

# CHAPTER 1

## INTRODUCTION TO AND OVERVIEW OF THE STUDY

### 1.1 INTRODUCTION

The late professor Charlotte Searle viewed the development of nursing technology as one of the philosophical landmarks of nursing (Mellish, Brink & Paton 1998:10). Nursing technology can be described as the application of scientific principles, knowledge and skills. The South African Nursing Council (SANC) Regulation, Regulation R. 212, 1993, Section 5(1) (g & h), relating to the course in clinical nursing science that leads to registration of an additional qualification, states that the course should lead *'to the consolidation of the knowledge of, personal growth in and the continued skill of a student in respect of'...* *'defining and accepting responsibility for independent nursing practice'* as well as *'rendering a scientifically based nursing practice'* (South Africa 1993).

It is the responsibility of educators to facilitate the application of scientific principles and knowledge. Facilitating the application of science and knowledge will ensure that qualified nurses become skilled practitioners. Teaching theory or facilitating learning in order for nurses to apply scientific principles in practice has been researched and widely debated, and various articles have been written on the subject. (Davies, Welham, Glover, Jones & Murphy 1999:33-8; Gallagher 2003:205-10; Hewison & Wildman 1996:754-61; Maselesele 2000:6.)

The so-called integration of theory and practice seems to be a continuing issue of concern. According to McCaugherty (1991b:1056), an accurate description of the theory-practice integration has not yet been achieved, but its existence has never been doubted. Some researchers conclude that a theory-practice gap exists because it is difficult to reconcile the values and goals of educationalists and practitioners concerning priorities in student learning. They suggest joint planning regarding curricula, teaching methods, and assessment criteria, as well as clarification of the roles of nursing

lecturers and clinical staff. Theory-practice integration can realise only if joint planning is implemented and the different roles of educators and clinical personnel are clarified. (Elkan & Robinson 1993:296; Ferguson & Jinks 1994:693.)

Cook (1991:1463) identifies the 'hidden curriculum' as another reason for the lack of integration of nursing theory and practice. The hidden curriculum is described as 'hidden learning' – unplanned or unintended learning that occurs. In any given learning setting, much more learning occurs than what is actually planned or intended. Where joint planning enhances theory-practice correlation, unplanned learning effectively broadens the gap between theory and practice.

The question arises: *Why does the need exist to integrate nursing theory and nursing practice?* It seemed obvious that theoretical knowledge should be applied in practice; that theory was taught to a nursing student with the intention of equipping the student for nursing practice. McCaugherty (1991b:1061) states: *'Theory without practice is sterile and practice without theory is blind.'* Some authors reason that theory and practice can never be integrated entirely, because theory and practice are by nature always in a dynamic that is essential for change to occur in the clinical practice (Rafferty, Allcock & Lathlean 1996:685).

Concerning nurses undergoing basic (clinical) training, the lack of integration of theory and practice is well documented. (Faely 1997:1062; Ferguson & Jinks 1994:693; Lowe & Kerr 1998:1031; Maselesele 2000:4; McCaugherty 1991b:1056; Yassin 1994:183.) However, whilst doing the literature review for this research, the researcher could not find any documentation that recognised the existence of a theory-practice gap from a teaching perspective.

The interest of the researcher in the need for theory-practice integration was stimulated while accompanying critical care student nurses in clinical practice. It was observed that some students had difficulty explaining their nursing actions, or relating their nursing actions to nursing theory. This problem led the researcher to seek for methods that could be used during the clinical accompaniment of students to enhance theory-practice integration. Methods described in literature that could lead to achieving this aim were *cognitive strategies, concept maps* and *reflection*. (Daley 1996:17; McCaugherty 1991a:534; Rich & Parker 1995:1050; Smith 1992:16.)

Different authors proposed the use of *reflective practice* as a method to enhance the integration of nursing theory and practice. (Carr 1996:289; Foster & Greenwood 1998:171; Landers 2000:1553.) Reflective practice can be interpreted as the practitioner's ability to access, make sense of and learn through work experience. Through reflective practice the practitioner could achieve more desirable, effective and satisfying outcomes (Johns 1995a:23).

The researcher decided to use one aspect of reflective practice, namely *guided reflection*, as a teaching strategy to investigate students' experiences of the application of theory to practice.

