CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describes the research methodology and design used in the study. The research methods including the research setting, study population, sample and sampling, phases of the study, the data collection instrument and data collection as well as the validity and reliability are described. Ethical issues that were considered will also be described.

3.2 PURPOSE AND OBJECTIVES

For consistency, the purpose and objectives of this study are repeated here:

The purpose of this study is to describe critical care nurses opinions regarding CPD, the current extent of their participation in CPD programs and their perceived barriers to CPD programs.

It is foreseen that the outcome of the research may provide for points of consideration for the development of a CPD program for critical care nursing in South Africa. It was expected that critical care nurses would describe their opinions of CPD as a nursing speciality and as individuals, which in turn will enhance ICU quality patient care and outcome.
The objectives of this study are:

- To describe critical care nurses opinions regarding CPD
- To determine critical care nurses current extent of participation in CPD programs
- To describe critical care nurses perceived barriers to CPD programs

3.3 RESEARCH DESIGN

The research design is considered “the architectural backbone of the study” (Polit & Beck, 2012). The design of the study is intended to provide guidelines to address the research problem and to promote the validity of the results (Burns & Grove, 2003). The research design selected for this study is quantitative. A non experimental, descriptive, two-phase, survey approach was used for this study.

A quantitative research design was selected for this study. The main characteristics of quantitative research are that it is positivistic and a formal measuring instrument is used to provide numeric information that is statistically analyzed (Polit & Beck, 2012). According to Polit & Beck (2012), positivism assumes that “nature is basically ordered and regular and that an objective reality exists independent of human behaviour”. For this study, postpositivism was used to try to be as realistic and objective as possible and to gather probabilistic evidence relevant to the research problem and thereby allow for generalization of the findings.

In a non experimental research design, the study is conducted in the normal circumstances or natural setting, without the researcher intervening in the data collection and new knowledge is generated (Brink, 2001). A non experimental design was appropriate for this
study as it took place in the natural setting (Gauteng branch Critical Care Society mini symposiums) and there was no manipulation or intervention related to the data collection (survey questionnaire used).

The purpose of a descriptive design is to gather complete and accurate information regarding a phenomenon through description, observation and/or classification and to generate new information on the phenomenon (Brink, 2001). A descriptive design was used to accurately describe critical care nurses opinions regarding continuous professional development, to generalize their opinions and to provide new information on the topic.

The research design comprised two phases, namely, phase 1 was the evaluation of the proposed data collection instrument (a questionnaire) and phase 2 was the survey study (Burns & Grove, 2003). According to Lynee’s model (1986), this type of design promotes the validity and reliability of the research by evaluating the data collection instrument before implementation in the survey study. The evaluation of the instrument in phase 1 ensures for content validity by early identification in errors, ambiguity and appropriateness and seen to improve accuracy and minimize the variables (Lynne, 1986).

### 3.4 RESEARCH METHOD

The research method is described as a systematic approach to the actual research process and includes stages of planning, structuring, execution, population, sampling, data collection and analysis (Burns & Grove, 2003; Polit & Beck, 2012). For the purpose of clarity research methodology will be briefly outlined and will be followed by descriptions of phase 1 and phase 2 research methods for this study.
**Research setting**

A research setting is the actual place and conditions or circumstances where and within which the research study takes place (Polit & Beck, 2012). To minimize bias and influences it is best to have as neutral a setting as possible for the study to be conducted in. A neutral setting is associated with comfort, accessibility, feeling at ease and without any expected behaviours (Polit & Beck, 2012). The setting should be carefully determined to decide where and when data will be collected to promote neutrality.

**Population**

A population is a “collection of objects, events or individuals having some common characteristic that the researcher is interested in studying” or “the aggregate of all cases that conform to some designated set of specifications” (Mouton, 2002). The target population is described as the population to which the researcher wants to generalise (Babbie & Mouton, 2002; Polit & Beck, 2012).

**Sampling and sampling method**

A sample is a portion of the target population selected to participate in the research study. The essence of sampling is that it should maximise representativity of the selected population and to allow for generalization to be as accurate as possible (Mouton, 2002; Polit & Beck, 2012). The method of sampling was non probability purposive for both phases. Non probability sampling is used when the entire population cannot be used, non randomly selected and for understanding opinions of subsets of the population (Polit & Beck, 2012). Purposive sampling is used by a researcher to subjectively select participants based on who he/she thinks will be representative of the population (Polit & Beck, 2012).
Data collection

Data collection is the process whereby the most appropriate method is used to systematically collect information, to a specific standard, with integrity, and the purpose is to address the research problem (Polit & Beck, 2012). Factors of resources, time, travel, cost, confidentiality and anonymity should be taken into account in all phases of planning, implementing and evaluation of the data collection process (Polit & Beck, 2012). The most appropriate method for collecting the data should be used to gather sufficient information to answer the research objectives.

