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PERCEPTIONS OF RECENT WITS PHYSIOTHERAPY GRADUATES REGARDING THE ORTHOPAEDIC MANIPULATIVE THERAPY (OMT) UNDERGRADUATE CURRICULUM CONTENT

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfillment for the requirements for the degree of Master of Science in Physiotherapy

Johannesburg, 2005

DECLARATION

I, Anita S. Gounden declare that this research report is my own work. It is being submitted for the degree of Master of Science in Physiotherapy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

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A. S. Gounden

_____day of _____2005

ABSTRACT

Orthopaedic manipulative therapy (OMT) like other areas of physiotherapy, is a rapidly advancing field. To keep abreast of changes, curricula need regular evaluation and updating. The curriculum consists of many components that may vary from content to timetabling.

The aim of this study was to determine how past graduates from the University of the Witwatersrand perceived the OMT curriculum with regards to content, teaching methods and clinical learning. This information will contribute to an overall evaluation of the present OMT curriculum.

The sample consisted of graduates from 1997-1999. Questionnaires and interviews were used to gather the information. Some interviews were carried out following analysis of answers to the questionnaire to clarify issues or gain additional information.

Results indicated that eighty one percent of the sample found the content relevant to clinical practice, but forty two percent found certain aspects of the content inadequate. The following areas of content were deficient: sixty percent found information on patient education, advice and counseling related to OMT inadequate. Fifty five percent would have liked to be more exposed to research in this area. Sixty seven percent felt that teaching of clinical reasoning skills was lacking. Ninety four percent would have liked information on other joint mobilization concepts.

It was perceived that active learning methods were more effective than passive learning methods. Fifty eight percent found tutorials, sixty eight percent found practical sessions, and fifty eight percent found workshops very effective.

With regards to clinical learning, seventy seven percent found supervision very helpful in clinical placements. Eighty one percent found patient presentations helpful, and seventy one percent found discussion of patients with lecturers very helpful.

Most responses indicated that the OMT curriculum was relevant to current practice in South Africa but inadequate in certain specific areas.

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LIST OF ABBREVIATIONS AND DEFINITIONS

Wits	University of the Witwatersrand
OMT	Orthopaedic manipulative therapy: Refers to a specialist area in physiotherapy that deals with the management of neuromusculoskeletal conditions.

Other titles for this area of speciality:

NMS	Neuromusculoskeletal therapy
MT	Manual therapy
SMT	Spinal manipulative therapy
HPCSA	Health Professions Council of South Africa
SAQA	South African Qualifications Authority
NQF	National Qualifications Framework
SGB	Standards Generating Body
ETQA	Education training Quality Assurance Body
CAM	Complementary and alternative therapies

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CHAPTER ONE

INTRODUCTION

The management of neuromusculoskeletal disorders is a dynamic and exciting area of physiotherapy. This diverse and extensive field encompasses many different assessment and treatment techniques.

In the present day context, these disorders may result from various causes e.g. a sedentary posture at the computer, a muscle strain from a sporting activity, or a traumatic injury from a motor vehicle accident. Physiotherapists, to manage these patients, use orthopaedic manipulative therapy (OMT) assessment and treatment concepts extensively. Significant developments were made in this field during the late 1900's.

OMT is taught to undergraduate physiotherapy students at all South African physiotherapy training centres. The subject has evolved over time in accordance with advancements in the field. It is important that curriculum content in this area is evaluated and updated regularly. It may well be that course content may help to determine the clinical competency of a graduate.

According to Sanson Fisher and Rolfe (2000), curriculum content determines how well health-care professionals are prepared for their roles. It also impacts on their levels of clinical competence and beliefs about which aspects are important for good clinical care. Domination by particular content, for example, is likely to be perceived by students as more important than other aspects, while deficiencies in content deprive students of exposure to certain information.

The practice of OMT in the present day context is diverse with respect to assessment and treatment skills. Treatment may involve joint, neural and soft

tissue mobilization, and exercise therapy. In addition, postural, functional and ergonomic analysis may indicate further OMT management.
The treatment approach may vary from one therapist to another depending on their exposure to various OMT concepts and recent OMT trends.
Undergraduate curricula in South African universities originally incorporated the Maitland concept into the OMT curriculum. They used this concept as a basis for OMT training. While this was appropriate, it is important that the present curriculum also include other aspects related to OMT to make it suitable for present day knowledge and practice. Besides including information on other concepts, essential knowledge of movement and functional analysis for neuromusculoskeletal conditions plays a vital role in management and should be included. Important skills like psychosocial understanding, interpersonal communication and relationships cannot be ignored. Also, the application of theoretical knowledge to clinical practice and clinical reasoning skills are immensely important in the practice of the profession.

Since 1994, physiotherapists became first line practitioners (Professional Board for Physiotherapy, Podiatry and Biokinetics, HPCSA). Patients may therefore seek treatment from a physiotherapist without doctors' referrals. This privilege comes with responsibility. Good basic diagnostic and treatment skills based on a sound knowledge of anatomy, physiology, biomechanics and pathology are crucial. The ability of physiotherapists to successfully and efficiently apply these skills is often a reflection of their undergraduate training. This forms the basis of their practice while additional learning (e.g. from postgraduate courses) and clinical experience, will with time, develop knowledge and clinical reasoning.

Since 2003, new graduates do a year of community service. Supervision and advice from more experienced colleagues may not always be available. The new graduate therefore needs to rely on knowledge that was acquired at an undergraduate level. In the light of this new responsibility, undergraduate training needs to be of an appropriate standard. This standard should be compliant with

that which has been set by the Standards Generating Body (SGB) for physiotherapy, which falls under the National Qualifications Framework (NQF). The South African Qualifications Authority (SAQA) implements the NQF (SAQA information booklet, 2000).

One way of assessing the standard of undergraduate education is to evaluate the curriculum. It is then possible to check whether it is relevant and appropriate, and adequately equips the student for the workplace.

Curriculum evaluation studies involve various classes of information, one being 'supplemental information'. This includes opinions and views of people concerning the curriculum. The stakeholders, who could participate in this type of assessment, may be heads of departments, lecturers, senior clinicians, recent graduates, students and patients. Students would be the most appropriate due to their current involvement in the course. However, they lack clinical experience. Therefore recent graduates could be an alternative given their recent experience of the undergraduate curriculum and their current clinical role (Sanson-Fisher and Rolfe, 2000).

Supplemental information is very useful in the evaluation process. One is able to determine whether a discrepancy exists between what lecturers perceive to be taking place and what is actually taking place. One may then be able to find out what additional information is needed to see why students are holding these views (Wolf, 1984). More importantly, responses of students with regards to relevance of content can be assessed (Coles and Grant, 1985). This may help to direct change so that the content included is appropriate for clinical practice in South African communities. It will also contribute to updating the curriculum taught in the physiotherapy department at the University of the Witwatersrand making it relevant to the present context.

The OMT curriculum at the University of the Witwatersrand

The OMT curriculum presently taught at the University of the Witwatersrand includes assessment of neuromusculoskeletal disorders, and treatment of these. Treatment techniques that are taught include soft tissue techniques, joint mobilisation according to the Maitland concept, neural mobilisation, and exercise therapy.

Soft tissue techniques include myofascial release techniques, trigger point therapy, deep transverse frictions, and massage. These are taught in the second year of study and applied in clinical work in the third and fourth year of study. Neurodynamic tests and treatment techniques are taught in third and fourth year. Rehabilitation techniques, posture assessment and correction, movement analysis and exercise therapy are taught in the second, third and fourth year curriculum. All of the above are related to common pathologies encountered in the clinical setting in South Africa.

Clinical work starts in the third and fourth years of study and eight weeks are allocated for this. The students work under supervision provided by hospital clinicians and university lecturers. Teaching methods used in the OMT course include lectures, practical sessions, workshops, patient presentations and discussions.

Following from this description, it would be important to assess whether the OMT curriculum taught in the physiotherapy department at the University of the Witwatersrand is up to date and includes sufficient and relevant information for the undergraduate, on subjects like mobilisation techniques, analysis of posture, movement and function. Besides actual OMT theory, the curriculum should also address influencing factors on OMT management e.g. psychosocial and communication skills. If appropriately designed, this curriculum will prepare graduates, to an extent, to cater for the basic need (relating to OMT) of the South

African community. This will give them added confidence especially during the year of community service. Acquiring past graduates' views is an important part of the evaluation process and will help answer the question as to whether the OMT curriculum taught at the above department is suitable.

At the time of the research, the Maitland concept was briefly introduced in second year. Soft tissue therapy was taught in 38 lectures and practical sessions. The Maitland concept and peripheral joint mobilisation was taught in detail in third year, together with neurodynamic testing and treatment in 34 lectures and practical sessions. Six small group tutorials on peripheral nerve injuries, osteoarthritis and rheumatoid arthritis, the shoulder, posture, gait and hand injuries were given.

In fourth year, the students were taught spinal assessments and treatments including mobilization in eighteen lectures and practical sessions. Eleven workshops and two practical sessions were held on various topics involving the lumbar, thoracic and cervical spine, traction and back class. Six small group tutorial topics included the shoulder, overuse injuries, headaches and the spine.

Clinical learning was done in the two OMT blocks in third and fourth year (four weeks each year). The hospitals used were Johannesburg General Hospital, Southrand Hospital, Tambo Memorial Hospital, and Helen Joseph Hospital for third and fourth year. There were approximately six to seven students in each block and therefore two at each clinical setting. They were supervised two to three times in the block (Wits Physiotherapy Curriculum Books 2001 and 2002).

1.1 AIM OF THE STUDY

To determine whether Bachelor of Science physiotherapy graduates from the University of the Witwatersrand consider the OMT undergraduate curriculum content, teaching methods and clinical learning, adequate and relevant to clinical practice.

1.2. OBJECTIVES

1. To determine the adequacy of curriculum content
2. To determine the relevance of teaching methods
3. To determine the adequacy of clinical learning

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The concepts of curriculum, curriculum evaluation and the general content of the OMT curriculum are discussed. The concept of curriculum is a broad subject and much has been written defining and explaining its many components. A general outline of the concept is given. Information included pertains to the content and teaching of the undergraduate OMT curriculum in the physiotherapy department at the University of the Witwatersrand.

2.2 THE CONCEPT OF CURRICULUM

2.2.1. Introduction

Education revolves around the curriculum. The curriculum is used to transmit messages and meanings and teach values (Hawes, 1982). Defining the curriculum is difficult since people reflect their own perspectives in their definitions. The curriculum has been described as the content of a subject, or area of study, or the total programme of an educational institution. However, a curriculum is not just a syllabus. It is influenced by the way the lecturer interprets it and by the context in which he/she finds him/herself. Various factors influence it e.g. the teaching environment, the timetable, relationships and the social context (Squires, 1987).

The modern curriculum includes objectives and goals besides the content. In the past, no statements were made about the goals to be achieved in the educational process. Specifying objectives has caused lecturers to think their courses

through better, and has made it easier for students to know what is expected of them (Squires, 1987).

The concept of curriculum includes content and process. Students process content in various ways from the simple learning of facts to the more complex activity of analysis and problem solving (Lowry, 1993). An example of the process may be learning the anatomy and biomechanics of a joint, then understanding how a specific pathology may affect joint structure and motion to cause pain, and eventually understanding how to treat the cause and reduce pain (Squires, 1987).

The obvious assumption is that all of these theoretical components in the physiotherapy curriculum prepare the graduate for practice. However other factors e.g. professional accreditation groups and regulatory bodies, clinicians, students and lecturers, also influence the design of this particular curriculum (Shepard and Jensen, 2002). This helps to make it relevant to the present standards of practice and a country's health care needs.

The curriculum should be of an acceptable standard i.e. that set by the professional regulatory bodies in the country. The controlling regulatory body for physiotherapy in South Africa is the Health Professions Council of South Africa (HPCSA). The Standards Generating Body (SGB) is part of the HPCSA and sets the standards for physiotherapy. The education and training quality assurance body (ETQA) assures the quality of the training.

2.2.2. Goals and objectives of the curriculum

Goals

A micro and macro environment influences goals of the physiotherapy curriculum. The macro environment includes society, the health care

environment, the higher education system, and physiotherapy related knowledge. Therefore an epidemic, for example, may need to be addressed by the physiotherapy curriculum. In this country, we need to address the HIV epidemic. Due to the impact of the disease on the population of the country, our curriculum should be modified so that students are made sensitive and aware of the resulting impact on society and their role in meeting the arising need. The physiotherapy graduate should be sensitive and responsive to this need in society.
The micro environment refers to the educational institution and clinical practice settings. This environment also affects learning. Finally goals should always be realistic, feasible and desirable (Shepard and Jensen, 2002).

Objectives

The main objective of the design and operation of the curriculum is the teaching of others. Objectives are expectations that should relate directly to the curriculum goals. If a goal were to develop critical reasoning skills, then the objective would be to create learning experiences that cause students to reflect and clinically analyse. They are created to guide the coursework and prepare the students for practice (Shepard and Jensen, 2002).

Different objectives may denote three kinds of behaviour viz. those concerned with thinking (cognitive), feelings (affective) and physical actions (motor/psychomotor) (Matthews, 1989). Objectives should be selected if there is evidence that they will be of value to the learner, that they is attainable, and that they will not be achieved unless it is taught (McNeil, 1996).

In physiotherapy, one may describe behavioral, problem solving, or outcome objectives. Behavioural objectives are identified under the cognitive, affective and psychomotor domains. The problem-solving objectives relate to a ‘problem’ given to the student to solve e.g. working out an appropriate exercise programme for a

patient with a lumbar disc herniation. In this case, the student goes beyond specific behaviours and will need to analyse and think through the problem, coming up with a solution from the information they have acquired or the materials they have been given. Outcome objectives are more broad-based and involve expectations of students practice (Shepard and Jensen, 2002).

2.2.3. Curriculum content

Content should include essential knowledge for practice and diverse knowledge. “Core content should not be static, absolute or permanent”, but should be revised intermittently to reflect global trends in healthcare and in education for healthcare” (Bandaranayake, 2000).

a) General classifications of curriculum content

There have been many recent classifications of content (Matthews, 1989). Content may be summarized as:

1) Knowledge based: this may include actual subjects e.g. OMT.
2) Culture based: content should be related to the culture of the community it serves. It should be sufficiently acceptable to all ethnic groups of that community.
3) Employment based: content may be relevant to a specific profession for example, to prepare the individual for the required tasks.

Content may be biased to one of the above types and curricula may stay this way since staff may be trained and schools accustomed to teach this particular content (Matthews, 1989). The OMT curriculum content includes all the above types of content.

b) Breadth and Depth of content

The issue of the appropriate breadth and depth of undergraduate education is a complex one. Students preferences of broader / narrower courses can only be determined by surveys. In most professional courses, the scope is determined by professional 'needs'. Undergraduate students are developed to a certain level only, after which they have the choice of specializing (Squires 1987).

c) Determination of curriculum content

One way of determining curriculum content would be through job analysis. This is observation of the actual utilization of concepts and techniques by various practitioners in the field. Another way would be to ask qualified persons to indicate what they would consider to be the minimum abilities needed for practice. A third way would be surveying the needs of the population with respect to the specialty, and then designing a course to meet those needs (McNeil, 1996).

Determining content again relates to the philosophy and goals of the physiotherapy department concerned. If the philosophy were to educate graduates to practice ethically in a diverse society, then the content would include teaching of ethical behaviour paying attention to social and cultural differences (Shepard and Jensen, 2002).

