

IN THE NAME OF ALLAH THE COMPASSIONATE THE MERCIFUL
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HEALTH PROFESSIONS
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**“Effectiveness of Different Elements in a Case-Based
Curriculum in School of Nursing in the Kingdom of
Bahrain: Student's Perception”**

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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Dedication

I would like to dedicate the harvest of this research to my dear parents, my husband Abdullah, my daughter and rest of children, and the rest of my family. This work would have not been materialized without their blessings and support.

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Abstract

Background / purpose of the study

The College of Health Sciences in the Kingdom of Bahrain is adopting a Case-Based approach during the four years of the nursing undergraduate curriculum. Case-Based Learning (CBL) is a method of learning where students are given a case or set of cases for study and research. The students study the case and the new material and try to solve the problem before discussing it in large-group tutorials. Students in a Case-Based curriculum are not only confronted with problems (cases), but also with other elements such as course objectives, tutors, description of student tasks, learning resources, lectures and tests. The effectiveness of these various elements on students learning, however, is not clear. This study aims to investigate the effectiveness of these various elements in a Case-Based curriculum on students learning.

Subjects and methods

This study was conducted on 2nd and 3rd year nursing students. Students were handed a structured questionnaire highlighting the main components of the Case-Based curriculum that influence student's decision on what to study. Four themes were included in the Questionnaire: Tutor, Tutorial Group, Learning Resources and Quality of Cases. Students were asked to indicate on Five-point Likert-type scale their degree of agreement or disagreement with each statement in the Questionnaire. The Questionnaire was pre-tested on a group of students (n = 13) and reduction analysis was done by doing exploratory factor analysis using principal component factoring and varimax rotation. The reliability of the Questionnaire was determined and the Questionnaire was then distributed to the whole class of 2nd and 3rd year of nursing students.

Results

- Overall, the four components of CBL are found to have an impact on student learning with degrees and are inter-related to each other.
- Students perceived that the ‘Quality of Cases’ is the most effective, whilst the “Tutor” is the least effective for their learning.
- There are differences in perception amongst students regarding the Learning Resources based on 2nd and 3rd year curriculum years.
- The qualitative comments from students on how to improve the effectiveness of CBL programs were related to all the four themes (Tutor, Learning Resources, Tutorial Group and Quality of Cases).

Conclusions

This study evaluated the students’ perception regarding effectiveness of different elements of CBL program at the school of nursing. The results indicated that there is a strong need for improving tutor performance and learning resources in the CBL program in Bahrain.

These results are expected to have a significant impact on CBL programs in Nursing School in the Kingdom of Bahrain. Encouraging results about this study may also help the researcher to transfer these data for adopting a similar model in Qatar Nursing School.

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LIST OF ABBREVIATIONS

CBL	Case-Based learning
CHS	College of Health Sciences
PBL	Problem –Based learning
SDL	Self-Directed learning

Chapter One

CHAPTER ONE

1. INTRODUCTION

1.1 Background

The goal of nursing education is to facilitate the transition of knowledge from the classroom to a variety of clinical experience within a framework of social responsibility (Bowers and McCarthy 1993). Because learning in nursing is a matter of having the opportunity to practice what is being learned in a variety of situations (Skinner, 1986), nursing students must be exposed to self-directed learning competencies to obtain knowledge, skills, and accredited uniquely for their personal and professional growth.

While some studies have reported that learners must be stimulated early in their academic program in order for their education to be meaningful and valued, others suggested that this stimulation best takes place by active participation in guided, realistic situation (Heliker, 1994). Although traditional learning may be more familiar to teachers and learners, and perhaps more convenient in the short term, passive learning habits have negative long-term implications (Youngblood and Beitz, 2001). According to Bean (1996), nursing students need to transform from passive to active learners where critical thinking skills increase and much significant learning begins with learners active engagement with real world problems.

Ashbaugh and Kasten (1991) in their study of educational leadership conclude that case-based instruction is a teaching strategy that allows students to actively solve complex problems that mimic real world clinical practice. It's a

method of linking classroom and practice. De Marco *et al.* (2002) present a similar perspective. They identify that case-based instruction is not only student-centered but also has the potential to be group-centered. Students can work collaboratively in groups to solve complex situational problems like they would in real health care teams.

Walton and Mathews (1989) also point out that other advantages of case-based approach include active participation of students in learning, encouraging self learning, improving higher order thinking and critical analysis skills, improving communication and decision making skills and strengthen the relevance of information by linking it to clinical context. Furthermore, Tomey (2003) concludes that learners in Case Based Learning (CBL) learn best when they synthesize knowledge and skills learned from a variety of experience & integrate their education to apply what they have learned.

In CBL, students take an active role in learning. This helps them in generating learning issues, decide how they will study them, and evaluate what they have learned. This process is helpful in the development of student's self directed, life-long learning skills (Barrows and Tambling, 1980; Walton and Matthews, 1989).

The College of Health Sciences (the researched organization) was established in April 1976 to meet the manpower needs of the health services in the Kingdom of Bahrain as a national academic organization under the umbrella of the Ministry of Health. The main aim in establishing the college was to supply the hospitals and health centers with well-trained professional staff.

The College started by offering the Associate Degree in General Nursing, Pharmacy, Laboratory, Technicians, Radiography and Health Inspection. In addition, the college also trained practical Nurses (Al Mohandis, 2001).

The College of Health Science in the Kingdom of Bahrain is adopting a Case-Based Learning (CBL) approach in nursing since 1998, which is adopted during the four years of undergraduate curriculum. The CBL is commissioned in the 2nd semester of 1st year curriculum and completed in the 4th year. The mission of the program is to: 1) produce the highest quality graduates in health care service who pursue life long learning experiences, 2) share knowledge in a continuous effort to improve quality of life around the globe, and 3) have a special responsibility towards the health education needs of society. Cases with different formats are presented to students weekly before every tutorial session and student study the cases individually and then discuss in large groups.

Students in CBL curriculum are not only confronted with problems (cases), but also with other elements related to the problems such as tutors, learning in a group, description of student tasks, learning resources and lectures. The extent to which these various elements affect student learning is not clear. Determining the effectiveness of the various elements in the Case-Based curriculum on student learning process will have a significant impact on evaluating, and consequently modifying, CBL as a learning model in the nursing school in the Kingdom of Bahrain.

The research findings of the study can also provide an evidence to help in adopting similar models in the nursing school in other GCC countries.

However, it is recognized that there is a need to understand the participant's perceptions and concerns and that such depth of insight would be best achieved through quantitative and qualitative research. The results from this study are intended to be used to assist the researcher with greater understanding of the key issues and perceptions raised by the participants in relation to the research context.

1.2 Research Aim

This study is conducted to examine the perception of nursing students about the effectiveness of different elements in the Case-Based Learning (CBL) curriculum.

1.3 Definitions of Key Terms

Learning: Learning is the acquisition of knowledge, cognitive skills, values, that move the student forward on the learner maturity continuum. Learning occurs through a process of inquiry and experience and builds on prior knowledge and skills. It is also the change in behavior as result of the interaction between the student, the teacher, and the curriculum, all within an educational environment (Lefrancois, 1995).

Case (Problem): In nursing, the case typically describes a patient situation, which provides students with information about the patient's physical, psychological and social background. Moreover, it's the vehicle by which a chunk of reality is brought into the classroom to be worked over by class instructor (Laurence, 1953).

Case-Based Learning (CBL): It is a method of learning through cases. Students are usually given the case before the classroom, and then the case is discussed with a large group with the help of tutors. This learning method enables students to integrate and apply clinical and basic knowledge (Ertmer and Russell, 1995). Tutors are usually subject- experts.

Problem-Based Learning (PBL): It is a subset of problem-centered learning methods which is easily identifiable by the use of typically well-structured problems which precede and motivate learning, and act as a vehicle for encouraging student's ownership of the learning environment (Greening, 1998).

PBL Tutor: a person who facilitates the learning of the group and activates group discussion to ensure that students progress satisfactorily through a problem (Mayo *et al.* 1995).

Learning Resources: the information resources that support the independent learning process. This could be achieved through e-journals, e-library, e-books, URL, laboratories, experts, and clinical setting, etc.

Tutorial Group: A tutorial group is a collection of individuals who meet, exchange ideas and information, and work together on shared objectives and tasks.

1.4 Research Questions

The following questions are addressed in the study:

1. What are the perceptions of students about the effectiveness of each of the following elements of CBL on their learning?
 - Quality of Cases
 - Tutors
 - Tutorial Group
 - Learning Resources
2. Is there a difference in perception between 2nd and 3rd year student's regarding the different elements of CBL?
3. Is there a gender difference between student's perceptions to the elements of CBL?
4. What are the perceptions of student's on how to improve CBL program at the School of Nursing in the Kingdom of Bahrain?

1.5 Justification for the Research

The CBL curriculum has been adopted only 4 years ago in the CHS in the Kingdom of Bahrain. However, there is very little research that has been conducted to evaluate the effectiveness of this method of learning. More specifically, the students' perceptions about the effectiveness of this method have not been tested. Therefore, the outcome of this research would have a positive impact to improve the delivery of the curriculum to students and to help in selecting appropriate staff for that role.

This study could be added to previous research conducted locally and used in other countries adopted for different learning organization to envisage the differences and similarities in view points.