Validity and Reliability

“Validity refers to the degree to which a measuring instrument measures what it is supposed to measure” (Brink, 2001). Validity is also referred to as most representative of the truth, most genuine and/ or most credible (Polit & Beck, 2012). Validity of a research study is usually associated with the quality, its reliability and the objective methods used in the research steps.

For the purpose of this study, reliability is the “consistency with which the measuring instrument yields a certain result when the entity being measured hasn’t changed” (Leedy, 2001). Reliability often refers to the measuring method used, its consistency over time and its validity. Statistical analysis methods need to be scientific to provide validity and reliability of the data interpretation, conclusions and recommendations to be made

Data analysis

The information gathered from the data collection requires it to be systematically analysed so that it can be interpreted for conclusions to be drawn (Burns & Grove, 2003; Polit &
Beck, 2012). As the study is quantitative, statistical data analysis by means of descriptive, inferential and stepwise logistical regression was used (Babbie & Mouton, 2003; Polit & Beck, 2012). Consultation with statistical Support was done to assist with the statistical measuring, analysis and reliable interpretation of data. Statistical support used a stepwise logistical regression analysis with a cross-validation.

Descriptive analysis refers to describing and summarising the data results in an organized way and using tables and figures (graphs) to visually explain the outcomes. The use of frequency distribution, standard deviations, percentages, ranges, and averages were implemented to describe the results. Inferential data analysis is used to estimate the probability of the sample information being correct and representative of the population. Inferential statistics, using Fishers exact (p-value), was used to determine the level of significance of the data. Stepwise logistical regression, using a 95% confidence interval, was used to determine the relationship between the independent variables with the most predictive power and converting it to an odds ratio (OR) of probability of the occurrence. These data analysis methods provide for reliability and validity of the statistics and conclusions and recommendations can be drawn from the results.

**Ethical considerations**

Accepted ethical codes and guidelines need to be abided by in conducting research to protect the integrity of the study, human rights and moral behaviour. These considerations include quality of the research, maintaining confidentiality and anonymity, providing privacy, obtaining permission for the study, participants giving voluntary informed consent, preventing harm and standards for any assistants.
3.4.1 Phase 1

3.4.1.1 Research Setting (n=1)

The research setting for phase 1 of the study was universally agreed by the participants on the panel of experts, that an identified hospital’s training room was a central location in Gauteng, the traffic was manageable and considered a neutral environment. The date and time were favourably adjusted to suit the participants.

3.4.1.2 Population

The first phase of this study evaluated the content and internal validity of the questionnaire by using a panel of critical care nurse experts in Gauteng. The target population for phase 1 comprised a panel of critical care nurse experts (Benner, 1984; Christensen & Hewitt-Taylor, 2005; Jasper, 1994) who are clinical and/or theoretical experts in critical care nursing. The evaluation of the questionnaire in this small scale group of experts was to identify problems and any ambiguity in the questionnaire (Burns & Grove, 2003; Lynn, 1986). Their evaluation of the questionnaire was considered essential to the second phase of the study.

3.4.1.3 Sampling and Sampling method

A non probability, purposive, quota sampling method was used to select critical care nurse experts (Benner, 1984; Jasper, 1994) as the sample to evaluate the validity and reliability of the data collection instrument. Using Lynn’s widely used model for content validity, an estimated sample size of experts is determined by their accessibility and agreeability and not actually by a number (Lynn, 1986). According to Lynn’s model, a maximum or sample size, of ten critical care experts was determined for phase 1. In order to meet the sample
size required, twenty experts were identified who met the inclusion criteria. To be representative the panel of experts included clinical and theoretical experts in critical care nursing which provided balance of the instrument. Ten experts were electronically invited and agreed to participate whereas eight experts participated on the panel which according to Lynne’s model (1986) was sufficient, where five is the minimum. These experts practice and were located in the Gauteng province.