In addition to the techniques above, there are various models that may be used to decide on content (McNeil, 1996). A needs assessment may be performed to decide what is critically needed by society, therefore making content relevant to society's requirements. Resources are therefore being used in the most efficient manner and society benefits most greatly. This model relates to the macro environment and its influences on the curriculum as explained earlier. The futuristic model anticipates future needs and structures the curriculum so that students are trained to suit those needs. The rational model gives attention to the learner, society, and fields of knowledge. It involves formulating educational

purposes, selecting and organizing educational experiences, and determines the extent to which purposes are being attained (McNeil, 1996).

d) Inclusion of evidence based knowledge and research principles into curriculum content

Curriculum content should also be based on evidence from research done on physiotherapy techniques and modalities. In this way, the knowledge included is objective (distinguishing it from belief and opinion) (Kelly, 1987). Evidence-based practice should best serve the needs of patients. Members of the profession need to perform research to determine whether interventions work. It is therefore important to help undergraduate students develop research skills (Connolly et al, 2001).

A longitudinal study done by Connolly et al (2001) examined the perception of knowledge and behaviour of students with respect to research. There was a change in a positive direction as students were exposed to research experiences. They also showed confidence in their ability to critically review the literature and accepted the responsibility of keeping updated on the most recent information.

e) Intention and reality

Finally, there is the concept of 'intention and reality'. There may be various aspects one may like to include in the curriculum, but this is only possible in theory. There may not be the time or staff or facilities available to teach them. Therefore, putting it into practice becomes difficult (Kelly, 1987). For example, it may be interesting for the student if many different concepts of joint mobilization were presented in the curriculum to allow them more options for treatment. However, there is not enough time to teach all these concepts. The student may be exposed to a variety of interesting and relevant information in the clinical setting, while in academic settings the emphasis is on theory and critical

analysis. Both perspectives are important in physiotherapy, but may not be covered in-depth due to time constraints. Students should therefore be taught how to constantly reflect on their clinical performance and identify their learning needs so that they are able to continue their education following graduation.

To conclude this topic, another way of deciding on content is to determine current skills demanded in clinical practice. Ultimately, the basic building blocks of physiotherapy practice must be provided. These may include not just an array of treatment techniques but information on teaching the patient and family how to manage their own health care needs, information on effective teamwork, and physiotherapy assistant roles (Shepard and Jensen, 2002). Skills that may be attained later e.g. alternative joint mobilization concepts can be excluded. What lecturers need to ensure is that graduates are able to work in the present health care environment, and that the qualification meets the requirements of the Professional Board for Physiotherapy, Podiatry and Biokinetics.

f) The explicit, implicit and null curriculum

The explicit curriculum is that which is found in the university's curriculum books. It is publicly stated, is reviewed in curriculum planning meetings, and is intentionally planned. It also refers to the courses, clinical education settings, length of time to complete the course, and the degree awarded. When curricula are evaluated, it is usually this component that is scrutinised.

However, some information is not taught but passed on indirectly. Attitudes and behaviours in the clinical setting, for example, may not be taught, but 'acquired' from watching lecturers or clinicians role model them. This is the 'implicit' curriculum. It includes values and beliefs that are passed down from lecturers to their students. The students, who then receive these messages, interpret them as significant (Shepard and Jensen, 2002).

Students absorb various attitudes, behaviours and values from clinical and academic teaching staff concerning lifelong learning, participation in professional organizations, care of patients, and respect of other staff members. These implicit messages may also concern the relative importance of certain types of knowledge, the types of patients who are challenging, specific approaches to treatment, and what personal and professional behaviours are acceptable. The 'implicit' aspect is often disregarded although it has just as much value as the explicit curriculum.

Every aspect of the explicit curriculum contains an implicit message. For example, learning OMT techniques in the laboratory may include an emphasis on professional behaviours. The student should perform the technique the same way they would on a patient, e.g. comfortably positioning the student who is modeling as the patient, or asking for feedback about the comfort of their hand position as they practice (Shepard and Jensen, 2002).

Intuitive skills e.g. clinical reasoning, communication skills, interpersonal skills and having the right attitude (part of the implicit curriculum) are not straightforward to teach. Students should be allowed to play out their future roles. Opportunities that allow reflection and rehearsing of appropriate skills are needed (Howe, 2002).

The null curriculum includes those elements that are missing from the curriculum e.g. information on complementary and alternative therapies. Decisions on what to exclude and include are difficult to make. Sometimes it is purely the extent of available teaching time for the course that dictates this. Time is also needed for students to consolidate concepts or reflect on ideas already taught. This also relates to the concept of intention and reality discussed earlier where it may be necessary to leave out certain subjects (Shepard and Jensen, 2002).

2.3 CURRICULUM PROCESS

2.3.1 Theory and Practice

In physiotherapy, one of the goals of clinical practice is to bridge the gap between theory and practice. This can only take place once the student starts practicing in the clinical placement. It involves a shift from the controlled classroom environment to a de-controlled one. Practice also includes acting without being always able to explain how treatment is working. In time, students develop strategies and routines that may eventually lead to automatic behaviour (Squires, 1987).
Reflection assists in this process. The students learn to refer back and forth between the literature and their clinical experiences. Students have to develop and refine skills like palpation, teaching core stabilization exercises and facilitation of normal movement. Besides technical skills, they also have to learn to motivate and teach patients (Shepard and Jensen, 2002).

Clinical environments in which students practice, however, are designed for patient care and not teaching. Also students' supervisors are in most cases clinicians and not teachers i.e. they may not have formal teaching qualifications. Despite this, clinical rotations provide a good learning experience for students. Students are given the opportunity to apply and integrate knowledge. The effectiveness of this exercise, however, depends on many factors such as feedback to students, staff-student relationships, and organization of teaching. Supervision of students involves constructive supportive feedback that redirects their learning toward areas of deficiency. The process of curriculum evaluation should aim to look at the various factors affecting clinical education e.g. if adequate feedback is given by the supervisor to the student to assist their learning, or if reflection by the students is being facilitated. These techniques can be adopted or improved on if they have been found to be deficient or lacking in the curriculum.

2.3.2 Organisation of the curriculum

Following from this discussion, the next challenge would be to organize the curriculum appropriately so that its objectives are achieved e.g. it should link theory to practice. This is a challenge in physiotherapy. The graduates should be sufficiently competent in applying and integrating their knowledge sufficiently in clinical practice.

Organization involves continuity, sequence and integration. Continuity refers to giving students the opportunity to practice and develop the cognitive, affective and psychomotor skills they've learnt. For example, teaching of joint mobilization techniques is followed by reinforcement of these skills in further laboratory practical sessions. Sequence refers to the process of building one experience on another, so that knowledge is broadened and deepened with each experience. An example would be the task of assuming greater responsibility for patients through each successive clinical placement. Finally integration refers to the complementary relationship of courses e.g. two courses may be run concurrently so that one complements the other reinforcing and clarifying knowledge in each subject (Shepard and Jensen, 2002).
At Wits, the basic Maitland concept is taught first. The theory is then applied by means of problem-solving exercises (in lecture and practical sessions), patient assessments and treatments, and finally case discussions.

2.3.4 Clinical education

a) Clinical reasoning and creativity

Clinical competence is determined by three important skills. These are patient consultation, knowledge, and problem solving ability. One needs to be proficient in clinical reasoning to problem solve. Clinical reasoning is the cognitive process by which the information contained in a clinical case is synthesized, integrated

with knowledge and experience, and used to diagnose the problem. It is the thinking underlying clinical practice (Groves et al, 2002).

Creativity in clinical reasoning is also required. Instead of focusing on the anatomy and pathomechanics alone, one needs to be sensitive to the individual context of each patient's presentation. The patient's interpretation of their pain goes beyond the anatomical structures to the impact of their problem on their lives. It influences emotion, expectations and motivation of the patient. Attention should be paid to psychosocial factors as well. As mentioned in the discussion of the biopsychosocial model, when developing curricula, these aspects should be considered (Jones, 1995).

Lippell (2002) suggests that a good student should be a creative, imaginative, lateral thinker. Although creativity is being more and more valued in higher education, medical curricula tend to discourage it (Lippell, 2002). The author suggests that problem-based education may be helpful to change this. Problem based learning stimulates creativity in the students' approach to a patient. Development of creativity can also be achieved by uncovering hidden talents and by respecting the originality and individuality of students.

Although creativity should be encouraged, this should occur at the correct time. The student should be exposed to specific learning problems that enable them to learn routines and standards first. This will reinforce procedural reasoning and technical skills. They may then be able to develop creative alternatives. The student will not be able to cope with complex, ambiguous or challenging situations initially. Once the pattern of learning is developed, the student can then be challenged with more difficult clinical experiences e.g. encouraged to problem–solve a diagnosis they have not encountered before (Shepard and Jensen, 2002).

b) Techniques used for teaching students in clinical settings

Physiotherapy students are faced with many challenges during their clinical education. Clinical education for physiotherapy students is 'hands-on' as soon as the student enters a placement. They need to know how to examine and treat patients - skills that were learnt in the classroom and laboratory. The student needs to adapt quickly to performing these skills in a very different setting from the laboratory (that is controlled and predictable).

In the past, students were sent to hospital settings only. Now, students may be sent to various other placements e.g. schools, outpatient health care facilities, community-based centres, and health promotion centres. They will therefore have access to patients in the ward, outpatient department, and in the community. They are being exposed to different perspectives and need to look at social and occupational factors (Shepard and Jensen, 2002). Certain techniques discussed below may be adapted to facilitate learning.

The student

All of the above factors affect the student's clinical experience. He/she needs to be responsible to make sure that certain goals are achieved at the end of the block. A way of doing this is for the student to be well aware of the objectives of the clinical block. At the Wits physiotherapy department, students are each given a clinical workbook in which the objectives for each block are listed clearly. Besides setting objectives for the block, students can prepare their own personal goals and objectives for that placement. This will help develop life-long learning habits. As students progress through their clinical learning experiences, and assume more responsibility for their learning, they should also be taught how to self-assess their performance.

Keeping a journal or presenting a case report is a useful clinical requirement since these activities encourage students to think about and question their

actions. However, this ends with the placement. Another tool that may be used to keep this process ongoing is a portfolio. This gives students the opportunity to reflect on their learning and professional development. They are then able to assess their own development as a professional. The clinical teacher or the physiotherapy department should help with structuring of the portfolio to guide They should be asked to set their own goals as well as learn how to do self-assessments. At present, students do portfolios for the public health clinical block only.

The clinical teacher

Clinical teachers play an important role in clinical learning and should be given information concerning the department's mission, goals and objectives. These help to define the context in which the curriculum is presented. Course descriptions will show them the information the student has been exposed to so that they can assess readiness of the group for that particular block. The clinical teacher will also have the added advantage of assessing preparedness and improvement for clinical practice (Shepard and Jensen, 2002). At the physiotherapy department at Wits, the clinical supervisors of a particular block have meetings each year with the lecturer who is the block coordinator. The clinical supervisors are made aware of the curriculum content and the goals and objectives of the block. They are also given a general talk regarding the mission, and goals of the Wits physiotherapy department. They are given the opportunity to contribute to making decisions regarding the organization of the blocks in which they are involved.

c) Factors affecting clinical education

Clinical hours

An investigation was carried out by Dolmans et al (2001) to examine clinical rotations of medical students. Results showed that some time in the blocks were

spent on non-instructive activities. Students perceived this as wasted time. (It was difficult to define non-instructive activity since it varied from one block to the other). They felt that time spent on reflection on experiences and supervision improved effectiveness of the block. These findings support the earlier discussion about the importance of supervision.

Although the study focused on medical students and the blocks they cover, it clarified that a high number of hours in a clinical block does not mean that students find the time effective. Lecturing staff should focus on kinds of activities that facilitate learning. There is a need for careful structuring of clinical time.

The Wits students do eight weeks of clinical work in the OMT block in the third and fourth years of study. A total of 224 hours are spent in this block.

2.3.5 Relevance of the OMT curriculum to the South African situation

It is important for our curriculum to address the needs of the South African community. Community service requirements put further pressure on academic institutions to deliver the kind of training that will adequately equip the new graduate to handle patients and situations in the community. This is because there is sometimes inadequate supervision and mentoring available for the new graduate.

Following the elections in 1994, a decision was made to develop a comprehensive health care system to address the needs of the entire population (Van Rooijen and Van der Spuy, 2000). Government adopted primary health care (which involves health promotion, prevention of disease, and supply of care and effective rehabilitation programmes) as a health care policy. This change obviously impacts on the training of physiotherapy students. They need more training at a primary healthcare level, in communication and interpersonal skills, community based training and professional and management skills. They should

be exposed to the biopsychosocial model with interactive teaching methods (Van Rooijen and Van der Spuy, 2000).

Bradshaw et al (2003) showed that premature mortality in South Africa (especially among males) is largely due to violence and road traffic accidents. HIV/AIDS also accounts for early loss of life in males and females in South Africa. Physiotherapists treating neuromusculoskeletal problems resulting from HIV/AIDS or trauma must have the necessary skills required for the treatment of these patients. The OMT curriculum should equip students with this knowledge.

Clinical placements should also be relevant to the situation in which we find ourselves as health care providers. A great deal of healthcare is now provided in the community. In-patient stays are becoming less common and much shorter than before and therefore hospitals may not be able to provide the experiences undergraduates need. Therefore, community placements may be more relevant and give students more opportunity for clinical training (Van Rooijen and Van der Spuy, 2000). At Wits, the students do a block in the community in third and fourth year. They are therefore given the opportunity to apply their OMT knowledge when involved in public health programmes on health promotion, prevention of disease, and rehabilitation in the community.

A functional approach to treatment has been shown to be of great value (Concha et al, 1995). Physiotherapy students need to be trained to address function when assessing and treating since this is more meaningful to patients especially in the community. The OMT curriculum should therefore place adequate emphasis on the reeducation of functional activities.

Curriculum process and the application of theory to practice are challenging. They may be influenced by the clinical environment and organization of the curriculum. However, the techniques and teaching methods discussed above may be of great value in achieving these goals. Finally, it is important that all of

these teaching techniques are applied within the context of our society. This will enable our students to make a meaningful contribution in their clinical placements.

2.4 CONCLUSION

The concept of curriculum is very broad and encompasses the implicit and explicit curriculum, content and process, all of which contribute greatly to students' growth. Due to the impact of the curriculum on the competency of the student, there needs to be regular evaluation. The evaluation process consists of various classes of information. Supplemental information may give clues regarding the relevance of the curriculum to society, and whether the perceived intentions of the curriculum are actually being achieved.

With regards to OMT, the curriculum should achieve acquiring of basic theoretical knowledge of the assessment and treatment of joint and soft tissue structures, the necessary practical skills and the ability to apply these effectively in the clinical setting. Clinical education (actual practical work in the clinical blocks) appears to have a significant influence on the students produced from a department. Therefore clinical reasoning and application of theory to practice is important. Active teaching methods seem effective in developing critical thinking. Relevance of the curriculum to the South African situation is important and should be considered.

Curriculum evaluation is an extensive process and involves obtaining a great deal of information. This report focused mainly on gathering and analyzing supplemental information. This information was obtained from questionnaires and interviews that are shown to be the most appropriate research tools for this type of study.

CHAPTER 3

METHOD

3.1 INTRODUCTION

This chapter describes the manner in which this study was carried out. Ethical clearance, the research participants and the research tool are discussed. This is followed by a description of how data were collected and interpreted.