Reflection has been successfully applied as a method to improve the integration of theory and practice with reference to novice neonatal nurses and first-year student nurses (Foster & Greenwood 1998:170,171; McCaugherty 1991a:540). Both novice neonatal nurses and first-year student nurses undergo basic training; therefore, this method has been proven successful in basic training. The researcher could not find any evidence that suggested that research was done in South Africa on the application of 'guided reflection' as a technique in the education and training of critical care nursing students.

The background to the research problem, the problem statement, the aims of the study, definitions of key concepts, the significance of the study, as well as the research methodology and ethical considerations will be briefly discussed.

## **1.2 BACKGROUND TO THE PROBLEM**

In South Africa, the nurse who intended to follow a course in critical care nursing was previously not restricted by pre-registration requirements, such as one year's experience in a critical care unit. Training was offered by hospitals that usually appointed a senior nurse to lecture students. This type of training could be described as a kind of apprenticeship system.

Training of critical care nurses developed into more formal training when colleges and universities became involved. With the expansion of technology in the critical care

nursing field, new interventions had to be implemented. For example, the ventilation of patients, using advanced ventilators such as oscillation ventilation for severe lung pathology, was previously not done. This meant that the training of critical care nurses had to be adapted to fulfil the needs created by new technology.

Recently, training institutions in Gauteng decided on pre-registration requirements for students who wanted to take a course in critical care nursing. Typical pre-requirements are at least one-year experience in a critical care unit or one-year experience as a registered nurse. Nursing colleges and universities in Gauteng implemented various training packages that are aimed at preparing students to cope with the demands of critical care courses. All these initiatives could yield a better-prepared, competent critical care nurse who would be able to apply knowledge gained during the training period.

Competent critical care nurses should have the capability to make quick and effective decisions and implement the necessary nursing actions. This also implies that these nurses should be able to integrate the necessary knowledge and skills. For example, if a patient's blood pressure suddenly decreases, the critical care nurse should be able to determine the most probable cause and implement the correct nursing actions. Most of the time a doctor is not present in the critical care unit, and it is not always possible to wait for a doctor to prescribe the necessary actions. Therefore, critical care nurses should be competent practitioners who have critical thinking and decision-making skills.

While accompanying critical care nursing students in clinical practice during the past seven years, it became apparent that some students had difficulty correlating practical events with theoretical knowledge. For example, students knew that they had to administer a vasoactive drug if a patient's blood pressure suddenly decreased, but in practice students could not relate the pharmacodynamic of that specific drug to the specific situation. This happened and was observed despite the fact that the students had already received the theoretical component of that particular practical event.

Literature describes the inability to integrate theory and practice as a multi-factorial problem, and relates these factors to the theory-practice gap in nursing. (Andrews & Jones 1996:358; Daley 1996:17; Davies *et al.* 1999:33; McCaugherty 1991b:1061.)

Researchers identified the following aspects as reasons for the lack of theory-practice integration:

- ♦ The 'hidden curriculum' - learning takes place although it is not formally planned (Cook 1991:1463);
- ♦ Lack of careful curriculum development - the theory does not compliment the practice (Chun-Heung 1997:460; Maselesele 2000:125; McCaugherty 1991b:1058);
- ♦ Lack of emphasis given to practical skills in the classroom (Landers 2000:1551);
- ♦ Insecurity of student nurses due to supernumerary status – they function as assistants (Ferguson & Jinks 1994:689; Landers 2000:1551);
- ♦ The under-utilisation of different teaching and learning strategies, for example: problem-based learning, concept maps, reflective practice, small group discussions and computer-aided education (Andrews & Jones 1996:364; Daley 1996:17; Davies *et al.* 1999:33; Durgahee 1996:22; Maselesele 2000:128; Rich & Parker 1995:1050);
- ♦ The lack of role models in the practical setting (Davies *et al.* 1999:33);
- ♦ An increased workload and a strained atmosphere (Landers 2000:1551);
- ♦ Textbook descriptions do not reflect practice (McCaugherty 1991b:1057);
- ♦ Role conflict of the nurse educator (McCaugherty 1991b:1058; Rafferty *et al.* 1996:687);
- ♦ The hospital ward is an ever-changing environment (Maselesele 2000:141; McCaugherty 1991b:1059);
- ♦ The sequence of the organisation of training experience (Rafferty *et al.* 1996:687);
- ♦ Conflict between educators and management (Yassin 1994:183);
- ♦ The theory is too idealistic and impractical (Yassin 1994:183);
- ♦ The lack of formal feedback on formative evaluation (Maselesele 2000:135); and
- ♦ The lack of planned accompaniment of students (Maselesele 2000:141).

