remove preconceived ideas (Poggenpoel 1998:337). This resulted in some changes to the original coding. An example of a coded, categorised and subcategorised interview was also provided to two independent qualitative research experts for confirmation of the coding process.

3.7.5 Reading the literature

The researcher engaged in a preliminary literature review regarding guided reflection and the research process in order to plan a strategy for the data collection. The researcher realised that a literature review could lead to preconceived ideas, and therefore used literature only as a guide to analyse and present data. A subject-related literature control was conducted after the analysis of the data in order to place the data into a known context (Streubert & Carpenter 1999:20).

3.7.6 Interpretation of data

The analysis and interpretation of the data is discussed in Chapter 4. Interpreting data and reporting findings require that time be spent with transcriptions, field notes and interviews (Streubert & Carpenter 1999:40). In qualitative studies, the interpretation and

analysis occur simultaneously (Polit & Hungler 1995:506). During the development of the themes, categories and subcategories, deductive reasoning and inductive reasoning were applied. Deduction involves drawing conclusions from generalisations (Streubert & Carpenter 1999:330). Conceptual explanation was applied as suggested by Mouton (2001:117). This means the meaning of a concept is clarified through the deductive derivation of its essential meaning. Inductive reasoning regarding the implementation of theory into practice was applied through inferences made from specific observations. The panel of experts who checked the development of the concepts into themes, categories and subcategories were also asked to verify the interpretation of the data.

3.8 MEASURES TO ENSURE TRUSTWORTHINESS

Streubert and Carpenter (1999:333) define trustworthiness as establishing the validity and reliability of qualitative research. Qualitative research is regarded as trustworthy when it accurately represents the experience of the study participants. Krefting (1991:215) notices that the criteria used to determine the trustworthiness of quantitative research do not always suit the criteria for qualitative research. Lincoln and Guba (1985:290) proposed a model that qualitative researchers could use to increase the trustworthiness (reliability and validity) of their research. This model includes the following criteria:

Criteria for trustworthiness

- Truth value: credibility
- Applicability: transferability
- Consistency: dependability
- Neutrality: confirmability

Table 3.2 on page 49 gives an overview of strategies that could be used to enhance trustworthiness, and the strategies used in this research (Krefting 1991:214-22).

3.8.1 Truth value (Credibility)

The truth value determines whether or not the researcher has established confidence in the truth of the findings. The truth value, in qualitative research, is synonymous with

credibility (Lincoln & Guba 1985:296). A qualitative study is credible when it represents accurate descriptions or interpretations of human experience or when the participants recognise the reported research findings as their own experiences (Streubert & Carpenter 1999:330). Therefore, the credibility of this study was based on the participants' descriptions of their own experiences of the implementation of theory into practice.

CRITERIA	STRATEGIES TO ENSURE TRUSTWORTHINESS	STRATEGIES USED IN THIS RESEARCH
Truth value (Credibility)	Prolonged engagement	<ul style="list-style-type: none"> • Prolonged accompaniment • Guided reflection • Panel of experts
	Accurate description	<ul style="list-style-type: none"> • Accurate descriptions
	Triangulation	<ul style="list-style-type: none"> • Methodological & theoretical triangulation
	Reflexivity	<ul style="list-style-type: none"> • Reflective notes
	Member checking	<ul style="list-style-type: none"> • Themes and categories were checked
	Interview technique	<ul style="list-style-type: none"> • Reframing questions
	Structural coherence	<ul style="list-style-type: none"> • Integration of data in a logical manner
	Authority of researcher and referral adequacy	<ul style="list-style-type: none"> • Familiarity with the critical care nursing field
Transferability (Applicability)	Representativeness	<ul style="list-style-type: none"> • All available participants
	Dense description	<ul style="list-style-type: none"> • Expert checking and consensus
Consistency (Dependability)	Dense description	<ul style="list-style-type: none"> • Dense description of research method
	Code-recoding	<ul style="list-style-type: none"> • Recoding
	Triangulation	<ul style="list-style-type: none"> • Experts on qualitative subject
Neutrality (Confirmability)	Confirmability audit	<ul style="list-style-type: none"> • Audit by experts on qualitative research
	Reflexivity	<ul style="list-style-type: none"> • Reflective notes

In this study, the following strategies were used to increase credibility:

- **Prolonged engagement**

Prolonged engagement entails building trust and spending time with the participants (Lincoln & Guba 1985:301). The researcher had already built up relationships with the participants while accompanying them during their first year and, as accompaniment is a continuous process, prolonged engagement was established.