3.2 ETHICAL CLEARANCE

Ethical clearance was obtained from the Committee for Research on Human Subjects (medical) at the University of the Witwatersrand.
Ethical clearance number: M01-05-38 (See appendix 6)

3.3. STUDY DESIGN

This is a descriptive retrospective study. Both questionnaires and interviews were used. Interviews were carried out to clarify certain information obtained from the questionnaires.

Use of questionnaires and interviews

Surveys are commonly used in the evaluation process. This research technique uses questionnaires or interviews as its research tools to collect data from a large group of people to get an overview of their perceptions. Surveys may be prospective or retrospective. Prospective studies involve identifying the group of people you want to study and then accessing them as they use a particular service. Retrospective studies like this one look at past events. One may look at the medical records of a clinic and then contact the relevant patients. This is an

easier way to access participants but the disadvantage is that they may have forgotten some of the information you require (Hicks, 1999).

Questionnaire design

This involves several important steps. The objectives of the researcher need to be reflected. The validity and reliability should be established. The questionnaire should be piloted so that any ambiguities/ unclear questions etc can be modified. Questions may be open or closed ended. The former allows the respondent more flexibility and therefore more information can be obtained. However analysis is less objective and therefore not as sophisticated as closed-ended questions. The latter have a structured response format and therefore can be objectively analysed. However, the format may not meet the needs of the respondents (Hicks, 1999). Questions should be put in a logical sequence. The layout of the questions should not influence the responses (Cormack, 1991).

Mail questions should have a shorter format since this produces a better response rate. The advantages of a questionnaire study are that a large number of people can be accessed since the researcher can simply post the questions to them. He/she does not have to administer them in person and this therefore saves time and money on travel. The researcher does not also have the opportunity to influence the sample (Hicks, 1999).

Interviews

The research interview may be used to supplement other methods of inquiry e.g. a questionnaire. Additional information may be collected, responses validated and probed into more deeply, through the interview. The interviewer should set an agenda for the interview. The aims, objectives, and procedure should be stated first. The interviewee should be assured of anonymity. One may also ask if he/she had any questions about the interview before continuing. The interview

schedule standardizes the interview since the same questions are asked in the same sequence and manner. The interviewer inviting the respondent to add further information or clarify his original response may amplify the response (Cormack, 1991).

3.4 RESEARCH TOOLS

3.4.1 Questionnaire and Interviews

(See Appendix 3)

Formulation of Questionnaire

Thirty-five questions were formulated. These were based on the researcher's background knowledge and on discussions with physiotherapy lecturers (including some who have specialized in OMT) and lecturers from a variety of other medical departments. The lecturers were from this university and other universities viz. University of Kwa-Zulu, and Pretoria. Discussions were also held with past graduates. The following procedures were undertaken to establish the validity of the questionnaire.

Possible questions were written down and distributed to some of the above-mentioned people, to gain their views and suggestions. Focus groups with the fourth years were held in 2001(See appendix 1 for focus group questionnaire). This was to determine whether the draft questionnaire addressed issues about the curriculum that were relevant to them. They had completed most of the OMT curriculum and had some clinical experience and were therefore in a position to make appropriate and relevant comments.

Finally, a formal discussion was held with a statistician, two experienced OMT lecturers, a lecturer from this physiotherapy department, and a faculty member from the University of the Witwatersrand who had done previous questionnaire studies on medical curricula. Each question was evaluated individually to see if it

was relevant to the specific objectives, worded correctly, laid out appropriately, and statistically relevant. All the above processes were carried out to check wording, accuracy, readability, analysis, and whether each section was comprehensive and exclusive. This was also done to reduce option bias i.e. to ensure that the order and position of questions in the layout didn't affect how people would respond.

A pilot study was carried out. Physiotherapists from the Johannesburg General Hospital and lecturers from the University of the Witwatersrand Physiotherapy Department participated. Ten questionnaires were returned. Not many changes needed to be made to the draft copy except for several corrections of the wording of some questions. The questionnaire therefore appeared to be well understood. This final draft was used in the study. The focus groups and pilot study contributed to the validity of the questionnaire.

Information sheet

(See Appendix 2)

This was used to introduce the researcher and give some background information about the study to the participant. It also stated that anonymity would be maintained.

Questions

These included a mixture of closed and open-ended questions. There were various types of closed-ended questions viz. dichotomous, scaled and grid type questions.

The first section included questions that covered demographic aspects of the participants i.e. age, area of work, year of qualification, nature of practice and number of years of OMT practice.

The next section covered aspects of undergraduate study. These covered technical and reflective content in the second, third and fourth years, relevance of the Maitland concept, deficient areas in the curriculum, teaching methods, and the inclusion of an optional course.
The next section covered postgraduate study. This included questions regarding which postgraduate courses participants may have done to supplement undergraduate knowledge, and why these courses were useful.

3.5 RESEARCH PARTICIPANTS

Physiotherapy graduates who completed their degree in 1997, 1998, and 1999 were selected to be participants in the study.
The names of graduates were acquired from the Physiotherapy Department of the University of the Witwatersrand records. The Health Professions Council of South Africa (HPCSA) was contacted and an official letter as required, was sent requesting contact details i.e. addresses of the relevant registered physiotherapists. In addition, the South African Society of Physiotherapy (SASP) was contacted since their records were more recently updated and also included telephone numbers of graduates who were members.

3.6 INCLUSION CRITERIA

The sample included physiotherapists in part-time and full-time employment, in hospital and outpatient practice, and in government and private institutions. The sample group consisted of all past graduates from 1997 to 1999.

EXCLUSION CRITERIA

None

SAMPLE SIZE

The entire population (a total of 121 graduates) was sampled.

3.7 DATA COLLECTION

A code was allocated to each questionnaire. An outsider, to maintain anonymity, did this. They were then posted together with a self-addressed envelope to the sample group. The researcher then obtained as many telephone numbers as possible from the SASP records and the telephone directory. The participants were called three weeks to a month later to establish whether they had received the questionnaire. Another copy was sent if they had not received the first one.

Data analysis

The quantitative data were captured on Microsoft Excel spreadsheets that were then analysed with the help of a statistician. (See appendix 5 for results of quantitative data). Responses to open-ended questions were extracted and summarized. (See appendix 5 for responses). On examination of this data, it was apparent that some information needed clarification or clearer explanation. Interviews were subsequently carried out to achieve this.

3.8 INTERVIEWS

Interview questionnaire (see appendix 4)

Attempts were made to contact thirty participants in order to obtain a minimum of six who were willing to be interviewed. Nine participants agreed to being interviewed. The author then conducted nine telephonic interviews. Anonymity was assured before each interview commenced. The aim and procedure was then stated. Six open-ended questions were asked (in the same sequence), based on information received from the questionnaire. This related to curriculum content and teaching methods. Respondents were free to add more information

or explain their response in addition to answering the question. The interviewer asked for clarification if there was any confusion regarding responses to the questions. The responses were then summarized (see appendix 5 for responses).

3.9 STATISTICAL ANALYSIS

The results in this report are presented both graphically and in table form in terms of the percentages of the responses to the indicated questions. The overall results are presented in chapter four. The full results are presented in appendix five in the same format as in the questionnaire. The data were analysed using descriptive statistics and are presented in percentages.

CHAPTER 4

RESULTS

One hundred and twenty one questionnaires were sent out. Thirty-two questionnaires were received and nine interviews were conducted.
Results of this study are discussed under demographics, curriculum content, the clinical curriculum and general teaching methods.

4.1. Demographics

Table 1 below illustrates the place of work of the respondents.

Table 1: Places of work

Workplace	Percent
Government outpatient	12.50%
Government ward	15.63%
Private outpatient	68.75%
Private ward	12.50%
Teaching	6.25%

Note that approximately sixty nine percent of respondents work in private outpatient departments.

Figure 1 below, illustrates the percentage of respondents working in various areas of physiotherapy.

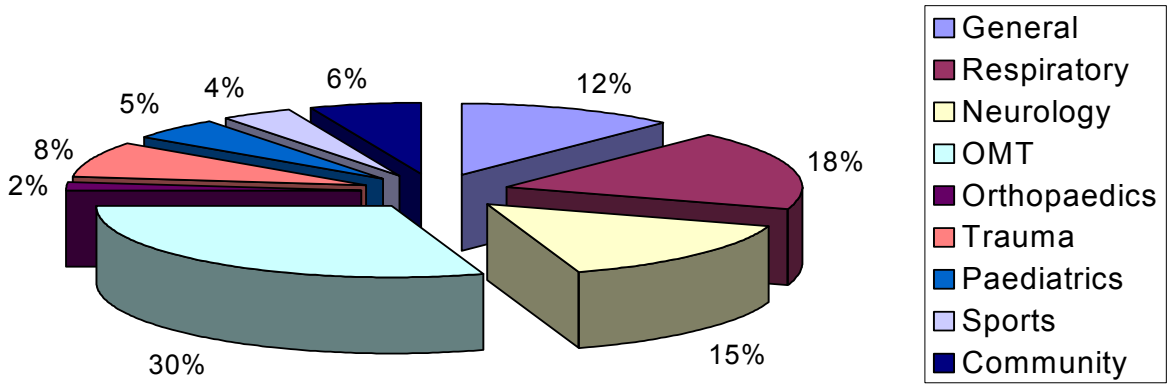

Figure 1: Area of work

The majority of respondents (75%) work in the OMT area. Forty four percent and forty one percent work in the orthopaedic and sports areas (which are related to OMT) respectively.

Table 2 below, illustrates the number of years that the respondents have practiced physiotherapy.

Table 2: Number of years of physiotherapy practice

Years	No. of respondents	Percent
1	1	3.23%
2	10	32.26%
3	4	12.9%
>3	16	51.61%

Most respondents (51.6%) had over 3 years of experience in physiotherapy.

Table 3 below, illustrates the number of years of OMT experience of the sample.

Table 3: Years of OMT experience

Years	Percent
<1	3.45%
1	13.79%
2	27.59%
3	17.24%
>3	37.93%

The majority of respondents (37.93%) had over three years of OMT experience.

4.2. Curriculum Content

4.2.1. Introduction of OMT into the curriculum

Four (12.90%) respondents felt OMT should be introduced into the second year of undergraduate study, twenty (64.52%) felt third year was appropriate, and seven (22.58%) said fourth year was appropriate.

Figure 2 Illustration of the percentage of respondents regarding the inclusion of OMT subjects in second year.

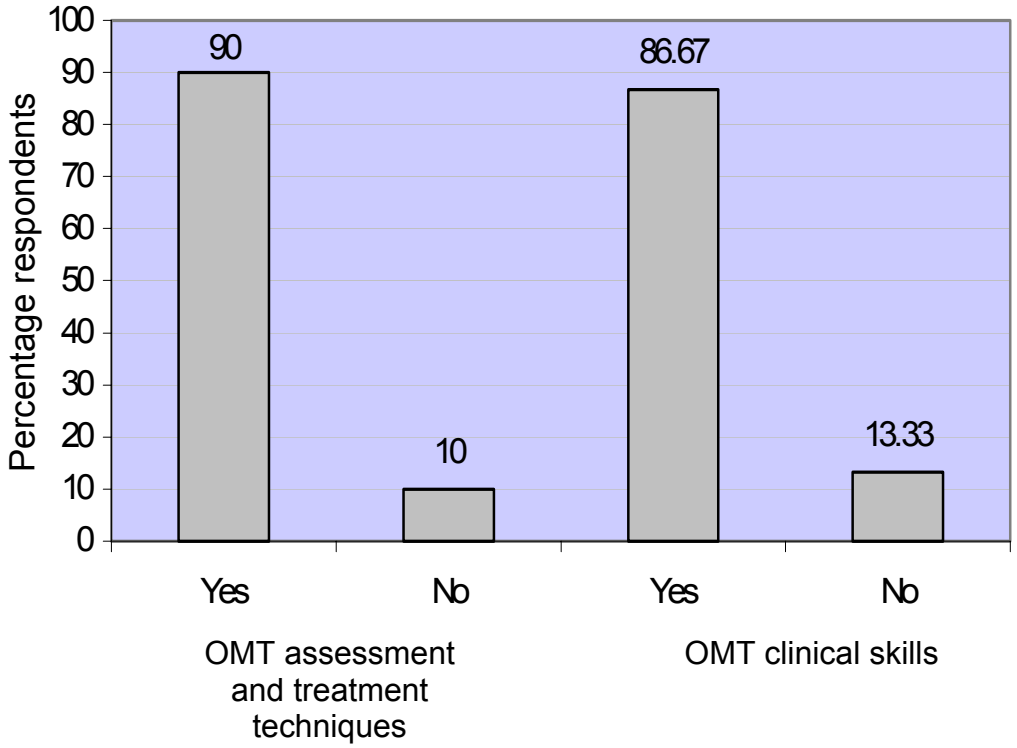

Figure 2: inclusion of OMT subjects in second year

Twenty-seven respondents (90%) felt that assessment and treatment techniques could be introduced in second year.
Twenty-six respondents (86.67%) felt that training of basic OMT clinical skills in a clinical environment can start in second year.

4.2.2. Third and fourth year OMT curriculum

Table 4 illustrates the percentage of respondents who perceived the third and fourth year OMT content to be relevant and adequate.

Table 4a: Suitability of OMT content – relevance of third and fourth year content to clinical practice

Answer	No. of respondents	Percentage
Agree	25	80.65%
Neutral	5	16.13%
Disagree	1	3.23

Twenty-five (80.65%) respondents agreed that the third and fourth year curriculum content was relevant to clinical practice. Five (16.13%) remained neutral and 1 respondent (3.23%) disagreed.

Table 4b: Suitability of OMT content – adequacy of third and fourth year content for clinical practice

Answer	No. of respondents	Percentage
Agree	8	25.81%
Neutral	10	32.26%
Disagree	13	41.84%

Eight (25.81%) respondents agreed that the third and fourth year curriculum was adequate for clinical practice, ten (32.26%) remained neutral and thirteen (41.94%) disagreed.

4.2.3. Teaching related to the biopsychosocial model

Content regarding patient education, advice and counselling related to OMT

Fourteen (45.16%) indicated that they had adequate information on this subject while 17(54.84%) indicated that the information was inadequate.

Content regarding psychosocial aspects, interpersonal skills and community skills

Eleven (35.48%) indicated that the above information was adequate while twenty (60.45%) indicated that it was inadequate.
Twelve (38.71%) said they had adequate instruction in applying these skills while nineteen (61.29%) said they did not.

4.2.4. Deficiencies in the OMT curriculum

Figure 3 illustrates the percentage of respondents who perceived important aspects to be lacking in the OMT curriculum.

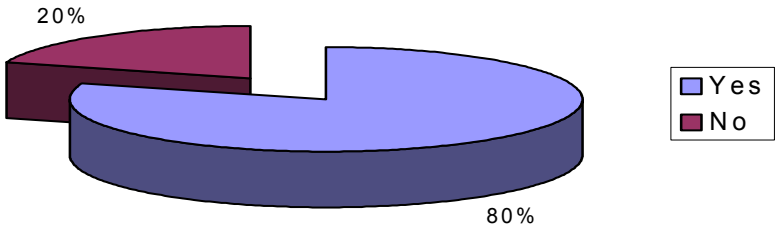

Figure 3: Deficiency of content

According to 24 (80%) respondents, there were important aspects lacking in the curriculum. Six (20%) did not think so.