The criteria to select and include these experts were:

- qualified critical care nurse with ten years or more experience in critical care nursing
- ICU clinical and/or theory nursing expert
- be affiliated to professional nursing associations, for example, Critical Care Society of South Africa
- provide written consent to participate

### 3.4.1.4 Data Collection

A two phase study was used wherein Phase 1, a panel of experts evaluated the relevancy and content of the questionnaire and in Phase 2, the revised questionnaire was implemented to collect data from critical care nurses. Evaluation of the data collection instrument was conducted prior to the commencement of the survey study in order to evaluate suitability of the instrument for the context of the data collecting questionnaire. Instrument evaluation was done by a panel of critical care nurse experts who met the phase 1 inclusion criteria.
3.4.1.4.1 Data Collection Instrument

A previously developed questionnaire by the National Council for the Professional Development of Nursing and Midwifery, Ireland, (2004) was adapted for the South African context. The instrument was constructed to obtain relevant answers to the research questions. A survey, self administered, structured questionnaire, with 42 close ended questions was used to collect data (Appendix F:140). This type of questionnaire improves representativeness, is considerate of time (to complete questionnaire) and provides data to describe current opinions of critical care nurses regarding CPD. The questionnaire was code lettered and numbered to ensure confidentiality and anonymity of the respondent.

The survey questionnaire was sub-sectioned into four sections aligned to the research objectives. The first section obtained information regarding participants’ personal and professional demographics. Second section determined the perceived CPD needs of critical care nurses and the third section gathered information on their current participation in CPD programs. The fourth section obtained information pertaining to the participants’ perceived barriers to attending critical care nursing CPD, teaching strategies as barriers and their preferred method of communication to receive information about educational programs (National Council for the Professional Development of Nursing and Midwifery, 2004).

The first section, in determining participants demographics, the following eleven factors were regarded as relevant and included: age, gender, basic registered nurse qualification, post basic ICU qualification, experience in ICU, type of ICU mainly worked in, permanent or agency employed and if employed by private or public hospital, average hours worked over a two week period, and a member of a local professional nursing body and also if a
member of an international professional nursing body (Richards & Potgieter, 2010; Skees, 2010).

The second subsection was designed to elicit the perceived CPD needs of critical care nurses and constructed to identify ten competency needs, personal and professional development needs, perceived need by employer for CPD and the need to develop critical care nursing specialty. The ten competency needs included: attitude, knowledge, skills, skills related to new technology, entry to a qualification, means to get paid more, requirement of company, own career development and contribution to the growth of critical care nursing. These questions were directly related to the research objectives and from the literature review and provide a point of departure in considering a CPD program for critical care nurses (Munro, 2008; Skees, 2010).

Section three, the collection of information of critical care nurses’ current participation in CPD programs was seen to be relevant as there is currently no accredited CPD program for critical care nursing. The need to know their current participation in CPD was seen to provide knowledge on what is currently being attended and the frequency of participation. Seven items gathered data on participation and frequency in educational programs related to: critical care nursing, basic nursing, other healthcare professions and determined participation at doctors, therapists, paramedical, non nursing/ medical education programs. This information was seen to be relevant to assess the need for a specific CPD program for critical care nurses and correlate this with the information from the third and fourth subsections related to barriers in participation (Richards & Potgieter, 2010; Skees, 2010).
The fourth section was designed to collect data on barriers that impede critical care nurses participation in educational programs and also which communication method is preferred to inform critical care nurses about CPD events. By identifying these barriers provides vital information for consideration in designing a CPD program for critical care nurses regarding accessibility, motivation and affordability. Thirteen specific barriers were used for this purpose: travel distance, event time, travel safety, lack of communication about CPD, not knowing how to access information about CPD, family responsibilities, costs, time given by company, employers recognition, relevancy of topics, recognition by SANC and teaching strategy. CPD entails education with teaching strategies used to transfer information. Further data was collected on eight items of different teaching strategies perceived as a barrier: refresher course, facilitated workshop, mentorship, e-leaning, distance learning, information updates and journals, lectures, decentralised CPD hub. Appropriate teaching strategies need to be implemented to ensure usefulness of the program and for learning to take place. If a teaching strategy is frequently perceived as a barrier by the participants, alternative methods of presentation need to be investigated for the design of an effective CPD program. Accessibility involves being informed as to CPD events taking place and if the inappropriate methods of communication are used, it will be a barrier to CPD participation (Richards & Potgieter, 2010; Skees, 2010). One item in this section was used to collect data on the preferred method of communication of informing critical care nurses about CPD events and included: short message system (sms), email, Facebook/ Twitter, newsletter, employer, poster and other. These are factors to be included in developing a CPD program for critical care nurses.
3.4.1.4.2 Data Collection Procedure

Based on Lynn’s model (1986) twenty experts, who met the inclusion criteria and were in Gauteng, were identified. Ten experts were electronically invited to participate and on any expert declining the invite, the next expert was invited to participate until ten experts agreed to participate. The positive respondents were then sent an electronic letter (Appendix C:137) outlining the study and procedures, included was a “Consent to participate in study” form (Appendix D:138) and an “Expert’s Demographic Data Sheet” (Appendix E:139).

