AN ANALYSIS OF PHYSIOTHERAPY CLASSROOM-BASED TEACHING AND HOSPITAL PRACTICAL SKILLS IN ZAMBIA

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DECLARATION

I hereby declare that " an analysis of physiotherapy classroom-based teaching and hospital practical skills in Zambia" is my own work and that I have not submitted it or any part of it for a degree at any other university. All the sources I have used or quoted have been indicated and acknowledged by means of complete references.

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ABBREVIATIONS

APTA	AMERICAN PHYSICAL THERAPY ASSOCIATION
UTH	UNIVERSITY TEACHING HOSPITAL
UWC	UNIVERSITY OF THE WESTERN CAPE
NHS	NATIONAL HEALTH SERVICE
EHC	EVELYN HONE COLLEGE
EC	EUROPEAN COMMUNITY
CSP	CHARTERED SOCIETY OF PHYSIOTHERAPY
CSO	CENTRAL STATISTICAL OFFICE
SLCP	STANDING LIASION COMMITTEE OF PHYSIOTHERAPY
NCH	NDOLA CENTRAL HOSPITAL
CGH	CHIPATA GENERAL HOSPITAL
TEVETA	TECHNICAL EDUCATION VOCATIONAL ENTRE PREURSHIP TRAINING AUTHORITY

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KEY WORDS

Curriculum

Analysis

Physiotherapy

Clinical Education

Clinical Practice

Clinical competence

Technical Knowledge

Clinical placements

Reflective Knowledge

Audit

ABSTRACT

The last decade 1990 to 2000 brought many changes to the global health care delivery systems. The changes have rendered the clinical-set up to be complex, ambiguous and unstable. Some physiotherapy training programmes have not kept the pace of change as that recorded in the health care delivery systems during the last ten years. The uneven changes between the health care delivery systems and physiotherapy education in the last decade have made the physiotherapy traditional techniques to be seemly unable to respond to the complex, and ambiguous situations in the clinical setting. Some recent research studies have identified gaps in the curricula of health science training programmes as a result of the rapid changes in the health care systems. Employers of health science professionals are in agreement that new graduates in health sciences possess a body of knowledge in their respective field of study. However, the employers' agreement is below 50% in relation to the graduates' capacity for applying theory to practice in unfamiliar situations, being able to exercise critical judgement and rigorous independent thinking. The researcher was driven to carry out this study because of the persistent complaints about students' inability to translate their theory into practice in the clinical area by clinical educators. The purpose of this study was to determine whether the physiotherapy theory at the Evelyn Hone College (EHC) matched the hospital clinical curriculum. A descriptive quantitative design was employed in the study, using retrospective data from

the EHC physiotherapy curriculum, physiotherapy records from Chipata General (rural) and Ndola

Central Hospitals (urban) from 1995 to 1999. The Physiotherapy curriculum data and patient records from the two hospitals were compared to establish whether there was any congruence between the two.

The results from the three research settings showed a significant value of $p.<0.001$, which means that there is a significant difference between classroom-based teaching at EHC and the two hospitals respectively. However, the interpretation of the results must be treated with caution and cannot be generalised because of the use of two student clinical sites out of twenty-six. The study highlights the high prevalence of impairments, disabilities and handicaps of musculoskeletal disorders, Bells palsy, cerebral vascular accidents and meningitis referred for physiotherapy at the two hospitals (Chipata and Ndola), as well as a high use of therapeutic exercises and electrotherapy. Additionally the study reveals a low frequency of respiratory, obstetrics and gynaecologic conditions and a low use of faradism at both hospitals. It is hoped that the results that this study has yielded could be a viable reference in a physiotherapy curriculum review and in the planning of student clinical placements in urban and rural setting.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

There have been unprecedented changes in the health care delivery systems globally in the last decade 1990 to 2000, as a result of advances in technology, medical science and education (Shepard & Jensen, 1990). These rapid changes in health care have brought challenges to the clinical environment and physiotherapy education. The clinical environment has become increasingly unique and complex, making the traditional physiotherapy knowledge and skills seem insufficient to untangle or solve clinical practice problems, thereby creating an impression of a mismatch between professional knowledge and education (Richardson, 1992; Schon, 1983). Hunt et al, (1998) argues, that in the light of the rapid changes in health care delivery systems the integration between the academic setting and the clinical community has become an important issue in health science literature internationally. The integration of the academic and the clinic has been identified as critical to successful student learning experiences.

Some recent research studies on health science training programmes have identified gaps in their curricula as a result of the rapid changes in the health care systems. Adamson et al, (1996) found that more than 72% of employers were in agreement that new graduates in health sciences possessed a body of knowledge in their respective field of study. However, the employers' agreement was below 48% in relation to the graduates' capacity for applying theory to practice in unfamiliar situations, their ability to exercise critical

judgement and rigorous independent thinking. Hunt et al, (1998), by using questionnaires investigated the perceptions of graduate physiotherapists about the adequacy of their undergraduate education at the University of Sydney (Australia) in equipping them for their current workplace. The results of the study indicated that physiotherapy graduates perceived important gaps between the knowledge and skills gained from their university education and those required in the workplace, particularly in the areas of communication with clients, coping in the workplace, knowledge of the health industry and workplace management. In Canada, Wells & Lessard (1986) carried out a survey on student clinical practice to analyse the content of physiotherapy students' clinical educational programmes. The results of the study revealed that musculoskeletal disorders were reported most frequently and therapeutic exercises were the most frequently used treatment procedures. The results of the study helped the Canadian physiotherapy schools to review their curricula so as to reflect the real world.

In the case of Zambia, physiotherapists at their professional seminar in 1997, raised concerns about the training of physiotherapy students at the Evelyn Hone College (EHC) in Lusaka. Some physiotherapy clinicians' observed that students on clinical placements failed to link theory with practical knowledge. Clinicians' reported further that many times, they were functioning more as lecturers than as clinical supervisors. Senior physiotherapy students reported that though some conditions were covered extensively in theory in the classroom, in practice they seldom encountered these. Hunt et al, (1988) and Gasner & Hogg (1996) contend that, critical to the success of clinical

education is the need for a positive match between the conditions seen in the hospital and the knowledge and skills acquired as a result of a university or college education. The students' and clinical supervisors' complaints were confirmed by the researcher during visits of students on clinical placements and at physiotherapy post examination meetings where the same issues were raised.

The researcher has been a tutor of physiotherapy at the Evelyn Hone College (EHC) for fourteen years. The EHC is the only institution in Zambia, where physiotherapists train at a diploma level while a degree programme has just been introduced at the University of Zambia Medical School. The physiotherapy curriculum objectives and learning model at EHC appear to emphasise the achievement of technical clinical competence among students. Barrows & Tamblyn (1980) argue that, concern for a sound knowledge base in the sciences has led to a preoccupation with the delivery of content. Culver & Hackos (1982) suggest that, to prepare physiotherapy students optimally for their future profession, educators must attend to issues of both content and the process of learning. Identifying what is required for their graduates, at the same time the education process must also equip physiotherapists for professional survival in a health care environment in which many parameters, notably funding and organization of health care are changing. Richardson (1992) suggests that the education process of the professional from undergraduate to postgraduate level should help physiotherapists to be prepared to accept and respond to the challenge of change.

1.2 BACKGROUND OF THE STUDY

The last decade of the twentieth century brought major advances in medical science, technology, education and health care delivery systems. Some of the changes that have taken place in the health care delivery systems are:

- The relocation of physiotherapy educational programmes from hospital centres to universities in response to the evolving role of physiotherapists and the growing body of knowledge in physiotherapy (Schmoll & Darnell, 1990).
- There is the decentralisation of the health services away from the public hospitals towards the community (Selby, Smith & Crowley, 1995).
- The welfare of the elderly and the chronically sick has increasingly come under intense focus.
- There has been a tremendous growth and explosion of health science information, which has rendered some professional knowledge to be obsolete because of the new developments (Grant, 1992).
- There have been health care budget cuts, payment systems that demand accountability and proof of effectiveness. There is increased consumerism and demand for quality assurance in health care, with a broad range of professionals vying for a market (Higgs, 1993; Loveridge, 1997).
- Health reform has resulted in some hospitals turning into trusts, boards and the emergency of contracts between the providers and purchasers of health services including physiotherapy.

The consequences of the above changes have made the physiotherapy clinical settings to be fluid, uncertain and unique resulting in physiotherapists having to treat patients who have increasingly complex problems (Jensen 1990; Schon & Shepard 1983). Physiotherapists, like other health care professionals, are also called upon to redefine their core skills, relinquish some aspects of their traditional roles and take on new roles (Richardson, 1992).

The extent of the changes in the health care environment could infer that there might be different curricular requirements for current physiotherapy students than those who were oriented towards the traditional workplace. Changes in the delivery of health care highlights the need to examine systematically how adequately health science education is equipping health personnel for the workplace (Emery, 1984; Havelock 1973; & Hunt et al, 1998). Richardson (1992) argues that, the changes in the health arena have implications for the future education of physiotherapy students. Hence the argument that a responsive physiotherapy curriculum and sensitive teaching methods to the changes taking place in health care delivery systems are necessary to prepare students adequately for the current and future health related situations (Higgs, 1992; Adamson et al, 1996). It is assumed that a responsive curriculum will ensure that there is integration between the academic setting and the clinical community. The integration between the academic and clinical curricula is essential for the successful learning experiences of physiotherapy students (Gasner & Hogg, 1996). Physiotherapy educators face the challenge of bridging the gap between classroom

instruction with physiotherapy practice. Meeting this challenge requires developing a curriculum that addresses the theory and practice of physiotherapy within the societal context in which physiotherapy services are provided, and the successful achievement of these criteria requires effective incorporation of contemporary clinical practice within the curriculum (Schmoll & Darnell, 1990). Schmoll & Darnell (1990) suggest that, the physiotherapy curriculum should be conceptually sound, operationally responsive to changes within the profession and yet solidly grounded in clinical practice. Such a curriculum Elliot (1991) believes would provide students with experiences, which develop insights into complex fluid, human situations and enable them, to act wisely.

1.3 STATEMENT OF THE PROBLEM

The medical and health professions education, for a long time placed great emphasis on developing a curriculum design, which successfully produced clinicians with the skills and abilities required of them in professional practice. However, the acquisition of technical knowledge in itself did not mean that students knew how and when to apply it (Barrows & Tamblyn 1980). Physiotherapy students need to function as competent and effective professionals in the real world and not simply possess theoreticalknowledge (Morris, 1993) because the health care environment is always in a dynamic state. Therefore undergraduate physiotherapy programmes today need to be evaluated and appraised constantly to keep up with the times. In this study physiotherapy clinicians and students were questioning the match between the EHC physiotherapy theory and the clinical practical curriculum.

1.4 RESEARCH QUESTION

Is there a match between the physiotherapy classroom theory taught at the Evelyn Hone College and the hospital practical clinical curriculum from 1995 to 1999)?

1.5 AIM OF THE STUDY

The over all aim of the study was to explore whether there was a match between the physiotherapy theory taught at the Evelyn Hone College and clinical (practical skills) curriculum.

1.6 OBJECTIVES OF THE STUDY

The objectives of the study were

1.6.1 To analyse the physiotherapy curriculum at the Evelyn Hone College from 1995 to 1999.

1.6.2 To audit two physiotherapy clinical placement sites, one in the rural and the other in an urban area from 1995 to 1999.

1.6.3 To ascertain the extent of the synchronisation of the theories taught at the college with the clinical practical requirements at the two clinical placement sites.

1.7 SIGNIFICANCE OF THE STUDY

To date, there have been few studies investigating the match between the physiotherapy skills, acquired during a college or university education and those required in a rapidly changing health care environment (Hunt et al., 1998b). It is envisaged that the results from this study could be of help in determining the relevance of the current physiotherapy curriculum and in

addressing the perceived problems between the physiotherapy theory and clinical practice in Zambia. Ultimately, physiotherapy students, the college academic staff, clinical supervisors and curriculum developers could benefit.

1.8 CONCEPTUAL FRAMEWORK FOR PHYSIOTHERAPY

In the 90s the medical and health professions undergraduate educational theory was based on the medical model which emphasised freedom from disease and restoration of health (Richardson, 1993). The medical model relies on observation and experience in the empirical world resulting in generalisations about the content and events of the world which can be used to predict future experience (Moore, 1982). The medical model further espouses that, scientific knowledge is discovered and justified on the basis of empirical processes where facts are described and phenomena are reduced to component parts to describe, explain and predict how, when and where these parts work (Higgs & Tichen, 1995). Many other health professions have questioned whether the medical model and its underlying paradigm is a sufficient, or preferred, model for the health sciences. This questioning is evident in several fields including nursing (Kidd & Morrison, 1988), physiotherapy (Richardson, 1992 & Schmoll, 1987) and occupational therapy (Mattingly, 1991). These disciplines place greater emphasis on the humanistic movement where knowledge is not perceived as objective facts, as in the medical model, but as the constructions arising from the minds of knowing, conscious and feeling beings. Rather knowledge is generated through a search for meaning, beliefs and values, and through looking for wholes and relationships with other wholes.

Richardson (1993) argues that there is an increasing concern in health care today for people whose health cannot be restored but who need help in establishing a good quality of life. Increasingly the work of physiotherapy is involved more and more in those areas. It is therefore pertinent to question what physiotherapists see as their purpose when working towards rehabilitation of the physically disabled. The **biomedical theories**, which are said to have underpinned physiotherapy training and practice in the past are now apparently being replaced by a more **holistic view** and this suggests a very different concept of health from that of the medical model. The many changes now occurring in health care may require individual paradigms of practice and their associated beliefs and values to be amended or expanded, if the physiotherapy profession is to continue to function well (Richardson, 1993). There are many paths to knowledge and some paths are more suitable to the variability and complexity of the human sciences. Restricting oneself to any single paradigm or way of knowing can result in a limitation to the range of knowledge and the depth of understanding, which can be applied to a given problem situation. Gordon (1987) argues that the validity of any theoretical model of practice is its usefulness. He further adds that it is not that the practice of a particular model is correct or incorrect, but the usefulness of a particular model to solve problems perceived as being important is what determines its validity. Thus as physiotherapists perceptions change as to what problems are important to solve, so must the theoretical framework which underpins their practice alter to accommodate these changes. Schon (1987) concludes that professional practice requires a combination of different paradigms.

1.9 DEFINITION OF TERMS USED IN THE THESIS

Clinical education is the facilitation of students' learning by the clinician to achieve education. This involves the development of character, morally socially and intellectually (Cross 1994).

Curriculum refers to all the learning, which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside the school (Kerr, 1968).

Clinical placements are clinical sites where physiotherapy students undertake clinical practice.

Physiotherapy is a systematic method of assessing musculoskeletal, cardiovascular, respiratory and neurological disorders of function including pain and those of psychosomatic origin and of dealing with or preventing these problems by natural methods based essentially on movement, manual therapy and physical agencies (Mead, 1988).

Clinical practice refers to the demonstration of appropriate theoretical knowledge, satisfactory skills and acceptable attitudes but at a level, which is basic and normal for the working environment (Holey, 1993).

Physiotherapy audit refers to a cyclic process that evaluates the effectiveness of clinical care against agreed standards or guidelines with the sole aim of improving services for patients (Tobin & Judd, 1998).

Education refers to the systematic instruction in the development of character regarding mental powers (Cross 1994; Thompson, 1996).

Clinical supervision is a process which focuses on the basic features of clinical practice and it is described as a formal process whereby a student

liases with a more experienced practitioner in order to learn and refine therapeutic skills through the use of case material (Mattesson, 1995).

1.9.1 SUMMARY OF CHAPTERS

The study is structured into six chapters. A brief overview of each chapter is given. Chapter one, an overview of the rapid changes that took place in the health care delivery systems globally in the 1990s with particular reference to the physiotherapy clinical area is presented, as well as the factors that led to the study. The chapter gives a detailed account of the effects of the rapid changes in the clinical arena in the 1990s and the measures that have been taken to address the gap between physiotherapy education and clinical practice. The background to the analysis of the physiotherapy classroom theory at the Evelyn Hone College in Zambia and audits of the two clinical placement sites (Chipata General and Ndola Central Hospitals) from 1995 to 1999 is presented. The chapter also features the research question, problem statement, and aim of the study and objectives of the study. Lastly the significance of the study, the physiotherapy theoretical framework and definition of terms used in the study are presented.

In chapter two the relevant and pertinent literature to the current study is reviewed. The history of the physiotherapy curriculum and its structure are presented. The researcher also looked at the three types of curricula used in physiotherapy. The chapter reviews some of the recommended strategies of teaching physiotherapy students in the clinical arena and ends with common problems in clinical placements.

In chapter three the methodologies of the current study are described. A detailed account and justification for the use of clinical audits is given. A descriptive quantitative design was used in the study by, using retrospective records from the physiotherapy curriculum at EHC, Chipata and Ndola physiotherapy departments. The methods of data collection, data analysis and ethical considerations are also discussed.

In chapter four, the study results from the audits of the EHC and the two hospitals (CGH and NCH from 1995 to 1999) are reported. The results from the three research centres were analysed using the Statistical Package for Social Scientists. The results from the EHC curriculum were compared to CGH and NCH using the chi-squares and were found to have a statistical significant value of $p<0.001$, which is a significant difference between classroom based teaching at EHC and the two hospitals respectively.

In chapter five the highlights of the study results are discussed in detail. The discussion hinges on the analysis of the physiotherapy classroom theory at the Evelyn Hone College (EHC) and audits of the two hospitals Chipata General (CGH) and Ndola Central (NCH) Hospitals from 1995 to 1999. The physiotherapy curriculum objectives content, teaching methods and student evaluation methods at EHC are compared to other physiotherapy training programmes. The physiotherapy curriculum objectives and teaching methods at EHC seem to emphasise acquisition of technical skills by students. Teaching strategies, which could help students cope with emerging trends in the clinical environment, are suggested. The teaching methods could include

problem solving, reflective thinking, problem based learning and helping the academic educators with experiences of how to supervise student research projects.

The study results seem to suggest also that there was a disparity between the physiotherapy curriculum at EHC and the two hospitals CGH and NCH. The findings revealed that the percentages of hours, allocated to the core modules of the curriculum at EHC were far less when compared to the percentages of the frequency of diagnostic conditions and treatment techniques at the two hospitals. The results between EHC, CGH and NCH had a statistical significance of $p<0.001$. In addition, the results also showed that there were more surgical disorders and high use of electrotherapy and exercise therapeutic modalities at the two hospitals. Fractures of the femur, injuries of soft tissues, cerebral vascular accidents, and Bell's palsy were disorders that featured prominently at the two hospitals, while low rankings in respiratory and gynaecological conditions and low use of faradism and hydrotherapy were also evident at the two hospitals.

In chapter six the study ends with the, conclusion and recommendations based on the results of the study. Recommendations for future research are made where recently qualified graduates from EHC can be asked to evaluate the adequacy of their physiotherapy education for their current work place. The researcher also underlines the need for the physiotherapy educators, clinicians and curriculum specialists to debate the study results and have a curriculum review of the physiotherapy programmes in Zambia

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Research on physiotherapy education is scanty and the little research that has been done in the area is diverse and reflects different interests, orientations and opinions. Today, as never before, physiotherapists are being bombarded from all sides to show evidence about the effectiveness of their treatments, as a result of health care budget cuts, health reform, increased consumerism in health care and a broad range of professionals vying for the market share (Loveridge, 1997). The focus of this study was based on the analysis of the physiotherapy classroom based teaching at the EHC and the hospital practical skills acquired at two hospitals in Zambia. The literature will be reviewed under the following headings, history of the physiotherapy curriculum, the structure of the physiotherapy curriculum, curriculum reviews of some physiotherapy training programmes, physiotherapy education and common clinical placement problems.