Areas of deficiency as stated by respondents in the follow-up question:
These were:

- Application of the OMT concept and actual OMT techniques in the clinical setting. Explanation of how the techniques work.
- Biomechanics and functional anatomy.
- Information on the sacroiliac joint and temperomandibular joint.

4.2.5. Additions to the OMT curriculum

Figure 4 illustrates the percentage of respondents who felt that some important additional aspects should be included in the OMT curriculum.

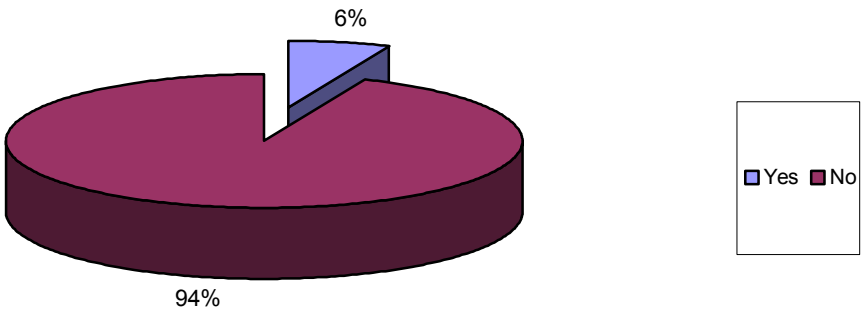

Figure 4: Inclusion of additional content

Twenty-nine respondents (93.55%) said that more information should be included into the OMT curriculum while two (6.45%) did not feel this way.

The respondents stated that more information should be included on the following topics:

- Posture and ergonomics
- Information on psychosocial aspects and counselling.
- Other OMT concepts and alternative therapies.
- More clinical teaching and application of OMT techniques

4.2.6. Alternative and complementary therapies

All respondents would have liked more information about OMT related alternative and complementary therapies.

4.2.7. Maitland techniques

Figure 5a, b and c illustrate the respondents' perceptions concerning Maitland techniques.

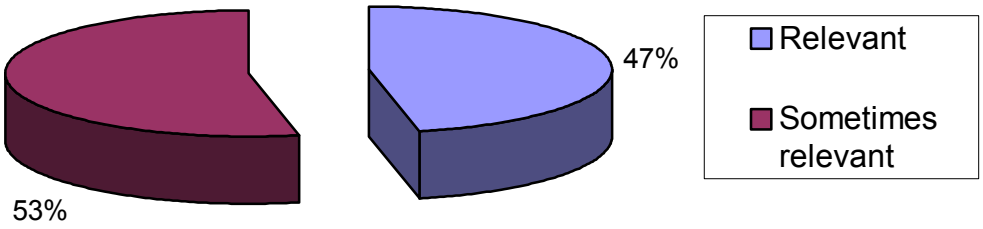

Fig 5a Perceptions regarding relevance of the Maitland concept in clinical practice

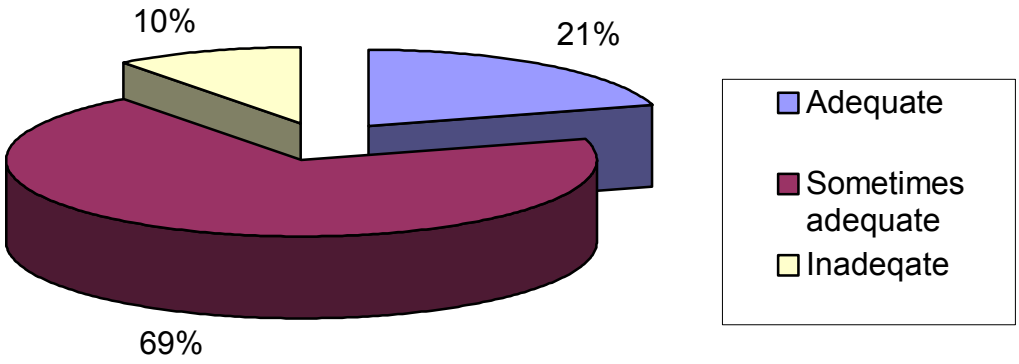

Fig 5b Perceptions regarding whether the Maitland concept is adequate for clinical practice

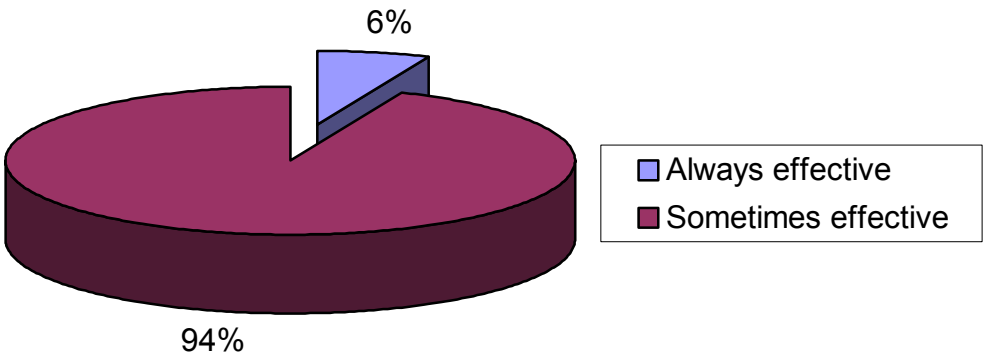

Fig 5c Perception on the effectiveness of the Maitland concept in treatment

Fourteen (46.67%) respondents stated that they found the Maitland concept relevant and six (20.69%) found it adequate for clinical practice.

Sixteen (53.33%) found it sometimes relevant, and twenty (68.97%) found it sometimes adequate for clinical practice.

Three (10.34%) respondents found it inadequate.

Two (6.45%) respondents reported that Maitland techniques were always effective while twenty-nine (93.55%) reported that they were sometimes effective in treatment.

Figure 6 illustrates the respondents' perceptions regarding the teaching of joint mobilisation techniques

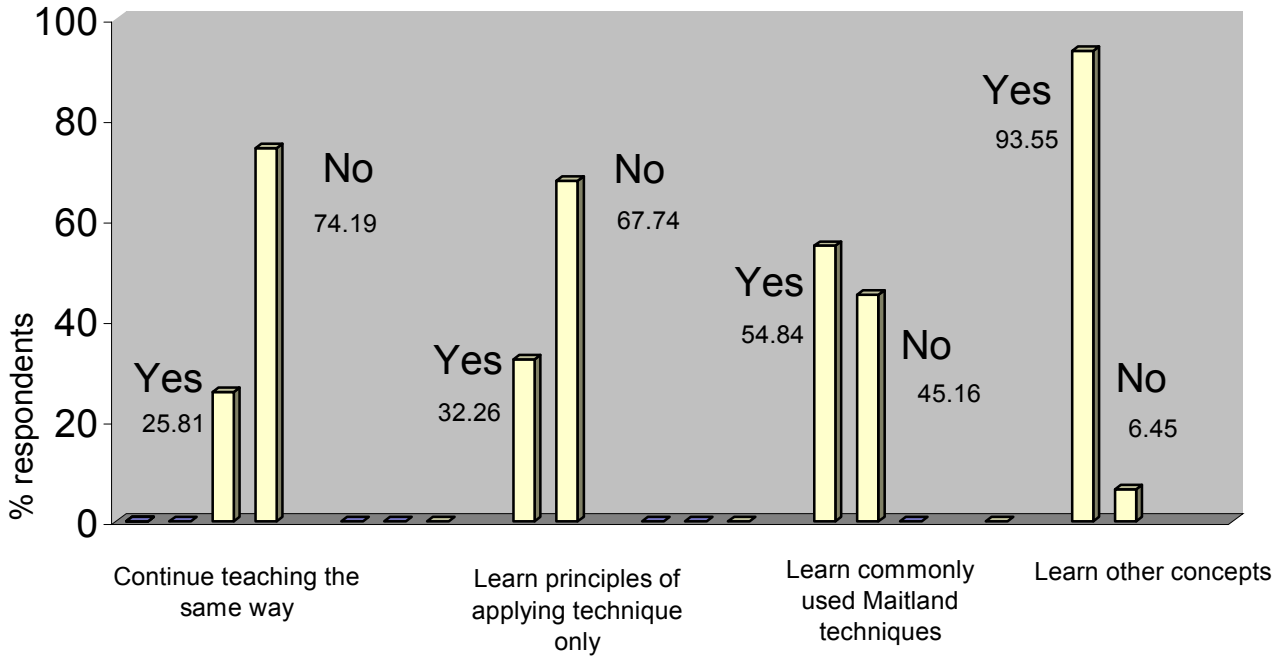

Fig 6: Teaching of spinal and peripheral joint techniques

Eight (25.81%) respondents would like the Maitland techniques for peripheral and spinal joints to continue to be taught the way they were taught to them.

Ten (32.26%) would prefer to learn only the principles of applying a technique.

Seventeen (54.84%) would prefer covering only the most commonly used Maitland techniques.

Twenty-nine (93.55%) would prefer learning the principles of other joint mobilisation concepts.

4.2.8. Use of OMT concepts

Table 5 illustrates the OMT concepts and techniques that are used commonly by the respondents in practice. The highlighted concepts are taught as part of the core curriculum in the department.

Table 5: Use of OMT concepts

Concept	Percent of respondents who always use this concept in their treatments
Maitland (joint mobilisation)	58.06%
Myofascial release techniques	63.33%
Neural mobilisation	19.35%
Mulligan	9.67%
McKenzie	3.22%
Rocobado	3.22%
Cyriax	3.22%
Dry needling	0%
Muscle energy	3.22%
Exercise	3.22%

Eighteen (58.06%) always use Maitland joint mobilisation in their treatments.
Nineteen (63.33%) respondents always use myofascial release techniques in their treatment.
Six (19.35%) respondents always use neural mobilisation in their treatment.
One (3.22%) respondent always use exercise in their treatment.

4.2.9. Creativity

Ten (32.26%) found that the prescribed curriculum allowed for innovation and their own creative ideas. Thirteen (41.94%) seldom found this and eight (25.81%) never found this.

Summary of responses regarding reasons for lack of creativity:

- There was a regimental approach to teaching especially regarding the use of techniques (techniques had to be performed and used in specific ways).
- The curriculum was too ‘textbook orientated’ and did not allow flexibility.

4.2.10. Perceptions regarding exposure to current research in OMT

Twelve respondents (38.71%) felt they were often exposed to current research in OMT through actual teaching/research articles in reading packs. Seventeen (54.84%) felt they were seldom exposed to this while two (6.45%) felt that they were never exposed to this.

4.3. TEACHING METHODS IN THE CLASSROOM

Figures 7a, b, c and d illustrate the respondents' perceptions of the effectiveness of various teaching methods in the classroom

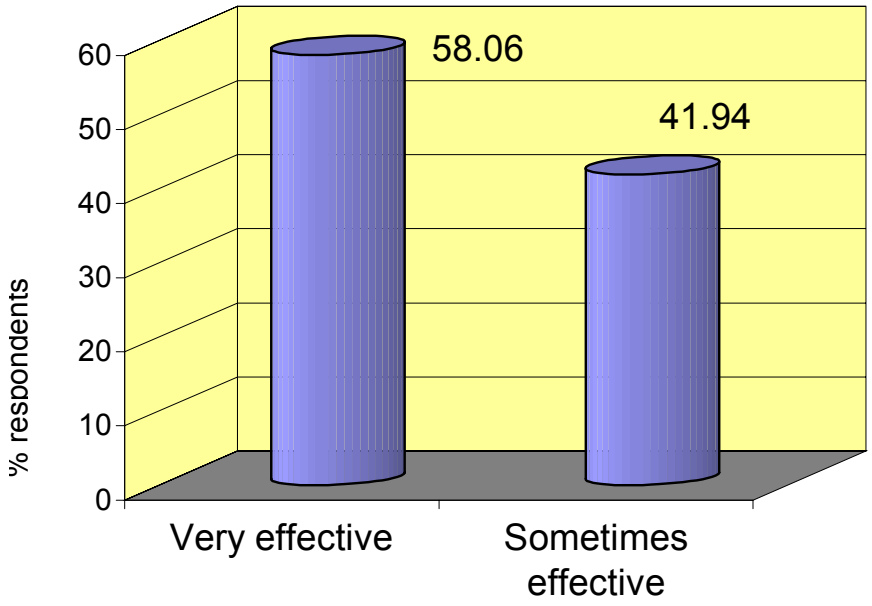

Fig 7a: Tutorials

Eighteen respondents (58.06%) found interactive learning e.g. tutorials very effective while 13(41. 98%) found it effective sometimes.

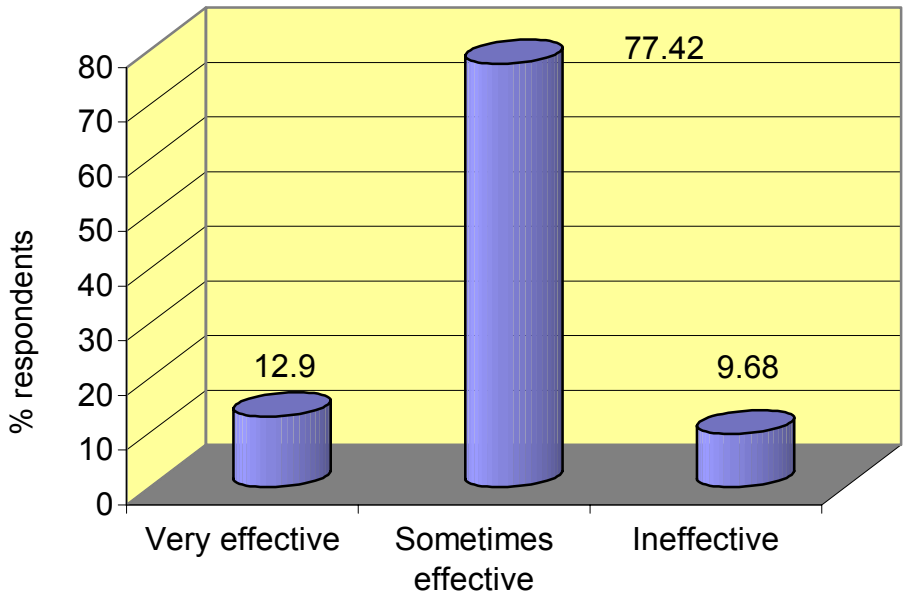

Fig 7b: Practical sessions

Twenty-one respondents (67.74%) found practical sessions very effective, 7(22.58%) sometimes found them effective, and 3(9.68%) found them ineffective.