On the panels agreed date (13 April 2011), time (14:00) and the selected venue’s training room, eight experts participated on the panel which according to Lynne’s model (1986) was sufficient. The chairs were arranged in a horseshoe manner to facilitate all group members seeing each other and thereby enhancing communication. Refreshments were provided by the researcher to facilitate a friendly, relaxed and conducive environment for data collection. The researcher facilitated introductions of the panel and then gave an overview of the study. Thereafter the expert panel’s data collection instrument was explained as well as the procedure for data collection of phase 1. Anonymity and confidentiality of the expert panel was assured and only the researcher and her supervisor have access to the raw data.

The questionnaire (Appendix F:140) was then reviewed by the panel of experts. Each expert was required to review and comment on each question (Appendix G:145) to evaluate content and construct validity. Each question was individually evaluated and rated according to the Likert scale to provide an index of content validity (Babbie & Mouton, 2002; Lynne, 1986), using 1 – 4, whereby: 1 referred to not relevant; 2 referred to include
but needs alteration; 3 referred to relevant; 4 referred to definitely relevant. Space was provided for comments by the experts. Lynne’s (1986) table of experts proportional to the number of experts agreeing to content validity was applied where a minimum of six experts are to agree for content validity to be greater than a .50 level of significance. Data was collected by using a four point Likert rating scale of 1- 4, to individually rate each question to determine if the questions were relevant and represent the critical factors for critical care nursing CPD. From the panel’s evaluation and ratings, minimal changes related to wording and sentence structure were done to the questionnaire. The experts’ evaluation of the questionnaire was essential to the second phase of the study. Data collection from this phase was not included in the data analysis.

3.4.1.5 Validity and Reliability of data collection instrument

Content, predictive and construct validity was used in the design of the questionnaire based on reliable and valid literature and review thereof (Polit & Beck, 2012). The researcher applied sensitivity, appropriateness and ensured efficiency in question development. Questions were arranged into content subsections and short introductions were included for clarification. Subsections in the questionnaire determined the predictive and construct validity of the data collection instrument. The evaluation of the instrument by the panel of experts for content validity by early identification in errors, ambiguity and appropriateness was to improve accuracy and minimize the variables.

The first phase of the study evaluated the content and internal validity of the questionnaire by using a panel of critical care nurse experts in Gauteng. Internal validity was determined by using experts to evaluate the questionnaire. Content validity was measured by
implementing a panel of experts to evaluate the instrument to determine the relevancy and appropriateness of the questions according to Lynn’s model (1986). In Lynn’s seminal work (1986) on determining and quantifying content validity, she states that it is essential to use a two phase process for content validation of instruments. Lynn further describes the content validity index (CVI) as the number of 3’s and 4’s rated by the panel of experts on the Likert scale of 1 – 4, by item rating per question and on evaluating the entire instrument (1986). Part of the content validity involves the panel of experts identifying areas for improvement and any gaps in the instrument. Inclusion criteria in both phases were implemented for content validity determination. According to Lynn (1986) a maximum of ten and a minimum of five experts should be used in phase 1. Each item was CVI rated and then the entire questionnaire was CVI rated. The entire CVI rating of the questionnaire by the panel of eight experts yielded 9.58 which is considered content valid.

Although currently no CPD programme for critical care nurses is in place, it is predicted that a CPD programme will be implemented in the future and the opinions of the current critical care nurses are valid for developing a CPD program. Based on reliable literature, construct validity was used as the opinions of critical care nurses regarding CPD were measured. Validity was further ensured by the services of a Statistician for the data analysis.

3.4.1.6 Data analysis

The results of phase 1 of the study used to evaluate the instrument, was not included in the data analysis. The content validity index (CVI) was used for data analysis of phase 1 (Lynne, 1986). Each expert on the panel individually evaluated and rated each individual
question in the instrument according to the Likert 1-4 scale. This provided for item and entire scale CVI to be assessed and content validated. Thereafter the questionnaire was revised according to the panels suggested improvements and gap identification, by means of word and sentence restructuring. The data analysis of phase 1 improved the instrument.