Although most authors view the lack of theory-practice integration as a problem, some see it as an advantage. They suggest that the lack of integration of theory and practice is not only inevitable and healthy but also necessary for change to occur in nursing education (Cook 1991:1462; Rafferty *et al.* 1996:689). The lack of theory-practice integration in nursing is no new problem. It is assumed that the inability to relate theory to practice is present not only in novice nurses but also in critical care nursing students.

The question arises as to which methods can assist the clinical facilitator in overcoming this problem while accompanying critical care nursing students in the clinical setting.

From literature, various teaching strategies are suggested to overcome the lack of theory-practice integration. Some of these strategies can be classified as problem-based learning, and attempt to integrate formal theory with real situations (Andrews & Jones 1996:364). They include concept maps that are used to explain the nursing process so that the student can apply it in practice (Daley 1996:17). Teaching strategies such as demonstrations, simulations, lectures, and workbooks were mostly used with the purpose of realising theory-practice integration, but they did not seem to accomplish this aim (Maselesele 2000:129).

Meanwhile, reflection has been researched as a means of enhancing theory-practice integration. Research on reflection has been conducted in relation with:

- ◆ Incidents in cancer patients (Coutts-Jarman 1993:77);
- ◆ Critical incidents (Davies *et al.* 1999: 33; Rich & Parker 1995:1050);
- ◆ Palliative nursing care (Durgahee 1996:22);
- ◆ The action learning group mechanism and midwives (Graham 1995:28);
- ◆ Novice nurses in a neonatal intensive care unit (Foster & Greenwood 1998:171);
- ◆ The utilisation of learning journals to enhance this technique in midwives in different countries (Hancock 1998:37); and
- ◆ Small group discussions (McCaugherty 1991a:536; Platzer, Blake & Ashford 2000:691).

### **1.3 PROBLEM STATEMENT AND THE RESEARCH QUESTION**

As theory-practice integration is a multi-factorial problem, there seems to be no clear-cut answers. While accompanying critical care students in clinical practice the past seven years, the researcher observed that some critical care nursing students found it difficult to relate their knowledge to the practical incident. This can be illustrated by means of an example. For instance, students received the theoretical component of the concept 'cardiac output'. When they were asked to explain the different (theoretical) aspects of cardiac output, they were able to do it, but when they were asked to relate these aspects to the patient they were caring for, they did not know what to say. This

means that nursing students may act by trial and error, or not at all. If an inappropriate nursing action were implemented, it might have a detrimental effect on the patient, which in serious cases could lead to misconduct. This would imply that the critical care nursing student was guilty as stipulated by the *Scope of Practice* of persons who were registered or enrolled under the Nursing Act of 1978, as amended. Section 4(a) of Regulation R.387, 1985, is applicable. (Scribante, Muller & Lipman 1995:437.) Such an event might also reflect on the quality of the critical care nurse's training and accompaniment, an aspect with which this research was concerned.

It seems that guided reflection, as a teaching strategy, is not widely used in nursing education in South Africa. The researcher therefore formulated the following research question: *How will guided reflection influence second-year critical care nursing students' experiences of theory-practice integration?*

#### **1.4 RESEARCH OBJECTIVES**

The objectives of this study are to:

- ◆ Facilitate guided reflection in second-year critical care nursing students who work at a private hospital in Gauteng; and to
- ◆ Describe the experiences of second-year critical care nursing students when guided reflection is applied to theory-practice integration.

#### **1.5 SIGNIFICANCE OF THE STUDY**

In this study, guided reflection will be used as a strategy to encourage critical care nursing students to adopt new thinking patterns or to change their way of thinking. Guided reflection should enable them to integrate nursing theory with practice to the benefit of patients, the students themselves and their colleagues. Foster and Greenwood (1998:171) describe reflection as a powerful educational tool because it can develop the critical thinking skill in students, and effectuate integration of theory and practice.