2.1.1. HISTORY OF THE PHYSIOTHERAPY CURRICULUM

The physiotherapy education curriculum has passed through many phases dating back to the 1920s when it was largely content based and emphasis was on technical knowledge. In the 1980s, focus was on the development of problem solving skills and modes of inquiry rather than on mastery of content. In the 1990s, the advances in technology and reforms in the health care delivery systems have directed how and what students in the health care

professions should learn (Graham, 1996) because of the new developments in the clinical area.

2.2 THE PHYSIOTHERAPY CURRICULUM STRUCTURE

2.2.1. DEFINITION OF CURRICULUM

A curriculum is defined as a combination of the content to be learnt, the learning process and evaluation of the learning outcomes. Learning is defined as a process that occurs within the individual and results in a change in behaviour. Learning can be grouped into three domains, cognitive, affective and psychomotor. Educational programs in physiotherapy are concerned with each of these domains (Marcoux & Pinkston, 1984).

2.2.2 GOALS OF THE CURRICULUM

Savoie & Hughes (1994) suggest that, when planning a curriculum the focus should be on the key curriculum goals, subject matter, skills development and critical analytical skills. Lucket (1995) and Adger (1999) argue that, a curriculum should be developed with a holistic approach by not incorporating only content but also values, theories, assumptions and beliefs about knowledge. Lucket and Adger further add that there must be an active partnership between the patient and the health worker.

The goals and objectives of the medical model curriculum, after which the physiotherapy education was modelled, appeared to be aimed toward achieving technical clinical competence. The terminal competencies referred to entail making students determine the physiotherapy needs of any patient

referred for treatment, through recognition of areas in which structure or function were abnormal. Competence for these physiotherapy skills was achieved through the traditional professional education curricular sequence of basic sciences, applied sciences and technical skills for the day today practice (Schon, 1987).

2.2.3 CONTENT OF THE CURRICULUM

The physiotherapy traditional approach has been found wanting in terms of both student learning and the demands of clinical practice (Morris, 1993). Although the long-standing traditional approach has been widely criticised it is still in use in some physiotherapy schools. The medical model encourages acquisition of technical knowledge and workloads for students are large (Coles, 1989). Schmidt (1983) claims that, some of the knowledge acquired with the traditional approach is irrelevant and that this approach does little to encourage postgraduate continuing education. Abramson (1978), Kennedy (1988) and Sherpard & Jensen (1990) observe that as the undergraduate physiotherapy programmes undergo metamorphosis into graduate programmes, there is always the proposal for acquisition of additional knowledge and technical skills. Eventually the curriculum becomes increasingly crowded with more and more content being crammed into limited time spaces. The authors further state that if attention to curriculum changes was focused on more knowledge, more skills, and more roles, scant attention may be given to how to teach the core knowledge of physiotherapy concepts and skills in a way that develops the type of professional practitioner who can meet the challenges of patient care in tomorrow's health care system.

Kennedy (1988), McCoy (1991), Schmidt (1983) and Schmoll (1990) argue that, over emphasis on the technical skill aspects of practice in some physiotherapy schools could yield a lack of comparable emphasis on other essential components of professional expertise such as understanding theory and development of analytical abilities. Schmoll (1990) urges educators to teach less content. Schmoll (1990) adds that, a curriculum can be broader in scope if its spectrum of key concepts can be narrowed to those that are important and central to the curriculum. Rose (1990) suggests that, when planning courses, vigilance needs to be exercised to avoid overcrowding the syllabi and overwhelming the students with facts. Hunt et al, (1998) argue that the challenge for educators of future physiotherapists is to find a balance between equipping graduates with the necessary knowledge and skills.

2.2.4 MODEL OF INSTRUCTION

Barrows & Tamblyn (1980), Hamilton (1976) and May (1977) described the traditional approach as one where the teacher is active and the students mostly are passive. Teaching is didactic and usually delivered by lecture to large groups. Kennedy (1988) likened this teaching style to that of the army, where the teachers explain, then demonstrate an assignment, next student execute the assignment with supervision and finally teachers examine the students' performance. In the traditional approach subjects are taught with little connection made between related topics (Coles, 1989). The general practice is that theory is taught largely separate from practice and patient problems are presented only after the theory has been taught. Students find

that there is poor correlation between theory and practice and that the lack ...

that there is poor correlation between theory and practice and that the lack of integration of subjects makes clinical practice difficult (May, 1977).

Shepard & Jensen, (1990) point out that technical knowledge is used to evaluate and treat patient conditions for which there are known helpful interventions. However, to work with health care problems for which there are no treatment protocols or known effective interventions, the physiotherapist must use reflective or intuitive knowledge. McCoy (1991) suggests that, skills such as problem-solving, analysis, and effective oral and written communication should be fostered alongside teaching factual knowledge. Schein (1972) argues that, one of the most important aims of education is learning how to learn, enabling the student to develop his own capacities to determine what he needs to know and how to go about learning without formal support.

2.2.5 EVALUATION

Taylor (1996) argues that, assessments are complementary to learning goals, he further adds that it is becoming widely accepted that assessments influence and even determine what and how students learn. Studies by Marton & Saljo (1976) have demonstrated that assessment methods can profoundly influence students approach to learning, in particular their use of deep and surface approaches to learning. Marton & Saljo (1976) suggest that assessments should reflect the range of goals of a learning programme, including the promotion of independent learning skills. In the traditional physiotherapy curriculum summative end of year examinations are the usual

form of assessments. However, Ellis (1988) and Menahem & Paget (1990) suggest that student assessments should be formative and continuous rather than be summative.

Eisner (1985) identified three curricula that are taught in all physiotherapy schools, these are the explicit, implicit and null curricula.

2.4 THE EXPLICIT CURRICULUM

Eisner suggests that, the explicit curriculum refers to those aspects of the curricula publicly announced in university bulletins and departmental brochures. She adds that, prerequisite courses, physical therapy courses, clinical education settings, the length of time to complete, the program and the degree awarded are all examples of explicit curriculum. When educators design or alter a curriculum they are most attuned to the explicit curriculum components. When clinical educators want to know how well prepared students are for treating the type of patients in their clinical setting, they inquire about the explicit curriculum.

2.5 THE IMPLICIT CURRICULUM

Eisner (1985) argues that the implicit curriculum includes values, beliefs and expectations that are passed down from academic and clinical staff members to their students. Eisner (1985) observes that, these values, beliefs and expectations are not part of the formal explicit curriculum but never the less are learned by students as part of their academic and clinical experiences. Eisner contends that, students regularly receive from academic members of staff implicit messages about the relative importance of certain types of

knowledge, what types of patients are most interesting and challenging, what personal and professional behaviours are acceptable and unacceptable. Some implicit curriculum components are evidenced as a direct result of the content and organisation of the explicit curriculum, like the number of hours devoted to certain subjects or how courses are scheduled gives strong implicit messages to students.

2.6 THE NULL CURRICULUM

Eisner (1985) defines, the null curriculum as what is missing from the curriculum or what things are left out. Obviously no physiotherapy curriculum can contain everything a physiotherapist will need to know. In deciding what to keep in and what to leave out, educators must consider the changing nature of the health care delivery. Educators must ask themselves questions such as will students be prepared with the skills needed to respond to future population needs in a cost-effective way? The educators need to consider how best to prepare the students for life long education that is how to teach the students to acquire information not presented in the physiotherapy programmes. Shepard & Jensen (1990) and Eisner (1985) argue that students will not learn everything they will need to know in a physiotherapy programme, or even most of what they will need to know prior to graduation.

Hunt et al, (1998) and Eisner (1985) suggest that, academic and clinical educators need to make conscious decisions about what to take out of the curriculum. Academic members of staff must face squarely the limitations of contact hours. In considering the null curriculum, like economists,

physiotherapists must be concerned with the distribution of scarce goods. Physiotherapy educators have to allocate limited resources, such as time to educationally beneficial ends.

2.7 CURRICULUM REVIEWS OF SOME PHYSIOTHERAPY PROGRAMMES

2.7.1 USA

Shepard & Jensen (1990) in their study of thirty undergraduate, entry-level and post professional graduate physiotherapy programmes in the USA observed that because of advances in medical science and technology, coupled with changes in the health care needs of the nation and health care delivery systems of the 1980s. Most of the physiotherapy programmes needed to be redesigned to prepare health care practitioners who could deal effectively with the health care needs of the 1990s. Shepard & Jensen (1990) further observed that, objectives of most entry-level physiotherapy education in the United States at that time appeared to be aimed towards achieving technical clinical competence. The graduates with their technical clinical competencies were failing to meet the needs of the rapidly changing clinical environment, as they lacked adaptability skills to deal with the reality of the uncertainty in their work place. Barrows & Tamblyn (1980) contends that, overemphasis on technical skills relies upon delivery of large physiotherapy content and examinations of recall of the imparted information, with little attention given to how well or how much such superficial learning can be used clinically.

Huebler (1994) observes that, due to the rapid changes in the health care delivery system, allied health practitioner graduates in the USA were not meeting the expectations of their employers who wanted clients to be moved more quickly through the health care systems. Huebler (1994) further adds that, graduates were inadequate in their interdisciplinary, practical clinical skills and knowledge of the health care industry. These were skills deemed essential by the employers. Huebler (1994) observes that, student undergraduate programmes might not have prepared them adequately hence the need to evaluate the curriculum to meet the clinical needs.

2.7.2 EUROPE

The British Chartered Society of Physiotherapy (CSP) in 1984 produced a new curriculum because users of the previous document had found that its prescriptive nature had limited their scope to respond to changing needs and demands (McCoy 1991). McCoy added that the new curriculum gave course planners more room to use their initiative and innovative methods in choosing appropriate content and learning activities. One of the pitfalls of the old curriculum was that it treated the acquisition of knowledge as an end not as a means. The curriculum had expanded beyond the student's digestive powers (Rose, 1990). The CSP (1996) support content relevant physiotherapy education. McCoy (1991) suggests that, there is need for physiotherapists to keep asking themselves what they really need to know in order to underpin the physiotherapeutic management of patients.

In 1987, the Standing Liaison Committee of physiotherapists (SLCP) within the European Community (EC) established a working party, to draw up a report on the provision of pre-registration physiotherapy education in the European Community (EC), in preparation for the implementation of the council's directive of December 21, 1988 of making recommendations to facilitate the formation of a policy on free migration and harmonisation of physiotherapy education within the EC (McCoy, 1991). The working party observed that, the physiotherapy curricula of most member states of the EC were constantly changing to meet the changing demands on physiotherapists. The working party observed that, there were trends among (EC) members of relocating physiotherapy courses to institutions of higher education and developing courses at degree level. There was a trend towards modularisation of courses and great emphasis was put on integration of theory and practice. There was also an increased awareness of the need to evaluate physiotherapy practice and most courses provided some research training. Teaching styles were changing from didactic to student-centred and problem-based learning methods.

2.7.3 CANADA

Cox et al, (1999) in their study of thirteen Canadian physiotherapy schools in 1997 observed that, financial constraints in the health care delivery system led to a shortage of physiotherapy clinical placements in many Canadian provinces. This led to the restructuring of physiotherapy educational programmes and the re-evaluations of academic curricula, which included

consideration of the length of clinical programs required to achieve entry-level competency.

2.7.4 AUSTRALIA

Hunt et al (1998) observed that, many allied health professional students in Australia, were lacking the necessary skills such as business management, knowledge of the health care industry and practical clinical skills required in the clinical environment. They attributed the shortcomings to rapid changes in the health care delivery service as health care professionals were pressured to move patients more quickly through the health care system. Hunt et al (1998) further added that, shortcomings were apparent in the curricula content of the undergraduate programmes for the allied health professionals (occupational therapy, orthoptics, physiotherapy and speech therapists) at the University of Sydney. Administrators where the allied health professionals worked, felt that there was an urgent need to examine systematically how adequately health science education was equipping health personnel for the work place.

2.8 PHYSIOTHERAPY EDUCATION

Physiotherapy education consists of two components, which are classroom-based theory and practice on one hand, and hospital based clinical practice on the other. Common goals in physiotherapy education include the development of technical and clinical reasoning competencies, interpersonal skills, knowledge and self directed learning skills (Higgs, 1992).

2.8.1 PHYSIOTHERAPY THEORY

Shepard & Jensen (1990) and Stewart (1996) define theory as written knowledge, which includes facts, principles, examples, and rules of thumb that constitute the basis for hands-on patient care. Krebs & Harris (1988) argue that physiotherapy theory is a highly abstract set of logical principles whose sole purpose is to help organise the way physiotherapists look at the world in general and their practice in particular. Physiotherapy theory education aims at preparing students to acquire the necessary knowledge for the physiotherapy profession. The academic educators play a key role in helping students acquire the right theoretical knowledge (Knowles, 1984). They are also concerned with the search for new knowledge and teaching of modern concepts to students, critical evaluation of the profession as a whole and the development of new theories, techniques and information deemed beneficial to the profession and its patients (Turnbull, 1995). The physiotherapy theory is sub-divided into

(a) Behavioural sciences

Behavioural sciences include psychology, sociology and communication skills. The students are expected to acquire knowledge in the behavioural domain to enable them meet the demands of interpersonal dimensions of their profession (Beenhakker, 1996). Through the behavioural sciences course, students are taught how to interact with other professionals, colleagues, patients and their relatives (Cross &Hicks, 1997;Higgs, 1992; Onuoha, 1994).

(b) Basic Sciences

Basic sciences include anatomy, physiology, medical conditions, Orthopaedics and kinesiology. These subjects form the foundation for the students to have an idea about the normal human development and the processes of the disease.

(c) Professional subjects

Professional courses cover physiotherapy principles and applied physiotherapy. These courses aim at assisting the development of the appropriate theoretical base for professional skills. Students are expected to demonstrate technical skills, intellectual capabilities, and the use of professional language (Forster & Galley, 1978). Margestson (1996) acknowledges that theoretical knowledge forms the basis upon which practical skills are built.

2.8.2 CLINICAL PRACTICE

Clinical practice is the second component of physiotherapy education, which. is a fundamental component of the undergraduate physiotherapy curriculum. Clinical education programmes contribute to the achievement of overall curricular goals. Holmes (1975) argues that, clinical education is vital as it helps students to gain confidence in handling patients, develop their clinical technical and decision -making skills. Holmes (1975) further claims that the clinical setting provides the complex context and conditions, which the students will face in actual practice.

Higgs (1992) echoed Holmes sentiments by adding that, clinical education plays a very important part in physiotherapy education, because it is in these settings that learners can truly appreciate their roles and responsibilities as health care providers and evaluate their readiness for autonomous professional practice after graduation. The clinical environment provides the situational task, and human complexities of the real world as a context for new learning and for the practice and evaluation of previous learning (Higgs, 1992). Wells & Lessard (1983) and Downey (1993) argues that, it is during clinical experiences that theory consolidates into practice. Exposure to patients in the clinical situation offers a unique experience, which cannot be replicated elsewhere (Currens & Bithell, 2000; Emery, 1984; Page 1987; Palastanga, 1995). The authors viewed clinical placements as a scarce resource. They suggest that sufficient numbers and varieties of appropriate clinical placements must be sustained if the standard of education received by the students has to be high.

The changes that swept across the health care system in the 1990s and continue to do so now have made traditional knowledge and skills seem not to be sufficient to untangle the changing characteristics of physiotherapy clinical practice today (Higgs, 1992; Richardson, 1992; Schon, 1983). The above authors further add that, the clinical arena is now so dynamic presenting situations that are complex, uncertain, unstable, and unique and they suggest that clinical education learning should be organised through self directed learning, problem solving, reflective learning and clinical reasoning as a way to help students translate their theoretical knowledge base into meaningful

practical skills. The links between reflection, competence in practice and lifelong learning have been reiterated in several professional documents (CSP, 1995; 1996a; 1996b) with the expectation that physiotherapists should be reflective practitioners and life long learners. Cross (1992), Cross & Neville (1993) and Dolmans & Schmidt (1994) suggest that, students would develop clinical competence in a fluctuating clinical environment if they were exposed to reflective and self-directed learning.

2.8.3 SELF DIRECTED LEARNING

The rapid changes that characterised the health care sector in the 1990s resulted in the physiotherapy clinical environment embracing new and complex disease patterns and the development of multiple providers of physiotherapy services. As the new millennium develops, competition for quality service among physiotherapy providers has stiffened. Higgs (1992) suggests that, self-directed learning skills as an educational framework for clinical education are particularly important attributes for physiotherapy students in this age of rapid technological advancements. In order for physiotherapy graduates to offer valuable service in a fluctuating clinical environment research studies suggest that, the physiotherapy education process must introduce students to self directed or long life learning. Higgs (1992) and Hunt et al, (1998) argue that students must recognise that, the sample of clinical skills they have learned at an undergraduate level may be appropriate at the time. Higgs (1992) contends that, knowledge is not a fixed entity but at any point in time, it represents a level of understanding, which is continuously being modified by an ability to reflect upon new personal and

scientific discoveries and by testing and refining according to the current context. Research studies argue that, in self directed or lifelong learning, students need to be confronted by the reality of uncertainty, which prevails in the clinical set-up and the realisation that as new information is accumulated, new perspectives develop. Self-directed learning skills provide learners with the ability to generate knowledge and skills in order to deal both proactively and responsively with their own learning needs and with changes in society's health care needs (Higgs, 1992). The clinical setting provides an important opportunity for physiotherapy students to generate, test and develop their knowledge base, which should be sound and well organised. This can be done by students seeking to discover their own meaning through self-directed learning and by endeavouring to make sense of their clinical learning experiences. Achieving these goals entails students questioning what they are learning or have learned, reflecting on their thoughts and actions, exploring the validity and efforts of different ways of achieving their clinical goals, experimenting with new ideas and discussing thoughts and experiences with others (Higgs, 1992).

Long (1990) argues that, what life long learning seeks to do is to provide a framework within which an individual can reflect on the past and prepare for the future in terms of learning experiences. As part of this process learners need the ability to cope effectively with change and indeed to initiate change (Tough, 1983). Candy (1991) emphasised the strong need for self-directed learning in our education systems as a means of copying with change. He said "rapid social change and technological changes have become so

commonplace that their ability to shock has diminished. However, one thing has remained more or less constant; the limitations for peoples' ability to cope with change. The effect has been not only to throw into sharp relief our human frailty, but even more to highlight the apparent inadequacy of educational systems to cope with people's hunger for new skills and information" (Candy, 1991, p xiii). Research studies observe that, if self directed skills are introduced to students at an early stage, graduates will then have the skills needed to take new directions in the future, including expansion into unfamiliar areas, students would be even more capable in adapting to the wide variety of new challenges in the workplace and developing professionally (Higgs & Boud 1991). Self directed learning can be accomplished in the physiotherapy training programme by having an explicit policy on developing life long learners. This should be reflected in the course aims, objectives and teaching strategies.

2.8.4 PROBLEM-SOLVING LEARNING

Norman (1990) contends that, in an endeavour to deal effectively with the knowledge explosion, physiotherapy educational programmes over the past decades have adopted the goal of developing problem solving skills and diminished the emphasis on knowledge acquisition. The need for problem solving is widely recognised in physiotherapy as well as medicine. May & Newman (1980) argue that, problem solving is an integral part of effective physiotherapy practice, as it is believed to be central in effective patient management.