Chapter two

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Introduction

Nursing today is far different from nursing as it was practiced years ago and one can just imagine how nursing will change during the 21st century. Nursing has had a significant effect on people's lives and as rapid change continues to transform the profession of nursing and the health care system with which it is closely linked, nurses embrace broader opportunities to influence human well-being. Because people now are better educated and have more knowledge about health and illness than in the past, nurses have to undergo advancement in the field of education and experience in order to fulfill and be fully equipped to assume advanced practice roles. (Hurley and Dare, 1985; Maitland, 1985; Loewenthal, 1986; Titchen, 1987; Van Langenberghe, 1988).

Nursing education has been seen, as a key to ensuring that nurses can respond to meet the health needs of a culturally diverse client population. With massive societal changes over the past twenty years (Drucker, 1994 and Reigeluth, 1994), there is a great influence on society's educational needs, and-in turn-this driving schools, colleges and universities to re-design or restructure their educational system. (Banathy, 1992 and Reigeluth, 1994).

From a practitioner perspective, DeMarco *et al.* (2002) also identify that "no nursing studies using case studies that addresses decision-making in the context of leadership and management issues with active work groups were found. Most of the studies used this approach to enhance individual learning".

In fact, while the current study examines the different elements of CBL, other set of studies (Tawash, 2004) conducted in the Kingdom of Bahrain investigated the degree to which CBL helped CHS nursing students improve their self-directed learning skills. The remaining ones (Swaileh, 2001) are base on the implementation of Case-Based curriculum in nursing education at CHS.

2.2 Curriculum Development in Nursing Education

The trend in education for the health-allied professions has shifted towards programs that are student-centered rather than teacher-centered approach of learning (Des Marchais, *et al.* 1992).; Meyers *et al* 1993 It leads to increased motivation to learn, greater retention of knowledge, deeper understanding, and more positive attitudes toward the subject being taught.(Bonwell and Eison 1991; McKeachie 1986).

Much of the pressure for changing the curriculum and trends in education are coming from the workplace, which is demanding that higher education prepare learners in new ways. Another concept from the real time interaction suggests that tomorrow's workplace will require more flexibility, customer focused mindsets, decentralized control, labor-management cooperation, delegation of authority to workers, and work teams of multi-skilled workers. (Costa and Liebmann, 1997).

As Banathy (1992), Drucker (1994), Reigeluth (1994) mention, in order to meet the demands, certain criteria have to be followed such as developing thinking skills; using the self-assessment process, which is integral to learning providing opportunities for students to actively construct knowledge for

themselves; creating learning environments that develop cooperative problem solving; making sure that skills are learned in the context of real problems; creating a learner-centered, and developing outcomes in which all students have learned how to think. Within the educational reform movement, schools have been challenged to shift from the traditional method of teacher-directed learning and the dissemination of knowledge, to learner-centered curricula that promote the development of lifelong learners who can think critically, solve problems and work collaboratively. These are the skills that we will need to survive in the future.

As Little and Ryan (1988), Loewenthal (1986), and Van Langenberghe (1988) observe, nursing is gaining recognition as a profession that requires extensive education, special knowledge and skills and preparation pertinent to the role to be performed. As Biley and Smith (1998) put it, there is an increasing need for nurses to possess critical thinking and problem solving skills because these are the key components of nursing practice. Other researchers contend that in order to realize these goals, schools need to adopt a system that embeds learning within real world contexts, involves participants in hands-on activities, meaningful problem solving and cognitive approaches (Brown, *et al.* 1989; Bednar *et al.* 1991; Blumenfeld *et al.* 1991; Jonassen 1991).

Nursing curricula now have a greater focus on critical thinking and the application of nursing and supporting knowledge to health promotion, health maintenance and health restoration as provided in both community and hospital settings. Some, for example Christensen (1987) refers to a sense for the critical, not only in analyzing data, but also in prioritizing actions to be taken as essential to professional practice. In nursing this is particularly

important, since the art of nursing has much to do with working with individuals and unique situations in a creative way.

2.3 Case-Based Learning (CBL) in Nursing Education

De Marco *et al.*, (2002) in their study conclude that nursing faculty has embraced CBL in their curricula from the perspective of using case studies in individual courses to increase critical thinking. They identify case studies, addressing nursing unique perspective on care have been used as an effective teaching strategy because they provide a context of complexity in situations, which forces students to dig below surface solutions and answers.

In their exploratory work concerning Case-Based Learning (CBL), Ertmer and Russell (1995) define CBL as a teaching strategy allows students to actively solve complex problems that mimic real world clinical practice. The Case-Based instruction method enables students to integrate and apply developing clinical and basic science knowledge and skills, such as clinical reasoning, critical thinking, problem solving, and interpersonal skills, to hypothetical or real case scenarios.

A number of researchers have focused on the implementation of CBL (Cassidy, 1996; Huston and Marques, 1987; Johnson and Purvis, 1987; Mitchell, 1981). For example, some work has reported whether or not a course uses reflective processes to focus on how learning occurs or to simulate reality, nursing education has reported the most success in effective learning through the use of case studies in courses that address ethical perspectives of

care, particularly decision making (Cassidy, 1996; Huston and Marques, 1987; Johnson and Purvis, 1987; Mitchell, 1981).

For the past century, case studies have been used in professional education programs as a way to bridge the gap between academic knowledge and real-life clinical application. The case study method has been used increasingly to relate concepts and theories to practice (Andrews and Jones, 1996). From a practitioner perspective, Dailey (1992) describes the case method as a teaching and learning strategy that stimulates ideas through complex problem analysis of actual or hypothetical situations and provides a means of applying theoretical principles to practice.

O'Connel and Bates (1976) for instance provide an alternative point of view; although the case study method has not been used widely in nursing, it was implemented as the primary strategy in one nurse practitioner program because the faculty believed the lecture format was inadequate for developing the skills they wished the students to acquire. Their research shows that the outcome of this program was positive because it gave the students the chance to transfer their problem solving skills from familiar to unfamiliar situations where they become active and involved learners. A second set of studies (Fromer, 1980) concludes that it also provided students with a beginning understanding of moral philosophy and the resolutions of ethical conflicts.

Patterson *et al.* (2002) highlight a conceptual research framework for assessing CBL applications from a scientific perspective, noting that in CBL, nursing students are expected to sharpen their assessment skills and learn to distinguish and prioritize pertinent information in order that decisions about

nursing care can be made; students then identify their own level of knowledge regarding their ability to solve the problem. A third set of comparative studies has been conducted by Jones and Sheridan (1999). The authors state "at this point, the students collect new information needed by identifying various learning resources including the library, the laboratory, other students, and faculty members and applying all knowledge to the case".

A fourth set of comparative studies has been conducted by Conway and Sharkey (2002). Their paper discusses the similarities between problem based and practice based learning and present the findings of an evaluative study of the implementation of a practice based learning model that uses computer-mediated communication to promote integration of a practice experiences with a broader goals of the undergraduate curriculum. This would provide an opportunity for partnership between students, academics and clinicians that would promote more positive outcomes for all and maintain the integrity of the PBL approach. It has been suggested that in learning experiences that use emerging technologies to support learning, the student has increased responsibility for identifying his/her learning needs, determining learning objectives, evaluating the outcomes, and pursuing learning strategies and resources". This could be particularly relevant in nursing education because it exposes students to the kinds of responsibilities that characterized actual nursing workplace practice and continuing professional development (Conway and Sharkey, 2002)

Further learning objectives may be identified, according to Rankin (1992), information gathering continues as needed throughout the clinical program. A similar perspective is presented by Maudsley (1999). His analysis also

considers that students actively discuss the problem in a class and pose questions about what they do not understand, and summarize what they have learned with a faculty tutor who serves as a facilitator of the learning process, rather than as a lecturer. O'Connell and Bates (1976) argue that the process of reaching a decision becomes the substance and not the decision itself.

According to Wilkerson and Feletti (1989), enhancing the case study discussion with faculty and clinical specialist input provides a monitoring and feedback mechanism to challenge the students to go beyond their initial responses. On the other hand, ground truth suggests that “students are able to receive immediate verbal feedback from the instructor and their peers about their assessment and problem-solving abilities, in contrast to the clinical setting where immediate feedback is not always possible” (Monahan and Yew, 2002).

2.4 Problem Based-learning and Case-Based Learning: similarities & differences

Problem-based learning (PBL) and case-based learning (CBL) are, in fact, conceptually very similar. Problem-based learning (PBL) is an educational strategy that supports both social and personal learning processes. Students are encouraged to take responsibility for their own learning, identifying learning needs, planning learning process, and monitoring and regulating their own learning (Stromso *et al.* 2004; Conway and Sharkey, 2002). A study by Hay and Katsikitis 2001 indicated that the two methods are similar in many aspects. However, the difference between them is that, in CBL, the case is

accompanied by resources materials and questions, which help in guiding the students in their self-study. Another difference is that students are provided with lectures prior to class discussion about content and concepts related to the case. On the other hand, in PBL, students are encountered with the problem (case) first in their tutorial and students focus mainly on identifying their own learning needs and seek resources in the light of problem (Hay and Katsikitis 2001).

The role of the tutor in CBL & PBL program is more or less similar. In both the tutor is expected to act as a “facilitator” in the group however, an important difference is that tutors are always ‘content experts’ in CBL program, which is not always in the case in PBL. Tutorial groups are usually small (8-10 students) in PBL program while CBL tutorials are usually conducted in large groups (20-25 students).