This research is also aimed at enhancing characteristics that define critical care nursing students. These characteristics, as outlined by Mellish *et al.* (1998:69), include

intellectual and imaginative powers, understanding, as well as reasoning and problem-solving skills that should be accomplished by competent critical care nurses. The ability of the nursing student to deliver sustained, independent and high quality work is of immense value in the critical care field. If the critical care nurse had the ability to deliver quality nursing care, the patient might recover quicker, which implied a shortened hospitalisation period. This could have financial benefits for both the patient and the hospital.

Another important characteristic of a competent critical care nurse is the ability to engage in critical thinking, enquiry and analysis. This characteristic involves research skills, self-awareness, and the ability to reflect upon one's professional practice. Developing the student's critical thinking skill seems to be a fundamental requirement of modern nursing (Quinn 2000:79).

This study could also indicate how guided reflection could help nursing students to become responsible and accountable practitioners within the legal, ethical, professional and institutional parameters of critical care nursing. At times, different ethical issues arise within the critical care setting, and critical care nursing students do not always have the experience to deal with these issues. Guided reflection could teach them how to deal with such issues.

The direct benefit of the study is the professional and personal growth of both the student and the researcher using this strategy. (Glaze 2001: 646; Teekman 2000:1134.)

## **1.6 ASSUMPTIONS**

Assumptions are statements that are not scientifically tested, but are considered to be true. Assumptions influence the logic behind the study, and the recognition of assumptions leads to more rigorous study development. (Burns & Grove 1997:48,49.) They set the stage for the research project, and are not designed to pre-empt the research (UNISA 2002). For the purpose of this study, assumptions are clarified within the following areas: epistemology, ontology and methodology.

### **1.6.1 Epistemology**

Epistemological assumptions deal with knowledge or the content of truth and related ideas (Unisa 2002). Theoretical-conceptual assumptions are also referred to as epistemological assumptions.

In this study, the following epistemological assumptions are considered:

- ◆ It is assumed that the experiences of participants, as perceived and interpreted by the researcher, are described in relation to the reality of the critical care nursing field; and
- ◆ It is assumed that participants' descriptions of their experiences reflect the theoretical knowledge that they integrate into practice.

### **1.6.2 Ontology**

Ontological assumptions include assumptions about the human nature, society, the nature of history, the status of mental entities, observable material phenomena, and causality and intentionality in human behaviour (Unisa 2002). The ontology deals with the reality of the meanings that people attach to a specific situation (De Vos 1998:242). In this study, it is assumed that critical care nurses' experiences of guided reflection and its effect on theory-practice integration are unique and authentic.

### **1.6.3 Methodology**

Methodological assumptions are criteria that are regarded as scientific, and include methods and instrumentation that give scientific validation to the study. The researcher assumed that:

- ◆ The utilisation of guided reflection as a data collection tool during interviews would provide information regarding participants' experiences; and
- ◆ A dense description of the research methodology would validate the research.

## 1.7 DEFINITIONS OF KEY CONCEPTS

The following key concepts are relevant:

- ◆ **Accompaniment:** For the purposes of this study, accompaniment entails the guidance given by the clinical facilitator during visitation of the critical care student nurse who is nursing a critically ill patient in the critical care setting.
- ◆ **Clinical facilitator:** Microsoft Encarta World English Dictionary (1999) defines 'facilitator' as follows: '*Somebody enabling something to happen: somebody who aids or assists in a process, especially by encouraging people to find their own solutions to problems or tasks*'. In the context of this study, a 'clinical facilitator' is a person who guides, accompanies and assists second-year critical care nursing students during clinical practice in a critical care unit.
- ◆ **Critical care nursing students:** In the context of this study, a critical care nursing student is a person who is registered as a nurse with the SANC, and as a student at a university in Gauteng Province. At the time of conducting this research, these students were doing the second year of the course leading to registration of an additional qualification in medical and surgical nursing science (critical care nursing).
- ◆ **Guided reflection:** To guide means to show somebody the way or to lead somebody in the right direction (Microsoft Encarta World English Dictionary 1999). In the context of education, reflection is a process of creating and clarifying the meaning of experience (present or past) in terms of self and self in relation to the world (Boyd & Fayles 1983:101). From the perspective of the clinical facilitator, guided reflection entails confronting and supporting the nurse practitioner in clinical practice in order to encourage the practitioner to learn through experience (Johns 1996b:1137).
- ◆ **Theory-practice integration:** In the context of this study, theory-practice integration is achieved when theory taught or acquired in the classroom or from any other source is successfully implemented in the practical situation.