Slaughter et al, (1989) observe that, physiotherapy students' ability to solve problems is of paramount importance as these students are the clinicians' of the future and will need to be able to analyse what they have learned in relation to managing patients' problems. The need for problem solving skills in physiotherapists is also emphasised by Henry (1985) who argued that, students or therapists who were unable to solve problems could not be effective clinicians' because if they could not recognise patients' problems, they would it difficult even impossible, to plan or implement successful patient management and treatment. A problem-solving curriculum generally introduces the patients' problems at the same time as the theory (Morris, 1993). The teacher acts at certain times as an information giver and at other times as a facilitator and small group work are used, as well as sessions for the whole class. Learning is more student-centred and subjects are integrated. Students are more involved in their learning and do more independent study, this is said to enhance greater understanding and longer-term retention of knowledge (May, 1977).

Dolmans & Schmidt (1994) contends that, learning organised through problem analysis helps students with what they already know and they build up their theoretical knowledge base into meaningful practical skills. This is the way of developing clinical competence in the profession. Competence develops a set of behaviours consisting of knowledge, skills, judgements and attitudes, which are required for individual's performance within the profession (Looms 1985).

2.8.5 REFLECTIVE LEARNING

Boud (1988), Davis (1985) and Schon (1987) argue that, clinical experience alone does not guarantee learning. Schon (1987) suggests that, to work with health care problems for which they're no protocols or known effective interventions, the physiotherapist must utilize reflective or intuitive knowledge. Boud (1988), argues that, the reflective practitioner holds the knowledge and skills of a technical practitioner and is skilled in creative information acquisition and intervention techniques that can be brought to bear on any unique health care problem that may be encountered during the practice of physiotherapy. Boud (1988), Davis (1985) and Schon (1987) advocate that, physiotherapy students should be taught to value thinking in action, that is thinking on their feet and not to focus only on problem solving but on problem setting or putting problems within a context in which they can be solved. Reflective knowledge is part of every professional's spontaneous actions, which may not follow specific rules or theories. This knowledge is central in professional practice especially in areas called "the indeterminate zones of practice" which are uncertain, unique and unpredictable (Schon, 1987 p 49). When such situations arise therapists cannot handle them solely by applying theories or techniques derived from the store of professional knowledge (Schon, 1987). Within the health care sector, occupational therapy and social work are firm advocates of reflective learning (Errington & Robertson 1998). Schon (1987) contends that, it has become accepted that practical experience underpinned by reflective practice is fundamental to physiotherapy learning. Carr & Kemmis (1986) view reflective activity as being central to the education of health care professionals.

Robertson (1996) condemned reflective practice describing it as anti-scientific and counter productive to the creation of a sound physiotherapy knowledge base. Robertson (1996) and Clonder (2000) observe that, while reflection at an individual level is clearly part of sound practice, it might be argued that if it stopped at the individual level it would be limited in scope and would serve only to maintain the status quo rather than promoting change. Clonder (2000) and Robertson (1996) further argue that, introspection limits our focus and is likely eventually to stifle professional development at an individual level. In addition, introspection may concentrate energies on micro-issues, losing focus on bigger issues which impact on the profession. Eraut (1995) wonders what the place of reflection would be in the physiotherapy out patient department. The author observes that, the pace of work in a busy outpatient department makes very different demands on clinicians. Workload is generally heavier in terms of throughput, patients are usually more short-term and the type of conditions being treated creates expectations of fast results. Eraut (1995) argues that, factors involved in the outpatient department limit scope for experimentation, inherent in reflection in action to a certain extent. Time for reflection in the outpatient department is tight, with the result that most decisions have to be made rapidly thus they are either intuitive or require fast deliberation involving little analysis (Eraut, 1995).

2.8.6 CLINICAL REASONING

Clinical reasoning according to Higgs (1992) refers to the thinking processes associated with clinical practice, rather than emphasising the decisions made or the actions or steps involved in patient management. In short, clinical

reasoning refers to the thinking and decision-making process associated with clinical practices. Higgs (1992) suggests that, essential clinical reasoning competencies include the ability to utilise cognitive or thinking skills. In short, it is to use skills of reflection, review, evaluation and meta-cognition (monitoring or awareness of thinking processes) and the ability to access one's knowledge base. Some factors, which could influence the effectiveness of clinical reasoning include the presence of a sound accessible organised knowledge base, the ability to generate knowledge, competence in performing data collection, interpersonal skills and the ability to involve the patient in decision-making. Higgs (1992) argues that, as members of a health profession, physiotherapists are required to act autonomously and to take responsibility for their actions. To do this they need to develop competence in clinical reasoning, a sound knowledge base, technical competence and other attributes such as interpersonal skills, particularly where physiotherapists have to act in a first-contact role.

2.8.7 CLINICAL COMPETENCE:

Aston & Hamel 1983; Caney (1983); Holey (1993) and Next decade (1979) define clinical competence in physiotherapy as the quality of being capable of adequately performing tasks and assuming roles of a physiotherapist with their associate requisite knowledge, abilities, capabilities, adaptability, skills, judgements, attitudes and values. In short, Holey (1993) and Next decade (1979) argue that, a physiotherapy student could be deemed competent if that individual possessed the knowledge, skills and attitudes enabling that individual to perform fully in a basic professional role. Aston & Hamel (1983)

and Caney (1983) argue that, clinical competence includes performance of tasks and relationships that meet the objectives of safety, efficiency and social acceptance in the environments normally encountered. Aston & Hamel (1983) and Caney (1983) observe further that, competence demands demonstration of appropriate theoretical knowledge, satisfactory skill and acceptable attitudes but at a level, which is basic and normal for the working environment. Nayer (1993) and Oldmeadow (1996) suggest that, competence is synonymous with performance therefore, in the physiotherapy clinical environment clinical competence is concerned with data gathering and analysis (knowledge), making diagnosis and treatment plans (psychomotor skills), treatment implementation (problem-solving skills) and (attitudes) communication skills). Loomis (1985) and Nayer (1993) observe that, competence in physiotherapy students is assessed either against set performance standards and this is called criterion-referenced evaluation and assessment against the performance of other students is called non-referenced evaluation. Holey (1993) argues that to reach standard performance, students must go through a period of competence skills development. The knowledge acquired from the classroom should be transferred into practical skills to build competence in their practice (Nayer, 1993).

2.9 COMMON CLINICAL PLACEMENT PROBLEMS

Clinical education is an essential and intricate process in the physiotherapy education programme. However, It is beset by a host of problems. Currens & Bithell (2000), CSP (1998), Cox et al, (1999) and Maxwell (1995) identified

clinical staff vacancies, funding inconsistencies, service pressures and the absence of formal relationships between universities and physiotherapy services as significant factors contributing to physiotherapy clinical education. The authors argue that, education providers for the professions allied to medicine will be expected to cope not only with the problems associated with the reorganisation of higher education but also the problems associated with the reorganisation of the hospitals as they change to trust status and the emergence of the purchaser and provider contract requirements. Currens & Bithell (2000) and Maxwell (1995) claim that the changes both in physiotherapy education and the hospitals could have implications for the clinical education and experience of undergraduate students.

2.9.1 FINANCE

Maxwell (1995) observes that, as the British National Health Service (NHS) health reforms took effect, hospitals turned into trusts, boards and there was also the development of contracts between the providers and purchasers of physiotherapy services. All these developments resulted in the inability of hospital trusts and boards to identify a budget for training allowances for physiotherapy students. Since clinical placement in undergraduate courses of education and training in physiotherapy and other professions allied to medicine in the British Isles was initially an unpaid experience for which the students received no remuneration. He further observes that, the (NHS) health reforms have resulted in a direct conflict between running a cost effective and clinically effective service and offering training opportunities for students. Maxwell (1995) found that, the focus on hospital resources was too

narrow to sustain training needs and service required. He suggests that, a solution would require the physiotherapy provider units to reflect the cost of student placements, which could discourage the purchaser units from accepting students.

Cox et al, (1999) observed that financial constraints in the health care delivery system in 1997, led to a shortage of physiotherapy clinical placements in many Canadian physiotherapy schools. Cox et al, (1999) observed that, rather than being seen as an asset during times of fiscal restraint and restructuring, students were all too frequently seen as a burden to services already stretched to the limit and clinical placements were often the first to go. In the United Kingdom Curren & Bithel (2000) argue that most physiotherapy managers recognised that, their budgets constrained the student clinical placement numbers they offered because they felt that their role was not a teaching service but rather a service to patients, so the teaching side was regarded as a secondary role, which did not bring in extra money into the service.

2.9.2 STAFFING

Shortage of staff across medical professions including physiotherapy is felt everywhere (Palastanga, 1995). Poor morale as a result of shortages, work pressure and low pay, causes many physiotherapists to leave government jobs opting for the private sector and over seas countries which have better conditions of service (Palastanga, 1995). Maxwell (1995) stresses that staffing issues relate both to the hospital clinical setting and higher education

institutions. Maxwell (1995) attributes the lack of staff in clinical supervision to annual, sick and maternity leave. The few available staff therefore have less time to spend supervising and teaching students on clinical placements.

Curren & Bithell (2000) argue that, at times links between physiotherapy schools and the clinic are not close. Gasner & Hogg (1996) suggest that, communication between the clinical supervisors and the academic educators is an extremely important factor in clinical practice. Gasner & Hogg (1996) are of the opinion that if all clinical sessions are preceded by meetings between academic staff and clinicians at which time there are opportunities for clarification of objectives, identification of expected knowledge base, consensus on skill instruction, teaching strategies and models, then clinical education could be enhanced. Cross (1998) contends that, successful clinical education can only take place if there is collaboration at all stages between physiotherapy academic staff based at the school and practitioners dealing with students in clinical locations. Cross (1998) advises that, academic educators move away from the traditional tendency of defining clinicians' learning needs in relation to objectives of clinical education and where they alone choose the physiotherapy content and format. Scully (1983) supports the close links between the clinic and academia by describing clinical education as the common denominator between the clinical area and the school. Therefore both the academic and clinical faculties need to be fully aware of developments in each other's domain.

Maxwell (1995) suggests that, physiotherapy teaching staff needs to keep up to date regarding changes in the physiotherapy delivery of care by spending time in the clinical setting. Vaughan & Edwards (1995) support the idea that, researchers (teaching staff) must get out more, as widely practised clinically effective treatments will not be devised and developed behind ivy-clad walls in the ivory towers of academia, but rather through understanding the clinical issues and the context in which treatments are administered. Vaughan & Edwards (1995) argue that, the best way to achieve understanding is through first hand clinical experience and a presence on the shop floor in this case the physiotherapy clinical arena.

Maxwell (1995) observes that, at times the universities admit too many students and therefore students have to be placed in clinical units before having had any background teaching, relating to some of the clinical units. He argues that, as staff numbers are cut in hospitals and provider units, students on clinical placements will be perceived to be more of a burden. This development could lead to the cancellation of placements due to staffing difficulties. Currens & Bithell (2000) observe that, the reason for the nation wide placement shortage in Britain in the last century has been due to the growth of physiotherapy student population. This growth of physiotherapy student population has made it increasingly difficult to ensure that sufficient numbers and varieties of appropriate clinical placements are sustained (Currens & Bithell 2000). The shortage of placements can ultimately affect the quality of clinical experience students could have. Maxwell (1995) stresses that as part of the standards for clinical education, a senior clinician is

supposed to be present during student clinical placement. However, in practice it is sometimes observed that, there are no senior staff members on the units except for only junior staff. Maxwell (1995) argues that it seems like there is little attention paid to training and development of clinical educators as some clinicians are less suited to be clinical educators while others are down right unenthusiastic about teaching students.

In some physiotherapy clinical areas, some clinicians feel that physiotherapy tutors are too theoretic and unrealistic because they lack practical content, while some clinician's accuse academic educators of credential arrogance (Turnbull, 1995; Currens & Bithell 2000). Turnbull (1995) observes that, the academic educators main concern in some clinical environments is the lack of interest in clinical research and its low reporting among clinicians. They also complain of clinical arrogance, lack of adequate teaching and assessment styles. Turnbull (1995) suggests that, there is a real need for both clinical and academic faculty to develop a mutual respect and tolerance for each other and recognise that, the roles and the framework within which each practice is different. Turnbull (1995) stresses that, there is a need to eliminate both credential and clinical arrogance and to recognise that both the academic educators, and the clinicians have unique roles to play within the profession. Learning from each other and listening to the others' viewpoint can gain much in student training.

2.9.3 DEPLOYMENT OF TIME

Curren & Bithell (2000) argue that, although clinical educators accept the responsibility to develop the next professional generation they find their commitment to clinical education is compromised by a responsibility to their employing authority and patient care is a higher priority and normally determines the number of student placements offered. Maxwell (1995) observes that, clinicians have difficulty in finding enough time between the clinicians' own caseloads and time to observe, teach and assess the students' performance. Maxwell (1995) notes that, in the clinical arena there is an increase in paper work concerning students on clinical placement as well as increased time spent with the students for discussion of objectives. The increase in clinical commitments is compounded by an increase in administrative duties thus conflicting with student training. Curren & Bithell (2000) and Maxwell (1995) argue that, the increasing demands on the clinical instructors' time leads to less time for treating patients and thus decreases patient throughput and productivity. Curren & Bithell (2000) and Maxwell (1995) contend that, the organisation of student placement into short blocks of three or four weeks or split clinical placement blocks (morning or afternoon on one specific unit) does not allow adequate time to accumulate experience on clinical placement units. Maxwell (1995) argues that, though it is recognised that students contribute to additional manpower resources during clinical placements, they also use expensive skilled senior therapists' time in supervision, instruction and teaching. Maxwell (1995)'s opinion is that, clinical supervision of students in a reorganised health delivery system can be time consuming and expensive.

2.9.4 TRAINING AND SERVICE NEEDS

Maxwell (1995) argues that, sometimes there were difficulties in providing a wide variety of patients for students on clinical placements to gain a broad and comprehensive clinical experience. French (1991) & Cross (1998) observe that, few patients and unvaried caseloads could affect clinical practice. At times there are also problems with providing patients with whom students can work independently. Maxwell (1995) argues that, sometimes students often come across very seriously ill in-patients in some wards and physiotherapists expect students to treat them, even when students did not receive up-to-date advice on the use of specialised equipment in the hospital setting.

Curren & Bithell (2000) and Maxwell (1995) observe that, sometimes students do not have enough patient contact time, possibly because objectives for achievement by the students and provision by staff on clinical placements are sometimes unrealistic and unachievable. In an effort to achieve objectives, much time is spent in discussing adjustments of the goals and aims, thus reducing patients contact time further. Maxwell (1995) observes that, the increased turnover of in-patients is another source of concern as this gives students less time to plan assessments and will mean fewer placements being available in major teaching hospitals. Maxwell (1995) argues that, students' limited knowledge of techniques during early placement blocks results in inadequate treatment.

2.9.5 SUMMARY OF CHAPTER

In this chapter, the history of the physiotherapy curriculum and the structure of the physiotherapy curriculum are reviewed. Flaws of the traditional physiotherapy curriculum with regard to student learning and clinical practice were discussed. The impact of the rapid changes of the 90s in the physiotherapy clinical arena in the USA, Europe, Canada and Australia were also reviewed together with the remedial measures that were taken to correct the situation. The chapter also explored physiotherapy education and the changes that affected it in the 90s. Further on the chapter focuses on teaching strategies to adopt in a rapidly changing physiotherapy clinical environment. The chapter also reviewed the common clinical placement problems. The problems identified ranged from inadequate funding, staff shortages, lack of adequate communication between the clinicians' and the physiotherapy academic staff, time pressures, inadequate and unvarying patient case loads and the new development of contracts between purchasers and providers of physiotherapy services. This chapter is followed by the methodology, which will present methods used in the study.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

This chapter will describe the research method used with reference to the research design, research instrument, research setting, sample, data collection and data analysis

3.2 STUDY DESIGN

A descriptive, quantitative design was employed in the study using retrospective data from the physiotherapy curriculum at the Evelyn Hone College and physiotherapy records from Chipata General (rural) and Ndola Central (urban) hospitals from 1995 to 1999. The purpose of the retrospective approach is to uncover facts or information already existing. However, researchers state that retrospective comparisons of data in clinical trials can be risky. The researcher has no assurance that the outcome is not seriously affected by differences in the makeup of the samples and by effects of maturation when samples are compared over varying time sequences (e.g. one or two years). Patients from two separate samples or even the same sample may have been treated by different therapists, different instruments may have been involved in the treatment processes, or different methods of treatment delivery may have succeeded those used earlier (Currier, 1979).

3.3 THE RESEARCH INSTRUMENT

3.3.1 AUDITS

In this study, the reasons for using audits, advantages and disadvantages of audits are briefly discussed. According to Vickers (1995) and Dobson (1995) audits are considered to be a valid form of research that provides valuable data concerning practise. Audits monitor, evaluate the quality of health care delivery and identifies areas where research could be implemented in everyday practice. Constan & Frater (1992) and Kaye (1991) argue that, an audit of treatment records is an acknowledged method of evaluating the efficiency and effectiveness of clinical practice. They further added that audits also encourage the keeping of legible and accurate records. Robson (1996) cites lack of time, manpower and support for audit from practitioners as barriers to undertaking audits. Constan & Frater (1992) further argue that, if audit documentation lacks consistency and accuracy, then effectiveness of the therapy intervention couldn't be evaluated

An audit, according to the United Kingdom' National Heath Service (1989) is the systematic, critical analysis of the quality of medical care, including the procedures used for diagnosis and treatment, use of resources and resulting outcome and the quality of life of the patient (Secretaries of State for Health, 1989). An audit is designed to observe current practice, set mutually agreed standards of care and compare expectations with reality and bring about change.

3.3.2 TYPES OF AUDITS

Kitchen (2000) proposed three types of audits, namely structural audit, process audit and outcome audit.

3.3.3 A Structural Audit

A structural audit is concerned with the amount and type of resources. The audit focuses on where the service is provided, with what facilities and by whom. The resources include the number of therapists, treatment sessions, and patient attendances.

3.3.4 A Process Audit

Process audit relates to the amount and type of health care activities. This type of audit centres on what is done and how it is done. It is normally more relevant to health care professionals. The audit assesses individual actions, identifying deficiencies and providing feedback for correction. It is probably the most threatening form of audit for clinicians as those found wanting could face the sack (Mawsan & Mc Creadie, 1993)

3.3.5 An Outcome Audit

An outcome audit describes what has been done, how appropriate it was and what the effects of treatment or what the results of an intervention are. It may be considered the most important in terms of quality assurance. The first two categories are the most commonly used for evaluation as they are often the most, straight -forward to undertake.

3.3.6 ADVANTAGES OF AUDITS

Kaye (1991) states that audits help monitor and encourage the keeping of legible and accurate records. They guide clinical and managerial decisions on the provision of service for patients, and they could stimulate further investigation. The advantage audits have over interviews or questionnaires is that they establish actual practice. They are a contrast to often retrospective information provided by respondents, which may reflect assumptions, and intentions of good practice (Kaye 1991). Turner et al. (1996) argue that, audits are an alternative to surveys and were a useful method for establishing the type and range of clinical measurements, treatment techniques and equipment. Vickers (1995) suggests that, audits could prove useful in patients' legal claims and malpractice as they provide accurate records.