2.5 Different Elements of Case-Based Learning (CBL)

The major elements of CBL include the Tutor, the Tutorial Group, Learning Resources and Quality of Cases. The role of each element is presented below in details.

2.5.1 Role of Tutor

There has been very little research in the literature about the role of tutors in CBL. However, the expected role of the tutor in CBL is probably quite similar to his role in PBL programs. The tutor in CBL is an expert in the group who

has been given the responsibility of helping the students to learn. Tutors who are experts on subject matter are more able to put into practice the full diversity of tutor role in PBL (De Grave *et al.* 1990). The tutor's role is critical to students' learning outcomes and satisfactions (Andrews and Jones 1996; Biley and Smith, 1998; White *et al.* 1999). Tutors, however, must know the process of clinical reasoning and self-directed learning and the task of the tutor is to guide students through the learning process (Barrow, 1988).

The tutor role in a case study group is to facilitate the problem-solving process, "to guide, probe, and support the students' initiative," not to lecture, direct or provide solutions. The tutor's attention is focused not only on the academic progress, but also on the psycho-cognitive characteristics that reflect each student's involvement with the learning process (Kaufman *et al.* 1989). However, Dolmans *et al.* (2002) argued that since most teachers have had primarily lecture-based experience, they have had hardly any role models for tutoring. They have expertise in the discipline in which they have been trained and have had limited training in how to teach students. They are prepared as lecturers or subject-matter experts with much knowledge about scientific truths or discipline-specific mechanisms and are assumed to be able to deliver this knowledge to students by lecturing. With this background it is understood that they will feel uncomfortable with the tutor role in PBL. Williams (1992) highlights other implications, noting that some of these tutor, when are being confronted with this new role, assume that a tutor should be passive and follow the student-centered model so rigidly that they, as tutors, become totally uninvolved.

Mayo *et al.* (1993) indicated that a tutor should encourage specific kinds of cognitive activities such as making connections, providing feedback and helping students to monitor their own learning. However, Kloss (1994) report that some students may behave negatively when confronted with the need to take more responsibility for their own learning. The resistance that the tutors will encounter from some students is a natural part of their transition from dependence to intellectual autonomy.

Barrow (1988) points that PBL is an opportunity for the instructors to understand how the process works, take some precautionary steps to smooth out the problems and wait until the payoff start emerging. The tutor must provide sufficient structure and guidance along the way, and by the end of the course most of the students will reach satisfactory levels of both performance and acceptance of responsibility for their own learning (Mayo *et al.*, 1995).

Research studies have shown that instruction encourages student's participation and stresses peer-peer interactions with explicit emphasis on problem-solving is effective in enhancing critical thinking (Monahan and Yew, 2002). The key for the teacher lies in answering questions with more questions, pushing the students to find information and solutions on their own. Increasingly, then, the teacher fades into the background while students engage in solving the problem. The teacher can help direct the students to information, which will answer their questions, but should not answer the questions *per se*. The questions the teacher poses are the key to stimulate student inquiry. These questions help focus the students on certain issues and push them to think about how they are learning (Des Marchais *et al.* 1992).

Aspy *et al.* (1993) observe that a teacher does not want students to struggle with a project for lack of information. They conclude that before writing or choosing a problem, the teacher must ensure that students will be able to find the information necessary to solve it. Hence generating lists of resources available could help students when they become stuck.

Dolmans *et al.* (2001) in their study give a good assessment for many who are not sure how to go about teaching PBL and fear that classes will degenerate into a pointless exchange of personal opinions. The teacher must think through what they are trying to accomplish in order to prevent this. The primary mechanism for the teacher to exercise control of the learning situation is the selection and crafting of the problems (Gijssels and Schmidt, 1990). What questions should students be asking in the course? What problems will provoke them to raise those questions? (Wilkerson and Feletti, 1989). Wetzel (1996) concludes that the teacher has to know when to intervene in the group discussion and when to sit back and let the students resolve their own difficulties.

Conversely, many researchers (Connolly and Seneque, 1990; De Grave *et al.* 1990) argue that according to many staff, there is a temptation to intervene and control the group discussion too much, a pressure to "keep students on the right path" in their discussions and many find it very difficult to stand back. It is very important that the students feel that this is their problem. If the teacher appears to be heading the students in a particular direction, they'll see that this really isn't their problem after all. They'll see that there is a correct solution (even if there is not one) and that it belongs to the teacher (Cascio *et al.* 1995). By the same token, tutors, for example, must be careful not to practice

facilitation by manipulation. That is, move the team to their view or solution. If this occurs, students may learn to be dependents upon the tutor, rather than becoming independent learners and decision makers (Bechtel, Davidhizar and Bradshaw, 1999). Moreover, although tutors may help teams where they lack information, during discussion, they should take caution in moving the team to their viewpoint.

Since the CBL is composed of two phases; the analysis of the problem and then the problem solving, the teacher has to be careful not to cripple the problem by properly analyzing the surrounding issues of the problem, helping students reflect on the experiences they are having, because reflection develops professional skill (Schon, 1987), improves problem solving and improves the learning (Schmidt, 1983). These reflective skills are part of effective problem solving and group skills. The teacher has to monitor progress, because successful problem solvers monitor their thought processes about once per minute to ensure that they are still on track and that they understand where they are in the process (Schoenfeld, 1984).

Albanese and Mitchell (1993) argue that monitoring is a key component in effective problem solving. The next stage is to determine what the students should be able to do by the time the problem is solved. The teacher also needs to decide how the problem could help students acquire those skills. "When problems are engaging, difficult, and useful, higher levels of comprehension and skill development occur than in traditional instruction".

Staff or teachers whose training was in the traditional method need the opportunity to develop as facilitators through workshops, observation, co-facilitation, support groups, peer review and reflective diaries (Williams,

2004). More recent studies reveal, however, that a tutor's expertise only has an impact on student performance if a unit does not match the student's prior knowledge or when the unit is less structured (Hay Jane and Katsikitis, 2001). This indicates that tutor performance might not be a stable.

Combs (1976) has gone further than this, giving that three characteristics are needed in order for the teacher to create an effective learning situation in the classroom, which can be summarized in terms of the following major themes: 1) Learners must feel safe and accepted and they need to understand both the risks and rewards of seeking new knowledge and understanding, 2) The classroom must provide for involvement, interaction, and socialization, along with a business-like approach to getting the job done and, 3) Learners must be given frequent opportunities to confront new information and experiences in the search for meaning.

However, he asserts that these opportunities need to be provided in ways that allow students to do more than just receive information. Students must be allowed to confront new challenges using their past experience without the dominance of a teacher/giver of information.

2.5.2 Role of Cases (Problems)

As Gijselaer and Schmidt (1990) assert, cases are starting point for students learning activities in CBL. The case usually consists of a description of some phenomena, which require some kind of explanation (Barrows, 1985).

O'Connel and Bates (1976) define the meaning of a good case study which presents a realistic situation and includes the relevant background, facts, conflicts, and sequences of events. Complex scenarios have been shown to increase student motivation and engagement. Indeed, case study method allows the students to make decisions and plan nursing care in controlled situations and gave them insights into situations that they may not experience in their clinical laboratory settings.

The primary disadvantage, however, is the lack of available cases appropriate for undergraduate nursing education. The size of the class can also place restriction on the use of this method. In nursing, it works best with a group size in which all individuals have the opportunity to participate. Since the case study method requires students to assume an active role in the learning process, a passive student may feel stressed (Biley, 1999).

A case most often begins with a chief complaint, the reason for a persons visit with a health professional. Students identify and record on the board key words, facts, and issues and formulate a statement of the problem(s). A list of ideas about what might be going on (hypotheses) is also developed and listed on the board. For each hypothesis generated, students are encouraged to explain their thinking and understanding out loud to the group. Students may work individually for a few minutes before presenting their ideas to the group in order to enhance their individual skills and learn from others in the group. This serves to make visible existing individual and collective knowledge, reasoning, and communication skills (Patterson *et al.* 2002). The initial list of hypotheses is usually broad and long because students generate initial hypotheses early in the case, when little information is available. Further

inquiry about the patient's history, physical examination, and laboratory findings helps students evaluate and prioritize their hypotheses.

Dailey (1992) contended that it is not simple to write a case scenario. However, when the case is based on real or hypothetical situations; it stimulates the nurse to critically think through a problem and generate solutions. The first step in developing a patient case study is to determine the learning objectives. Objectives must reflect the content that needs to be covered as well as identify the goals of the lesson (King, 1994). On the other hand, the case should be thorough enough to provide the learners with baseline data regarding the situation, allowing learners to work through problem situations (Andrews and Jones, 1996). Johnson (1992) concludes that for new nurses, case studies reinforce what was learned at school and provide an opportunity to explore clinical situations. Case studies developed, as learning experiences for practicing nurses should reflect authentic patient situations.

An important attribute of a good case is that it should address real-life health problems that students are likely to encounter in their future professions. Problems should accommodate a variety of teaching and learning strategies and styles, and promote the acquisition of knowledge as well as the development of skills (Schmidt, 1993). In addition, arguing that the problem should be ill-structured so that as students perform additional research, Schmidt (1993) asserts that they discover the problem's complexity and understand that it may have a number of solutions. Student views of effective cases included cases that had clear objective were not reassigned, encouraged problem solving and discussion in the group and that did lead the repetition of

material. According to Barrows (1985) cases are generated in such away that they become the tools, which provide students with a direction and extent of study that must be undertaken to acquire a deeper understanding of the problems.