- **Accurate descriptions**

Krefting (1991:216) cites Sandelowski (1986) who states that qualitative studies seem credible if accurate descriptions or interpretations of human experiences are provided. The researcher tried to be as accurate as possible in describing the experiences of the participants, which are discussed densely in Chapter 4. A panel of experts verified the interpretations and a final report was written after consensus was reached.

- **Triangulation**

Triangulation is a mode of improving the probability that findings and interpretations are found credible (Lincoln & Guba 1985:305). Four different types of triangulation are described in research literature: data triangulation, investigator triangulation, theoretical triangulation and methodological triangulation (Burns & Grove 1997:242; Krefting 1991:219; Streubert & Carpenter 1999:299). In this study, methodological triangulation and theoretical triangulation were applied.

With methodological triangulation, different methods of data collection are used. In this study, an unstructured interview (Johns's guideline to structured reflection, Annexure I), observations (field notes), written narratives (of the participants' own experiences) and the researcher's reflection on the whole process constituted different sources of data. With the unstructured interview, the researcher aimed at obtaining information about the participants' experiences of the integration of theory into practice and their non-verbal communication. The written narrative was aimed at presenting their experiences of the guided reflection process. The process of reflection entails thinking back and reflecting on the whole process. The researcher did that and included this experience as well. These different methods aimed at obtaining different perspectives or angles in order to get a clearer picture.

Theoretical triangulation was established by means of a literature control that was conducted after the data was analysed in order to see how the themes, categories and subcategories fitted into the literature.

- **Reflexivity**

Reflexivity refers to the assessment of the extent to which the researcher's background, perceptions and interests influenced the qualitative research process (Krefting 1991:218). The researcher was aware of this aspect and constantly reflected on her perceptions and background. The researcher therefore included data of the researcher's experiences of the reflection process. According to Krefting (1991:218), through the recording of personal thoughts and feelings about the research process, the researcher becomes aware of bias and preconceived assumptions.

The researcher also applied bracketing regarding the analysis of data. Bracketing is a cognitive process of putting aside one's own beliefs and not making judgements regarding what is heard or observed.

- **Member checking**

Member checking is a technique that involves continuously verifying the data, analytic categories, interpretations and conclusions with informants (Krefting 1991:219). Member checking was conducted with one of the participants regarding an interview, because the researcher wanted to confirm that the description given by the participant was correctly understood.

- **Interview technique**

The manner in which the interview is conducted can enhance the credibility of a study. The researcher had experience in the processes of communication due to the nature of the researcher's work and the nature of the accompaniment of critical care nursing students. Where applicable, the researcher reframed questions to ensure that the participants fully understood the questions. Krefting (1991:220), citing May (1989), suggested that reframing or asking questions in different ways might improve the interview and therefore increase the credibility of the study.

- **Structural coherence**

The essence of structural coherence is to ensure that no unexplained inconsistencies exist between the data and their interpretations (Krefting 1991:220). The researcher aimed at integrating all the data into a logical holistic picture, which is densely described

in Chapter 4, to ensure structural coherence. The researcher also provided a mind map of all the themes, categories and subcategories. (Refer to Figure 4.1.)

- **Authority of researcher and referral adequacy**

Credibility can also be enhanced on the authority of the researcher being present during the study and being familiar with the phenomenon being studied (Krefting 1991:220). In this research, the researcher facilitated the guided reflection and was familiar with the critical care nursing field, because of involvement in the clinical accompaniment of critical care nursing students. Therefore the researcher could associate with the participants' descriptions.

3.8.2 Transferability/Applicability

Applicability refers to the degree to which the findings could be applied to other contexts and settings or other groups. It is the ability to generalise the findings to larger populations (Krefting 1991:216; Polit & Hungler 1995:362). In qualitative research, it is not always possible to generalise completely due to the fact that each situation is unique to the particular participants; hence, the terms 'fittingness' and 'transferability' are used (Krefting 1991:216). In this study, the following strategies were used to enhance transferability:

- **Representativeness**

The key factor in the transferability of data is the degree to which the participants represent the population (Krefting 1991:220). In this study, all available participants of the particular group, namely second-year critical care nursing students registered for the course at a university in Gauteng, were used. There was therefore good representation of the group. Regulation R.212, 1993, issued by the SANC, provides certain criteria for the training of critical care nurses, which implies that the findings of this research may also be relevant to other critical care nursing students in South Africa (South Africa 1993).