## 1.8 RESEARCH METHODOLOGY

Research methodology includes the research process and the different tools and procedures used (Mouton 2001:56). An overview of the research methodology follows. An in-depth discussion of the research methodology is presented in Chapter 3.

### 1.8.1 Research design

In this study, a qualitative, explorative, descriptive, and contextual research approach will be followed to capture the experiences of second-year critical care nursing students who will be subjected to guided reflection.

The research design is *qualitative*, as an in-depth study will be conducted to capture the experiences of critical care nursing students in the research setting. The researcher will observe, describe and document the experiences of participants in a critical care unit that represents the research setting. Polit and Hungler (1995:178) state that *descriptive* research aims at observing, describing and documenting aspects of a situation as it naturally occurs.

The purpose of *exploratory* research is to explore the dimensions of the phenomenon, its manifestations, and its relations to other factors (Polit & Hungler 1995:11). This research aims at exploring the experiences of critical care nurses who will be subjected to guided reflection with the purpose of enhancing the integration of theory with practice.

The research design can also be described as *contextual*, as the study will be conducted within a specific context. This context comprises a specific critical care unit in a specific private hospital in Gauteng, the involvement of critical care student nurses who are working in the unit at a specific time, and the involvement of participants at a specific time in their training as critical care nurses.

### 1.8.2 Population and sampling

A target population is the aggregate of cases about which the researcher would like to make generalisations (Polit & Hungler 1995:230). The target population for this study is

second-year critical care nursing students who are registered for a critical care course at universities.

Sampling entails selecting a portion of the population to represent the entire population. A sample then consists of subjects or units that compose the population (Polit & Hungler 1995:230). Purposive sampling will be used in this study. It involves the conscious selection of certain subjects or elements by the researcher for inclusion in the study (Burns & Grove 1997:306). Purposive sampling is chosen for this study, as a limited number of second-year critical care nursing students are available at the chosen research setting (a private hospital in Gauteng) for inclusion in the study.

### **1.8.3 Data collection**

Data collection will be done by means of unstructured interviews. These interviews will be conducted according to an adaptation of Johns's framework, also called the *Guideline for the Facilitation of Reflection as Teaching Strategy* (Foster & Greenwood 1998:168). A detailed description of the adapted framework will be presented in Chapter 2. (Refer to Annexure I.) Previously, Foster and Greenwood (1998:168) had successfully used Johns's framework to structure reflection on action during the orientation of novice nurses in a neonatal intensive care unit.

Field notes will be taken to collect data about the non-verbal communication of participants during the facilitation of guided reflection. Field notes are detailed reproductions of events (De Vos 1998:285).

Following the application of guided reflection, participants will be asked to write short narratives about their experiences of the event. The researcher will also take reflective notes on the research process. These notes will be used to build up arguments during the interpretation of data.

### **1.8.4 Data analysis**

The data obtained through tape-recorded unstructured interviews will be transcribed, analysed and coded according to themes, categories and subcategories of main concepts found. The short narratives written by students about their experiences of the

application of guided reflection will also be analysed and coded. The data analysis and the interpretation of meanings will be discussed and described in Chapter 4. The importance of the study findings will be judged by incorporating relevant literature into the study and by comparing the findings of the study with previous research findings.

### **1.8.5 Measures to ensure trustworthiness**

Qualitative research is trustworthy when it accurately represents the experiences of study participants. Krefting (1991:215) notices that the criteria used for measuring trustworthiness in quantitative research do not always suit the criteria for qualitative research. Streubert and Carpenter (1999:333) define trustworthiness in qualitative research as closely related to validity and reliability. Lincoln and Guba (1985:290) propose a model to enhance trustworthiness (reliability and validity) in qualitative research. Based on this model, Krefting (1991:217) provide criteria that could be used to determine the trustworthiness of qualitative research. These criteria will be discussed in more detail in Chapter 3. Criteria such as truth value (credibility), applicability (transferability), consistency (dependability) and neutrality (confirmability) will be used to enhance the trustworthiness of this study. These criteria will be met by implementing different strategies.