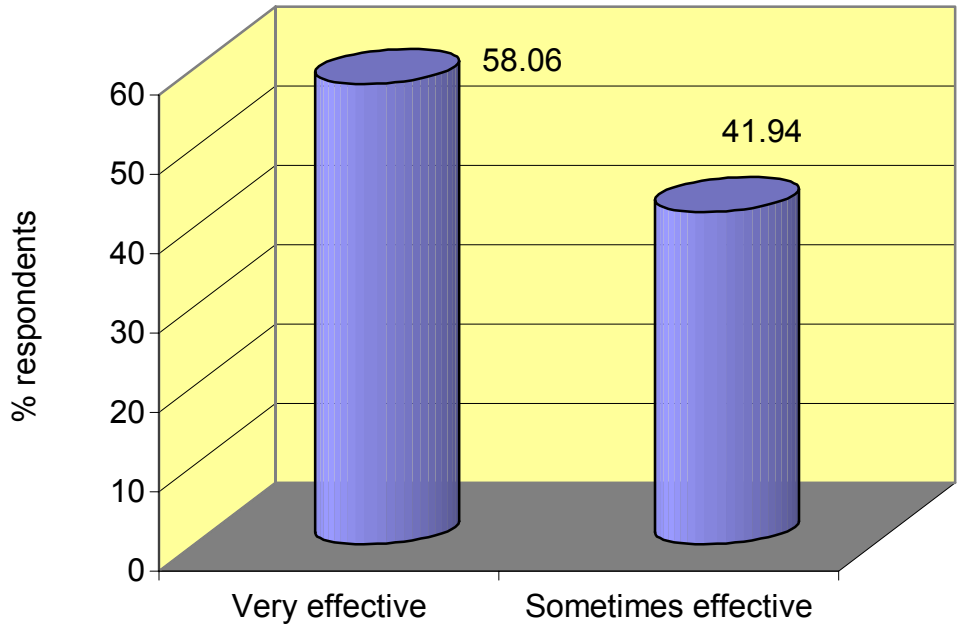

Fig 7c: Workshops

Eighteen respondents (58.06%) found workshops very effective while 13(41.94%) found them effective sometimes.

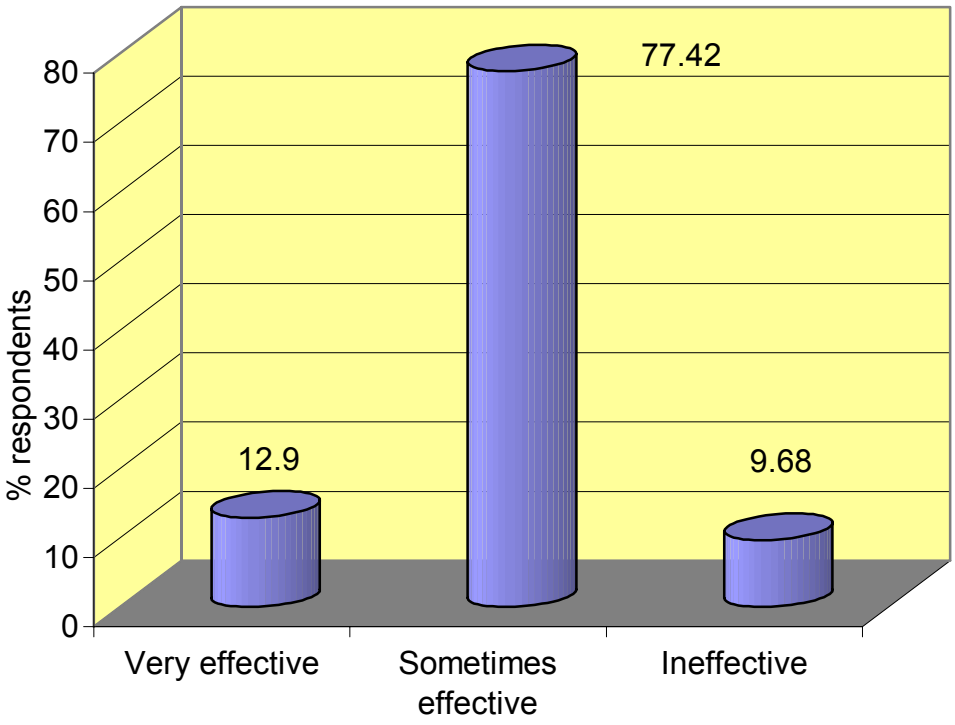

Fig 7d: Lectures

Four respondents (12.90%) found lectures very effective.

Twenty-four (77.42%) found them effective sometimes, and 3(9.68%) found them ineffective.

4.4. THE CLINICAL CURRICULUM

4.4.1. Holistic treatment approaches

Figure 8 illustrates whether respondents felt that holistic approaches to treatment were taught

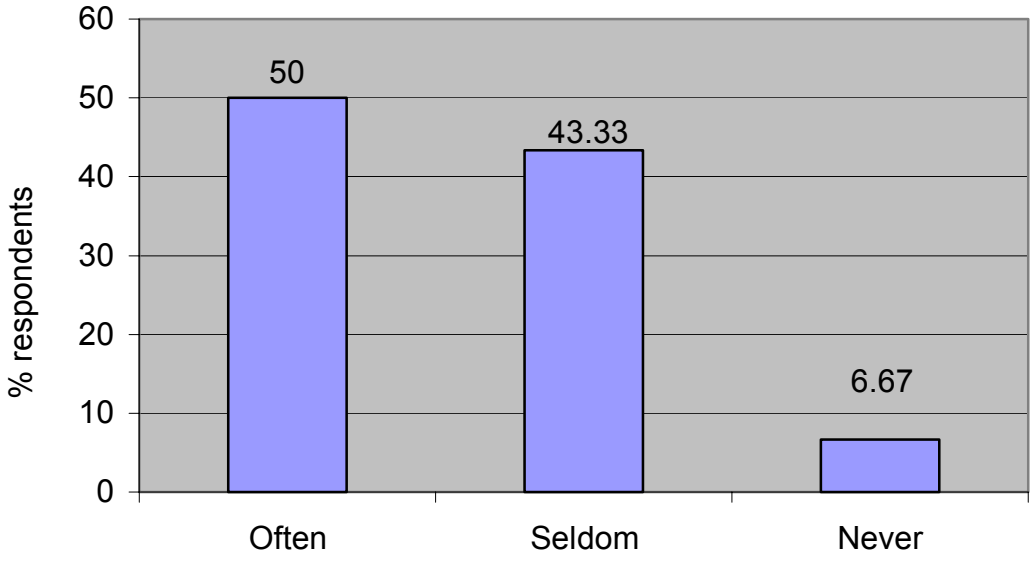

Fig 8: Teaching of holistic treatment approaches

Fifteen respondents (50%) indicated that they were often taught holistic treatment approaches.

Thirteen (43.33%) indicated that they were seldom taught these while two (6.67%) indicated they were never taught these.

4.4.2. Clinical reasoning

Figure 9 illustrates the percentage of respondents that perceived teaching on clinical reasoning to be adequate/ inadequate.

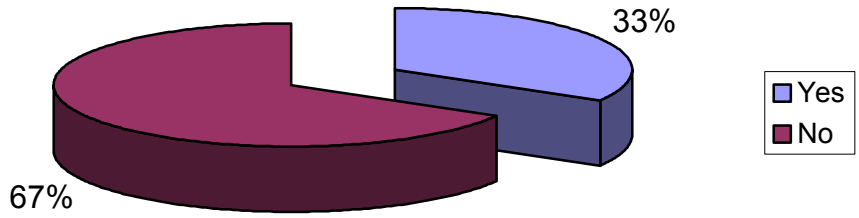

Fig 9: Teaching of clinical reasoning

Ten (33.33%) indicated that they did have sufficient teaching in clinical reasoning while twenty (66.67%) indicated that they did not.

4.4.3. Duration of clinical blocks

Two respondents (6.67%) agreed that the total of eight weeks of clinical time were adequate in third and fourth year while twenty-eight (93.33%) disagreed.

4.5. CLINICAL TEACHING METHODS

Figures 10 a, b, c, d and e illustrate the perceived effectiveness of various clinical teaching methods.

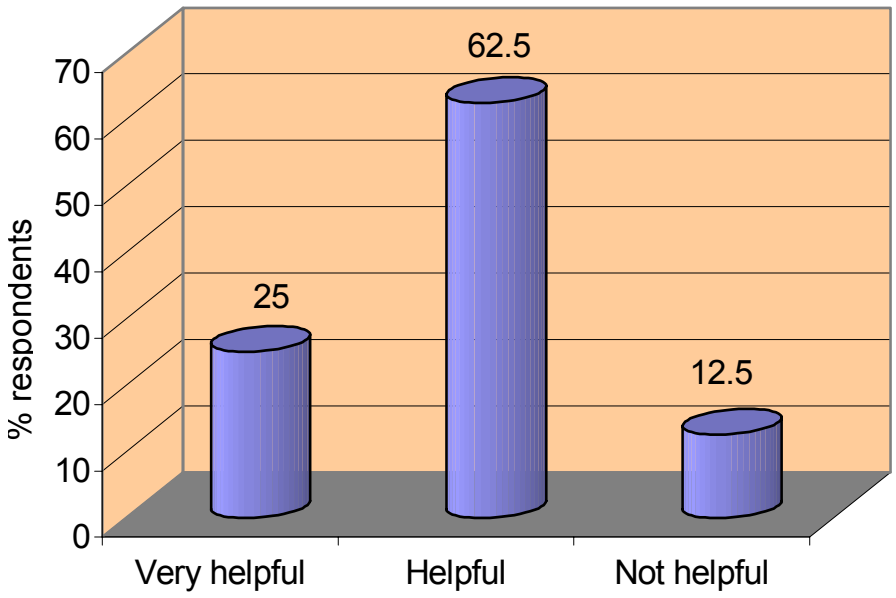

Fig 10a: Working with fellow students

Eight respondents (25%) found working with fellow students very helpful, 20(62.5%) found this helpful, and 4(12.5%) did not find this helpful.

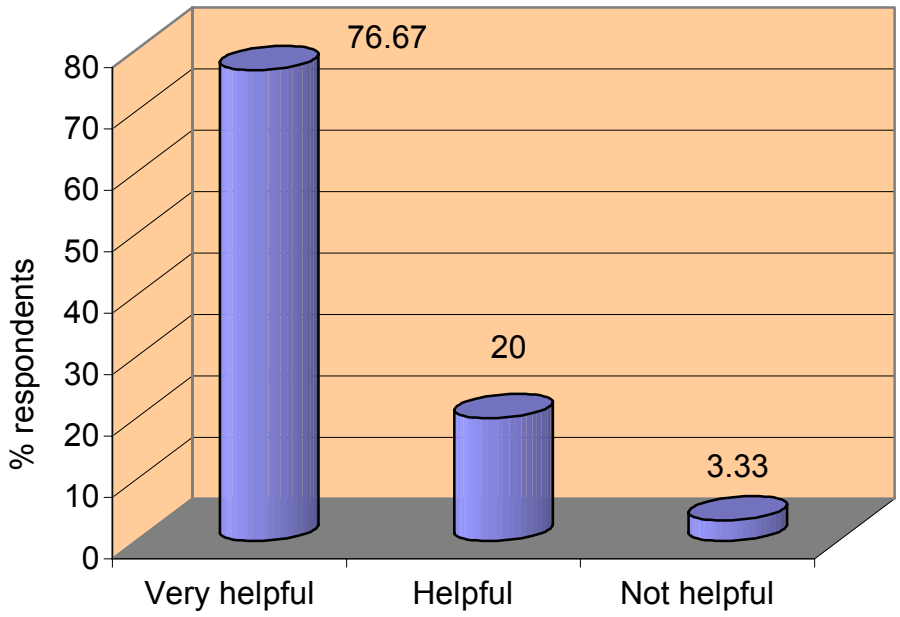

Fig 10b: Supervision

Twenty-three respondents (76.67%) found supervision very helpful, 6(20%) found it helpful, and 1(3.33%) did not find it helpful.

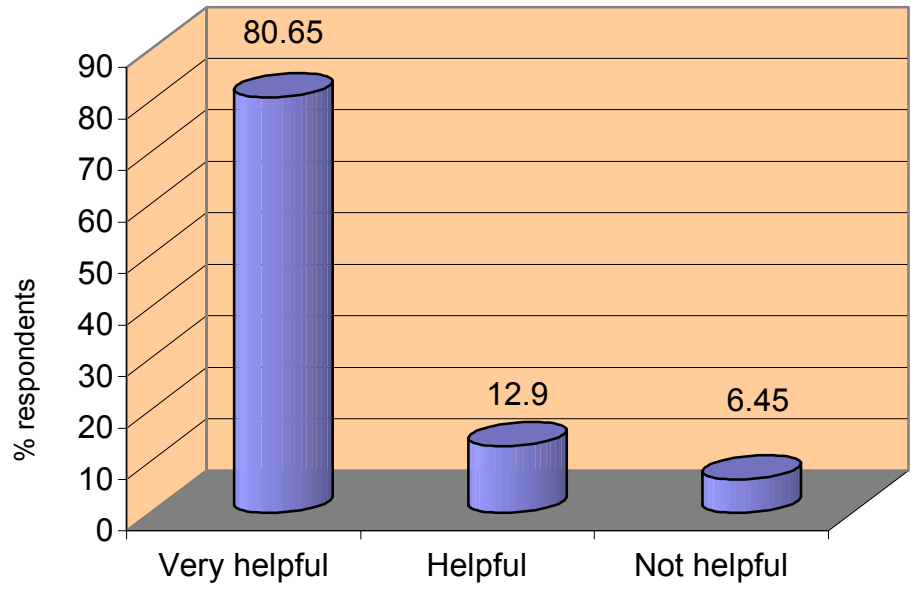

Fig 10c: Patient presentations

Twenty-five respondents (80.65%) found patient presentation very helpful, 4(12.90%) found it helpful, and 2(6.45%) did not find it helpful.

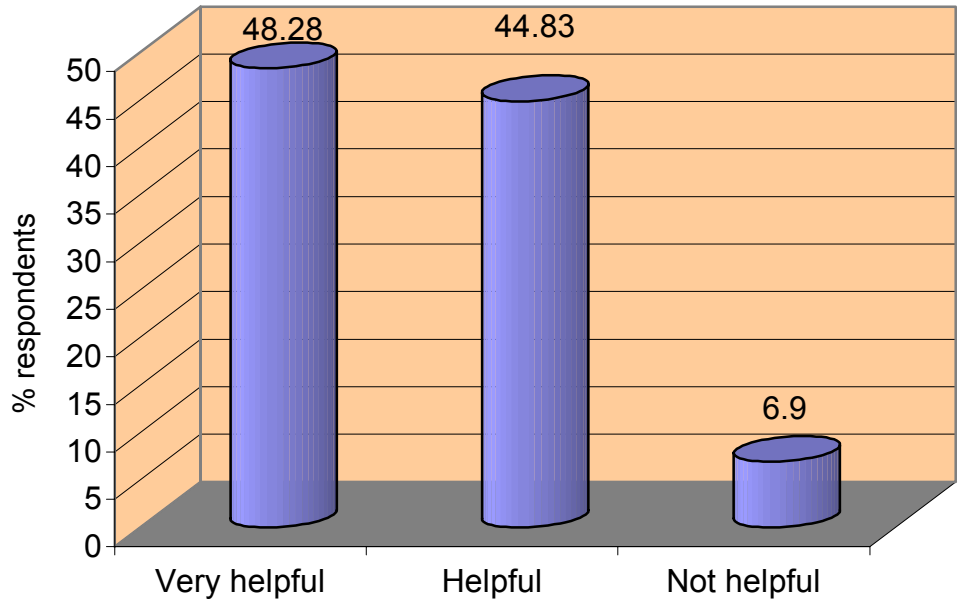

Fig 10d: Working with senior students

Fourteen respondents (48.28%) found working with senior students very helpful, 13(44.83%) found this helpful, and 2(6.90%) did not find it helpful.