3.3.7. WEAKNESSES OF AUDITS

Mc Intrye (1995), however, comments that though audits are widespread, there is little evidence of change and improvement due to this process. The author adds that some audit reports simply describe the situation, few note evidence of change and some do not even identify possible remedial actions. Clinicians frequently do not close the loop, they may not implement the changes indicated by audit or may do so under duress. The reasons for this are many and most of the audits are still poorly understood. Difficulties are associated with first undertaking an audit and then implementing its recommendations. Kaye (1991) argues that sometimes audits cannot involve all staff, because their workload is so much. Audits can be so daunting that it

is wise to examine only two or three criteria at a time, though this will not reflect all influences on a situation.

3.4. RESEARCH SETTING

This study was conducted in Zambia which is a land-locked Southern African Country sharing borders with Angola, Botswana, Malawi, Mozambique, Tanzania, Namibia, Democratic Republic of Congo and Zimbabwe. The country has nine (9) provinces, subdivided into 72 Districts. In 1991, Zambia moved to Multi-party Democracy. Many changes have since been registered, such as economic and structural adjustment in order to improve the economy, decentralisation of the health care system and increased health expenditure. According to a government report on the National Poverty Reduction Strategic Framework, sixty-eight percent of the population were poor and that most Zambians were living in households where their basic needs were not being met. Zambia with a total population of 10.2 million (CSO, 2000), acknowledges that the Health sector has always been one of the critical sectors of the country. Like most other developing countries, Zambia has endeavoured to develop a system of health care for her people. At independence, in 1964, the government of Zambia declared free health care for all. The strategy placed emphasis on curative medicine just like the system of medical care originally developed in the industrialised countries. However, the rapid growth in health facilities observed throughout the seventies was followed by a collapse of the system as government funds became increasingly insufficient to maintain the extensive services. As a result, the health status of the people declined. Health facilities experienced chronic

shortages of drugs, many qualified staff left the country for better conditions of service elsewhere and communities' confidence in the health care system was eroded. Free health care was replaced with cost sharing measures in 1992.

The Ministry of Health in Zambia operates under an umbrella body called the Central Body of Health. All health institutions in the country are now independent and have management boards. Health institutions are now classified into four categories namely; (a) Tertiary hospitals, which have specialty facilities, high staff numbers and bed capacity between 700 t0 2000. (b) General hospitals have a bed capacity of 100 to 700. The conditions they cannot handle are referred to tertiary hospitals (c) Clinics deal with out-patients mostly and some have a bed capacity of 50 (d) Community health posts are run by the community and refer some patients to clinics. The audits were carried out at three places namely Evelyn Hone college, Chipata General and Ndola Central Hospitals

3.4.1 Evelyn Hone College (EHC)

The EHC, which houses the physiotherapy training sector, is located in Lusaka Province. Lusaka is the capital of the country and of Lusaka Province. It is Zambia's chief administrative centre and a major financial, transportation and manufacturing hub. The population of Lusaka is 1.4 million (CSO, 2000). The EHC was opened in 1963 and it trains local and international students. It offers programmes in business, media, health

sciences, and applied science studies. The physiotherapy programme was initiated in 1972.

3.4.2 Chipata General Hospital

Chipata General Hospital is a rural provincial hospital in the Eastern Province of Zambia. The Eastern Province is known for it's farming and trading activities. It has a population of 362,132 (CSO, 2000). The hospital has a patient bed capacity of about 500. Its departments consist of medical, surgical, paediatrics, maternity, psychiatry, public health and physiotherapy. The physiotherapy department at the hospital is made up of an office, an orthopaedic workshop and one large room where heat, electrical and exercise treatments are carried out. There are three qualified physiotherapists. The hospital has been a clinical placement centre for physiotherapy students since the 1980s.

3.4.3 Ndola Central Hospital

Ndola Central Hospital is a tertiary hospital on the Copper Belt Province. Ndola city is the capital of the Copper Belt, near the border with the Democratic Republic of Congo. It is an important industrial centre of the Copper Belt region. The city is a leading center of copper and cobalt processing. It has a population of 393,793 (CSO, 2000). The hospital has a patient bed capacity of 800. The hospitals' departments include medical, physiotherapy, maternity, psychiatry, public health and surgical. The physiotherapy department consists of an office, two large rooms, one for

heat and the other for exercise treatments and a hydrotherapy pool. It has eight physiotherapists. It has had links with physiotherapy student supervision since the 1970s.

3.5 SAMPLE

The samples consisted of all patients' records in the physiotherapy departments of Ndola Central and Chipata General Hospitals from January 1995 to 1999. The patient's records audited at Chipata General Hospital were 1547 while those at Ndola Central Hospital were 3121, giving a total of 4,668. The study sample also included the physiotherapy curriculum records at EHC from 1995 to 1995.

3.5.1 PROCEDURE OF DATA COLLECTION

The data was collected by the researcher at three settings namely

3.5.2 At the Evelyn Hone College

A data capture sheet was developed and used to elicit information from the Physiotherapy curriculum (appendix II 129). The variables included

- Course objectives and competencies
- Number of hours in the classroom and clinical area
- Core modules of the curriculum
- Organisation and sequence of subjects
- Teaching methods of the curriculum
- Student assessment methods
- Number of terms.

3.5.3 At Chipata and Ndola Central Hospitals

- The two hospital facilities were conveniently selected out of twenty-six facilities where students undertake their clinical placements.
- An audit data capture sheet was developed and used to record the patients' demographic data which included the patients' age, primary diagnosis and gender.
- Information on clinical diagnoses was captured from surgical, orthopaedic, medical, neurological, paediatric, gynaecology, intensive care units and the physiotherapy out patient departments of the two hospitals. This information was then classified into various categories, (see appendix III on page 130).
- The most used treatment procedures used in the physiotherapy departments at the two hospitals were also recorded. These included therapeutic exercises, chest therapy, massage and electro-physical agents.
- The number of patients' attendances in the two departments were noted
- All physiotherapy patient records at the two hospitals from 1995 to 1999 were recorded on the two data capture sheets.

3.6 PILOTING

Two instruments were used in this study. (a) The data capture sheet for auditing physiotherapy patient records and piloted at the University Teaching Hospital (UTH), physiotherapy department during the Bachelor of Science Physiotherapy Honours Project (Moyo, 2000) was used. (b) The University of

the Western Cape physiotherapy curriculum calendar for 1998 and 1999 were used to validate the data capture sheet that was used to collect information from the EHC Physiotherapy Curriculum. The physiotherapy classroom and clinical hours, competency and module objectives at UWC were compared to the EHC physiotherapy curriculum and helped in the design of the data capture for the EHC physiotherapy curriculum.

3.7 DATA ANALYSIS

Data collected was subjected to both descriptive and inferential statistical analysis with the help of a statistician. The computer-based statistical package for social scientists was used for the analysis of the data. Results were analysed using frequency distributions of core subjects of the EHC curriculum and patient diagnoses and treatment procedures at Chipata and Ndola hospitals. Comparisons of data between the three research settings provided additional information concerning variation in approach to treatments procedures used and time allocated to the core subjects of the EHC curriculum. The frequency of the treatment procedures and clinical diagnostic conditions at the two hospitals were compared to the time allocated to the physiotherapy theoretical modules at the EHC. The results were presented in the form of percentages, graphs, frequency tables and histograms.

3.8. ETHICAL CONSIDERATION

Approval by the Senate of the University of the Western Cape was granted before the study commenced. Letters of introduction were sent to the Principal of Evelyn Hone College and Executive Directors of Chipata General and

Ndola Central Hospital Management Boards to seek permission for data collection and permission was granted (appendices VIII, XIX, X Pages 136 to 138). The purpose for the study was stated and confidentiality was maintained and anonymity was ensured.

3.9 SUMMARY OF CHAPTER

In this chapter, the methodology of the study in terms of the research design, the research setting and sample, methods of data collection, analysis and ethical considerations were presented. This study adopted a descriptive quantitative design. The two research setting sites were conveniently selected to represent both rural and urban hospitals where students undertake their clinical placements. The focus of the study was to explore the synchronisation between the physiotherapy classroom theory and the hospital practical skills in Zambia.

The instrument used for data collection were audit capture sheets. The audit capture sheets comprised core subjects, module hours, teaching methods from the Evelyn Hone College physiotherapy curriculum and demographic data, patient clinical diagnoses and treatment procedures from the two hospitals. Audits help monitor and encourage the keeping of legible and accurate records. They guide clinical and managerial decision on the provision of service for patients, and they could stimulate further investigation any area identified. Quantitative data was subjected to descriptive and inferential statistics.

CHAPTER 4

RESULTS

4.1 INTRODUCTION

In this chapter the results of the study are presented. The descriptive statistical results of the physiotherapy curriculum at EHC are presented first, then the results of the audits at Chipata General and Ndola Central hospitals follow later. Lastly comparisons of the three research settings using the inferential statistical analysis of chi – squares are made.

4.2 THE PHYSIOTHERAPY CURRICULUM AT EHC

The physiotherapy curriculum at the Evelyn Hone College is a three-year full - time programme. The curriculum has nine terms stretching over a three-year period resulting in three terms per year (TEVETA, 1999). A term consists of thirteen weeks. Each first year enrolment in physiotherapy takes twenty students because of limited space and other facilities. The physiotherapy curriculum at the EHC is 61.6% theory and 38.4% clinical practice. The whole curriculum accounts for 4,478 hours (see appendix VII, page 135). During the period between 1995 and 1999 the EHC physiotherapy curriculum was revised twice, in 1992 and 1997

4.2.1 THE OBJECTIVES OF THE CURRICULUM AT EHC

The objectives of the curriculum at EHC are stated as -

- To give students a clear concept of the responsibilities of physiotherapists towards patients, the nation and other members of the professions allied to medicine.
- To provide students with adequate theoretical knowledge and practical skills so that they can discharge their professional duties effectively.
- To link theoretical knowledge and practical skills by giving students experiences through their own body, using patients, simulations and by providing sufficient clinical practice under supervision (TEVETA, 1999).

4.2.2 FIRST YEAR

The first year of the programme is based at EHC. During this time the focus is on the theoretical base of the physiotherapy education. Students are introduced to basic sciences, professional subjects and basic therapeutic skills. The modules covered in this period include anatomy, physiology, physics, and principles of physiotherapy, ethics, psychology, sociology and mathematics for the first eighteen months. There is progression of learning involving the cognitive, affective and psychomotor domains. There are external examinations in anatomy and physiology and internal examinations in the other basic science modules after eighteen months.

4.2.3 SECOND YEAR

In the second year the course involves a mix of college-based study and the initial stages of clinical practice at the University Teaching Hospital (UTH).

Clinical involvement starts as observation periods, where students are given opportunities to observe third year students treating patients in various therapeutic situations. Student observation periods include wards, out patient departments, day hospitals and schools for the physically handicapped children. Eventually students are given the opportunity to take part in clinical practical sessions, attend tutorials and practical demonstrations. The presence of students in departments is meant to help them blend the knowledge and skills gained in the first year of the course. When the medical and surgical conditions are covered theoretically, half way in the second term of the second year, students go for their first full internship in clinical placement for three months to extend their clinical learning experiences, which may not be available locally at (UTH). The total duration for the whole clinical placement is six months, which is divided into two parts of three months each. Students on clinical placement go to both rural and urban hospitals, so that they are exposed to a variety and broad range of conditions. Clinical supervisors and physiotherapy teachers monitor student performance and progress during clinical placements.

4.2.4 THIRD YEAR

In the third year, the physiotherapy course is mostly clinically oriented. Students continue with hospital practical sessions. They wind up their theory in surgical, medical, rehabilitation, physical examination and professional orientation. Students take their external examinations in surgical and medical conditions in the second term of the third year, then the second full internship clinical placement follows for another three months, until the end of the

second term of the third year, when students start preparing for their final practical examinations. The research project component of the curriculum is a small part in the rehabilitation studies module and it was introduced in 1998. At that time there was inadequate academic staff with research skills to supervise projects effectively. The physiotherapy curriculum at EHC emphasises training of students in the assessment of patient problems. Qualified physiotherapists teach the curriculum for the major part of the course with input of varying amounts from other professionals allied to medicine. The teaching methods at EHC suggest that acquisition of technical skills is primary. They range from lectures, demonstrations, case studies, group discussions and role-play. The didactic teaching methods entail students spending more time in the classroom. Like wise, lecturers are regarded as givers of information and have to spend long hours in preparation to meet student needs. The typical model of instruction is where the teachers explain, demonstrate, then students practise, first with supervision, then without supervision and students are finally examined on their techniques. Students are assessed using both formative and summative techniques (TEVETA, 1999).

Table 1 HIERARCHICAL ORDER OF THE CORE MODULES OF THE PHYSIOTHERAPY CURRICULUM AT EHC

Modules	Hours	Percentage
Clinical practice	1710	38.40%
Exercise therapy	382	8.58%
Medical Conditions	208	4.67%
Surgical Conditions	195	4.38%
Rehabilitation	195	4.38%
Electrotherapy	182	4.08%
Physical examination	169	3.79%
Clinical demonstration	140	3.14%
Massage	130	2.92%

N = 4452

Table 1 shows a summary of the hierarchical order of the core modules of the physiotherapy curriculum at EHC 1995 t0 1999.

4.2.5 CORE MODULES OF THE CURRICULUM

The core subjects of the curriculum consist of medical conditions, surgical conditions, rehabilitation, electrotherapy & thermo-therapy, exercise therapy, physical examination, clinical demonstration, clinical practice and massage. The core subjects have a total of 3,311 hours, which accounts for 74.34% of the total physiotherapy curriculum while the rest consists of 25.66%.

4.2.5.1 MEDICAL CONDITIONS

Medical conditions incorporate neurological, paediatrics, chest and cardiological conditions. The objective of the module is to help students to understand medical conditions and their related pathology. The module has 208 hours, which represents 4.67% of the total curriculum. The module starts in the second term of the second year and finishes in the second term of the third year (see appendix VII, p.135).

4.2.5.2 SURGICAL CONDITIONS

Surgical conditions encompass surgery, orthopaedics, burns, obstetrics and gynaecological disorders. The module has 195 hours, which accounts for 4.38% of the total curriculum. The objective of the module is to help students understand surgical conditions and their pathology. The module starts in the second term of the second year up to the second term of the third year (see appendix VII, p.135).

4.2.5.3 REHABILITATION

The rehabilitation module has 195 hours making up 4.38% of the total curriculum. The objective of the module is to equip students with the knowledge and skills to provide comprehensive professional rehabilitation and identify the potential of individuals. The module covers principles of rehabilitation, concepts of primary health care, disability and rehabilitation services, low cost aids, applied ergonomics, basic research and project formulation. The module starts in the first term of the second year to the second term of the third year (appendix VII, 135).

4.2.5.4 ELECTROTHERAPY

Electrotherapy consists of 182 hours, which is 4.08 % of the whole physiotherapy curriculum. The objective in this module is to equip students with the appropriate electrotherapy and thermotherapy techniques in the treatment of patients. The module starts in the first term of the first year up to the second term of the second year. The module covers physics, faradism, ultrasounds, interferential, short wave diathermy, microwave, ultraviolet, infrared, wax-bath, hot packs and cryotherapy (see appendix VII, page 135).

.4.2.5.5 EXERCISE THERAPY

Exercise therapy has 382 hours making up 8.58% of the whole curriculum. Students are expected to apply appropriate exercise therapeutic techniques in the treatment and rehabilitation of patients. The module starts in the first term of the first year up to the second term of the second year. The module covers mechanical principles, classification of exercises, types of muscle action, mobility, muscle strength and endurance, co-ordination and balance, traction and translation of peripheral joints, relaxation and neuro-development treatment, (Bobath).

4.2.5.6 PHYSICAL EXAMINATION

The physical examination module has 169 hours, representing 3.79% of the whole curriculum. Students are required to show proficiency in the identification of patients' functional problems and to find the optimal physiotherapy intervention. The module starts in the third term of the first year and ends in the second term of the third year.

4.2.5.7. CLINICAL DEMONSTRATION

Clinical demonstration has 140 hours, which represents 3.14% of the whole curriculum. The objective of the module is to help students gain experience in presenting and discussing patient cases in a professional manner. The module also prepares students for their final practical examinations. The module starts in the third term of the second year and ends in the third term of the third year (appendix VII, page 135).

4.2.5.8 CLINICAL PRACTICE

The clinical practice module has 1,710 hours, representing 38.40% of the whole curriculum. The chief objective in the clinical practice module is to equip students with the appropriate techniques in the treatment and rehabilitation of the patients. The module starts in the second term of the second year and ends in the third term of the third year. The module is introduced at the same time with clinical demonstration. Clinical practice is compulsory and students are required to be exposed to at least 85% of the conditions taught in the classroom and they must have covered 85% of prescribed clinical hours before they can be deemed eligible for their final practical examinations (see appendix VII, page 135).

4.2.5.9 MASSAGE

Massage has 130 classroom contact hours, representing 2.92% of the whole physiotherapy curriculum. The massage module objective is to equip students with the appropriate techniques in the treatment of the patients. The massage

module starts in the second term of the first year and finishes in the second term of the second year.

4.3 DEMOGRAPHIC DATA OF PATIENTS WHO ATTENDED PHYSIOTHERAPY SERVICES AT CGH FROM 1995 TO 1999

CATEGORY	1995	1996	1997	1998	1999		%
FEMALE	121	118	121	210	108	678	43.8
MALE	196	175	156	231	111	869	56.1
					Total	1547	100

Table 2 shows that 1547 patients' records were audited in the physiotherapy department at Chipata General Hospital (CGH) from January 1995 to December 1999. The patients consisted of 869 males (56.1%) while the females were 678 (43.8%). The patients' ages were excluded in this study because the records were inconsistent most of the times and generally classified patients as either male or female. The distribution of patients at (CGH) was from the following wings orthopaedic 401, surgery 321, neurology 226, cardiovascular 223, medicine 176, paediatrics 133, and arthritis conditions 129.

4.4 CONDITIONS AT CHIPATA GENERAL HOSPITAL FROM 1995 TO 1999

CONDITIONS	1995	1996	1997	1998	1999	TOTAL	%
SURGICAL	170	134	185	218	144	851	51.1%
MEDICAL	142	222	207	225	159	814	48.8%
OTHERS							.1%
				Total		1665	100

Table 3 above shows that from 1995 to 1999 surgical conditions (orthopaedics, degenerative and congenital deformities) were 851(51.1%), medical conditions (respiratory, cardiovascular, paediatrics and neurology) were 814 (48.8%) and the others category made up .1% at Chipata General Hospital.

4.4.1 FREQUENCY DISTRIBUTION OF SURGICAL CONDITIONS AT CGH

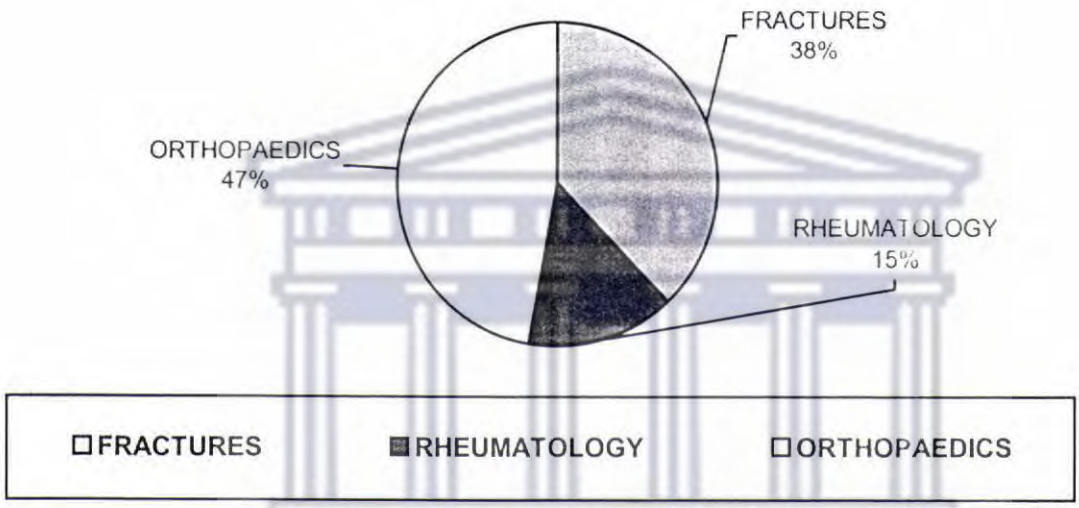

Figure 1. Shows the surgical category (orthopaedics, degenerative and congenital deformities) with its subdivisions of fractures 321 (38%), most fractures were those of the elbow 12% and femur 16%. Orthopaedic cases were 401 (47%). In this subdivision backache represented 21% and soft tissue injuries constituted 64%. The rheumatology subdivision had 129 cases (15%) with poly-arthritis of body joints representing 33%.