3.4.1.7 Ethical considerations

The survey questionnaire was based on a previously designed instrument to provide for quality in the study (National Council for the Professional Development of Nursing and Midwifery, 2004). The questions were constructed to address the research objectives. A two phase approach was used to improve the study. Permission was obtained from the relevant ethical committees to proceed with the study (Appendix A:135). The data collection phases were planned and implemented with integrity and sensitivity.

The panel of experts were assured of their anonymity and confidentiality of their participation. The experts were provided with an electronic written outline of the study prior to participation and written informed consent was obtained from each expert. Data collection of phase 1 was not included in the data analysis. Only the researcher and her supervisor have access to the raw data.
3.4.2 Phase 2 (survey study)

3.4.2.1 Research Setting (n=3)

After consultation with the researcher’s supervisor and the study phase 1 panel of experts, the proposed research setting for phase 2 of the study, being four hospitals in Gauteng, was reconsidered so as to provide for a more representative, natural, standardised and non threatening environment. The research survey study (phase 2) was subsequently conducted at three (3) mini symposiums held at various locations in Gauteng, May to June 2011, namely,

- mini symposium 1: was mainly accessible for east and south Gauteng area
- mini symposium 2: was mainly accessible for west and north Gauteng area
- mini symposium 3: was accessible for central and all areas of Gauteng.

All three the mini symposiums were conducted by the Gauteng Critical Care Society of Southern Africa (GCCSSA) branch. The mini symposiums were considered a natural CPD environment. The three GCCSSA mini symposiums were considered by the researcher to be homogenous as they were held in Gauteng, all being the same length of time (08:00 – 13:00) and the same topics (ventilation and blood gas analysis) which were relevant to critical care nursing. The environment was considered neutral, nonthreatening, providing for anonymity and was cost free to attendees. The mini symposiums were open to all critical care nurses to attend, from private and public sector, both permanent and non permanently employed. The geographic locations of the three mini symposiums allowed for a representative population of critical care nurses working in level 2 and level 3 ICU’s in Gauteng.
3.4.2.2 Population

As the entire target population was not accessible to the researcher, the accessible or study population that was reasonably accessible to the researcher was used for the study. The target population selected were critical care nurses. The accessible population for this study were critical care nurses working in level 2 and/ or level 3 ICU’s in Gauteng that attended any of the three identified mini symposiums conducted by the GCCSSA. A preliminary survey conducted in February 2010 as to critical care nursing staffing of ten ICUs (level 2 and 3) in Gauteng revealed an estimated 100 critical care nurses, inclusive of permanent and non permanently employed, but not necessarily living in this area. This number was variable and depended on ICU bed occupancy, length of stay, patient acuity and the mobility of critical care nurses.

3.4.2.3 Sampling and Sampling Method

For Phase 2 (survey study) a purposive sampling method was used to represent the population of critical care nurses working in level 2 and level 3 ICU’s in Gauteng and included permanent and non permanent critical care nurses working in public and private healthcare sectors. This sampling method was used to assess the predictive and constructs validity. Purposive sampling method was used by the researcher as the sampled population was reasonably accessible in the research setting, provided an equal opportunity for each attendee to participate and before handing the participants the questionnaire to complete, the researcher asked each critical care nurse as to the level of ICU that they worked in and had the opportunity to briefly explain the aim of the research and the importance of clearly completing the questionnaire in full. A sample size of one hundred (n=100) critical care nurses was determined and sampled from the population, with 100 questionnaires
distributed and 71 returned (n=71). Sample size was limited by the nursing shortage and the mobility of critical care nurses.

The criteria to select and include the critical care nurses were:

- working in a level 2 and/ or level 3 ICU in a public and/ or private hospital
- post basic qualified or experienced (more than 6 months) in the specific field of critical care nursing.
- permanently or non permanently employed.
- provided written consent to participate