CBL is characterized as a content-based curriculum since it covers the required content through a series of integrated cases. Jonassen and Hernandez-Serrano (2002) have gone further than this, arguing that in order to educate professionals equipped to deal with the complexity of workplace situations, educators should expose them to stories generated at the workplace by exposing them to narratives cases. The use of case studies also relates to deep versus surface learning (Dowd, 1996). Distinctions' between surface learning and deep learning is relevant here. For example, in surface learning, students merely learn facts: they are not provided with a choice of how they learn, and they remain passive in the learning process. In deep learning, learning is active, focuses on developing connections and uses interactions with others (Biggs and Tefler, 1987).

2.5.3 Role of Tutorial Group

A study of the use of CBL tutorial groups is believed to have a positive influence on student learning. Learning in small groups can be considered as an effective instructional format as it provides ample opportunities to stimulate student learning (Michaelsen *et al.* 1996). As Dolmans *et al.* (2001) put it, there is also clear evidence available that learning in groups positively influences student learning. However, they add that “not all teachers and not all students experience the desired positive effects of group work, and always

all students complain that the performance of some teachers guiding small groups show deficiencies”.

Cooperative learning in the tutorial groups positively influence student learning or leads to better learning than individual learning (Dolmans *et al.* 2001). Most commonly, student's progress through the problem by the end of the first session have developed a list of learning issues. At this point, students do not continue to read through the case. Instead, they review and prioritize their learning issues and decide how to proceed with their studies, setting expectations of themselves for the time between meetings (Dolmans *et al.* 2001).

In the tutorial group, elaboration can take several forms such as discussion, note taking or answering questions (Dolmans *et al.* 2001). Good cases encourage students or groups to discuss and elaborate knowledge and experience. Discussion running through the case should not be a debate, and it is not for the purpose of winning. Discussion is a skill that makes thought processes visible, allows assumptions to surface and be challenged, and exposes the sources of disagreement (Peterson, 2004). In essence, effective discussion focuses on issues, not personalities (Kindler, 1988). In the meantime, that team needs a common approach to problem solving, and members need a safe, secure environment in which to function, share ideas, interact, and to keep them on task (Johnson and Johnson 1997; Senge 1990).

Team process breaks down when there is a lack of direction, purpose, and open communication between team members. Discussion, mindfully done, allows ideas to be challenged in a meaningful way, and focuses on making a

decision so a problem can be addressed and remedied. Discussion is useful in clustering items together into categories, prioritizing items as to their relevance to the problem, or selecting a solution to the problem (Peterson, 2004.).

Evidence indicates that active participation in learning is more satisfying than passive transfer of information from the teacher to the students and that active learning leads to enhanced retention and recall (Bransford *et al.* 2000). According to Sheive and Metivier (1994), for teams to improve, and therefore learn, all members must contribute to the ongoing evaluation of the team process and development. This requires group members to provide feedback and evaluation on: 1) each member's commitment to the task and team; 2) the level of affective development including feelings of trust, belonging, and work relationships; 3) the team's efficiency-ability to get the job done; and 4) their ability to resolve conflict. Therefore, team members must have, and follow, methods and procedures that allow feedback.

On other hand, Dolmans *et al.* (1998) argue that some group members may try to take over the group and dictate what everyone does. These types of people are not good group workers. Also, more quiet people may not feel comfortable expressing themselves and their ideas with a group. Sometimes people just don't get along no matter how hard they try and their personalities clash. When you put students into groups, sometimes many of the hard working students do all of the work and the lazy students do nothing and still receive the same grade.

Group work can help develop specific generic skills in students such as critical thinking, interpersonal and problem solving skills, and leadership skills (Tipping *et al.* 1995 and Peterson, 1997). In addition, group work may reduce the workload involved in assessing, grading and providing feedback to students. In a study conducted by Dolmans *et al.* (1999) it was demonstrated that small groups with relatively low levels of motivation require much more input from a teacher than highly motivated groups.

2.5.4 Role of Learning Resources

Marshall *et al.* (1993) observe that students are encouraged to pursue their own learning using a variety of resources, ranging from medical literature and laboratory work to clinical observation and consultation with experts. A frequent criticism of nurse education is the lack of clinical preparation of students. The opportunities for clinical placement for nursing students, like those of other practice-based disciplines are limited by funding constraints for student supervision and available clinical placements. In response to this situation, students can use the database as a resource to assist them in designing nursing care plans appropriate for the clinical problems presented to them (Check *et al.* 2004). The database provide components of nursing care plans which are used in clinical practice to provide a complete set of instructions to guide in the care of a patient, thus providing greater links between theory and practice. The challenge to staff was to integrate this database of care plan in the CBL.

Check *et al.* (2004) report that students are provided with moderately complex practice-base scenarios of clinical problems and a variety of learning

resources, which promote self-direction. The scenarios include a wide variation of practical activities, descriptions of simulated patient's progress and hospital or community health facility documentation. The computer database was included among the learning resources provided to students who, had access to practical and technical equipment and worked through the various scenarios and activities with teaching staff acting as facilitators and provide guidance where necessary. Furthermore, Mann and Clark (1995) give attention to the growth in the variety of resources formats and methods of dispersion of information that have had a compounding effect on skill level demands. It has become increasingly important for students, who are entering a profession to develop an ability to seek out sources on their own and gain facility in exploring new resources.

Research has supported the contention that use of a variety of resources is associated with the use of deep learning strategies (Hilliard, 1995; Newble and Entwistle, 1986). Other studies have shown that students in self-directed learning use a greater number and variety of resources than students in a traditional lecture-based curriculum (Stromso *et al.* 2004). McMaster University, Rush University, and the University of New Mexico suggest that use of resources is one of the major differences between students in PBL and traditional, which is alike in CBL (Saunders *et al.* 1985).

The results of a study done by Dolmans (1994) demonstrate that the availability of references list, and tutors have an impact on students learning activities during self-study. In the search phase, students are supposed to orient themselves on as many different learning resources as possible. This process of searching should be considered as a preparation of actual studying

by means of inspecting the available resources like textbooks, the Internet and journals. One skill that has become increasingly important for nursing students is the willingness and ability to use the vast information resources that are available on the internet (Choi, 2003). Also, the students can use paper or video cases to stimulate their learning and integration of the relevant basic sciences.

CBL is expected to direct students to make maximum use of the library resources. The librarians should be taught to enable students how to use technology as a mean of accessing, or engaging, and managing information. The most basic form of online learning materials is computer text reproductions. Students can choose wide ranging and appropriate resources and quickly learn that the more specific their question is, the more likely they are able to obtain useful information (Dammers *et al.* 2001).

Chapter Three

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the rationale, approaches, and methodology, and data collection techniques for the research study.

Case based learning in the School of Nursing in Bahrain is conducted since 1998. The program is composed of four years of study and CBL starts from the second semester of the first Academic year of students study. Cases are usually introduced prior to the tutorials and students study the case individually before tutorial sessions and come to tutorials with prior knowledge about some details related to the problem. Cases are delivered to students along with learning materials and guiding questions that help in students learning. Tutorials are conducted in large group sessions and the role of the tutor is to facilitate the discussion and student interactions during these sessions. Tutors are content experts and are usually the designers of the cases given in tutorials.

In this study, both quantitative and qualitative research tools were used for collection of the data. Self-administered questionnaire was used in this study and was modified during the pilot study that has preceded the actual commencement of the study. The questionnaire is comprised of four themes to identify students' perception about the influence of different elements of CBL,

including Quality of Cases, Tutorial Group, Learning Resources, and Tutors. A copy of the questionnaire is provided in Appendix 2.

3.2 Design

The research design was based on a 'cross-sectional protocol'. This design is suitable for studies aiming at finding out the prevalence of phenomena, situation, problem, and attitudes by taking a cross-section of the population suited for the research questions at time of research study (see below sections for details).

3.3 Population

The population used was all 2nd and 3rd year nursing students in College of Health Sciences (CHS) in the Kingdom of Bahrain during academic year 2003-2004.

3.4 Sample

All (2nd and 3rd year nursing students in CHS, (n= 125; male, n=39 and female, n=86 selected to participate in the study were chosen as a result of their knowledge in CBL and overall experience (background) in nursing education curriculum. The reason for excluding the first year students in the sample was because College of Health Sciences (CHS) adopts the Case-Based Learning (CBL) program only from the second semester of first year.

A purposive sampling technique is used in this study. Purposive samples are composed of individuals from the population who possess characteristics that are appropriate for the research study (Morgan, 1998; Gorman and Clayton, 1997, cited in Thomas, 2001). It is decided that the random sampling technique, is not appropriate. This is primarily because this study aims to examine the in-depth experiences and background to gather numbers and statistics that can be generalised to represent the wider population.

Thus, a selected sample of one hundred and twenty five (n=125) participants were selected to capture a broad representation of homogeneous individuals – similar in race, and background. Table (3) shows the details of the survey sample.

Moreover, a selected sample of 20 participants (10 per group, 2nd & 3rd year students) was selected to participate in the focus group sessions. This can be envisaged in table (8).