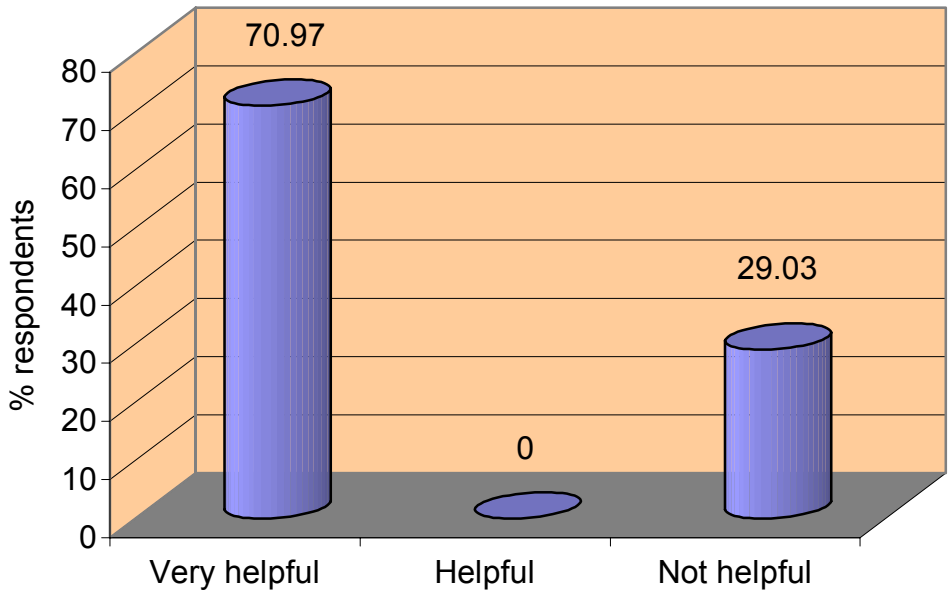

Fig 10e: Discussing patients with lecturers

Twenty-two respondents (70.97%) found discussing patients with lecturers very helpful and 9(29.03%) found this helpful.

CHAPTER 5

DISCUSSION

Curriculum evaluation is an intensive and lengthy process. The purpose of this research report was to obtain supplemental information with the aim of determining whether past physiotherapy graduates from the University of the Witwatersrand, considered the OMT undergraduate curriculum content, teaching methods and clinical learning adequate and relevant to clinical practice.

Curriculum is discussed in general. Perceptions of the graduates regarding OMT curriculum content, teaching methods adopted in OMT teaching, and clinical learning are discussed together with the demographic details of the sample.

5.1. CURRICULUM EVALUATION

a) Definition of curriculum evaluation

The definition of curriculum evaluation is to systematically collect relevant information about the course. The information is interpreted and then used to judge how well a course is meeting its goals. Finally, action is taken to make improvements (Wolf, 1984; Coles and Grant, 1985).

When evaluating courses, we assess the values we need to develop in students. The best way to do this is to evaluate students in clinical practice (Wolf, 1984). One may also evaluate students by surveys, interviews, or focus groups. These will assist lecturers in determining if the course achieved its stated goals. Examining the goals, objectives and content regularly and systematically may also facilitate curriculum development (Shepard and Jensen, 2002).

b) Reasons for curriculum evaluation

Evaluation should be an ongoing process in our planning that results in regular modifications of the curriculum. Terminal evaluation is carried out to assess the final product to establish whether it achieves what it sets out to do, and whether it does it better than other possible approaches (Wolf, 1984). Problems concerning the way the curriculum is run and reasons for these problems are also determined by this information (Coles and Grant, 1985).

c) Factors to consider in curriculum evaluation

Curriculum evaluation may involve assessing various factors viz. methods of teaching, timetabling, allocation of staff and resources, the effectiveness of laboratory work, the attitudes and values of staff and students, and the relationships between learning experiences and examination success. Anyone associated with an educational event may be involved in its evaluation i.e. lecturers or students. Students should be the beneficiaries of this undertaking and should be involved in the process (Coles and Grant, 1985).

d) Classes of information obtained in curriculum evaluation:

Supplemental information

Classes of information obtained in the evaluation process may include information on the learners' development, execution of the programme, comparing the intended and achieved programme and cost of the programme. One of these classes of information is supplemental information. This aspect is expanded on since it relates directly to this research report. Supplemental information includes opinions and views of students, lecturers, administrators, community members and others. This information can play an important role in evaluating the overall worth of a programme. One is able to determine:

1) how the programme is perceived by different groups,
2) whether there is a discrepancy between what is perceived to be taking place, and what is actually taking place,
3) what additional information is needed to help one see why people are holding these views (Wolf, 1984).

This information is important since it gives feedback on how the students (consumers of the course) envisaged the curriculum since the curriculum on paper may not be what actually occurs. The intentions of the planners may not be carried out. The students' experience may be quite different from what it was envisaged to be. Their observations or comments should therefore be considered. The task of the evaluator is to look at their responses in relation to relevance of the content. Content analysis has therefore been found to be of use. As mentioned earlier, lecturing staff may not be aware of deficiencies of content, less effective teaching methods, course layout/ organization etc. The students, who have experienced the curriculum and been direct recipients of the information, will be in a better position to judge its effectiveness (Coles and Grant, 1985).

There should not be too much emphasis placed on supplemental information alone. Evaluation studies should consider this information together with the other classes of information listed above.

Supplemental information can be gathered through questionnaires and interview techniques. Results of these studies show that extreme views concerning courses are rare. Reactions are usually mild and new courses are generally accepted if they are well thought out and presented. However, one is never sure what views and reactions may be so one needs to find them out. A subclass of supplemental information involves finding out how well national needs have been met (Wolf, 1984).

Another subclass of this information is the ‘side-effects’ or unintended effects of educational programmes, courses and curricula. The unintended effects of programmes may be positive or negative. A positive unintended effect may be that students’ interests have been stimulated and their attitudes developed. The reverse may also occur. A way of determining ‘side-effects’ is through the use of follow up procedures. Following learners into the first few years of employment can furnish one with this information. The detection of ‘side-effects’ is thought to be easier when conducting studies using unstructured interviews and open-ended questionnaires (Wolf, 1984).

It is necessary to establish if an unintended effect occurring with one group of learners occurred with another group. If not, it may not be the course or curriculum that has caused the particular ‘side-effect’. It is therefore desirable that one assesses more than one group of students or graduates. Effects that are found in one group can be compared to another. These effects would be useful to ascertain since negative ‘side-effects’ that are detrimental to learning can be identified and eliminated while positive ‘side-effects’ can be maintained (Wolf, 1984).

Gathering supplemental information

In obtaining the information, conflicting results may be found but generally one finds a great deal of agreement amongst members of the specific group studied. Protection should be given to those who are participating. Anonymity assurance is sufficient for the participants to be open and candid (Wolf, 1984).

e) Sampling considerations in curriculum evaluation studies

A probability sample is one in which every member of the population has a known and non-zero chance of being included in the sample. Sampling is widely used in research. It is accepted since it is often impossible to obtain information

from every member of the population. In evaluation studies, the situation is often different. A course or curriculum has been developed for a particular group who are usually very accessible. Also, one is focusing on a particular group that was exposed to a specific curriculum. Therefore, the whole group should be sampled (Hicks, 1999) as in this study. This sample of learners that are being studied may be regarded as representative of all learners i.e. current and future who are to be exposed to the programme. This group can be used as a basis for inference as long as the population of learners in the future does not change drastically every year (Wolf, 1984).

Analysis and interpreting supplemental information in evaluation studies

This depends on the form of the data. Information gained from interviews and reports from discussions need to be summarized in narrative form and qualitatively analysed. However, attitude and opinion measures from questionnaires i.e. closed- ended questions can be quantified (Wolf, 1984). When looking at opinions, views and reactions, one should pay attention to extreme results e.g. strong reactions. The majority of the group may feel that it was ineffective or very effective. This is significant and may be compared to other areas of evaluation (Wolf, 1984).

5.2. THE WITS OMT CURRICULUM CONTENT

In 1997-1999, all OMT teaching was covered in third and fourth year at Wits. When asked about the third and fourth year curriculum content, most respondents (87%) agreed that the curriculum was relevant to clinical practice. Forty two percent, however, found the content inadequate. Some reasons why they thought it was inadequate, were given in the interview while others were given in response to certain questions in the questionnaire.

The following paragraph outlines the perceived inadequacies of the curriculum. Information regarding the following aspects were perceived to be insufficient:

a) Patient education, advice and counseling relating to OMT.
b) Psychosocial aspects, interpersonal skills, and communication skills required for the management of patients with neuromusculoskeletal conditions.
c) Instruction in applying the above skills.
d) Clinical reasoning skills.
e) Clinical time.
f) Joint, soft tissue, neural mobilization concepts, psychosocial aspects, and specific conditions.

The above topics will be discussed now except for clinical reasoning skills and clinical time that will be discussed under clinical learning. There are many OMT concepts that may be taught to students at an undergraduate level. However, each OMT concept is unique and has to be understood well in order for the student to practice it. They also need to learn the technical skills that go with each concept. This can take much time to learn since they have to be applied very precisely to get the desired effect. The lecturer may therefore make reference to these concepts, so that the students hear about them. He/ she may not be able to actually teach them in detail due to inadequate time, staff and facilities (Kelly, 1987; Shepard and Jensen, 2002). However, the present content should be examined. Certain topics may be less important and can be replaced with more relevant information on other OMT concepts and specific conditions as indicated by the respondents.

The respondents indicated that there was perhaps inadequate emphasis or information relating to psychosocial issues and communication. This part of the curriculum should be improved on since much of OMT learning is now based on the biopsychosocial model. The physiotherapist should address psychological factors in combination with passive treatments like mobilization. This is because

cognitive- behavioural strategies can be effective in dealing with pain and improving functional outcomes (Shacklock, 1999). Education of the patient can be integrated with OMT. When treating pain, for example, physiotherapists often need to discern if physiological, psychological, environmental or behavioural factors have a contributory role. In recent years, researchers have discovered that physiotherapists have to address the above factors and may therefore adopt a combination of interventions to reduce pain. This multi-faceted approach to back pain is necessary in order to be effective (Li and Bombardier, 2001; Pinnington, 2001). The curriculum has to address all factors that have a bearing on the patient's problem. It should include the necessary information that physiotherapists will require to identify and deal with the above issues adequately. This will prepare students to holistically manage their patients.

In conjunction with acquiring the above knowledge, students should learn how to communicate appropriately with patients in order to obtain relevant information related to psychosocial aspects e.g. illness behaviour. They need to be able to deal with these factors to an extent, and know how and when to make referrals to other health professionals.

Respondents also indicated their use of various OMT related therapies. Almost 100% of the sample always or sometimes uses Maitland, myofascial release, neural, Mulligan, and McKenzie techniques. These techniques are popular and this finding probably compares well to OMT practice in South Africa. Rocabado and Cyriax' concepts, muscle energy techniques and exercise were used less often. Although the first three concepts are more rarely practiced, it is quite alarming that exercise is hardly used in treatment by this sample. While passive therapies e.g. joint, soft tissue, neural mobilization, and posture correction are important, and are often indicated in treatment, modern day practice tends to lean towards the use of active therapies like exercise. Exercise empowers the patient to participate and continue in treatment even after their physiotherapy management is over. Twomey (1992) and Goldby (1997), advocate the use of

exercise indicating the physiological benefits like the maintenance of muscle bulk and bone mass.

Previously, it was common practice for the physiotherapist to simply administer treatments such as joint mobilization and an electrotherapy treatment for neuromusculoskeletal conditions. However, the benefits of empowering patients so that they take responsibility for their health have been realized. A way in which this can be achieved is to educate the patient on their condition and how to treat and prevent further problems. Exercise prescription is usually appropriate to treat and prevent further damage to the body.
The present curriculum does place more emphasis on exercise. The opinion of physiotherapy lecturers in the department now, is that present physiotherapy students use more exercise in their treatments than those in the past.

The respondents indicated that they were using much of what was covered in the university curriculum taught to them. Studies have found that the choice of treatment may be influenced by the physiotherapists' academic degree. In addition physiotherapists' own perceptions of effectiveness influences what they use (Li and Bombardier, 2001).

When asked specifically about the use of the Maitland concept, the majority of the sample found it sometimes relevant and adequate, and sometimes effective in treatment. According to surveys done to assess which modalities and techniques physiotherapists use in practice, it was found that a multi-dimensional approach is adopted. Many of these include passive treatment like manual therapy e.g. Maitland (Jackson, 2001). The Maitland concept has been taught as a basic joint mobilization concept in all South African university physiotherapy departments. Initially much emphasis was placed on this topic since the general treatment approach was more passive (as discussed above). Recently however, the trend in OMT has been to rehabilitate the patient. An active therapy such as exercise to mobilize joints and soft tissue and strengthen muscles has more long-

term benefits. Therefore, although Maitland should be included in the curriculum, the lecturer should also teach other treatment modalities found to be effective in managing neuromusculoskeletal conditions. When considering which joint mobilization concepts to teach, South African physiotherapy schools have chosen to keep the Maitland concept in the curriculum. The Maitland assessment is especially good to teach since it is well understood in OMT practice. Reference is often made to the Maitland assessment and certain treatment techniques at postgraduate level and in international clinical settings. It provides a good foundation for students. They can easily build on it and add to this knowledge in later years. While other joint mobilization concepts are also popular, they cannot be taught in the short space of time allowed in the curriculum. However, it may be useful for students to know that these concepts exist, so that they can study them further if they choose to.

The respondents also wanted to spend more time learning fewer Maitland techniques (those commonly used in practice), and have more assistance in the practical sessions. The present OMT curriculum teaches the commonly used techniques for each peripheral joint and for the spine. This gives the student adequate time to learn the each technique well. More assistants are now allocated to the practical sessions wherever possible so that students have enough help. For several years, the class sizes were larger and this made teaching of practical skills harder. The present first year class, however, has fewer students so teaching in these sessions should be more manageable in the future.

Ninety four percent of the sample would like to learn the principles of other joint mobilization concepts. However, as discussed earlier, these should be mentioned but cannot be taught in detail.

Perceptions on alternative and complementary therapies (CAM) were obtained. A hundred percent of the sample would have liked more information on this subject.

Although this may be beneficial to include, the time allocated may be just enough for core content only. Secondly, there may be insufficient evidence to support the theories these therapies are based on. A study by Murdoch-Eaton and Crombie (2002) showed no statistical differences between one group of students who had knowledge on CAM, and another (which did not have knowledge on CAM) regarding their ability to evaluate CAM therapies or advise patients.
While this information may be interesting, it may not be what students have to know before graduating (Kelly, 1987; Shepard and Jensen, 2002). Perhaps, one could give a very brief idea of CAM therapies so that students are aware of what treatment options are available to a patient. It may also help them understand the kind of treatment a patient may have had if they came for physiotherapy after, or whilst having CAM.

When asked about introduction of OMT into the curriculum, most respondents felt that it should be introduced in the third year of study. Also, according to responses to other questions, the majority felt that more information be added to the curriculum. If OMT started in third year only, and we added more information into the curriculum, it would increase the already large volume in third and fourth year. It may not be possible to teach all of this in just two years of study. The respondents may not realize this due to lack of teaching experience.

The interview responses were different. Most of those who were interviewed prefer OMT to be introduced into second year. However, they thought that others thought third year was appropriate since clinical work starts in this year of study and students are therefore able to apply their knowledge better at this stage. Although the sample felt third year was a good starting point, they (90%) also felt that second year students were ready to be taught assessment and treatment techniques. About 87% also felt that training of basic clinical skills could start in second year in a clinical environment.
This discrepancy may be due to the fact that the physiotherapy curriculum at the University of the Witwatersrand starts in second year. Second year is loaded with

basic physiotherapy subjects. The added OMT volume may crowd the curriculum. If changes are made to the entire physiotherapy curriculum so that courses are brought forward to first year, it may be possible to include more OMT information in second year. Also, if the second year curriculum had a clinical component e.g. visits to the outpatient department, OMT topics would be suitable to include. Therefore, the appropriate decision would be re-arrangement of the entire physiotherapy curriculum so that OMT subjects are covered in a space of three to four years instead of two years.