3.4.2.4 Data Collection

An explanatory electronic letter was sent to the chairperson of the Gauteng branch of the Critical Care Society of Southern Africa (GCCSSA) to obtain permission to utilize the identified GCCSSA three mini symposiums to collect data at (Appendix H). The geographic locations of the mini symposiums allowed for a representative population of critical care nurses working in level 2 and level 3 ICU’s in Gauteng. There was no cost to the critical care nurses to attend the mini symposium and refreshments were provided by the GCCSSA. The topics, ventilation and blood gases, presented at the mini symposiums were the same for each mini symposium and relevant to the critical care nurse. On obtaining the required permission, data collection was by means of a self administered, structured questionnaire, sub-sectioned according to the research questions, with close ended questions. The mini symposiums were conducted May – June 2011, at different venues, which allowed for greater accessibility to the CPD event. At each of the mini symposiums, before handing the participants the questionnaire to complete, the researcher
asked each critical care nurse as to the level of ICU that they worked in and had the
opportunity to briefly explain the aim of the research and the importance of clearly
completing the questionnaire in full. To increase the number of usable questionnaires,
instructions to complete the questionnaire were provided to the participating critical care
nurses who met the inclusion criteria (Appendix I:154). The researcher expected that the
participants may discuss and debate topics related to the questions before answering and
thus the respondents were requested to answer the questions independently, without
discussion. This process facilitated the completeness of the returned questionnaires.

The researcher maintained integrity of the study by distributing, collecting and storing the
questionnaires herself at all three mini symposiums. An information letter was attached to
each questionnaire given to the participants explaining the study (Appendix I:154). Consent to participate in the study (Appendix J:155) was obtained from the participating
critical care nurses. One questionnaire only was to be completed per participant. The
questionnaire was completed by the participants at a time convenient to them before,
during or directly after the mini symposiums and done not to disrupt the mini symposiums.
On completion, the participant folded the questionnaire, inserted it into an attached
envelope, sealed and placed it in the labelled collection box kept by the researcher. A
target sample of 100 was determined and 100 questionnaires were distributed with 71
returned and complete (n=71). Each mini symposium yielded returns of:

- mini symposium 1: 42 distributed and 33 returned (76.19%)
- mini symposium 2: 14 distributed and 8 returned (57.14%)
- mini symposium 3: 44 distributed and 30 returned (68.18%)
3.4.2.5 Validity and Reliability of the data collection process

Implementing the questionnaire in phase 2, the survey study, determined external validity. The use of criteria for the sample is reliably representative of the population and able to reliably complete the questionnaire.

Reliability was measured by internal consistency (Polit & Beck, 2012) and by evaluating the questionnaire by the panel of experts. Consistency and accuracy of the data collection by the researcher herself ensured reliability of the study and the same questionnaire and data collection method was implemented to the study population at all three the mini symposiums.

Application of the selection criteria to both the panel of experts evaluating the instrument and the survey sample groups was to ensure correct representation of the population. Only one questionnaire was designed and used to collect the data with. The control of manipulation of questionnaires was implemented. The researcher ensured that the questionnaires were correctly managed, distributed and collected according to a checklist. Coding of the questionnaires was to prevent bias. Non threatening environments were used for the data collection. Clear instructions were given to the participants to minimize errors and variables. Generalization of the population is reflected by the sample size. Variables were not to be manipulated and data results and reports are accurately recorded. Confidentiality was observed. The researcher applied a plan to ensure the integrity of the study.
3.4.2.6 Data Analysis

Data analysis was by descriptive, inferential and stepwise logistical regression statistical methods (Polit & Beck, 2012). Statistical support was consulted to assist with the analysis and interpretation. Descriptive data analysis of phase 2 (survey study) was done by organising and summarising the collected raw data for statistical analysis to be done. The statistical analysis was done to describe the data. Inferential analysis was done to draw conclusions from the data analyzed.

3.4.2.7 Ethical considerations

Ethical requirements were taken into consideration by electronically obtaining permission from the Gauteng branch of the Critical Care Society of Southern Africa to collect data at three mini symposiums held in Gauteng in May and June 2011. The dates and venues of the mini symposiums are not disclosed herein so as to further maintain confidentiality and anonymity of the participants.

The survey questionnaire was code lettered and numbered for use during data collection and reporting to ensure confidentiality and anonymity of the participants. Information was provided to the sample before deciding to participate. Participation in the study was voluntary and participants were allowed to withdraw from the study at any time without penalty. Before inclusion in the study, a written informed consent was obtained from the participating group of critical care nurses.
Access to the raw data is by the researcher, her supervisor and the statistician only, thereby further providing confidentiality. The data collection was done by the researcher without assistants. The data is safely stored and will be destroyed by the researcher after the required time frame. Results of the study will be made available to the Gauteng branch of the Critical Care Society of Southern Africa if they request it.

3.5 SUMMARY

In this chapter the reader was introduced to the research methodology and design used in the study. The research methods including phase 1 and phase 2 research setting, study population, sample and sampling, data collection instrument and data collection as well as validity and reliability were described. Ethical issues that were considered were also described. The next chapter will review the data analysis and results of the study.