- **Dense description**

The person who gives detailed, factual descriptions cannot specify the external validity of a study. He or she can only provide the dense description necessary to enable someone else, who is interested in making a transfer, to reach a conclusion about whether or not the transfer can be contemplated as a possibility (Polit & Hungler 1995:362). Dense descriptions of methods provide information as to how repeatable the study might be or how unique the study was. The researcher described the research design, data analysis and interpretations in detail to establish a dense description and to enhance the trustworthiness of the study.

3.8.3 Consistency/Dependability

Consistency or dependability refers to the consistency of findings (Krefting 1991:221). Lincoln and Guba (1985:292) describe reliability as synonymous with dependability, stability, consistency, predictability and accuracy. Qualitative research focuses on learning from the participants rather than controlling them. Consistency is therefore assessed in the researcher and the participants (UNISA 2002). The following strategies were used in this study to enhance the consistency of findings:

- **Dense description**

According to Krefting (1991:221), a strategy to enhance the dependability of a study is to describe the exact methods of data gathering, analysis and interpretation. In this research, the methods of data gathering, analysis and interpretation were densely described in Chapters 3 and 4, thereby increasing the dependability of the study. By providing a dense description, another researcher might use the information to do a similar study.

- **Code-recoding**

Another strategy to increase the dependability is the code-recode procedure used during the data analysis (Krefting 1991:221). This method entails waiting at least two

weeks after coding to recode the same data in order to compare the results. In this study, the code-recoding method resulted in some changes to the original coding.

- **Triangulation**

Triangulation involves colleagues and methodological experts who check the research plan (Krefting 1991:221). In this study, expert qualitative researchers checked the methodological research approach, including the data interpretations. Expert clinical facilitators checked the interview guide to establish theoretical triangulation.

3.8.4 Neutrality/Confirmability

Neutrality refers to the degree to which the descriptions of the participants and the conditions, and not the bias, motivations, interests or perspectives of the researcher, are reflected (Lincoln & Guba 1985:290). The emphasis of neutrality is not on the researcher but rather on the data. The following strategies were used to enhance neutrality/confirmability:

- **Confirmability audit**

According to Krefting (1991:221), a confirmability audit involves an external auditor who attempts to follow the natural history of the events of the project and verifies why certain decisions were made. Guba (1985), in Krefting (1991:221), suggests various categories of records that may be utilised for a confirmability audit. Data reconstruction, synthesis of themes of categories, and inferences made from the data are suggested. The researcher provided two expert qualitative researchers with categories, interpretations and inferences, and therefore utilised data reconstruction and syntheses to enhance confirmability.

- **Reflexive analysis**

According to Krefting (1991:221), reflexive analysis is useful to ensure that the researcher is aware of the influence that he or she has on the data. Reflexivity was discussed in Subsection 3.8.1.

3.9 ETHICAL CONSIDERATIONS

According to Streubert and Carpenter (1999:33), ethical issues, especially in the field of professional nursing, are becoming increasingly complex. This is also true in the context of critical care nursing, within which this research was conducted. A discussion of some of the ethical issues that were taken into account during this study is included. Initially the researcher anticipated that the patients' documents related to the incidents described by the participants were going to be used, but the data obtained from the participants did not necessitate the use of patient records. The discussion that follows is therefore related to only the participants and the hospital involved.

3.9.1 Human rights

Human rights that are protected in research include the rights to self-determination, privacy, anonymity and confidentiality, fair treatment, and protection from discomfort and harm (Burns & Grove 1997:200). Each will be briefly discussed.

- **Right to self-determination**

Humans should be treated as autonomous agents, who have the freedom to conduct their lives as they choose without external control (Burns & Grove 1997:200). In this research, participants were not coerced or asked to divulge sensitive information. The participants chose to reveal the data they felt comfortable to share with the researcher. Participants were not deceived in any way and all relevant information regarding the research was disclosed to them. Care was taken not to violate the participants' right to self-determination in any way.