3.5 Setting

The study was conducted in the nursing school at the College of Health Sciences in the Kingdom of Bahrain during the academic year 2003-2004.

3.6 Procedure

At the onset of the study, the Dean of Medical Education at the CHS was briefed of the aim and study design by the researcher. Permission was granted

by the College of Health Sciences to conduct the study on the second and third year students of the academic year 2003-2004.

A meeting was arranged with the Program Coordinator at the College of Health Sciences to review the number of the groups and the students in each year, and permission was taken to distribute the questionnaires. The bilingual questionnaires (Arabic/English) were submitted to all students with the help of the coordinator and the tutors to ensure that all forms are received. The main reason for having bilingual questionnaires was to ensure that the questions are well understood, and explaining to students the purpose of the study and requesting them to cooperate in filling the questionnaire with consideration of the responses to be anonymous.

The procedure for conducting the study consisted of a warm-up session by the tutors. First, the tutors attempted to put participants at ease by selecting a non-threatening environment, encouraging them to be self-confident, with the objective of boosting their perceptions (Jarratt, 1996). Second, the participants were informed of the aim of the study, and that their response would be confidential and be only used for the purpose of the study. Then, the participants' verbal approval for participation was obtained before the actual study took place. Lastly, the participants were requested to answer all questions as per the criteria set for the study. All students attended the survey class-by-class and no absenteeism reported.

3.7 Ethical Consideration

Relating to this, the researcher has considered a number of key issues that affect the research process generally developed through reviewing the general research protocol pertaining to ethical issues. These include:

1. Before data collection; (see 3.6 above)
2. The data collection stage (confidentiality and anonymity – refer to section 3.6 above);
3. Relating to the analysis and reporting stages (Saunders *et al.* 2003). The data was analyzed using SPSS – version 13.0.

3.8 Measurement Methods

The questionnaire used in this study was developed based on research used in a PBL setting by Dolmans and Schmidt (1994). Students were asked to indicate on five Likert-type scales their degree of agreement or disagreement with each statement in the questionnaire. These dimensions were answered on five-point response scale: strongly disagree, disagree, neutral, agree and strongly agree (categorical scale). The Arabic translation was based on the researchers' conceptual understanding of the individual questions.

According to Zikmund (1991), Likert-scale is used in several instances to measure respondents' attitudes towards certain issues, the Likert- scale offer respondents' option that reduces timing and effort in answering question. Moreover, questionnaires distributed to student using collective administrative approach that ensures a very high response rate, as the researcher will find a

few people refusing to participate in the study. Successfully, this would have personal contact with study population.

Data in the focus groups are gathered through note taking (Jarratt, 1996). All sessions were conducted with each group of participant .An interview guide (Matthyssens and van den bempt, 2003; Jarratt, 1996) is used to avoid losing focus and to ensure all relevant questions are asked. Finally it is also worthwhile to explicitly note that to minimize any bias, consecutive sessions with other participants start with a discussion of the main conclusion drawn from the previous discussion.

3.9 Pilot Study

An “Pilot” study was carried-out on 13 nursing students in the 3rd year in College of Health Sciences. As the common practice with most pilot studies, the main purpose is to find out the clarity of questions, students’ perception of English and Arabic phrases used within the questionnaire, and clarity. Moreover, these questionnaires are used for understanding the participants’ level of knowledge about Case-Based Learning (CBL).

Analysis of the pilot study data:

1. Reduction analysis: Data were subjected to item reduction by doing exploratory factor analysis using the Principal Component factoring and varimax rotation. Exploratory factor analysis is the preferred method of factor extraction. Its goal is to extract the maximum variance from a data set resulting in uncorrelated components. The pattern of correlation of different variables is

analyzed by using the principal component method. The resulting linear combinations are often referred to as components, “as opposed to factors”. The methodology for analyzing factor loading is to underline or mark all of the loadings in the rotated factor matrix that are higher than 0.50. In the rotation, the factor axes are rotated around the fixed origin until the loading mean a certain criterion and hence the purpose of rotation is to achieve a configuration of loading having the maximum number of test loading on the minimum number of factors, the easier it is to invest those factors with psychological meaning.

In the present study the component matrix of each variable has one substantial loading on a component except for factor number four (i.e. Learning Resource) the researcher refers to that variable as complex meaning that has a relationship of two derived factors. Moreover, the researcher treated the variable as belonging to the factor on which it has the highest loading.

2. Assessment of reliability: Internal consistency reliability is calculated for each element by using *Cronbach's alpha* statistics, which measures the reliability of the questionnaire. Reliability concerns the extent to which results are reproducible. Alpha reliability has values from 0 to 1, and in general, above 0.6 is viewed minimum acceptable alpha for a measurement scale.

3.10 Items Classification

After performing the item reduction analysis and testing the internal consistency reliability, the questionnaire was redistributed to both year 2 and year 3 students. The number of students who participated in the study was 125 students.

The final form of the questionnaire consisted of 25 statements comprising four different elements of a Case-Based curriculum. These elements included the followings:

1. Quality of Cases (5 items).
2. Tutorial Group (5 items).
3. Learning Resources (5 items).
4. Tutors (10 items).

3.11 Data Analysis

Students were asked to state their gender, academic year and age on the form, and were assured about the anonymity of the questionnaire. Each student was coded by numbers. Although the age has been noted on the form but not used in any analysis in the current study. This might be useful in future research to interpret any effect on the final result. The relationship between the following variables was analyzed:

- 1) Dependent variable: Perception of student
- 2) Independent variables:
 - Different elements of the Questionnaire

- Level of student education “Academic year”
- Students’ gender

The data from the questionnaire was analyzed using (SPSS version 13.0) for windows. Data analysis included the following methods:

- a) ***Standard descriptive statistics:*** frequencies and percentages were used to describe the respondents and their institutional demographics.
- b) ***Correlation coefficient:*** to quantify relationships between the different elements in CBL, the Pearson’s correlation was used. The Pearson product moment correlation is a parametric measure of association between two continuous random variables. The value has two special properties. First, it is bounded by -1 and 1 ; if the correlation is exactly -1 , there is a perfect, negative linear association between the two variables, the scatter plot of the two variables fall along one line with negative slope. Conversely, if the correlation is exactly 1 , there is a perfect, positive linear correlation.
- c) ***Independent sample t-test:*** this test was used to examine the differences between the perception of students in relation to gender or to the year of study. Sampling distribution by using *t-test* depends on the difference between two means and the standard deviation of the samples. A p-value less than 0.05 are considered statistically significant.

Chapter Four

CHAPTER FOUR

4. RESULTS

4.1 Introduction

This chapter presents patterns of results and their relevance to the research aim or questions. This chapter begins with an interpretation of the findings obtained from self-administered questionnaire, and quantitative evaluation of questionnaire responses.

The primary purpose of this research is to examine the perception of nursing students about the effectiveness of different elements in the Case-Based Learning (CBL) curriculum on student learning. In essence, the research also aims to provide some insights into the goal of nursing education ensuring that students need to transform from passive to active learners where critical thinking skills increase and much significant learning begins with learner's active engagement with real world problems.

A secondary purpose of the research is associated with the research questions, which are set out (in Chapter one) to achieve the research aim.

4.2 Results of the Pilot Study

This can be classified under the following headings:

4.2.1 Reduction analysis of the Questionnaire

An exploratory factor analysis was done with the criteria to include all items with factor loading >0.5 . Table 1 shows the items with factor loading more than 0.5. According to this analysis, which is shown in table (1), the writer excluded one item following the reduction analysis, which did not fulfill criteria. Using this factor model, the following data was found:

- **Factor 1 (Tutor):** has 8 items related to the Tutor and two items (R1 and R2) related to Resources.
- **Factor 2 (Cases):** has all the five items related to the Quality of Cases.
- **Factor 3 (Tutorial Group):** has all the five items related to the Tutorial Group.
- **Factor 4 (Learning Resources):** has three items related to Learning Resources and two items related to Quality of Cases.

Although it may seem that some of the statements within the questionnaire not related to the above factors, this is a resultant of the SPSS analysis.

ITEMS	Factor loading
<u>Factor 1</u>	
• Tutor facilitates the learning of student rather than focus on acquisition knowledge (T1)	0.81
• Tutor helping the learners become familiar with others as persons (T2)	0.77
• Tutor help the students translate the diagnosed needs into clear, feasible learning objectives (T3)	0.75
• Tutor helps the learner to develop the skills of self-directed learning (T4)	0.72
• Tutor balances natural desire of student to be directed towards desired goal (T5)	0.69
• Tutor facilitates student's engagement in learning activities (T6)	0.69
• Tutor helps the student to understand how tutorial process works and function (T7)	0.67
• Tutor help students develop their skills on observation and reasoning (T8)	0.67
• Tutor is a useful resource of information (R1)	0.64
• Evaluation of self is skills that brings the most discomfort to student (R2)	0.54
<u>Factor 2</u>	
• The cases have clear objectives (C1)	0.75
• The cases are related to health needs (C2)	0.73
• The cases are realistic (C3)	0.71
• Each case covers the content it is intended for (C4)	0.57
• Learning increase student confidence related to class material (C5)	0.54
<u>Factor 3</u>	
• Collaboratively work in the group to solve complex situational problems (G1)	0.69
• Tutorial give students the ability to work and contribute within a team and development of lifelong skills (G2)	0.67
• Working as a team helps to improve knowledge and application of practice (G3)	0.67
• Case-based learning empowers the student to be an active participant in the classroom setting (G4)	0.63
• Each student participates in evaluation of every other member of the group (G5)	0.62
<u>Factor 4</u>	
• Resources provide me with the necessary information to answer questions and apply knowledge (R3)	0.69
• Library references are useful for student learning (R4)	0.68
• Clear student instructions in the case improves my learning (C1)	0.62
• Textbooks provide me with a comprehensive overview of health needs and problems (R5)	0.53
• Problems are set up to encourage students to prop deeply, think rigorously (C8)	0.51

Table (1): the exploratory factor analysis of the items grouped into four factors which influence students learning in CBL. (T = tutor, G= learner and tutorial group, C= cases & R= resources.)