- ◆ **Truth value (Credibility)**

Truth value (credibility) is achieved when the researcher has established confidence in the truth of the findings. Strategies that will be used to strengthen the credibility of this study are prolonged engagement, triangulation, reflexivity and member checking. The implementation of these strategies will be discussed in more detail in Chapter 3.

- ◆ **Applicability (Transferability)**

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.) However, it is not always possible to make generalisations due to the fact that research settings and participants (or populations) differ (Krefting 1991:216). Therefore, in qualitative research, the terms 'fittingness' or 'transferability' are used rather than 'applicability'. In this study,

representativeness and a dense description will be used as strategies to enhance the transferability of study findings.

- ♦ **Consistency (Dependability)**

Consistency or dependability refers to the consistency of findings (Krefting 1991:221). Lincoln and Guba (1985:292) regard reliability as synonymous with dependability, stability, consistency, predictability and accuracy.

According to Krefting (1991:221), a dense description of the exact methods of data gathering, analysis and interpretation will enhance the dependability of the findings. Thus, a dense description will be applied as a strategy, and the methods of data gathering, analysis and interpretation used in this study will be densely described in Chapters 3 and 4. The provision of a dense description might increase the dependability of study findings, and the possibility that another researcher could use the findings to do a similar study.

- ♦ **Neutrality (Confirmability)**

Neutrality involves the degree to which the findings reflect the experiences and circumstances of participants, and not the bias, motivation, interests or perspectives of the researcher (Lincoln & Guba 1985:290).

According to Krefting (1991:221), triangulation regarding methods, data sources and theoretical perspectives could be used to test the strength of the researcher's ideas. Triangulation, therefore, could be used as a strategy to establish confirmability of findings. The possibility that the researcher could contaminate the data or the data analysis will also be considered, and will be dealt with under the heading 'reflexive analysis'. (Refer to Subsection 3.8.1.)

## **1.9 ETHICAL CONSIDERATIONS**

Engaging in research brings with it a personal and professional responsibility to ensure that the study is morally and ethically sound (Streubert & Carpenter 1999:33). Ethical issues such as human rights issues, benefits and risks, and informed consent will be

taken into account in this research. A detailed description of the ethical considerations is presented in Section 3.9.

Participants in this study as well as the participatory institution (a private hospital in Gauteng) will be given the rights to self-determination, privacy, anonymity and confidentiality, fair treatment, and protection from harm and discomfort. The participants will be fully informed about the benefits and risks involved, and will be asked to sign an informed consent document.

### **1.10 SCOPE AND LIMITATIONS OF THE STUDY**

It is probable that the limitations or restrictions of a study will affect the generalisation of study findings (Burns & Grove 1997:49). There are two kinds of limitations, namely theoretical and methodological limitations. Theoretical limitations may restrict the abstract generalisation of the findings. However, because this study is qualitative in nature, the focus is rather on methodological than theoretical aspects. Generalisation is only applicable in situations with similar characteristics. The trustworthiness of the research design will restrict the possibility of methodological limitations. This aspect will be discussed in Chapter 3.

### **1.11 CONCLUSION**

Clinical facilitators could play a major role in seeking new methods and strategies that could be used to enhance the ability of critical care nurses to integrate theory with practice in the clinical care unit.

This chapter focussed on the background to the research problem, the problem statement, the aims of the study, the definitions of key concepts, the significance of the study, assumptions, research methodology, ethical considerations, as well as the scope and limitations of the study.

The remainder of the study is organised as follows:

- ♦ A literature review is conducted, and presented in Chapter 2. It describes aspects of theory and practice, as well as reflection, as they apply to this research. A part

of the literature review is incorporated into Chapter 4 and serves as a literature control on the analysis of data.

- ◆ Chapter 3 describes the research methodology, which includes the research design, population, sampling, data collection, data analysis, measures to ensure trustworthiness and ethical considerations.
- ◆ In Chapter 4, the data analysis and an interpretation of the data are presented. The themes, categories and subcategories that emerged during the data analysis are discussed. Relevant quotations from verbatim transcripts are presented to substantiate the analysis and interpretation.
- ◆ Chapter 5 describes the conclusions, evaluation, and recommendations of this study.