4.4.2 FREQUENCY DISTRIBUTION OF MEDICAL CONDITIONS AT CGH FROM 1995 TO 1999

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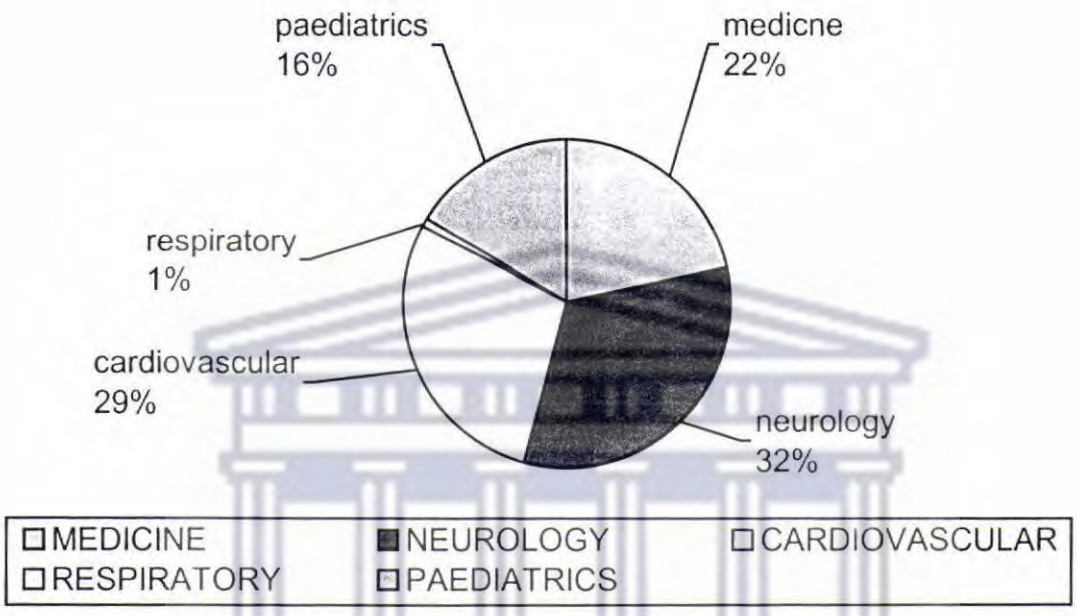


Figure 2. Shows the medical conditions categories with its subdivisions of neurology with 226 cases (32%) and Bell's palsy making 60% of the cases. The cardiovascular subdivision had 232 cases (29%) with disorders of cerebral vascular accidents representing 75%. The medicine subdivision constituted 22% with disorders of meningitis representing 6.2% and cerebral malaria 5.6% respectively. The paediatrics subdivision had 133 cases with disorders of cerebral palsy having 88%. Lastly the respiratory subdivision had 7 cases representing 1%.

4.4.3. PHYSIOTHERAPY TREATMENT TECHNIQUES AT CHIPATA GENERAL HOSPITAL

TREATMENT PROCEDURES	1995	1996	1997	1998	1999	TOTAL	%
EXERCISE THERAPY	293	258	273	462	273	1559	52%
ELECTROTHERAPY	43	55	72	246	137	510	17%
MASSAGE	74	78	87	194	100	533	18%
REHABILITATION	87	100	88	56	51	382	13%
						2984	100

Table 4 shows the treatment category where therapeutic exercises led with 52%, massage came second with 18%, electrotherapy follows with 17% and rehabilitation was last with 13%.

TREATMENT PROCEDURES AT CHIPATA GENERAL HOSPITAL

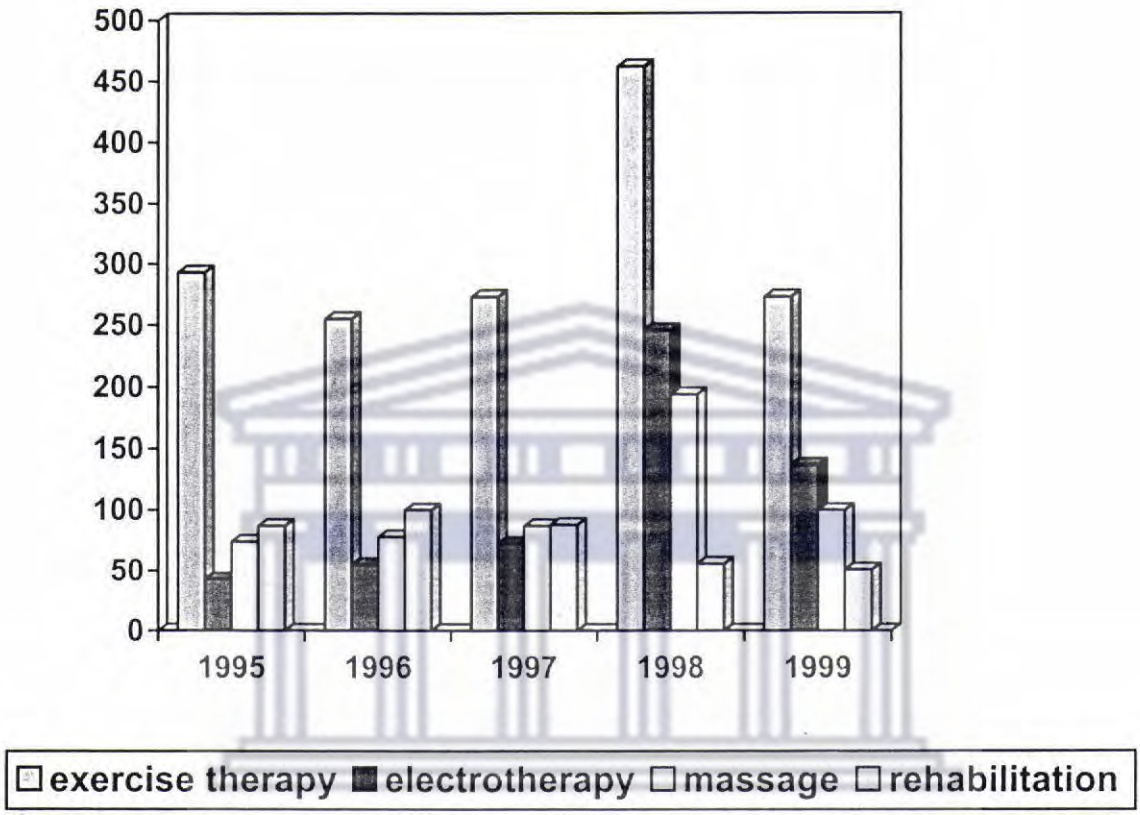


Figure 3 is a graphic representation of table 4. It shows how the treatment procedures fared from 1995 to 1999 at Chipata General Hospital. Exercises and electrotherapy were the most used treatment techniques during the five year span at CGH.

4.4.4. FREQUENCY USE OF THE EXERCISE THERAPY CATEGORY AT CGH FROM 1995 TO 1999

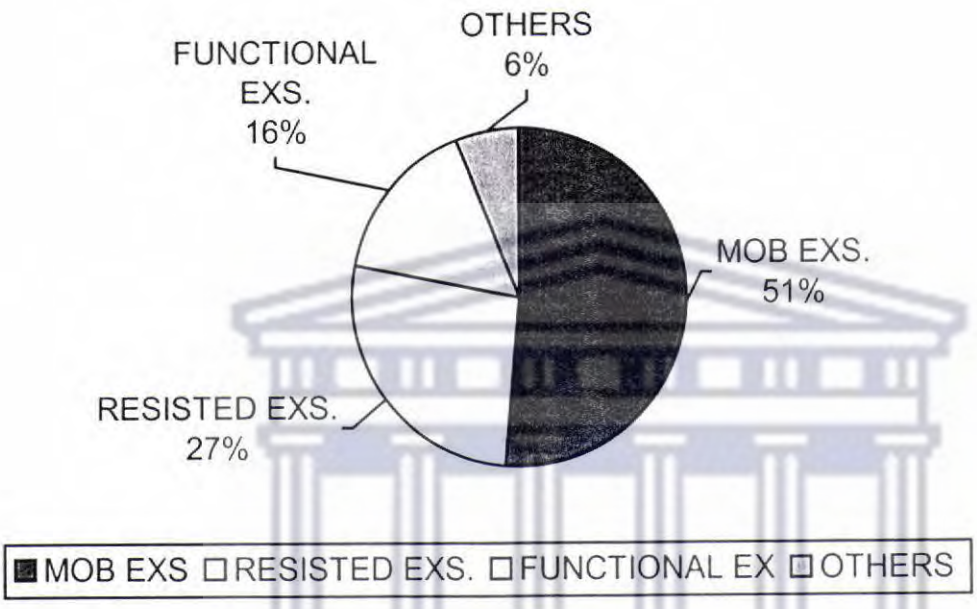


Figure 4 shows the subdivisions of the therapeutic exercise category with mobilizing exercises (exercises aimed at moving joints through their range of motion) leading with 798 (51%). Progressive resisted exercises (exercises using manual & graded weights) came second with a total of 418 (27%). Functional exercises (exercises aimed at promoting activities of daily life and the type of work a patient engages in) had 246 (16%) while the other subdivision consisting of traction had 95 representing 6%.

4.4.5 FREQUENCY DISTRIBUTION OF ELECTROTHERAPY MODALITIES AT CGH FROM 1995 TO 1999

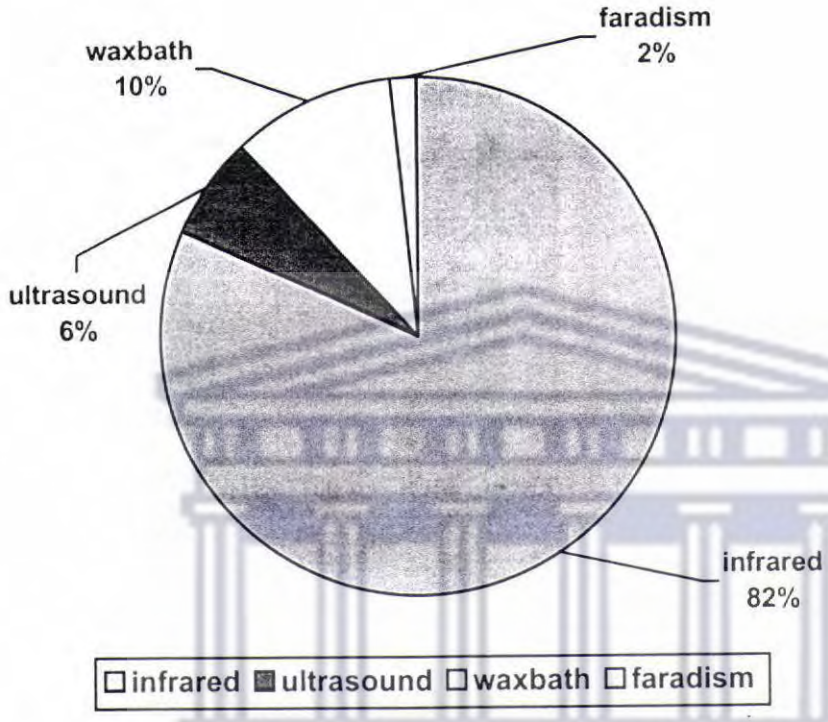


Figure 5 shows the subdivisions of the electrotherapy category with the infrared frequency of 416 (82%); wax-bath had 53 (10%). Ultrasound had 33 (6%) and faradism had 8 (2%). These were all the modalities available at CGH.

4.5 DEMOGRAPHIC DATA OF PATIENTS WHO ATTENDED PHYSIOTHERAPY SERVICES AT NCH FROM 1995 TO 1999.

CATEGORY	1995	1996	1997	1998	1999		%
FEMALE	141	330	377	254	344	1446	46%
MALE	190	433	429	356	267	1675	54%
						3121	100

Table 5 shows the patients records audited in the physiotherapy department at NCH from January 1995 to December 1999 were 3121. The patients consisted of 1675 males (54%) while the females were 1446 (46%). The patients at NCH physiotherapy department were most of the times only classified as male or female just like information on age was incomplete at Chipata General Hospital. The distribution of patients at Ndola Central Hospital were from the following wings, orthopaedics 941, surgery 638, rheumatoid arthritis 506, cardiovascular 432, neurology 260, medicine 63, obstetrics & gynaecology 16 and paediatrics 6.

4.6. CONDITIONS AT NDOLA CENTRAL HOSPITAL FROM 1995 TO 1999

CONDITIONS	1995	1996	1997	1998	1999	TOTAL	%
SURGICAL	344	384	412	482	479	2101	67%
MEDICAL	232	232	242	211	123	1040	33%
					Total	3141	100

Table 6 shows that from 1995 to 1999 surgical conditions at Ndola Central Hospital were 2101 representing 67% while medical conditions were 1040% constituting 33%.

4.6 1. FREQUENCY DISTRIBUTION OF SURGICAL CONDITIONS AT NCH FROM 1995 TO 1999

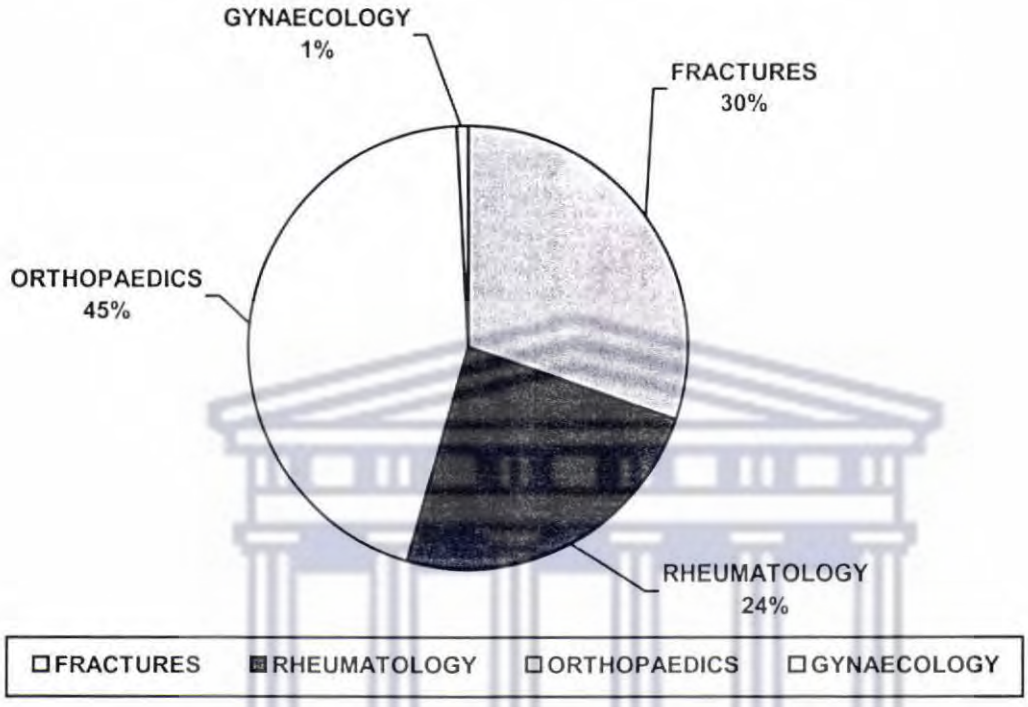


Figure 6 shows the surgical category with its subdivisions of orthopaedics representing 941 cases (45%) with disorders of soft tissues and backache accounting for 47% and 26% respectively. The fracture subdivision had 638 cases (30%), high fracture disorders were those of the pelvis 10.2%, femur 10% and humerus 8.3%. The rheumatology subdivision had 506 cases (24%) with cervical spondylosis disorders representing 42%. The obstetrics and gynaecology cases were 16 representing 1% of surgical cases.

4.6.2. FREQUENCY DISTRIBUTION OF MEDICAL CONDITIONS AT NCH FROM 1995 TO 1999

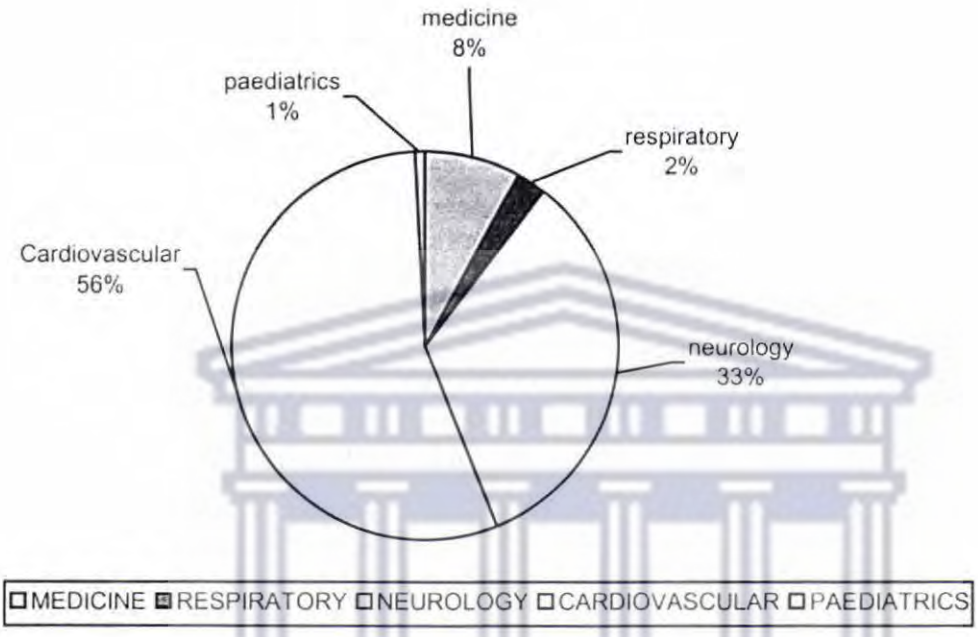
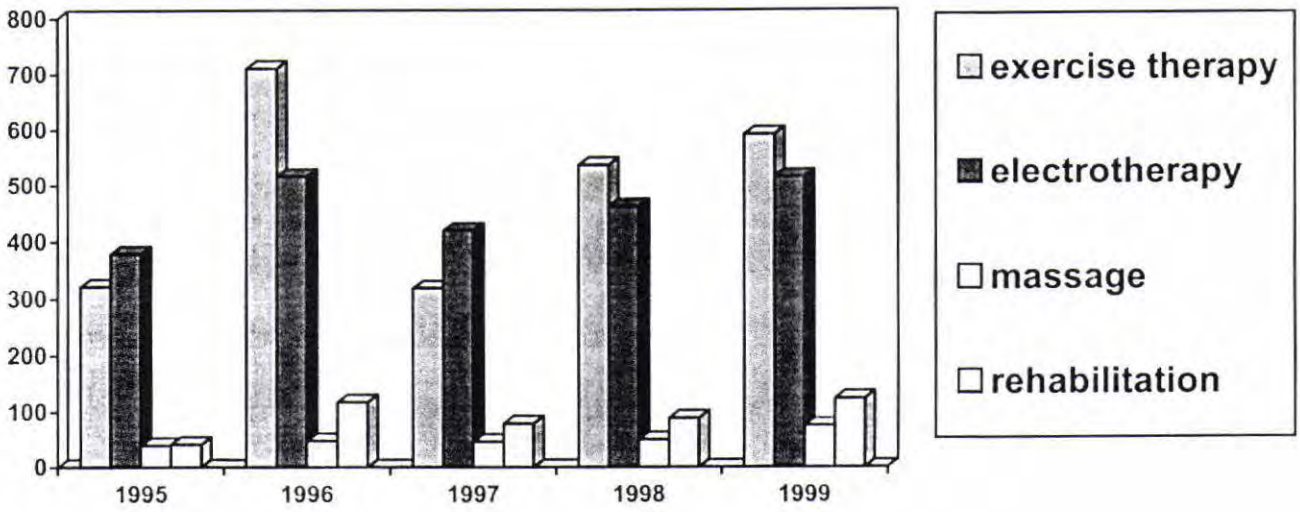


Figure 7 shows the medical conditions category with its subdivisions. The cardiovascular subdivision had a frequency of 432 cases (56%), cerebral vascular accidents ranked high in this subdivision with 83%. The neurology subdivision had 260 cases (33%), sciatica and Bells palsy ranked high in the subdivision with 30% and 20% respectively. The medicine subdivision had 63 cases (8%) with meningitis as the highest disorder with 33%. The respiratory subdivision had 19 cases (2%) and the least subdivision was paediatrics with 6 cases accounting for 1%.