4.2.2 Evaluation of the Reliability of the Questionnaire

Table (2) shows the results of the calculated internal consistency reliability using *Cronbach's alpha*. The researcher has considered elements with *Cronbach alpha* more than 0.6 as an acceptable reliability. As shown in the table, all the different elements demonstrate a high degree of reliability ranging from 0.63 to 0.892.

Therefore, the different elements of the questionnaire demonstrated high internal consistency reliability. Based on the preliminary data analysis shown above, the researcher concluded that the questionnaire used has acceptable internal consistency reliability.

Elements	Cronbach's alpha
Tutor	0.89
Learning resources	0.63
Tutorial group	0.75
Quality of cases	0.82

Table (2): the Cronbach's alpha for the different elements in the questionnaire.

4.3 Response Rate

The response rate for the entire sample (n=125) was 100% and no peculiarities noted. Please refer table (3) for more details.

4.4 Demographic Data

Table (3) shows the distribution of students according to gender and academic year expressed as numbers and percentages. The total number of students who participated in this study was 125 students. There were 51 (40.8%) 2nd year students and 74 (59.2%) 3rd year students. There were 16 (12.8%) 2nd year male students and 23 (18.4%) 3rd year male students, with a total of 39 (31.2%) male students. Also there were (28%) 2nd year female students and 51 (40.8%) 3rd year female students with a total of 86 (68.8%).

	YEAR		TOTAL
	2	3	
Male	16 12.8%	23 18.4%	39 31.2%
Female	35 28.0%	51 40.8%	86 68.8%
Total	51 40.8%	74 59.2%	125 100.0%

Table (3): The characteristics of (n=125) included in the study (data are expressed as numbers and percentages)

4.5 Analysis of the Student's Perception about the Effectiveness of Different Elements of CBL

This can be summarized under the following main themes as follows:

- 4.5.1** Correlation between the different elements affecting student's learning in CBL.
- 4.5.2** Perception of students about the effectiveness of different elements influencing students learning in CBL.
- 4.5.3** Differences in students perception relating to different elements affecting learning in CBL according to academic year.
- 4.5.4** Gender differences in students' perception related to elements affecting students learning in CBL.
- 4.5.5** Qualitative comments from students on how to improve the effectiveness of different elements on student's learning in CBL.

4.5.1 Correlation Between the Different Elements Affecting Student's Learning in CBL

Table (4) shows, the correlation between the four factors (Quality of Cases, Tutorial Group, Learning Resources and Tutor) influencing students learning in a case based learning program. All the elements (Quality of Cases, Tutorial Group, Learning Resources and Tutor) correlated with each other with a high degree of significance.

Element	Influence of quality of cases	Influence tutorial group	Influence of Learning Resources
Tutorial Group	.420*		
Learning Resources	.583*	.445*	
Tutor	.328*	.313*	.617*

*p = 0.000.

Table (4): Shows the correlation between the different elements which influence student learning in CBL. Numbers on the top represent r values and * indicates $p < 0.01$. These data indicate that all the elements of CBL are inter-correlated significantly in affecting student learning in the CBL program in Nursing School.

4.5.2 Perception of Students about the Effectiveness of Different Elements Influencing Students Learning in CBL

Table (5) shows the perception of the students (n=125) about the effectiveness of different elements on students learning expressed as mean ($\pm$ SD). The mean scores in all the elements were in the range of (agree) with no significant differences between them. The lowest scores were given for Tutors (3.31 ± 0.77) and the highest score were given for the Quality of Cases (3.65 ± 0.61). Items are rated based on a Likert-type scale of 1-5.

These data indicate that all the elements of CBL are of comparable importance in affecting student learning in the CBL program in Nursing School.

Elements	N	Mean	SD
Tutor	125	3.31	0.77
Learning Resources	125	3.41	0.60
Tutorial Group	125	3.55	0.69
Quality of Cases	125	3.65	0.61

4.5.3 Differences in Student's Perceptions Related to Elements Affecting learning in CBL According to Student's Year of Study

Table (6) shows the factors effecting different elements of CBL on students learning according to a students year of study. Data were presented as mean $\pm$ SD. *P < 0.05 is significant. Data were analyzed by using *unpaired t-test*. The data indicate that there is a significant difference between second year and 3rd year students response regarding the effectiveness of Learning Resources (i.e. P=0.017) in student learning. However, there were no significant differences between the two cohorts regarding the effectiveness of the Quality of Cases, Tutorial Group or Tutor on their learning, i.e. $p > 0.05$.

Themes	Year	No.	Mean	Std. deviation	T	Sig. (2-tailed)
Quality of cases	Year 2	51	3.66	.552	.317	.752
	Year 3	74	3.63	.651		
Tutorial Group	Year 2	51	3.65	.660	1.484	.140
	Year 3	74	3.47	.706		
Learning resources	Year 2	51	3.55	.546	2.421	.017*
	Year 3	74	3.29	.615		
Tutor	Year 2	51	3.21	.817	-1.162	.248
	Year 3	74	3.37	.733		

4.5.4 Gender Differences in Student's Perception Related to Elements Affecting Learning in CBL According to Student's Year of Study

Table (7) shows the differences between male and female students regarding their perception of the effectiveness of different elements of CBL on students learning. There were no significant gender differences between all the four elements in the questionnaire (Quality of Cases, Tutorial Group, Tutor or Learning Resources, i.e. $p > 0.05$). The data indicate that gender is not a significant variable affecting the student's perception of the effectiveness of different elements of CBL.

Themes	Gender	No.	Mean	SD	T	Sig. (2-tailed)
Quality of cases	Male	39	3.67	.60	.302	.763
	Female	86	3.63	.61		
Tutorial Group	Male	39	3.58	.67	.389	.698
	Female	86	3.53	.70		
Learning resources	Male	39	3.43	.57	.382	.703
	Female	86	3.39	.61		
Tutor	Male	39	3.18	.84	-1.218	.225
	Female	86	3.36	.73		

4.5.5 Qualitative Comments from Students on how to Improve the Effectiveness of Different Elements on Student's Learning in CBL

Themes	N (total)	2 nd year	3 rd year
Quality of Cases			
1. Increase the exposure to clinical cases in the hospital. It is very effective on students learning	8	2	6
Tutorial Group			
1. Number of the students should be less to allow enough students interaction.	18	10	8
2. Increase the duration of the session which will help them to interact more	6	2	4
Learning Resources			
1. More supply of books and journals which may help the students to solve the problem	8	4	4
2. Train the library staff well	6	3	3
3. Recommended resources attached should be available.	14	9	5
4. Increase number of computers in the library	8	2	6
Tutor			
1. Better communication between tutors and students	28	15	13
2. More availability of the tutors.	11	5	6
3. Break the language barrier between tutors and students.	9	4	5

Table (8): Qualitative comments obtained from participants on how to improve the effectiveness of different elements in CBL. Data and viewpoints were generated based on a The selected themes were based on participants' comments given in the distributed questionnaires, i.e. "what are your suggestions to improve the CBL curriculum?" and 'Focus Group' discussions conducted with selected participants (n=20, 2 groups of 10 students for 2nd & 3rd years).

Chapter Five

CHAPTER FIVE

5. DISCUSSION

The objective of this study is to explore student's perception pertaining to different elements of effectiveness of Case-Based Learning (CBL), which would facilitate the learning of undergraduate nursing students. Collection of data is done quantitatively through Questionnaire-based responses of students and qualitatively through open-ended comments and Focus Group discussion with the students. It was found that nursing students perceived the different elements in CBL (Quality of Cases, Tutorial Group, Tutor and Learning Resources) of similar importance for their learning processes.

It was evident from the research findings that the lowest mean score was given to the Tutor (i.e. 3.31) and the highest mean score was given to Quality of Cases (i.e. 3.65). Yet, there was an overall correlation between all elements of CBL as perceived by the students. However, there were no significant differences between the effectiveness of elements of CBL on students learning across years of the study, except for the Learning Resources, which were perceived less effective for students learning in 3rd year compared with 2nd year students.

The researcher contends that most of comparisons and contrast views have been related to studies conducted in PBL areas. This was clearly associated with the dearth of information and studies undertaken by similar scholars in CBL.

5.1 Tutor effectiveness in CBL

The role of the Tutor in CBL is to facilitate the process of active learning by students and foster the skills of critical thinking and habits of continued learning. The Tutor also influences what students will study, since he or she guides the tutorial group process and uses his or expert knowledge – if any – when discussing the problem (Dolmans and Schmidt, 1994). The current study indicates that the lowest mean score was found for the Tutor amongst the other elements. These data indicate that tutors were perceived as the “least effective” in students learning in CBL in the Nursing School.