5.3. TEACHING METHODS

The results from this study indicate that active learning methods were preferred by this sample of graduates. Interactive learning or active learning methods have been found to be more effective than passive methods e.g. lecturing (Matthews, 1989). The problem-based approach is a more in-depth approach to learning because students analyse and integrate information, as opposed to the passive absorbing of information (Lowry, 1983). In a study by Lake (2001), additional reading and discussions in class facilitated learning. Students' marks in this class were higher than those in the group that were being lectured to. The students in our department are given additional reading for the block. They should perhaps be asked to set aside time during the OMT block to discuss some of these topics. Active learning may help them to apply the information better.

The respondents found tutorials, practical sessions and workshops to be more effective than lectures. Fifty eight percent found tutorials very effective, sixty eight percent found practical sessions very effective, and fifty eight percent found workshops very effective. Only thirteen percent found lectures a very effective teaching method. While lectures are useful to initially teach/ give large amounts of basic information (Shepard and Jensen, 2002; Matthews, 1989), tutorials, workshops/seminars and practical sessions that allow discussion and facilitate problem solving are effective in getting students to consolidate their knowledge

(Matthews, 1989; Lowry, 1993; Lake, 2001). During some practical sessions, discussion with other students and the facilitator help students to clarify facts and resolve problems. The clinical blocks run by the physiotherapy department also includes tutorial sessions. Lecturers and clinical teachers present patients or allow students to present patients to the group of students allocated to the placement. This helps to facilitate discussion around various OMT topics. At the end of the rotation, case presentations are made by groups of students. A discussion follows each presentation so that the audience can ask questions or add information.

If the department chose to have more active learning, it should be introduced gradually. Students may perceive that the course or the lecturer is not effective since they are not being given all the information (Lake, 2001). Students prefer passively absorbing information from the lecturer rather than sourcing it themselves probably because this is easier to do.

Most respondents (74%) would not like Maitland techniques to be taught the way they were taught to them. According to the interview results, they would have preferred to cover application of the techniques to various conditions. This has been addressed subsequent to 1999. The present curriculum encourages problem solving in some of the OMT practical sessions. Once techniques are taught, case scenarios are given to the students so that they can apply what they have learnt when treating a particular condition. In some sessions, they are exposed to patients in the outpatient department. After spending time assessing and treating the patient, they present their findings to the class. A discussion follows each presentation. More patient presentations to the class by lecturers may be of great value. This will have to be incorporated into the curriculum.

5.4. CLINICAL LEARNING

Most respondents (67%) indicated that there was insufficient teaching in clinical reasoning. In the interview, the participants suggested that clinical reasoning be

facilitated by problem solving exercises and bedside teaching. Literature supports the fact that feedback from supervisors and lecturers is useful (Groves et al, 2002; Jones, 1995). Clinical reasoning is a cognitive process that needs to be developed by the methods mentioned above together with exposure to expert clinicians. The patient presentations, case presentations and problem-solving practical sessions mentioned earlier are a good means of teaching clinical reasoning skills. However, additional time is needed in the curriculum to include more patient presentations and problem solving practical sessions. Students do get feedback from lecturers and clinical teachers on some of their management of patients which helps to teach clinical reasoning. Documentation by the student is also assessed and it is quite clear to follow their thinking processes when looking at the patient files. One can then correct or improve this.

Ninety seven percent thought that undergraduate students would benefit from interaction with lecturers who lecture in postgraduate courses. Postgraduate lecturers are often regarded as being expert clinicians. They will therefore facilitate or further develop clinical reasoning skills. Whenever possible, specialist OMT lecturers are now asked to do a workshop or give a lecture to students. Their input in the clinical blocks would also be of great value.

According to the literature, creativity is stifled in medical curricula (Lippell, 2002). Only 32% of the respondents felt that the OMT curriculum allowed for innovation and their own creative ideas. The rest felt that that the curriculum never or seldom offered this opportunity. When asked about how creativity could be encouraged in the curriculum, participants responded that exposure to more approaches or methods of treatment would allow creativity. They also felt that if given the freedom to modify techniques, they would be more creative. One may assume a rigid and strict approach when teaching OMT treatment techniques since they are described very specifically in the textbook.
In clinical practice, one cannot adopt a very rigid approach due to the varying situations in which patients present. Creativity may be stimulated by good

supervision, mentoring and developing a problem-based approach to teaching (Lippell, 2002). This is also related to understanding that a patient's problem may be multi-faceted and addressing issues like the patient's emotions, expectations, and other psychosocial factors. Creativity in clinical reasoning may be encouraged by getting the student to be aware of not only the patient's condition, but also the context of their presentation e.g. the patient's interpretation of their pain and how it affects their work and personal life.

Creativity in the present curriculum is expected of students at certain times and not others. It is expected in most cases when students are planning treatments. They are not given a specific selection of techniques or modalities to use for each condition. They can choose any combination of treatments as long as they are able to justify their choices. However, certain treatment techniques or modalities may be recommended by the lecturers for specific conditions in some teaching sessions e.g. case presentations or practical sessions. Students are expected to know and use these. Once students have a good understanding of the basic knowledge, have more clinical experience, and have acquired more knowledge, they will be better able to judge how and when to change these recommended treatment approaches. This may only be possible at a later stage e.g. end of fourth year or post-qualification in most cases.

The literature shows that the effectiveness of a clinical placement depends on other factors as well (Dolmans, et al 2001; 2002). A high 'patient mix' i.e. seeing patients with a variety of conditions, and a high level of supervision is necessary to make the placement effective. Time wasted on 'non-instructive' activities (not defined in the literature) did not contribute to learning. The response to one of the questions illustrated the value of supervision. Seventy seven percent found supervision very beneficial in helping students to apply theory to practice. In recent years, the role of the clinical teacher in the department has been well defined. Clinical teachers from all the placements are invited to the department to be made familiar with the department's mission, goal and objectives, course

content and the process in which the block is run. The importance of their role in the students' learning is emphasized. This has helped clinical staff to participate more in teaching in clinical blocks. Lecturers are required to visit placements once a week as well, to increase student contact time.

Clinical teaching in the department involves many tasks for example, observing students assess and treat patients or presenting patients to the student group. Asking questions is also an effective way of facilitating recollection of facts or principles (Shepard and Jensen, 2002). Questions may be of different standards e.g. certain questions may require students to simply recall a fact, while others need analysis and evaluation of information. Supervisors should also encourage students to self assess their performance (Shepard and Jensen, 2002). Keeping a reflective journal could be introduced to enable students to think about their practice. Dolmans et al (2001) showed that time spent on reflection on experiences and supervision improved effectiveness of the block.

Respondents found patient presentations, discussing patients with lecturers and working with senior students very helpful. Perhaps these will also assist in clinical learning. As discussed earlier, patient presentations are done on a regular basis. Senior students should be recruited to help to assist wherever possible. This will have to be well structured into the timetable.

Ninety three percent felt that eight weeks of clinical time spent in the outpatient department practicing OMT was inadequate. Although more time may be beneficial to the student, the curriculum may not allow for additional time to be spent in the blocks. However, a 'mixed' orthopaedics and OMT block (16 weeks) may be the answer to acquiring more clinical experience. The future neuromusculoskeletal blocks may be arranged this way. Research has shown that a learner's level of attainment is directly related to the length of time actively spent in learning. Learning also depends on whether the time allocated is properly used (Matthews, 1989). Therefore, although clinical time may be

increased, the individual student is still responsible to make sure that they benefit from this by spending their time wisely.

5.5. RESEARCH AND EVIDENCE BASED THERAPY IN THE OMT CURRICULUM

Thirty nine percent felt that they were often exposed to current OMT research while 55% felt that they were seldom exposed. It has been shown in the literature that if students are expected to do research as part of their course, they show confidence in their ability to critically review the literature and accept the responsibility of keeping updated (Connolly et al, 2001). The fourth year curriculum now includes a specific research course. This may create interest in this area and encourage students to do post-graduate research and add to the body of information we already have. In addition to this, students can perhaps be encouraged to do minor research projects in their clinical blocks e.g. measure and report on the outcomes of specific treatments. This may stimulate interest in research and develop critical thinking.

Evidence-based therapy is becoming increasingly important. It is therefore necessary for students to be exposed to the practice of sourcing and reading the latest literature relating to the subject and be aware of evidence-based practice. They should be encouraged to adopt an evidence-based approach to management of patients (Kelly, 1987). The present curriculum facilitates this approach since students are required to do a verbal presentation of a case study at the end of each clinical block. They have to make reference to published literature to support their management of the patient. They are also required to submit portfolios at the end of the elective block. The portfolio consists of three case studies and a reflective journal. Each case study has to be accompanied by a critique of a journal article on the subject and the clinical reasoning behind their assessment and treatment of the patient. A reflective journal is also included and this helps students to consider their management of patients and assess their own thinking processes to see if their decisions were correct.

The methods mentioned above have been adopted to encourage critical thinking that will hopefully help to raise the standard of OMT practice. University departments have a responsibility to take the lead in finding and passing on updated information to the rest of the profession. This will make an impact that will help change traditional ways of thinking.

5.6. DEMOGRAPHICS OF RESPONDENTS

The majority of respondents work in an outpatient setting. Most spend time practicing OMT. Therefore their opinions are relevant to the area of study. They are well informed and perhaps able to judge the content better than those who spend more time practicing in other specialist areas. However, their expectations of the curriculum may also be higher compared to physiotherapists in general practice and other specialist areas, since this is their area of interest. The results indicate that some physiotherapists work in two or more workplaces listed in the questionnaire. They did not indicate *one* area in which they work the most although the question asked for this specifically.

The majority of respondents had completed over three years of practice and therefore had a fair amount of experience in the practice of physiotherapy. Thirty eight percent of the sample had over three years of OMT experience. These figures indicate that the respondents were able to make reasonable judgements, and had knowledge of the information and skills needed for effective practice. Graduates are appropriate for this study given their recent experience of the undergraduate curriculum and their current clinical role (Sanson-Fisher and Rolfe, 2000).

5.7. CONCLUSION

In summary, most past graduates were practicing OMT and had a fair amount of clinical experience. They stated that the curriculum was lacking in areas

pertaining to other OMT concepts, patient counseling and psychosocial aspects and research. They would also like information on alternative therapies. Wherever possible, appropriate information may be added to the curriculum. However, not all subjects can be covered in detail in the available teaching time. The respondents appear to be using much of what they were taught at university in clinical practice. This shows how influential the undergraduate curriculum can be, and emphasizes the need for regular evaluation and updating.

The respondents indicated that OMT be introduced in third year, although they felt that second year students are ready to start some of the OMT subjects taught in third year. This discrepancy may be due to the fact that the physiotherapy curriculum at the University of the Witwatersrand begins in second year. They may have therefore felt that the second year curriculum is too full or that OMT is not appropriate at this stage since the students are not doing clinical work. A possible change is anticipated in the future first year curriculum. Physiotherapy teaching may start in the first year and this will make it possible for second years to be taught OMT and to start practicing it.

The respondents preferred active learning methods. They would also prefer Maitland techniques to be applied to the clinical situation. Case scenarios in the present curriculum help students to learn how to apply the techniques they learn. Perhaps more patient presentations by lecturers will also achieve this. Patient presentations will also teach application of other OMT treatments, how to measure outcomes and educate patients. With regards to clinical learning, respondents preferred that clinical reasoning skills be developed to a greater extent. They suggested that bedside teaching, problem solving exercises, and exposure to expert clinicians would facilitate this. This is also supported by the literature. The practical sessions in the department include problem-solving exercises and expert clinicians are invited to give some lectures or conduct practical sessions. Unfortunately a lack of funding does not always permit outside lecturers to participate in teaching.

The respondents also felt that more clinical time was needed and that supervision was very valuable in contributing to clinical learning. Clinical supervision is considered very important in the department and clinical teachers and lecturers have been allocated to all placements. Students and staff also give patient presentations. Clinical time for this block may be increased in the future.

A limitation of the study is that the researcher carried out the interviews. This could have introduced an element of bias although it appears from the above discussion that graduates were honest in their opinion. Also, a specific format was followed when the interviews were carried out. This would reduce bias.

CHAPTER 6

CONCLUSION

In this study, it was found that 25.81% of respondents found the third and fourth year OMT content adequate while 41.94% found it inadequate. Eighty one percent found the OMT curriculum relevant.

Ninety four percent of respondents would like information on other OMT concepts. Fifty five percent indicated that they found information on patient education and advice lacking. Sixty six percent would like more teaching on aspects related to the biopsychosocial model. Other areas of inadequacy included biomechanics, functional anatomy, posture and ergonomics, alternative therapies and pathology. Content is being revised and when complete, will include more relevant information e.g. psychosocial aspects relating to back pain.

The respondents felt that the curriculum may be made more relevant if there was more emphasis on clinical reasoning and application of treatment modalities to the clinical situation. Exposure to research would also make the practice of OMT relevant in the clinical setting. Only 38.71% felt that they were often exposed to current research in OMT.

Active teaching methods were preferred instead of passive learning. Only 13% of the sample found lectures effective while graduates preferred tutorials, practical sessions and workshops.

With regards to clinical learning, respondents felt that the development of clinical reasoning skills was needed. Sixty seven percent indicated that they had insufficient teaching in this area. Supervision, patient presentations and discussion of cases with lecturers were found to be very helpful.

The current curriculum is being revised. More information has been included on posture, ergonomics, biomechanics, pathology, and patient advice and education. In the pre-clinical teaching in 2006, there will be time available to relate more information to the biopsychosocial model and other OMT concepts. There will be time to briefly inform the students on the role of alternative therapies.

The 2005 first year undergraduate physiotherapy students are for the first time covering some physiotherapy topics. This makes it easier to teach the OMT content over the four years of study (and not three years as previously). All of the content with the exception of a few topics will be taught by the end of the 3rd year of study, allowing for consolidation of knowledge in 4th year. The new curricular arrangement gives the lecturer more time with the students making it possible to use more active learning methods e.g. problem solving exercises. This should improve clinical reasoning skills.

Supervision in the clinical placements has increased. A university supervisor attends the placement every week. Clinical supervisors are aware of their role and have meetings with the block coordinator (at least twice a year) besides the informal meetings at the clinical placements. Supervision involves patient presentations, bedside teaching and discussion of patients' conditions, assessments and treatment plans. This helps to develop the students' clinical reasoning skills.

The students are more exposed to research. They are given research articles to read in their clinical block. They do a research course in third and fourth year in which they learn research skills. They are also required to do a literature review for their case presentations at the end of each block.

Changes to the curriculum have therefore started and will continue to be made until it includes all the relevant content.

6.1 RECOMMENDATIONS

The results of this study indicate that the OMT curriculum content taught at the University of the Witwatersrand be inclusive of more topics which are relevant to practice today. Wherever possible, students should be taught how to apply their knowledge in clinical practice. More clinical time (extended blocks) and teaching is also recommended.