4.6.3 PHYSIOTHERAPY TREATMENT TECHNIQUES AT NCH FROM 1995 TO 1999

TREATMENT PROCEDURES	1995	1996	1997	1998	1999	TOTAL	%
EXERCISE THERAPY	322	710	319	538	592	2481	45%
ELECTROTHERAPY	379	517	420	463	516	2295	42%
MASSAGE	39	48	46	50	75	258	5%
REHABILITATION	41	117	79	89	123	449	8%
					Total	5483	100

Table 7 shows the treatment category where therapeutic exercises lead with 45%; electro-therapy came second with 42%. Rehabilitation (physiotherapy intervention in the community) follows with 8% and massage was last with 5%. Figure 8 below shows by means of a graph how that exercises and electrotherapy featured prominently at NCH from 1995 to 1999.



4.6.4. FREQUENCY DISTRIBUTION OF EXERCISE THERAPY AT NCH FROM 1995 TO 1999.

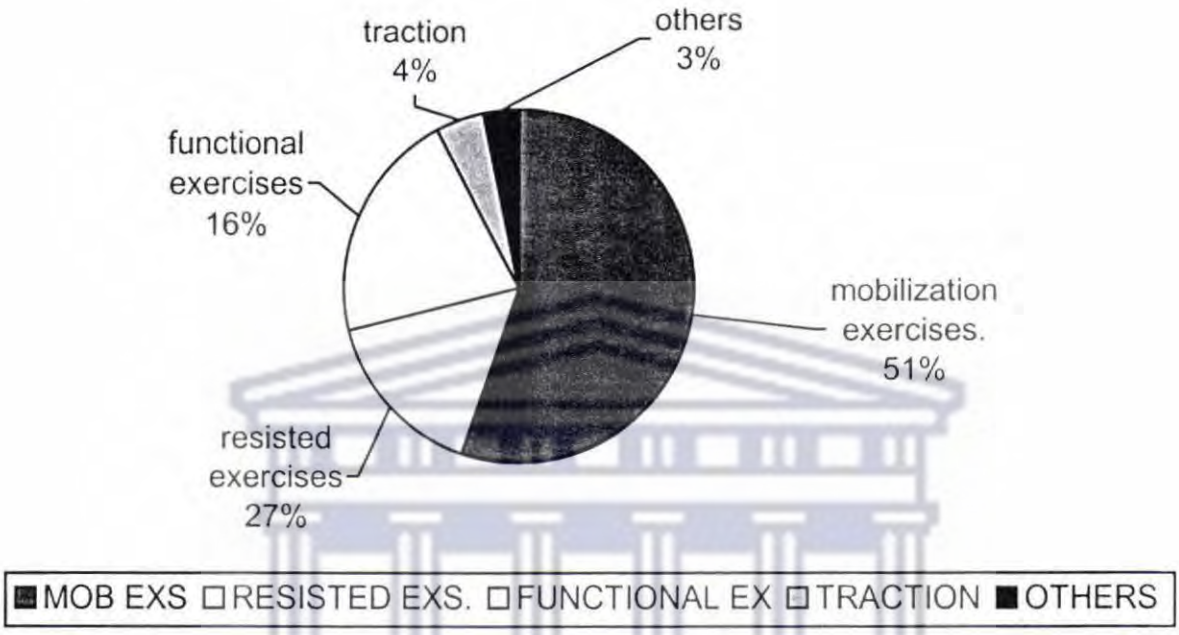


Figure 9 shows the subdivisions of the therapeutic exercise category with mobilizing exercises (exercises aimed at moving joints through their range of motion) leading with a frequency of 1373 (51%). Progressive resisted exercises (exercises using graded weights) came second with a frequency of 388 (27%). Functional exercises (exercises aimed at promoting activities of daily life and the type of work a patient engages in) had a frequency of 529 (16%). Traction had a frequency of 108 (4%) while the others subdivision using hydrotherapy had 83 (3%).

4.6.5. FREQUENCY DISTRIBUTION OF ELECTROTHERAPY AT NCH FROM 1995 TO 1999

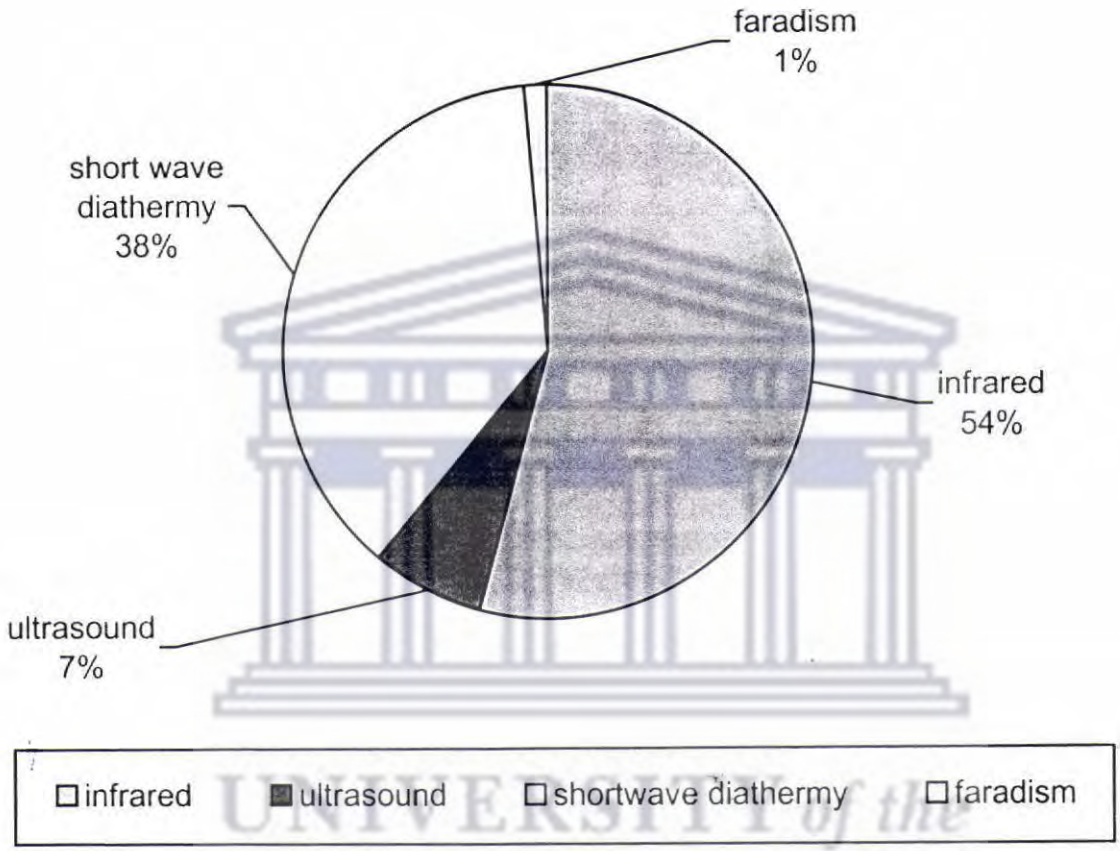


Figure 10 shows the subdivisions of the electrotherapy category at Ndola Central Hospital with infrared having a frequency of 1245 (54%). Short wave diathermy had a frequency of 863 (38%). Ultrasound had a frequency of 157(7%) and faradism 30 (2%). These were the only modalities at NCH

(Time spent on classroom based teaching) Physiotherapy curriculum Evely Hone College			**Clinical practice** Chipata General Hospital 1995-1999, conditions & treatment		**Clinical practice** Ndola Central Hospital 1995 to 1999 conditions & treatment	
Conditions & Treatment techniques	Hours	%	Frequency	%	Frequency	%
Exercise therapy	382	8.53%	1559	33.5%	2481	29.6%
Medical conditions	208	4.64%	814	17.5%	780	9.32%
Surgical conditions	195	4.35%	851	18.3%	2101	25.1%
Rehabilitation	195	4.35%	382	8.21%	449	5.3%
Electrotherapy	182	4.06%	510	10.9%	2295	27.4%
Massage	130	2.9%	533	11.46%	255	3.0%
Total		***		100		100

Table 8 shows the percentages of the physiotherapy curriculum hours at EHC in relation to the two hospitals where physiotherapy students undertake their clinical placements. *** This column excludes percentages for clinical practice

38.1, physical examination 3.77 and clinical demonstration 3.21. The total should be 100.

4.7 COMPARISON OF CHI-SQUARE TESTS ON THE RESULTS OF THE PHYSIOTHERAPY CURRICULUM AT EHC, CONDITIONS AND TREATMENT TECHNIQUES AT CGH AND NCH

Comparison	chi-square	DF	p
EHC Curriculum, Chipata, Ndola	1218.553	10	0.001
EHC Curriculum versus Chipata	71.397	5	0.001
EHC Curriculum versus Ndola	471.893	5	0.001
Chipata versus Ndola	1002.323	5	0.001

(P<0.001)

Table 9 above shows a summary of chi-squares conducted on the results of the physiotherapy curriculum at EHC, Chipata General and Ndola Central Hospitals. The chi-square test conducted on the results of the three research centres shows a significant value of p<0.001, which is a significant difference between classroom-based teaching at EHC and the two hospitals respectively. Additionally, the learning opportunities for students between Chipata General Hospital and Ndola Central Hospital showed a significant difference of p<0.001 because of the variation in the number of patients and equipment each hospital had.

4.8 FREQUENCY OF CONDITIONS, TREATMENT TECHNIQUES AND ATTENDANCE OF PATIENTS AT CGH AND NCH PHYSIOTHERAPY DEPARTMENTS FROM 1995 TO 1999

NDOLA (urban)		CHIPATA (Rural)
No of Patients	3121	1547
Surgical conditions	25.1%	18.3%
Medical conditions	9.32%	17.5%
Exercise therapy	29.6%	33.5%
Electrotherapy	27.4%	10.9%
Rehabilitation	5.3%	8.21%
Massage	3.0%	11.4%
Others	0.3%	0.2%

Table 10, above shows the differences between the patients who attended physiotherapy services, the conditions and treatment techniques at NCH and CGH. Ndola Central Hospital had higher numbers of patients and surgical conditions. Additionally NCH had a high use of therapeutic exercises and electrotherapy modalities while massage recorded a low use. At Chipata General hospital there was a high number of surgical conditions, high use of therapeutic exercises, rehabilitation skills and massage. The comparison between Chipata General Hospital and Ndola Central Hospital stress the differences between rural and urban physiotherapy clinical settings. Data of this nature could be helpful to both the students and academic staff when planning clinical placements.

4.9 SUMMARY OF THE CHAPTER

The physiotherapy curriculum at EHC is a three years programme. The curriculum is 61.2% theory and 38.1% practical. Its total hours are 4478. During the period from 1995 to 1999, there were two revisions. The curriculum aims and objectives endeavour to achieve technical competence among physiotherapy students. The main method of instruction is didactic. The core modules of the EHC curriculum are medical conditions, surgical conditions, rehabilitation studies, clinical demonstration, clinical practice and massage. The total hours for the core modules are 3311 accounting for 73.9% of the whole curriculum. The curriculum assessment methods are formative and summative.

The audit results from the physiotherapy department of CGH from 1995 to 1999 showed that patients consisted of 678 females (44%) and 869 males (56%). Surgical conditions were the most common form of conditions seen. There were 851 surgical cases (51%). The common surgical cases were musculoskeletal with a frequency of 321 (38%). Fractures of the femur alone represented 16%, orthopaedics cases were 401(47%) and rheumatology cases were 129 (15%). The medical categories consisted of paediatrics 133 cases (88%) with cases of meningitis representing 6.2% and cerebral malaria 5.6% respectively. Respiratory conditions had 7 cases (1%). The treatment procedures at CGH consisted of mostly exercises with a frequency of 1559 (52%). The electrotherapy modality had a frequency of 510 (17%) and infrared was the most used heat treatment with 82%. The massage modality

had a frequency of 533 (18%). The rehabilitation technique had a frequency of 382 (13%).

The audit results from the physiotherapy department of NCH from 1995 to 1999 indicated that patients comprised 1675 males (54%) and 1446 females (46%). Surgical conditions were the most frequent seen conditions with a frequency of 2101 (67%). Musculoskeletal cases were 638 accounting for 30% of the surgical conditions. Fractures of the pelvis represented 10.2% while fractures of the femur had 10%. In orthopaedics there were 941 cases (45%) and soft tissue injuries in this division ranked high with 47%. Obstetrics and gynaecology cases were 10 (1%). Medical condition cases were 1040 constituting 33% of the conditions seen at NCH. The common medical conditions were cardiovascular with a frequency of 432 cases (56%) and cardiovascular accidents topped the list with 83%. Neurological cases were 260 (33%) with sciatica representing 30% and Bells palsy 20% of the cases. The medicine subdivision had 63 cases (8%) with meningitis as the common case with 33%. Respiratory cases were 19 (2%). Paediatrics had 6 cases accounting for 1%. The treatment procedures at NCH consisted of therapeutic exercises with a frequency of 2481 (45%). The electrotherapy treatment modality had a frequency of 2295 (42%) and infrared was the most common heat treatment used with 54%. The massage modality had a frequency of 218 constituting 5% while rehabilitation techniques had 149 (8%). The chi-square test conducted on the results of the physiotherapy curriculum at EHC, CGH and NCH showed a significant value of $p<0.001$. This suggests that there was a significant difference between the classroom-based teaching at EHC and

the clinical practical skills at CGH and NCH. Additionally the chi – square test conducted on the results between Chipata General Hospital and Ndola Central Hospital showed a significant difference of $p<0.001$ stressing the differences in the student learning opportunities between rural and urban physiotherapy clinical settings.

CHAPTER 5

DISCUSSION

5.1 INTRODUCTION

The purpose of this study was to establish whether there was a match between the physiotherapy classroom theory at EHC and clinical practical skill required at Chipata General and Ndola Central Hospitals from 1995 to 1999. This chapter will discuss the results in relation to the literature used in this study.

The results of this study show that there was a mismatch between the physiotherapy classroom theory at EHC and clinical practical techniques used at CGH and NCH over the five years span (1995 to 1999) (table 8, page 78). The percentages of therapeutic exercises at Chipata and Ndola hospitals were three times more than those for the curriculum at EHC. The frequency percentages of medical conditions were three times more at CGH and twice as much at NCH when compared to the percentages of the curriculum hours at EHC. The frequency percentages of surgical conditions were three times more at CGH and four times more at NCH when compared to the curriculum at Evelyn Hone College. The percentages of rehabilitation treatment techniques were twice more at CGH and were high by one percent at NCH when compared to the EHC curriculum hours. The frequency percentages of the electrotherapy treatment techniques were six times more at NCH and two times high at CGH when compared to the percentages of curriculum hours at

EHC. The frequency percentages of the massage treatment modality were three times more at CGH while at NCH they were at par with those at EHC (table 8 page 78). The hierarchical order of the core subjects at EHC from 1995 to 1999 showed increased percentage hours for medical conditions, therapeutic exercises and clinical practice while massage had low percentage hours (appendix VII page 134). However, the hierarchical order at the two hospitals was different with high frequency percentages for surgical conditions and high frequency percentages for treatment modalities like electrotherapy, rehabilitation and therapeutic exercises (table 1 page 59).

The interpretation of the results of this study should be treated with caution, because of the study limitations and the use of only two clinical settings in the study out of twenty-six clinical facilities used for student clinical placements. Definitive conclusions about the match between the physiotherapy classroom theory at EHC and the clinical practical skill from 1995 to 1999 can only be drawn by another study that would sample a wider number of both rural and urban clinical placement sites in Zambia. A broader sample could perhaps establish a clearer picture of the most common conditions seen and the treatment techniques used in the twenty-six clinical facilities used by physiotherapy students on clinical placements. The twenty-six clinical settings are in different places of the nine provinces of Zambia and are therefore very likely to present unique medical and surgical problems depending on many factors like the geographical positions of the area, activities people are engaged in and the availability of the physiotherapy equipment. The results this study yielded from CGH and NCH physiotherapy departments from 1995

to 1999 could provide a viable reference in the review process of the EHC physiotherapy curriculum when another study with a much wider sample of the twenty-six clinical settings in the Zambia is taken. Wells & Lessard (1986) argue that documentation of students' clinical placement experiences is a very important exercise as it shows curriculum areas that need emphasis and those that need to be altered. The two authors further add that documentation of students' clinical placement experiences may be one way to maintain integration of theory and practice because it identifies the critical knowledge base necessary for physiotherapy students and the changes occurring in the clinical setting. The results derived from CGH and NCH physiotherapy departments from 1995 to 1999 show valuable relationships between the rural and urban physiotherapy clinical facilities. The results showed the following trends of pathologies and treatment procedures.

5.1.1 TRENDS OF PATHOLOGIES AT CGH AND NCH

The physiotherapy departments at CGH and NCH showed high frequencies of femur fractures, Bell's palsy, cerebral vascular accidents and cerebral meningitis while respiratory, obstetrics and gynaecological conditions were low at the two hospitals. The femur fractures were mostly as a result of trauma, Bells palsy resulting from ear infections and Aids-related cases. Cardiovascular accidents may have been precipitated by most likely poorly controlled and untreatable high blood pressure, hereditary causes, a high fatty diet and old age. Cerebral meningitis was common probably because of the high prevalence of malaria in Zambia. The high frequency of femur fractures in this study is consistent with observations by Wells & Lessard (1986), Voss

(1982) and Moyo (2000) that musculoskeletal pathologies constituted a large proportion of the pathologies seen by physiotherapists. The low frequencies of respiratory conditions registered at the two hospitals in this study was also consistent with the study by Moyo (2000) while Wells & Lessard (1986)'s survey of student clinical experiences in Canada showed that respiratory conditions featured prominently may be the climate could have played a role.