Students perceived tutors role to be less “effective” in their learning, thus the mean score given in the Questionnaire was the lowest. The similar viewpoint was expressed in the Focus Group discussion. The reason for this low score for tutors could be due to the fact that all students were Arab and spoke English as a second language, and most of tutors were not Arabic speakers. In fact, students indicated that language is a communication hindrance factor especially for nursing students who are taught in Arabic during all their previous years of study. This could explain the student's needs for better communication between them and the tutors and what it could be described as “language barrier”. These barriers not only affect students learning but also create students misunderstanding of their roles in CBL tutorial sessions (Das *et al.* 2002). Therefore, tutors’ skills in clearly communicating with the students are very important in succeeding their roles.

To overcome communication between students and tutors, Dolmans *et al.* (2002) described that the Tutor should be encouraging to specify kinds of

cognitive activities, such as making connections, providing feedback and helping students to monitor their own learning. In addition, this guidance has to be in a clear way making sure that students will be able to achieve the above goal.

However, Barrows (1988) stated that tutors should be experts in the subject matter areas when they teach and they should be experts in facilitating students learning process as well as in guiding Tutorial Group process. The impact of process versus content expert tutors on student learning in CBL is still an area that requires further investigation. However, students may be biased towards their preference of teacher-centered education and would expect teachers, who are expected to be facilitators, to outline paths for them to follow. Similar studies found that Arab students wanted handouts or answers to questions from tutors or the end of PBL sessions (Das *et al.* 2002).

5.2 Quality of Cases

The nature of student learning in CBL is to large extent dependent on the Quality of Cases presented to the students. Cases are written descriptions of real life problems or situation that stimulate problem analysis, decision-making, oral communication, and teamwork. Working with cases will allow students to examine a problem from different angles, process it and then use critical thinking to arrive at a solution (De Marco *et al.* 2002).

In this research, students' overall perception about the effectiveness of the Quality of Cases in their learning was positive. Therefore, Quality of Cases appears to be an important determinant of student learning in CBL and was

given a high score (table 5). These data are in agreement with van Berkel and Schmidt (2000) model about the interaction between different elements on students learning in PBL. Their study demonstrated clearly that the Quality of Cases has the highest impact on students learning as well as on other elements of the PBL curriculum. Further, Dolmans *et al.* (1997) commented that if the case does not lead students to spend time on the intended faculty objectives, the intended learning outcomes are not accomplished.

The present study clearly showed that there was no significant difference between 2nd year and 3rd year students. According to the researcher, this can reflect that the design of the problems in CBL should be done according to the level of the students linking with students' prior knowledge. When students have insufficient prior knowledge, they will not have enough leads to follow in analyzing the problem and generating learning issues, and therefore, the cases should be geared to their level of prior knowledge to achieve the maximum number of intended objectives.

During the Focus Group students perceived that learning through clinical cases in the hospital is very effective for their learning. Cases in the tutorial in CBL are usually presented in a paper format. However, this format sometimes may not be ideal for student learning in some case scenarios. Case scenarios in CBL can be presented to students in the form of papers, video clip, role play, newspaper report, real patient or simulated patient. The selection of the format to be used in case scenarios depends on many factors including course content, nature of the clinical problems...etc.

However, during the Focus Group discussions, apparently students found that learning through cases in the hospital is more effective than using paper cases. Whether these perceptions are due to the Quality of Cases, the hospital setting or the performance of clinical instructor is unclear.

5.3 Learning Resources

One of the main objectives of CBL is to help students to develop self-directed learning skills and to be able to learn on their own for the rest of their lives. An interesting finding in our study is that students perceived learning resources attached with the case as less effective in their learning in 3rd year compared with 2nd year (table 6). These data are in agreement with previous research done in PBL settings. Dolmans and Schmidt (1994) who demonstrated that students, during the 1st year, confine themselves to the references literature cited in the course book when searching for relevant literature; while students in the fourth curriculum year, make less use of the reference literature cited in the course book.

Furthermore, Ramos and Moore (1987) indicated that students in PBL curricula appear to utilize a greater variety of references than those used in the standard curriculum. A study done by Rankin (1992) indicated that PBL students are more likely to use self-directed rather than faculty-recommended resources. Albanese and Mitchell (1993) found that the PBL students consulted more textbooks, journals and had more informal discussion with staff and their peers. Vernon and Blake (1993) illustrated the importance of using electronic search to get self-selected resources and felt more competent in information seeking skills. These data, along with the current findings,

indicate that students may become more self-directed learners as they progress in the CBL program.

Qualitative comments from the students in our study indicated that the students found Learning Resources to be insufficient. Students indicated that they need more supply of books and journals, skilled library staff, ready access to computers in the library and availability of the recommended learning resources. This information is unlikely to contradict with our quantitative data since these comments were perceived by both 2nd year and 3rd year. Whether students' perception of Learning Resources as less effective in 3rd year compared with 2nd year students is due to insufficient learning resources in the college or students' dependence on self-learning through resources other than those provided by the college is still unclear.

In the present study, students preferred clinical setting to work with real patients as an effective method of learning. This is probably because the clinical placements would appear to represent a rich set of activities compared with other learning activities in CBL. However, learning in clinical setting present nurse educators with challenges that are different from those encountered in the classroom. White and Ewan (1991) noted that learning in clinical setting could offer students various shared experiences with clients many of whom will be touching and unforgettable. So, clinical teaching has been defined as the mode that provides students with the opportunity to translate theoretical knowledge into the learning of variety of skills required to give patient-centered care (Schweer and Gebbie, 1976).

Many of the comments raised by nursing students during the Focus Group session were related to suggestions for improving learning resources in CBL. This perception may be attributed to many variables, which affect use of libraries and information resources. Deretchin *et al* (1998) indicated that the heavy use of electronic resources, particularly the World Wide Web (www), supports speculation that resource use habits of students appears to be moving away from a predominant reliance on printed materials. Factors influencing information and library use include types and intensities of information needs and applications and uses for the information, as well as descriptive attributes such as age, discipline, habits and library skills. Also, level of awareness of library services which may affect college library use.

5.4 Tutorial Group

Tutorial Group is an essential element of CBL curriculum. In a Tutorial Group, students discuss problems or cases that need further self-study. A Tutorial Group is a specific form of cooperative learning. Cooperative learning uses large groups that work together to form an interdependent links at maximizing each group dynamics (Lewin, 1948). Advocates of self-directed learning (SDL) claim that the discussion in the Tutorial Group has positive cognitive and motivation elements (Dolmans *et al.* 2001).

In the current study, students perceived the Tutorial Group as the second most effective element in their learning (after the Quality of Cases). In CBL, tutorials are run in large groups of 28 students. Whether small CBL Tutorial Groups can differ in their effectiveness of students learning is still unclear in the literature. However, qualitative comments from some students indicated

that less number of the students in the tutorial can be more effective for their learning. This finding may appear incongruent with a study done by Papo (1999). The latter indicated that students at higher levels of study and with previous experience of various class sizes do not perceive large classes to pose significant problems to their learning. However, taking into consideration the level of students in the current study, the mismatch between the two studies can probably disappear.

In any Case-Based program, the faculty's primary aims should be strategically dependent on the (1) External drives – aim for provision of joined up counseling and reduction of burdens on the tutor and where it wants to go in terms of encouraging effective group dynamics, interactions and the mechanism for control, and (2) Internal drives – need to build or faculty's ability to deliver and monitor group sessions in practice so that students can plan and manage their own activities and prioritize their plan of actions. Moreover, in working with the dynamics of a group, the importance of self-evaluation, reflection and feedback between students is emphasized. Dolmans *et al.* (1998) attributed that some Tutorial Groups are faced with some students who do not prepare for the Tutorial Group meetings or who do not attend all of them. These students let others to do the work. This group work has a negative outcome.

Chapter Six

CHAPTER SIX

6. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

6.1 Summary

The results of the current study can be summarized as follows:

1. Students perceived the ‘Quality of Cases’ as the most effective factor for their learning and that “Tutors” as the least effective. The different elements of the CBL curriculum (Tutors, Quality of cases, Learning Resources and Tutorial Groups) were inter-related to each other.
2. Learning Resources were perceived to be less effective by 3rd year compared with 2nd year students.
3. Gender of students did not affect their perception of the effectiveness of different elements of the CBL curriculum.
4. To improve the effectiveness of the CBL program, students suggested the following:
 - Tutors: better communication including breaking the language barriers and be readily available;
 - Tutorial Groups: decrease the number of students per group;
 - Learning Resources: more computer facilities, more books in the library, training the library staff and including the learning resources with the cases;
 - Cases: exposes to more number of “real cases” in the hospital.

6.2 Conclusion

- Tutors are perceived less effective and Quality of Cases as more effective for students learning.
- For effective CBL programs, improvements of the different elements are required.

6.3 Limitations of Study

As with any research undertaking, there are some limitations associated with this study.

1. Using students' perception for data collection could be biased by their lack of training or individual bias toward the program.