- **Right to privacy**

Singleton's (1988) view of the right to privacy, as stated in De Vos, Schurink and Strydom (1998:7), is the individual's right to decide when, where, to whom and to what extent his or her attitudes, beliefs and behaviour will be revealed. The nature of this research lent itself to the inclusion of personal questions. With this in mind, the researcher took care to formulate questions in a non-threatening way and asked a panel of experts to validate the interview guide. The interviews were conducted in a place where the participants' privacy was protected. By ensuring the privacy, worth and dignity of the participants, the researcher complied with the requirements set out in the *Position Statement* of the Democratic Nursing Organisation of South Africa (DENOSA) regarding ethical standards for nurse researchers (DENOSA 1998:2.3.3).

- **The right to anonymity and confidentiality**

Confidentiality and anonymity can be ensured through the protection of the participant's identity, as stated in DENOSA's *Position Statement* (DENOSA 1998:2.3.3). Complete anonymity in this research was not possible because of the qualitative nature of the research and the small sample size.

In order to protect the identity of the participants and the confidentiality of the collected data, the person chosen to transcribe the interviews was not known by the participants and no names were used in the research report. Care was also taken with the interpretation of the data. According to the SANC policy on professional nursing education (SANC 1992:17), confidentiality regarding the location of the research should be maintained. The researcher ensured that no link could be established between the individual identity of the participants and the organisation where the research was conducted.

- **Fair treatment**

Fair treatment is observed when each person is treated fairly and receives what he or she is due or owed (Burns & Grove 1997:205; DENOSA 1998:2.3). Fair treatment implies fair selection and treatment of the participants (Burns & Grove 1997:205-6). By using all the available participants, the researcher established fair selection of the participants. The researcher kept to the agreements that were made with the

participants with regard to the purpose of data collection, thereby ensuring fair treatment of the participants. Unfortunately, the recording of one interview was of a poor quality, and could therefore not be included in the data analysis. This meant that the respective participant might not have been treated as fairly as the researcher envisaged. However, the participant's narrative description of the interview was included.

- **Protection against discomfort and harm**

The right to protection against discomfort and harm is based on the ethical principle of beneficence that states: "*One should do good, and above all, do no harm*" (Brink 1996:40; Burns & Grove 1997:206). In this research, discomfort and harm could have been caused by the process of reflection, as can be seen in the following definition:

'Reflective learning is the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of the self, and which results in a changed conceptual perspective.' (Boyd & Fayles 1983:100.)

The researcher was aware of the fact that issues regarding the participants' experiences raised by reflection could have caused feelings of discomfort. The researcher took care to respect and not to exploit or harm the participants.

3.9.2 Balancing benefits and risks

When conducting research, the researcher must carefully assess the risks and benefits that the study offers the participants and share the assessment with them (Polit & Hungler 1995:121). The risks were explained to the participants and informed consent was obtained (Annexure VI). The risk in this research was that the participants could become aware of feelings they previously might not have been aware of. Although this could be a risk, it could also mean that, by dealing with these feelings, the participant could learn how to deal with similar situations in the future.

There were no costs involved for the participants, and the researcher had the permission of hospital management to conduct the research (V). The participants could therefore be at ease during the data collection.

The biggest benefit the participant received from this research was learning the technique of reflection, which could enhance their professional growth in the nursing field.

3.9.3 Informed consent

Informed consent means that subjects have adequate information regarding the research, and are capable of comprehending the information and taking an informed decision. The right to freedom of choice allows participants to voluntarily consent to or decline participation in the research. (DENOSA 1998:2.3; Polit & Hungler 1995:125; SANC 1992:17.)

Thus, informed consent includes four elements, namely: disclosure of essential information, comprehension, competence and voluntarism (Burns & Grove 1997:210). Douglas and Larson (1986), as stated by Burns and Grove (1997:212), see voluntary consent as the prospective participant's decision to take part in a study of his or her own volition without coercion or undue influence. The researcher was aware that the participants could feel coerced as a result of the researcher's position as their clinical facilitator, and therefore emphasised the right to freedom of choice. Informed consent was obtained from each participant. (Refer to Annexure VI.) Consent was also given by the hospital where the research was conducted. (Refer to Annexure V.)

3.10 CONCLUSION

In this chapter, the research process that was followed during this study was discussed. The research design, population and sampling, data collection and analysis, trustworthiness and the ethical considerations that guided the researcher in the study were included. Chapter 4 presents the analysis and interpretation of the data obtained through the interviews, narrative descriptions and field notes.