5.1.2 TREATMENT MODALITIES AT CGH AND NCH

The frequent use of **therapeutic exercises** at the two hospitals appears to indicate that there was a great dependence on the use of hands. The use of hands fulfils the motto of the profession where the core practice of physiotherapy emphasises the use of hands. The percentage hours for therapeutic exercises at EHC and the frequency percentage use of exercises at the two hospitals were all high (table 8 page 78). The pilot study analysing clinical experiences of physiotherapy students in Canadian Universities (Wells & Lessad, 1993) and the audit of the University Teaching Hospital in Zambia (Moyo, 2000) also observed a high use of therapeutic exercises.

5.1.2.1 ELECTROTHERAPY

The use of the electrotherapy modalities at CGH and NCH physiotherapy departments from 1995 to 1999 was high (table 10 page 80). The use of electrotherapy at CGH and NCH was limited to five modalities namely, faradism, infrared, ultrasound, wax bath and short-wave diathermy with infrared recording a higher score and faradism the lowest. The EHC electrotherapy curriculum also covers modalities like interferential, microwave,

ultraviolet and cryotherapy. The repeated use of infrared at the two hospitals could imply that it was the most readily available heat treatment modality which therapists and students used. It could be assumed also that since infrared is cost effective and easy for the often cash strapped hospitals to acquire, to repair and to maintain the equipment. Faradism, short wave diathermy and ultrasound are very expensive pieces of equipment and need specialised repairs. In the European community the use of electrotherapy in the hospitals varies among member countries with some countries emphasising it, while others are scaling it down (McCoy, 1991). Wells & Lessard's (1986) survey of student clinical practice in Canada found little use of the electrotherapy modality.

5.2 CHIPATA GENERAL HOSPITAL

The physiotherapy department at CGH had a varied caseload from 1995 to 1999. The students on clinical practice might have seen more cerebral vascular accidents, Bells palsy and musculoskeletal conditions as the results of this study indicated a high frequency of these disorders. They also could have seen an increased number of cerebral palsy cases and meningitis in paediatrics as a result of the high prevalence of malaria parasites and complicated births referred for management at CGH. The respiratory conditions referred for physiotherapy were quite few (1%) and there were no obstetrics and gynaecological cases. It could well be that the doctors and nurses are not sure about the role and contribution of physiotherapy in obstetrics and gynaecologic cases The disparity between what is taught and seen in practice is an area the academic staff at EHC could look at as

students learn significant units about respiratory conditions, stress incontinence, pelvic inflammatory diseases and exercises for expectant mothers but their frequency in the clinical setting was less or none at all from 1995 to 1999. A high combination use of massage, rehabilitation techniques and therapeutic exercises at CGH could help the department play a key role in community rehabilitation, as these modalities do not involve the use of hands. Physiotherapy students on clinical practice at CHG from 1995 to 1999 could have had a limited experience with electrotherapy modalities, as the selection was limited only to faradism, wax-bath, ultrasound and infrared. There was no short-wave diathermy and students could have missed its use, as it is one of the modalities taught at the college and used most often in big hospitals. The limitation in the variety of electrotherapy modalities could have been due to the breakdown of equipment, cost of repairs and high costs involved in acquiring new equipment. The hospital is now a management board and is expected to run on a cash budget.

The characteristics of rural clinical placement sites like CGH are that they are small, have few physiotherapists. Generally, they are far from EHC and are ill -equipped in terms of electrotherapy equipment. Scully & Shepard (1983) argue that small hospitals tend to have a different style of student teaching compared to large teaching health care facilities. This may affect what students learn and how they are evaluated. Clinicians in smaller hospitals or emerging clinical sites may be able to devote more time to the students and can provide the students with increased supervision, but they are often the last to be familiar with new developments in the clinical education process by virtue of their long distances from EHC.

5.3 NDOLA CENTRAL HOSPITAL

Ndola, being a referral hospital had a high physiotherapy caseload from 1995 to 1999 (table 5 page 71). The caseload at NCH was also varied like CGH. The majority of the cases were surgical as Ndola is an industrial town and in 1995 to 1999, apart from seeing more fractures of femur, Bell's palsy, cerebral vascular accidents and meningitis, physiotherapy students could have also seen fractures of the pelvis and cervical spondylosis as the numbers of both these conditions were high. Students are mostly likely to have seen very few paediatric cases as they accounted for 1% of the conditions seen at NCH. The paediatric cases were few probably because in Ndola there is another hospital, which is exclusively for children where some patients could have gone. The academic educators at EHC could review the teaching of large units of respiratory and gynaecology as the frequencies of these conditions was low (see figures 6 & 7 on pages 73 & 74). The high use of therapeutic exercises and rehabilitative treatment skills at Ndola Central Hospital physiotherapy department could be useful at the home for the aged and Cheshire school of handicapped. During the 1995 to 1999 period the use of electrotherapy at NCH was limited to short-wave diathermy, infrared, faradism, wax-bath and ultrasound. The limited electrotherapy modalities at NCH could also be due to breakdown of equipment, high cost of repairs or even lack of money to acquire the machines. As a result of the students' limited exposure to electrotherapy equipment at NCH they might have missed practising their knowledge acquired at EHC on interferential, microwave and ultra-violet.

Urban clinical placements like Ndola are generally large, with a good number of physiotherapists. Most of these sites are in reasonable proximity to EHC, and they are supposed to be provided with adequate equipment which is adjunct to physiotherapy. In large hospitals supervision of students is not as close as in small hospital settings, although Large hospital facilities are usually used to having students around, they are better prepared to handle clinical education (Scully & Shepard 1983). Large hospitals usually have big gymnasiums where there is so much going on at any one time.

The high prevalence of soft tissue injuries, Bells palsy and cerebral vascular accidents and a high frequency use of therapeutic exercises and infrared at the two hospitals could result in the allocation of more hours of teaching in the areas of soft injuries, neurology, kinesiology, exercise physiology and electrotherapy and less hours could be allocated for the least frequent conditions. Very low frequent occurring conditions such as respiratory, hydrotherapy ,obsterics and gynaecology could be restructured in the curriculum. The information derived from this audit could be useful to the physiotherapy academic staff at EHC in that they can be made aware of the trends in the clinical arena. Clinicians and researchers could discern current treatment techniques and trends in pathologies at the physiotherapy departments of CGH and NCH Hospitals from 1995 to 1999. Documentation and monitoring clinical experiences could be one way to identify the critical knowledge base necessary for students of physiotherapy and areas in which clinical research is lacking.

5.4 CLINICAL PLACEMENT PLANNING

The audits of CGH and NCH could also provide valuable data when the physiotherapy academic educators at EHC are planning clinical placements for students at rural and urban areas. The data reveals relevant information with regard to the size of the hospital, the treatment techniques commonly used, the most prevalent occurring conditions, the number of patients referred for physiotherapy and the number of physiotherapists at the hospitals. The results from the two hospitals seem to confirm what Richardson (1993). He states that traditionally physiotherapy education and research have been seen to set the trend and inform practice but the changes occuring now in health care suggest that education and research should be led by practice in order to identify the new competencies and strategies being developed and used successfully in practice today.

Research has generated many reasons for the discrepancy between physiotherapy theory and clinical practice. May (1977) observes that the science base of physiotherapy education has been drawn from the separate teaching of various subjects and this has led to criticism of the lack of correlation between theory and practice, leading to a fragmentation of concepts, which makes integration in clinical practice difficult. Carr & Kemmis (1986) stress that the gaps between educational theory and its practical application only exists because practitioners do not interpret or evaluate the theories that are offered according to the criteria utilized by those engaged in theoretical pursuits. The CSP (1996 a & b) suggests that the dynamic nature

of the clinical environment is both stimulating and frustrating. Perceptions are that procedures are no sooner developed than they have to be modified to accommodate change.

Hunt et al, (1998b) argue that the shift of the physiotherapy programmes from the colleges and the hospitals, where they were predominantly vocational or clinically focussed, to universities where they have assumed an applied clinical sciences framework is one reason for the disparity. The authors observe that a societal condition emerging in most parts of the world is the distinct classification of physiotherapists engaged in physiotherapy education. In the early times, in many parts of the world, physiotherapy was pursued primarily within a clinical setting. Hunt et al, (1998b) argue that physiotherapy practitioners concurrently provided physiotherapy instruction while maintaining full clinical practice usually within a hospital setting. The shifting of physiotherapy education from the hospitals to universities over a time has resulted in two kinds of physiotherapists.

- Academic educators

  The academic educators work primarily within university settings and are largely responsible for classroom and laboratory experiences. They ensure that students are equipped with the pertinent theoretical framework required to provide direct patient care.

- Clinical educators

The clinical educators work primarily with clinical settings and are largely responsible for overseeing clinical education or the supervision of students'

clinical experiences. They ensure that students can observe, participate and eventually treat patients effectively and competently.

Hunt et al, (1998) argue that, although many academic educators engage in some level of clinical practice and many clinical educators provide classroom and laboratory instruction, the professional expectations for these two groups vary significantly with regard to their roles and measurements of their performance as dictated by clinical and university environments. Hunt et al, (1998) stress that the unique challenge for physiotherapy education in countries adopting university-based physiotherapy education is the linking of clinical practice with the academic components of physiotherapy education provided within the university environment. Physiotherapy education in Zambia is not an exception to this challenge.

5.5 PHYSIOTHERAPY CURRICULUM AT EHC

In 1987 (TEVETA 1999), the EHC Physiotherapy curriculum duration was three years and six months because there were activities like political education, library time, sports, and production unit that were added to the curriculum content. There were also additional units in the massage, medical conditions and electrotherapy modules. In 1992, the curriculum was reverted to its original three years duration after a directive from the college authorities. Political education, library time, sports, and the production module was discontinued. The medical module had new units on malaria and Aids, while the electrotherapy modality had interferential added. In 1998, The EHC Curriculum had new additions in terms of rehabilitation and mathematics

modules to its content. In all the two curriculum revisions in 1992 and 1997, the EHC curriculum just added more knowledge and skills to its content, but the curriculum objectives; the teaching strategies and its student evaluative methods remained generally the same. It could be assumed that there has been too much emphasis on more skills, more knowledge and more roles, rather than addressing how to enable student to meet the challenges of change (Shepard, 1990 & Hunt et al, 1998). The implications of the global changes of the last decade (1990 to 2000) in the clinical area suggest that inexperienced students and recently qualified physiotherapy graduates will have to become independent, autonomous professionals without the luxury of being able to follow set paths of practice or to work closely with senior staff (Richardson, 1993). In a stable system of health care delivery in the past, junior physiotherapists worked in the shadow of their seniors, taking time to absorb the unspoken attitudes, behaviours and thinking of the profession (Richardson, 1993). Students need to understand the environment in which they operate and to be able to work effectively with people and within the work context. An environment, which fosters critical thinking, is more likely to promote the required intellectual maturity (Culver & Hackos, 1982).

The EHC curriculum could emulate other physiotherapy schools in the world who are moving away from goals and objectives aimed at producing physiotherapy technicians. The objectives could be replaced with aims and objectives that could help students become professionals who would be capable of making decisions regarding diagnosis and treatment in collegial relationships with doctors. The overall goals and objectives of the

Physiotherapy curriculum at EHC could be made to reflect an explicit policy on developing self-managed and life-long learning, adaptability and creativity among students. This is one way the physiotherapy curriculum at EHC could contribute meaningfully to the rapidly changing physiotherapy clinical arena, where problems are ill-defined, goals are complex and outcomes are difficult to predict (Higgs & Jones, 1995; Checkland, 1981).

Although the seemingly prescribed teaching methods at EHC range from lectures, demonstrations, case studies, group discussions and role-play, the predominant style of teaching is the didactic method, which aims toward achieving technical clinical competence. The didactic teaching methods entail students spending more time in the classroom. Likewise lecturers are regarded as givers of information and have to spend long hours in preparation to meet student needs. The didactic style of teaching is where the teacher explains, then demonstrates an assignment, next students execute the assignment with supervision then without supervision and finally the teacher examines the students' performance. The physiotherapy curriculum at EHC seems to be silent on the modern teaching techniques like problem solving, problem based learning, self directed learning and reflective learning, which research suggests are efficient in patient management (Higgs & Jones, 1995 ;Richardson,1999). Physiotherapy education throughout the world has undergone a number of changes over the last decade as the physiotherapy theory and practice are in a constant dynamic state as the profession evolves and grows (Higgs 1992). The physiotherapy educators both at EHC and in the clinic need to review current teaching methods. The clinician's input is

instrumental in grounding the curriculum within a realistic societal context and could help the academic educators identify areas of study, which are relevant and meaningful to physiotherapy practitioners.

Physiotherapy educators could learn the teaching strategies which other physiotherapy programmes in the world have adopted. Workshops could be organised where authorities on clinical reasoning, reflective learning, problem-based learning and lifelong learning could be invited to share their experiences. Kennedy (1988) urges academic staff in physiotherapy to move away from their emphasis on technical knowledge where they encourage one correct answer for every written or practical examination. He suggests that, alternatively, they could encourage and reward logic analysis of problems and reasonable creative solutions. Shepard & Jensen (1990) and Hunt et al, (1998) argue that, modes of teaching that rely on the acquisition of technical skills encourage rote learning and often students lack understanding and analytical skills. The authors further stress that during their educational programmes students need time to think, assimilate and reflect on all aspects of their learning experiences, including experiences that are not stated formally in the curriculum. In this study clinicians hinted that students were failing to translate theory into practice, maybe students needed time to process, test and refine their overloaded information before competence could take place. Newble & Entwistle (1986) reiterate that, didactic teaching promotes rote learning with poor understanding and short-lived retention of what has been learned.

Newble & Entwistle (1986) argue that, in terms of clinical practice students need to adopt a deeper approach, which promotes greater understanding and longer term retention of learned material. In the European Community physiotherapy schools have varying educational philosophies resulting in different teaching methods being employed. Some countries emphasise the didactic method while others are moving a way from didactic teaching methods to more student centred and problem based learning which reduce the classroom and contact time, but do not reduce the time students spend in learning (McCoy, 1991).

Physiotherapy assessments at EHC are summative and formative. Menahem & Paget (1990) and Ellis (1988) support student assessments that are formative and continuous rather than be summative only. Research studies have demonstrated that assessment methods could profoundly influence students approach to learning, in particular, their use of deep and surface approaches to learning. Taylor (1996) suggests that assessments should reflect the range of goals of a learning programme, including the promotion of independent learning skills. The EHC Physiotherapy curriculum could do well by ensuring that the student assessment methods reflect the curriculum goals and objectives that will foster student-managed learning, adaptability, creativity and problem solving if the students are to make an impact in the new millennium. The reviewing of the assessment methods could also include clinicians, because they are equally involved in clinical education. McCoy (1991) argues that, some physiotherapy schools in the EC do not prescribe student assessment techniques. She observes that, originators of the courses

are free to draw up their own assessment programmes, which comprise course work, practical tests and written examinations.

The research component in the physiotherapy curriculum at EHC could be expanded with the whole physiotherapy course work adopting an inquiry learning approach where students could be actively responsible for their own learning and the teacher could act as a facilitator. Students need skills in thinking, research, evaluation and problem solving to extend their skills base and operate with flexibility in the clinic. The academic educators need to acquire experience of both teaching research techniques and supervision of projects if the research component in the curriculum is to flourish. Ballin et al, (1980) cite unfamiliarity with the research process as the chief obstacle to physiotherapists becoming involved in research. McCoy (1991) suggests that physiotherapists need to be able to evaluate their practice. Evaluation, which requires an ability to use the tools of research and an understanding of the research process, has become even more important in the new climate of health delivery where bids for physiotherapy resources need to be supported by evidence of the effectiveness of physiotherapy intervention. Twoney (1996) argues that research skills are essential for graduates, not only as part of the goal of striving for clinical excellence, but also for ensuring that physiotherapy practices are based on sound research. Walker (1998) suggests that the small number of physiotherapy educators in academic institutions should not be the only ones responsible for research in physiotherapy. She proposes that there must be strong contribution from practising clinicians who should be

conducting clinically based research, with case studies, case series and using designs that range from single case to randomised clinical trials.

The total contact hours in 3 years of the EHC curriculum are 4,452 these compare well with the total contact hours of pre-registration physiotherapy education in the European Community (EC), where West Germany leads with 5,480 and the United Kingdom is last with 2,625 (McCoy, 1991). The hours devoted to clinical placement at EHC are 1,710. Therefore the EHC curriculum balance tips towards clinical practice so as to ground students in patient assessments and treatment. However, since the physiotherapy course work, which aims at technical competence is so extensive that it cannot all be learned and integrated in the time allowed, students sometimes fail to observe and participate in physiotherapy care from first referral to the end of treatment. The duration of the full internship clinical placement for physiotherapy students at EHC is twenty-four weeks (24). The full internship clinical placement time is divided into two phases of three months each. Most problems in the clinical area manifest themselves in the first part of the clinical placement when students have not completed all the conditions. Clinicians' expectations of student output are high hence the complaints that students are failing to translate theory into practice. Students need time to process their patient's clinical information in an uncertain environment.

The clinical practice hours at EHC correlate closely with other physiotherapy schools in the world. The clinical placement hours deemed necessary to acquire entry level physiotherapy competence varies widely among Canadian

physiotherapy programmes, they range from as little as 1036 hours at McGill university to 1275 hours at Manitoba university (Cox et al, 1999). In the European Community the hours for clinical placement vary from a minimum of 800 in Denmark to 2,942 in West Germany (McCoy, 1991). There is no research evidence on the optimum clinical placements hours for a pre-registration course, but the quality of the clinical experience provided is at least as important as the number of hours allocated to it (SLCP, 1990). Physiotherapy practical lessons are compulsory at EHC. Students are expected to cover 85% of both medical and surgical conditions. Students are required to cover a minimum of 85% clinical hours before they can be eligible for their final examinations. The students are introduced to the clinical environment in the third term of the first year during professional orientation and during nursing in the sixth term in the third year. The introduction of early clinical exposure develops positive attitudes and professional socialization among physiotherapy students (Gasner & Hogg, 1996).

6 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 SUMMARY

The results of the study suggest that there was a mismatch between the physiotherapy classroom theory at EHC and the clinical practical skills at CGH and NCH over the five years span 1995 to 1999. The percentages of the surgical and medical conditions at CGH and NCH do not tally with the percentages of the hours allocated for the core modules of the physiotherapy curriculum at EHC (see table 8, p 78). The hierarchical order of the core modules taught at EHC from 1995 to 1999 is 5% high percentage hours for medical conditions, clinical practice and therapeutic exercises and low percentage hours for massage (see table 1, p 59). However, the hierarchical order at CGH and NCH indicated high percentages for surgical conditions and high frequency percentages for electrotherapy and rehabilitation treatment modalities (see table 8, p.78).