6.4 Recommendations and Suggestions

Having gone through general scope of the research, the researcher has identified four major themes that have been discussed in the Focus Group which are as follows:

1. Provide good training for Tutors and provide a tool for feedback to Tutors about performance and availability.
2. Increase the exposure of nursing students to clinical cases in the hospital.
3. Decrease the number of the students in Tutorial Groups and increase the duration of the session to allow better students interaction.

4. Increase the availability number of computers and recommended books in the library.
5. Provide a good training program for the library staff
6. Renovate the rooms used for group meeting and each room should be equipped with a network computer and a projector.
7. Clear and effective mechanisms for communication need to be established between Tutors and students.

6.5 Areas for Future Research

The following studies in this area need to be considered:

1. The impact of CBL programs on self-directed learning of nursing students.
2. Comparing the students and faculty perception about the effectiveness of different elements of CBL programs.
3. The effectiveness of using e-learning in CBL programs.

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Appendices

Appendix (1)

The items of the questionnaire and the corresponding themes affecting student Self-learning in a Case-Based curriculum					
Year:				Age:	
Gender:					
5	4	3	2	1	
Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
THEME 1: The influence quality of cases					
					1. Each case covers the content it is intended for. 2. The cases have clear objectives. 3. The cases are related to health needs. 4. The cases are realistic 5. Learning increase student confidence related to class material.
THEME 2: The influence of tutorial group					
					1. Collaborative work in the group helps students to solve complex situational problems. 2. Tutorials give students the ability to work and contribute within a team and development of lifelong skills. 3. Working as a team in tutorials helps to improve knowledge and application of practice. 4. Case base learning empowers the students to be an active participant in the classroom sitting. 5. Each student participates in evaluation of every other member of the group.

THEME 3: The influence of learning resources

- | | | | | | |
|--|--|--|--|--|---|
| | | | | | <ol style="list-style-type: none"> 1. Textbooks provide me with a comprehensive overview of health needs and problems. 2. Resources provide me with the necessary information to answer question and apply knowledge. 3. Library references are useful for student learning. 4. Clear student instructions in the case improve my learning. 5. Problems are set up to encourage students to prop deeply, think rigorously. |
|--|--|--|--|--|---|

THEME 4: The influence of the tutor

- | | | | | | |
|--|--|--|--|--|--|
| | | | | | <ol style="list-style-type: none"> 1. Tutor facilitates the learning of student rather than focus on acquisition knowledge. 2. Tutor help the students translate the diagnosed needs into clear, feasible learning objectives. 3. Tutor balances natural desire of student to be directed towards desired goal. 4. Tutor helps the learners become familiar with other as persons. 5. Tutor helps the learners to develop the skills of self-directed learning. 6. Tutor helps the students to understand how tutorial process works and function. |
|--|--|--|--|--|--|

Appendix (2)

فقرات الأسئلة والمواضيع التي تؤثر في التعليم الذاتي بواسطة منهجية معتمدة على الحالات:

العمر /	السنة /
	الجنس /

	١	٢	٣	٤	٥
	أرفض بشدة	أرفض	محايد	موافق	موافق بشدة
الموضوع (١) تأثير مواضيع الحالات:					
١- كل حالة تغطي المحتوى المقصود					
٢- مواضيع الحالات لها أهداف واضحة					
٣- الحالات لها علاقة بالاحتياجات الصحية					
٤- الحالات واقعية					
٥- ٥. التعليم يزيد ثقة الطالب بمادة الصنف.					
الموضوع (٢) تأثير المجموعة والمتعلم:					
١- يستطيع الطلاب العمل في مجموعات لحل المشاكل المعقدة					
٢- تُعطي البحوث الطلاب القدرة على العمل وتُساهم ضمن الفريق وتطوير المهارات الدائمة.					
٣- فريق العمل يساعد الطلبة في تحسين معرفتهم وتطبيق الممارسة					
٤- الدراسة المعتمدة على الحالات تُشجّع الطلاب على المشاركة في قاعة المحاضرات.					
يُشارك كل طالب في تقييم بين كل عضو المجموعة.					
	١	٢	٣	٤	٥
	أرفض بشدة	أرفض	محايد	موافق	موافق بشدة
الموضوع (٣) تأثير مصادر التعلم					
١- المراجع الدراسية تمد المتعلم بنظرة شاملة عن الاحتياجات والمشاكل الصحية					
٢- المصادر تمد المتعلم بالمعلومات المهمة التي تجعله يستطيع الإجابة على الأسئلة وتطبيق المعرفة					
٣- مراجع المكتبة مفيدة لتعلم الطالب					
٤- التعليمات الواضحة للطالب في الحالة تحسن التعلم.					
٥- يتم إدراج المشاكل لتشجيع الطلاب لإسناد أعرق، وصرامة الاعتقاد.					

الموضوع (٤): تأثير المعلم الخصوص

١- دور المعلم في المحاضرات تسهيل العملية التعليمية عن التركيز على اكتساب المعرفة فقط					
٢- دور المعلم يساعد الطلبة على ترجمة احتياجاتهم إلى أهداف تعليمية واضحة					
٣- المعلم يوازن بين رغبة الطالب والرغبات ذات الأهداف التعليمية					
٤- المعلم يساعد المتعلمين ليكونوا متآلفين مع الآخرين كأشخاص.					
٥- المعلم يساعد المتعلم للاشتراك في مصادر التعليم وتطوير المهارات في التعليم الذاتي					
٦- يساعد المعلم الطلاب لفهم كيفية تنفيذ عملية البحث ووظيفة.					
٧- تسهيلات المعلم تساعد المتعلم للاندماج مع الأنشطة التعليمية					
٨- المعلم مصدر مفيد من المعلومات.					
٩- يساعد المعلم الطلاب لتطوير مهاراتهم على الملاحظة والتفكير.					
١٠- التقييم الذاتي للنفس يعتبر مهارة ولا تريح الطالب.					

ملخص الدراسة

الخلفية / الغرض من الدراسة

تتبنى كلية العلوم الصحية في مملكة البحرين الدراسة المعتمدة على الحالة أثناء السنوات الأربع من المنهج الجامعي في التمريض. تعتبر الدراسة المعتمدة على الحالة طريقة يعطى للطلبة فيها حالة أو مجموعة من الحالات للدراسة والبحث. يدرس الطلبة الحالة والمادة الجديدة ويحاولون حل المشكلة قبل مناقشتها في حضور المجموعة الكبيرة. لا يتبع الطلبة في الدراسة المعتمدة على الحالات منهجاً فقط لمجابهة الحالات ولكن يهتمون أيضاً بالعناصر الأخرى مثل أهداف الدراسة، المعلمون، وصف مهام الطالب، مصادر التعلم والمحاضرات والاختبارات. ولكن مدى تأثير هذه العناصر المختلفة على تعلم الطلبة ليست واضحة. تهدف هذه الدراسة لتحري مدى تأثير العناصر المختلفة في منهج الدراسة المعتمدة على الحالة على تعلم الطلبة.

الأبعاد والطرق

أجريت هذه الدراسة على طلبة التمريض للسنوات الأكاديمية الثانية والثالثة. تم توزيع استبيان على الطلبة يبرز المكونات الرئيسية لمنهج الدراسة المعتمدة على الحالة لتبيان تأثير قرار الطالب على ما يتم دراسته. تضمن الاستبيان أربعة أبعاد وهي: المعلم، مجموعة البحث، مصادر التعلم ونوعية الحالات. يتحتم على الطلبة تحديد معيار الموافقة أو الاختلاف على مقياس من نوع Likert (خمس نقاط) لكل عنصر في الاستبيان. تم تجربة تطبيق الاستبيان على مجموعة الطلبة (n= 13) وتطبيق عملية (Factor Analysis) وكذلك تم التأكد من مدى مصداقية الاستبيان ومن ثم تم تسليم الاستبيان إلى طلبة السنة الثانية والثالثة من طلبة التمريض.

النتائج

- المكونات الأربعة للتعلم المبني على الحالة فعالة بوجه عام على تعلّم الطالب وذات علاقة إيجابية بعضها ببعض.
- إدراك الطلبة بأنّ "نوعية الحالات" هي الأكثر فاعلية، بينما "المعلم" هو الأقل فاعلية لتعلمهم.
- توجد اختلافات في الفهم بين الطلبة بخصوص مصادر التعلم مستندة على سنواتٍ منهج السّنّة الثانية والثالثة.
- إن التعليقات النوعية من الطلبة على كيفية تحسين فعالية برامج الدراسة المعتمدة على الحالات تعلقت بكل الأبعاد الأربعة (المعلم، مصادر التعلم ومجموعة البحث ونوعية الحالات).

الاستنتاجات

النتائج من المتوقع أن يكون لها تأثير هامّ على برامج الدراسة المعتمدة على الحالات في كلية التمريض في مملكة البحرين. مثل هذه النتائج المُشجّعة التي أظهرتها هذه الدراسة قد تساعد الباحث أيضاً لتحويل هذه البيانات لتبني النموذج المماثل في كلية التمريض بدولة قطر.

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برنامج ماجستير التعليم الطبي

كلية الطب والعلوم
الطبية

آراء الطلبة في مدى فاعلية العناصر المختلفة لبرنامج التعلم المبني على
الحالة
في كلية التمريض بمملكة البحرين

رسالة مقدمة كجزء من متطلبات الحصول على درجة
الماجستير في التعليم الطبي

إعداد
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مملكة البحرين

ديسمبر 2005م

ذو القعدة 1426هـ