The interpretation of the results of this study should be treated with caution, because of the study limitations and the use of two clinical settings out of twenty-six physiotherapy clinical facilities used for student clinical placements. However, results of the study could provide a viable reference in the review process of the EHC curriculum when another study with a much broader sample of the clinical settings is done. The high prevalence of soft tissue injuries, Bells palsy, cerebral vascular accidents cases and the high use of therapeutic exercises, infrared and rehabilitation techniques at the two hospitals could result in the allocation of more hours in these modules while hours could be scaled down for the least frequent conditions like respiratory,

obstetrics & gynaecological conditions and the hydrotherapy treatment technique. The conditions that are low in frequency in the clinic such as hydrotherapy, respiratory, obstetrics and gynaecology but are taught in the college could be restructured. The results of this study could also prove useful in the planning of student clinical placements for rural and urban clinical settings as the study reveals a contrast between the two. In spite of the increasing demands upon physiotherapy graduates, changes to their education should not be made by continuous additions to the curriculum. There is research evidence that rather than encouraging thinking and problem solving skills physiotherapy educators focus on imparting technical skills. The challenge for educators is to find a balance between equipping graduates with the necessary knowledge for the work place and enabling them to make a contribution to the professional development. The latter can be achieved through the graduates' own adaptation to changes and professional development and through research, and scholarly input to the professions knowledge base.

The physiotherapy curriculum at the EHC had two revisions between 1995 and 1999. The revisions entailed adding more content to the curriculum, while the curriculum aims, objectives, teaching strategies and assessment methods seem to have remained relatively the same. The EHC curriculum could move away from goals and objectives aimed at producing physiotherapy technicians. These could be replaced by aims and objectives that help students to be professionals who would be capable of exercising decision making regarding diagnosis and treatment of patients, instead of just carrying

out doctor's orders. The physiotherapy teaching method at EHC is mostly didactic which only reinforce the acquisition of technical competence by students. The academic and clinical educators could review their teaching strategies. They could consider methods like clinical reasoning; reflective learning-problem based learning and lifelong learning which research has established to be effective especially in the clinical setting. The assessment methods of students could also reflect the aims and objectives of the curriculum in an endeavour to test the deeper form of knowledge like independent thinking. The research component at EHC could be broadened to encourage deep thinking, research, evaluation and problem solving skills among students if they are to rise up to the challenges of the rapidly changing clinical setting of the new millennium.

There is a need to develop a physiotherapy curriculum that reflects clinical practice and the real world. The curriculum must respond, in a timely fashion, to changes in physiotherapy practice, health care delivery systems. It should facilitate changes that will promote the growth and development of the physiotherapy profession. Physiotherapists can only fairly be regarded as providing a valuable service to the community provided that their methods of practice are modified and curricula up-dated to meet the changing needs of the society. This study highlights the need for the integration of the physiotherapy theory and clinical practice in the wake of recent challenges in the clinical arena. Today, more is demanded of physiotherapy graduates than a decade ago, as there are comparatively unexplored contexts of care in physiotherapy clinical practice. There is a need to prepare a health care

practitioner who is able to deal effectively with the health care needs of the new millennium

6.2 CONCLUSIONS

The aim of the study was to ascertain the extent of the synchronisation between the physiotherapy classroom theory taught at the Evenly Hone College with the clinical practical requirements at the Chipata General and Ndola Central Hospitals. The researcher reviewed relevant literature and related studies which focused on how adequately the university or college physiotherapy programmes prepared students for the current work place. The study employed a descriptive quantitative design to carry out audits of the physiotherapy curriculum at EHC, Chipata General and Ndola Central Hospital physiotherapy departments using retrospective data. The EHC, CGH and NCH physiotherapy departments were selected as research centres because EHC is the institution that trains physiotherapists at a diploma level while CGH and NCH represent the clinical sites where physiotherapy students undertake their clinical placements. Physiotherapy plays a key role in the management of patients. The role has become even more important in this era where there are rapid changes in the clinical environment and diseases patterns are becoming more complex.

The study shows that there seems to be a disparity between the physiotherapy curriculum at EHC and the clinical environment (Chipata General & Ndola Central Hospitals) because the hours allocated for teaching the core modules of the physiotherapy curriculum at the EHC are far less

when compared with the frequency of the conditions and treatment procedures in the physiotherapy departments at the two hospitals (table 8, page 78). The ranking order of core modules at EHC in1995 to 1995 indicated high percentage hours for medical conditions, therapeutic exercises and low percentage hours for massage. However, the ranking order of conditions and treatment procedures at the two hospitals showed high frequency percentages of surgical conditions, therapeutic exercises, electrotherapy and rehabilitation. The study also showed low frequency percentages for respiratory, gynaecological paediatric conditions and hydrotherapy treatment technique at NCH while CGH showed low respiratory and no gynaecological conditions and a low use of faradic treatment modality.

The study observed that, the objectives of the physiotherapy programme at EHC appear to be aimed towards achieving technical clinical competence for students. The teaching methods employed are didactic, where the teacher explains, demonstrates an assignment, next students execute the assignment with supervision, then without supervision and finally teachers examine the students' performance. Research has postulated that acquisition of technical knowledge does not imply that students know when and how to apply the knowledge. The mode of teaching that emphasises acquisition of facts militates against understanding and analytical skills. Students need time to incubate ideas and learn the richness of thought that can be fostered by patience and the repetitive pursuit of knowledge. Academic staff could move away from their emphasis on technical knowledge where they encourage one correct answer for every written or practical examination. Alternatively, they

could encourage and reward logic analysis of problems and reasonable creative solutions.

This study has also concluded that physiotherapy clinical practice is undergoing change all the time due to various factors. This poses a huge challenge for physiotherapy educators who are always endeavouring to bridge the gap between theory and clinical practice. To remedy this problem, teaching strategies could be evaluated and periodic reviews of the physiotherapy curriculum could also be undertaken. The documentation of objective databases on conditions seen by physiotherapy students and the treatment procedures used during clinical placements could provide a viable reference in the curriculum review process. The databases could provide data for educators, when adjustments in curricula are being considered and when planning student clinical placements. Identifying personal needs and expectations in clinical placements could help students.

Continual changes in the ethos and delivery of health services point to an increasing need for physiotherapy practitioners to be able to identify and solve physiotherapy problems in new and unforeseen fields of health care. Undergraduate education programmes today are challenged to ensure that physiotherapists are prepared to respond to changes in health care. The many changes now occurring in health care may require individual paradigms of practice and their associated beliefs and values, to be amended or expanded if the physiotherapy profession is to continue to function well.

6.3 LIMITATIONS OF THE STUDY

The study was undertaken to establish whether there was any congruence between the physiotherapy classroom theory at (EHC) and clinical practice at Chipata General and Ndola Central Hospitals. The researcher was motivated to do this research because there were frequent complaints by physiotherapy clinicians and students. Clinicians reported that, students on clinical placements were finding it difficult to translate theory into practice. Students felt that though some conditions were covered extensively in the classroom, they seldom saw some of them in practice. The rapid changes in the health care delivery system in the last decade have had a major impact on the training of physiotherapy students, world wide because as the changes come, new clinical needs arise. The study used a descriptive quantitative design to carry out audits of the physiotherapy curriculum at EHC and the two hospitals (Chipata General and Ndola Central) using retrospective data.

The noted limitations of the study were:

(a) There was no consistency in the method of recording patients' cases at both hospitals, such that vital information like patients' ages, treatment and primary diagnoses were at certain times left out, had this data been available, may be more information and perhaps a different clinical picture would have emerged.

(b) The entries into the patients' record books were, at times, done by helpers in the physiotherapy departments who were unfamiliar with the conditions and treatment procedures used in physiotherapy.

(c) The handwriting varied a lot in the patients' record books and some times it was not legible, this made the extraction of information from files a daunting and time-consuming task.

6.4 IMPLICATIONS OF THE STUDY

Research studies have established that the integration between physiotherapy theory and clinical practise is critical to the successful learning of students. The task of blending a college or university-based instruction with clinical instruction and linking academic preparation with clinical practice represents a common challenge for physiotherapy programmes the world over. The results of this study appear to show a disparity between the physiotherapy theory in the classroom at (EHC) and clinical skills curricula at Chipata General and Ndola Central Hospitals. The implications of not reviewing the current physiotherapy curriculum at EHC in terms of its objectives, content and assessment methods will have far reaching consequences. It means the college will continue to produce physiotherapy technicians who will be subservient to doctors instead of producing professionals who can exercise critical judgement on the decisions they make in the clinic. The training of physiotherapists would continue to be misplaced and will lag behind other physiotherapy programmes in the world, as the graduates would fail to manage patients effectively in a rapidly changing physiotherapy clinical area, neither would the graduates rise up to the challenge of community needs nor the disease patterns of the new millennium.

The stakeholders involved in the training of physiotherapy, which includes the Ministry of Health, Technical Education Vocational and Entrepreneurship (TEVETA), Evelyn Hone College physiotherapy educators, Clinical educators at various hospitals and the newly opened physiotherapy school at the University of Zambia Medical School should look at the design, implementation and assessment aspects of the EHC curriculum.

6.5 RECOMMENDATIONS

The researcher recommends the following:

(a) That another study is undertaken to find out from recent physiotherapy graduates about how adequately the physiotherapy education at EHC prepared them for their current work place and compare results with this study.

(b) The patient records at both Chipata General and Ndola Central hospitals should be computerised in order to avoid the many errors that occur when many therapists have to use their own handwriting. The Zambia Society of Physiotherapy Association through its meetings with its members could stress to physiotherapists the importance of good record keeping in their departments, as this would help research undertakings.

As physiotherapy programmes develop education programmes, they are challenged to construct curricula that reflects the cutting edge of research, meets the current and future needs of practice and are sensitive to the unique characteristics and societal environments at any given point in time. The

successful achievement of these criteria requires effective incorporation of contemporary clinical practice within the curriculum. It is hoped that the findings of the present study will stimulate debate on how best to address curriculum development in physiotherapy programmes.

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APPENDIX 1

DATA CAPTURE SHEET FOR THE PHYSIOTHERAPY DEPARTMENT AT CHIPATA AND NDOLA CENTRAL HOSPITALS

1995 - 1999	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NO.PATIENTS												
DIAGNOSIS)												
AGE												
GENDER MALE / FEMALE NUMBERS												
TREATMENT MODALITIES												
PLACE OF INTERVENTION												

APPENDIX II

DATA CAPTURE SHEET FOR THE PHYSIOTHERAPY CURRICULUM AT (EHC)

1995 – 1999.

	1995	1996	1997	1998	1999	
COURSE OBJECTIVES COMPETENCES						
DURATION OF COURSE						
CLASS ROOM CONTACT HOURS						
CORE SUBJECTS (SURGERY, ORTHOPAEDICS, MEDICAL, AND NEUROLOGY)						
SEQUENCING OF SUBJECTS						
ASSESSMENT METHODS						
CLINICAL HOURS						
TEACHING METHODS						

APPENDIX III

A LIST OF DIAGNOSTIC CATEGORIES

ARTHRITIS AND MUSCULOSKELETAL DISORDERS
Osteoarthritis of spine

Osteoarthritis of extremities

Rheumatoid arthritis

Back pain

Cervical

Thoracic

Lumbar

Congenital anomalies

Contusion, lacerations

Crushing injuries

Degenerative disk, herniated discs

Dislocations-upper and lower extremities

Fracture and fracture dislocation, upper and lower limbs

Fractures spine, ribs, pelvis

Meniscectomies

Multiple injuries, including motor vehicle accidents

Musculoskeletal disorders

Osteomyelitis

Per arthritis-Frozen shoulder

Sprains, strains-joints,

Tears-muscles, ligaments

Tendonitis, bursitis, capsulitis synovitis upper / lower limbs

Burns

MEDICINE

Blood diseases and diseases of blood-forming organs

paediatrics

Cardiac disorders

Central circulatory disorders/ Cerebrovascular accidents

Digestive, endocrine, metabolic system disorders

Diseases of skin and subcutaneous tissue

Peripheral vascular disease

Pregnancy

Respiratory disease-acute and chronic

NEUROLOGY

Diseases of the central nervous system

Disorders of spinal and peripheral nerves, peripheral ganglia, neuromuscular junction, autonomic nervous system

Head injuries and skull fractures

Myopathies

Neuropathies (alcoholic, Guillain-Barre)

Peripheral nerve and plexus injuries

Spinal cord and root injuries

OTHERS

Psychological

Poverty

Malnutrition

AIDS

APPENDIX IV CONSENT LETTERS

UNIVERSITY OF THE WESTERN CAPE
PHYSIOTHERAPY DEPARTMENT
PRIVATE BAG X17
BELLVILE 7535
4 APRIL 2001

THE EXECUTIVE DIRECTOR
NDOLA CENTRAL HOSPITAL
P/A NDOLA
ZAMBIA

U.f.s
THE PHYSIOTHERAPIST INCHARGE
NDOLA CENTRAL HOSPITAL
P/B PHYSIOTHERAPY DEPT
NDOLA

Dear sir/Madam

RE: **PERMISSION TO USE PATIENTS RECORDS IN THE PHYSIOTHERAPY DEPARTMENT BETWEEN 1995-1999**

I am a physiotherapy teacher at Evelyn Hone College. I am currently pursuing a Master of Science degree in physiotherapy at the above – mentioned university. I am kindly asking for permission to use records of patients who attended physiotherapy at your hospital from 1995 to 1999.

I would like to use this information for my research project, which is a requirement for the award of the master's degree. I would like to assure you that this information will be treated with the strictest confidence and the patient's names will remain anonymous.

Your help in this matter will be highly appreciated

Yours sincerely

Geoffrey Moyo

APPENDIX V

UNIVERSITY OF THE WESTERN CAPE
PHYSIOTHERAPY DEPARTMENT
PRIVATE BAG X17
BELLVILE 7535
4 APRIL 2001

THE EXECUTIVE DIRECTOR
CHIPATA GENERAL HOSPITAL
P.O.BOX 510119
CHIPATA
ZAMBIA

U.f.s
THE PHYSIOTHERAPIST INCHARGE
CHIPATA GENERAL HOSPITAL
PHYSIOTHERAPY DEPT
P.O. BOX 510119
CHIPATA

Dear sir/Madam

RE: **PERMISSION TO USE PATIENTS RECORDS IN THE PHYSIOTHERAPY DEPARTMENT BETWEEN 1995-1999**

I am a physiotherapy teacher at Evelyn Hone College. I am currently pursuing a Master of Science degree in physiotherapy at the above-mentioned university. I am kindly asking for permission to use records of patients who attended physiotherapy at your hospital from1995 to 1999.

I would like to use this information for my research project, entitled an analysis of physiotherapy classroom-based teaching and hospital practical skills in Zambia, which is a requirement for the award of the master's degree. I would like to assure you that this information will be treated with the strictest confidence and the patient's names will remain anonymous.

Your help in this matter will be highly appreciated

Yours sincerely

Geoffrey Moyo

APPENDIX VI

UNIVERSITY OF THE WESTERN CAPE
PHYSIOTHERAPY DEPARTMENT
PRIVATE BAG X17
BELLVILE 7535
4 APRIL 2001

THE PRINCIPAL
EVELYN HONE COLLEGE
P.O.BOX 30029
LUSAKA
ZAMBIA

Dear Sir,

RE: **PERMISSION TO USE PHYSIOTHERAPY THEORY CURRICULUM CHARTS BETWEEN 1995 TO 1999.**

I am a physiotherapy teacher at Evelyn Hone College. I am currently pursuing a Master of Science degree course in physiotherapy at the above-mentioned university. I am asking for permission to use Physiotherapy theory curriculum charts from 1995 to 1999.

I would like to use this information for my research project entitled an analysis of physiotherapy classroom-based teaching and hospital practical skills in Zambia, which is a requirement for the award of the Master of Science degree in physiotherapy. I would like to assure you that this information will be treated with the strictest confidence.

Your help in this matter will be highly appreciated

Yours sincerely

Geoffrey Moyo

APPENDIX VII

EVELYN HONE COLLEGE PHYSIOTHERAPY CURRICULUM

3 YEARS PROGRAMME

	YEAR ONE			YEAR TWO			YEAR THREE			HOURS
	TERMS			TERMS			TERMS			
	1	2	3	4	5	6	7	8	9	
SUBJECTS	P/W	P/W	P/W	P/W	P/W	P/W	P/W	P/W	P/W	
ANATOMY	6	6	4	4	4					312 (7%)
PHYSIOLOGY	4	4	4	4	4					260 (5.84%)
COMMUNICATION SKILLS	2	2	2							78 (1.75%)
PSYCHOLOGY/SOCIOLOGY	2	2								52 (1.16%)
PROF. ORIENTATION/ETHICS/ADMIN	2	2	2							104 (2.33%)
BASIC PRINCIPLES OF EX.THERAPY	3	3								78 (1.75%)
MATHS	2									78 (1.75%)
PHYSICS/ELECTROTHERAPY		3	3	3	3					182 (4.08)
MASSAGE			2	3	3					130 (2.92)
EXERCISE THERAPY	5	5	5	6	6					382 (8.58%)
PHYSICAL EXAMINATION			3	3	3	2		2		169 (3.79%)
GENERAL PATHOLOGY			2	2						52 (1.16%)
REHABILITATION				4	4		2		3	195 (4.38%)
PSYCHIATRY				2	2					52 (1.16%)
CLINICAL DEMONSTRATION						2		2	9	140 (3.14%)
NURSING CARE										36 (0.80%)
CLINICAL PRACTISE							40		40	1,710 (38.4%)
SURGICAL CONDITIONS					5	5		5		195 (4.38%)
MEDICAL CONDITIONS					4	6		6		208 (4.67%)
FIRST AID										39 (0.87%)
									TOTAL	4452 (100%)

KEY

- P/W = Periods per week
- Each term is thirteen weeks
- Lessons start at 07.45hrs to 10.30hrs then break for 30 minutes, lessons resume at 11.00hrs to 12.45hrs then lunch follows. Afternoon sessions begin at 14.00hrs to 16.30 hrs.

APPENDIX XIX

UNIVERSITY OF THE WESTERN CAPE
PHYSIOTHERAPY DEPARTMENT
PRIVATE BAG X17
BELLVILE 7535
07 November 2001

THE EXECUTIVE DIRECTOR
CHIPATA GENERAL HOSPITAL
P.O.BOX 510119
CHIPATA
ZAMBIA

U.f.s
THE PHYSIOTHERAPIST INCHARGE
CHIPATA GENERAL HOSPITAL
PHYSIOTHERAPY DEPT
P.O. BOX 510119
CHIPATA

Dear sir/Madam

RE: **PERMISSION TO USE PATIENT'S RECORDS IN THE PHYSIOTHERAPY DEPARTMENT BETWEEN 1995-1999**

I want to thank you most sincerely for having given me permission and an opportunity to collect data from the physiotherapy department at your centre. The data will help me as a Master of Science student in physiotherapy at the University of the Western Cape to analyse the congruence between the physiotherapy course at EHC and student clinical practical skills at Chipata General and Ndola Central Hospitals. I would like to assure you that the study results will be availed to you as soon as the examiners are through with the thesis next year.

Yours sincerely

Geoffrey Moyo

APPENDIX X

UNIVERSITY OF THE WESTERN CAPE
PHYSIOTHERAPY DEPARTMENT
PRIVATE BAG X17
BELLVILE 7535
07 November 2001

THE PRINCIPAL
EVELYN HONE COLLEGE
P.O.BOX 30029
LUSAKA
ZAMBIA

Dear Sir,

RE: **PERMISSION TO USE PHYSIOTHERAPY THEORY CURRICULUM CHARTS BETWEEN 1995 TO 1999.**

I want to thank you most sincerely for having given me the permission and opportunity to collect data from the physiotherapy section at your centre. The data will help me as a Master of Science student in physiotherapy at the University of the Western Cape to analyse the congruence between the physiotherapy course at EHC and student clinical practical skills at Chipata General and Ndola Central Hospitals. I would like to assure you that the study results will be availed to you as soon as the examiners are through with the thesis next year.

Yours sincerely

Geoffrey Moyo