A plan for future fourth years would be to include some of the present fourth year curriculum (spinal mobilization) into third year. The present third year curriculum has several free lecture periods in the second half of the year. Perhaps the foundation for treating spinal patients should be laid down at the end of third year to allow for more application and problem solving in the fourth year pre-clinical block. The entire OMT curriculum (second year to fourth year) should be organized in such a way that there is continuity and sequence (Shepard and Jensen, 2002). Continuity refers, for example, to getting the students to practice and develop manual techniques. This involves learning and revising in several practical sessions. Sequence is the process of building one experience on another. Therefore, after the techniques are learnt, one can introduce case scenarios to teach students how to select the correct techniques and apply them. More difficult scenarios where selection of correct techniques is not so obvious, and where students have to modify them before they are applied, may follow this.

Ninety three percent felt that eight weeks of clinical time spent in the outpatient department practicing OMT was inadequate. Perhaps a mixed orthopaedics and OMT block would allow students to have more exposure to patients requiring OMT assessments and treatments.

Future research in this area may be done to compare OMT curricula taught at other physiotherapy departments in the country. This may give more clues as to which topics are relevant for undergraduate OMT study.

A similar study to this should be carried out after changes are made to the OMT curriculum to see if there has been an overall improvement.

There should be ongoing evaluation of the OMT curriculum so that it is always relevant to the current situation in South Africa, and of a sufficiently acceptable standard comparable to OMT practice around the world.

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APPENDICES

APPENDIX 1

FOCUS GROUP QUESTIONNAIRE

1. **What do you like about the OMT course content?**

2. **What do you think needs improvement concerning course content?**

3. **What specific suggestions do you have for changing the course/ course content?**

APPENDIX 2

INFORMATION SHEET

THE PERCEPTIONS OF RECENT WITS GRADUATES CONCERNING THE ORTHOPAEDIC MANIPULATIVE THERAPY (OMT) CURRICULUM CONTENT

My name is Anita Gounden. Thank you for taking time to read and answer this questionnaire.

At present I am teaching the OMT undergraduate curriculum to the 2nd, 3rd and 4th year physiotherapy students at Wits. My teaching role has prompted me to research the curriculum content to assess whether it is adequate and relevant to clinical practice today.

OMT is a rapidly advancing field. We hear of developments in assessment and management all the time. It is therefore important that the curriculum be regularly evaluated and updated accordingly.

Your response to this questionnaire will play a vital role in the evaluation process. The results will also be useful to the Professional Development committee who are currently involved in evaluating and standardising OMT curricula around the country.

Be reassured that your anonymity as a participant will be maintained. A number will be allocated to the questionnaire for reference.

As a participant, you will be informed of the results of the study. Your contribution is valuable and I urge you to please help us in this important assessment process.

I appreciate your effort and time.

Thank you

Anita Gounden

APPENDIX 3

QUESTIONNAIRE

Please tick the relevant boxes.
More than one may be ticked, depending on the type of question.

SECTION A

Demographic Data

1. **Age** :

2. **Year of qualification** : a) 1997 ☐ b) 1998 ☐ c) 1999 ☐

3. **Where do you spend most of your time working?**
(Please tick the appropriate box or boxes)

1.1 - Government Practice
a) Hospital(wards) ☐
b) ☐

1.2 - Private Practice
c) Hospital(wards) ☐
d) Out-patient dept ☐

1.3 - Teaching
e) ☐

4. **Are you working in:**

a) South Africa ☐
b) Another country ☐ (please specify)

5. **In which area of practice do you spend most of your time?**

a) General ☐ b) Respiratory ☐ c) Neurology ☐
d) OMT ☐ e) Orthopaedics ☐ f) Trauma ☐

g) Paediatrics □ h) Sports □ i) Community □
j) Other □ (please specify):

6. **Number of years of physiotherapy practice**:

a) <1 □ b) 1 □ c) 2 □ d) 3 □ e) >3 □

7. **If OMT is included in your work, then indicate number of years of OMT practice**:

a) <1 □ b) 1 □ c) 2 □ d) 3 □ e) >3 □

SECTION B

Undergraduate Information

1.1 **When should OMT be introduced into the undergraduate curriculum?**

a) 1st Year □ b) 2nd Year □ c) 3rd Year □ d) 4th Year □

1.2 **Would you have preferred the second year syllabus to have incorporated some third year OMT subjects:**
(Please tick the appropriate box)

	Yes	**No**
a) Assessment and treatment techniques of Peripheral joints	1)	2)
b) Training of Basic OMT Clinical Skills in a Clinical Environment eg: Assessment and treatment techniques of Peripheral joints, exercise programs, application of myofascial release techniques.	1)	2)

1.3 **What are your opinions concerning the curriculum content in third and fourth year?**
(Please tick the appropriate box)

1.3.1 **Third and fourth year curriculum content was relevant to clinical practice:**

a) Agree □ b) Neutral □ c) Disagree □

1.3.2 **Was adequate for clinical practice:**

a) Agree □ b) Neutral □ c) Disagree □

1.4 **In your third and fourth year you were taught the Maitland concept of assessment and treatment techniques for peripheral and spinal joints.**

Have you found this concept:
(please tick the appropriate box in 1.4.1.1 and 1.4.1.2)

1.4.1.1 a) Relevant □ b) Sometimes relevant □ c) Irrelevant □ for clinical practice

1.4.1.2 a) Adequate □ b) Sometimes adequate □ c) Inadequate □ for clinical practice

1.4.2 **Are the techniques:**

a) Always effective □ b) Sometimes effective □ c) Ineffective □ .

1.5.1 **You were taught Maitland treatment techniques for peripheral and spinal joints:**

Would you:

a) like it to continue being taught the way it was taught to you?

1) Yes . 2) No □

b) prefer learning the principles only eg principles of applying an antero-posterior (AP) movement without teaching all APs on every joint?

1)Yes □ 2)No □

c) prefer covering only the most commonly used Maitland techniques?

1)Yes □ 2)No □

d) prefer learning principles of other joint mobilisation concept?

1)Yes □ 2)No □

1.5.2 **Which techniques do you use in treatment:** (Please tick the appropriate box for each aspect)

	Always	**Sometimes**	**Never**
Maitland (joint mobilisation)	1)	2)	3)
Barnes/Travell (myofascial release)	1)	2)	3)
Butler/Elvey (neural mobilisation)	1)	2)	3)
Other – Specify			
	1)	2)	3)

1.6 **How would you describe the OMT undergraduate course content with regards to the following aspects?** Please tick the appropriate box for category A and the appropriate box for category B)

	A		B	
	Varied/ Diverse Information	**Stereotyped and Limited Information**	**Clinically Based**	**Not Always Relevant to Clinical Practice**
1.6.1 **Assessment**	1)	2)	3)	4)
1.6.2 **Treatment**:				
a) Joint, neural and myofascial release techniques	1)	2)	3)	4)
b) Exercise therapy	1)	2)	3)	4)
c) Biomechanics	1)	2)	3)	4)
d) Ergonomics	1)	2)	3)	4)
e) Function	1)	2)	3)	4)
f) Balance and proprioception	1)	2)	3)	4)

1.6.3 **Please tick the appropriate box as above**

	Adequate Information	**Inadequate Information**
a) Information on patient education, advice and counselling (related to OMT)	1)	2)
b) Psychosocial aspects, interpersonal skills and communication skills for neuro musculoskeletal patients	1)	2)

1.6.4 **Did you have adequate instruction in applying the above skills?**

a)Yes □ b)No □

1.7 **Did you have sufficient teaching in clinical reasoning i.e.were you able to diagnose the structure at fault/the biomechanical basis for pain or abnormal movement?**

a)Yes □ b)No □

1.8 **Your course content together with readings helped you to adequately manage:**

a) all patients encountered □
b) most patients encountered □
c) some patients encountered □
d) none of the patients encountered □

1.9 **In your opinion, were there any important aspects:**

1.9.1 **lacking in your OMT training?**

a) Yes □ b) No □

If yes, please specify:

……
……
……
……
……..

1.9.2 **you think should be included into the OMT curriculum?**

a) Yes b) No

If yes, please specify:

……
……
……
……

1.9.3 **you think should be excluded from the OMT curriculum?**

a) Yes b) No

If yes, please specify:

……..……

……..……

……

……

……

1.10 **Did you find that the prescribed curriculum allowed for innovation and your own creative ideas?**

a) Often □ b) Seldom □ c) Never □

If 'seldom', or 'never' was ticked, substantiate:

……

……

……

……

1.11 **Were you adequately exposed to current research in OMT ie through actual teaching or research articles within the reading files?**

a) Often □ b) Seldom □ c) Never □

1.12 **Were you taught holistic treatment approaches?**

a) Often □ b) Seldom □ c) Never □

1.13 **Would you have liked more information about OMT related alternative and complementary therapies eg. Chiropractic, osteopathy, biokinetics, podiatry?** (Please tick the appropriate box for each)

a) Yes □ b) No □

1.14 **Were the total of eight weeks of clinical time adequate in third and fourth year?**

a) Yes □ b) No □

1.15 **What helps teaching application of theory to practice?** (Please tick the relevant box for each)

Clinical Learning	**Very Helpful**	**Helpful**	**Not Helpful**
a) Working with fellow students	1)	2)	3)
b) Supervision	1)	2)	3)
c) Patient presentation	1)	2)	3)
d) Working with senior students	1)	2)	3)
e) Discussing patients with lecturers	1)	2)	3)

1.16 **How effective are the following?:**

Theoretical Learning	**Very Effective**	**Sometimes Effective**	**Ineffective**
a) Interactive learning eg tutorial groups	1)	2)	3)
b) Practicals	1)	2)	3)
c) Workshops	1)	2)	3)
d) Lectures	1)	2)	3)

1.17 **Core and Optional Curricula**

The Core curriculum is that part of the curriculum which is a baseline standard or essential component to a curriculum. Core competencies are the requirements to be satisfied before a new graduate assumes the responsibilities of a qualified practitioner.

The optional curriculum is a special study module for those interested in doing additional OMT training within the undergraduate curriculum. They may be interested in specializing in OMT at a post-graduate level. Institutions overseas have incorporated such “specialist” courses for undergraduates to allow them to pursue their area of interest to an extent before qualification.

1.17.1 **Should an optional course be offered?**

a) Yes □ b) Unsure □ c) No □

1.17.2 **If an optional course was offered, what information do you think should be included in it?**

……..……

……..……

……..……

……

1.18 **Do you think that undergraduate student interaction with post-graduate program lecturers be beneficial:**

a) Yes □ b) No □

POST-GRADUATE

2.1 **Please give information about OMT courses you have attended since you qualified.**

Year in which course was done	Name of Course	Duration of course eg week-end

2.2 **Which courses listed above best supplemented your undergraduate knowledge and why?**

……..……

……..……

…….……..

……

……

APPENDIX 4

INTERVIEW QUESTIONNAIRE (WITH RESPONSES)

- **Question 1 (regarding Section B question 1.1 from previous questionnaire)**

Most respondents (64.52%) stated that OMT should be introduced in the 3rd year of study. Why do you think this was so? Indicate if 'unsure' or 'don't know'.

- **Question 2 (regarding Section B question 1.3.1 and 1.3.2 from previous questionnaire)**

When asked about 3rd and 4th year curriculum content, most (80.65%) agreed that the content was relevant to clinical practice but 42% stated that the content was inadequate. Why do you think the 3rd and 4th year curriculum content was inadequate?

- **Question 3 (regarding Section B question 1.5.1)**

94% of the respondents would like to learn the principles of other joint mobilization concepts. Are there any specific OMT concepts you would like to see included in the curriculum?

- **Question 4**

How do you think OMT techniques should be taught?

- **Question 5 (regarding question Section B question 1.7 from the previous questionnaire)**

Most respondents (67%) said that they did not have sufficient teaching in clinical reasoning while 33% said it was adequate. How would you like to see clinical reasoning skills being taught or stimulated in the curriculum (clinical and theoretical curriculum)?

- **Question 6 (regarding Section B question 1.10 from the previous questionnaire).**

Only 32% of the respondents felt that the curriculum allowed for innovation and their own creative ideas. The rest felt that the curriculum seldom or never offered this opportunity. What methods may be used to allow the student to be creative and innovative in OMT?

APPENDIX 5

FULL RESULTS OF STUDY

The total sample number was 121. A questionnaire was posted to each one of the graduates. Thirty-two completed questionnaires were received after three months. There was therefore a 26.4% response rate. Nine interviews were conducted after responses from the questionnaires were analysed. All questionnaire and interview responses are presented here. The question is written first as it appeared in the questionnaire and is followed by the response. Questions asked in the interview and their responses are included. These follow the questions they relate to in the questionnaire. Graphs and tables are not labeled since they are accompanied by the question and responses that are written out in full.

Section A:

Demographic data

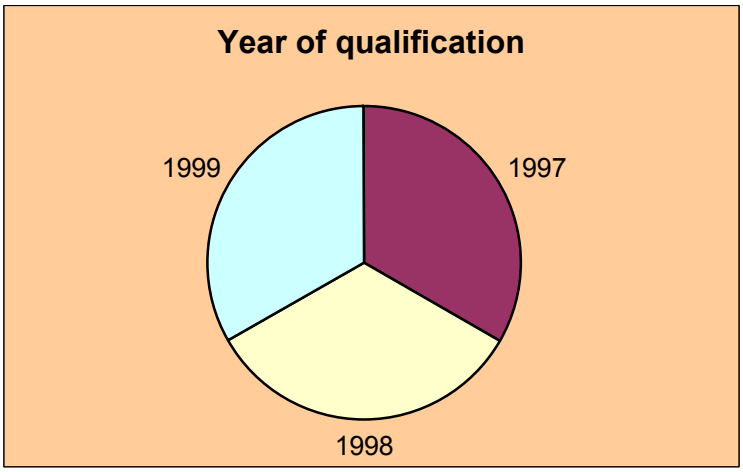
1. Age:

Question 2

Year of qualification: a) 1997 □ b) 1998 □ c) 1999 □

32 responded.

28.13% of the sample qualified in 1997, 34.38% qualified in 1998 and 37.50% qualified in 1999.



Year	No.s	Percent
1997	9	28.13
1998	11	34.38
1999	12	37.5

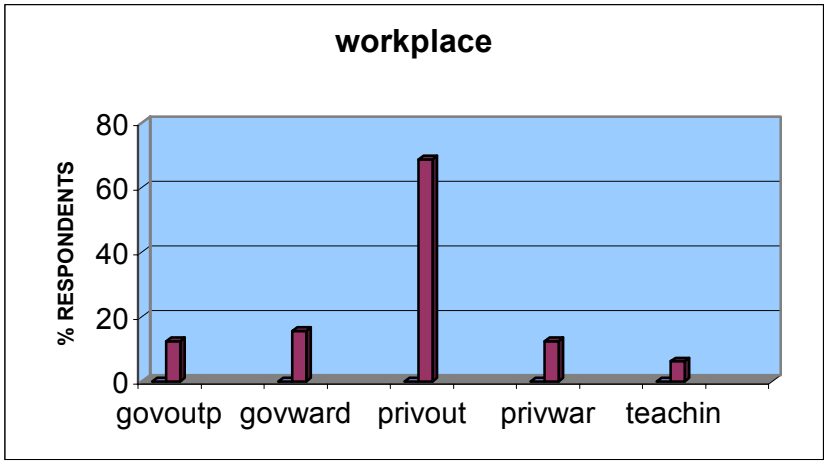
Question 3

Where do you spend most of your time working?

a. 3.1 - Government Practice dept	**a) Hospital(wards)**	**b)**	**Out-patient**
b. 3.2 - Private Practice dept	**c) Hospital(wards)**	**d)**	**Out-patient**
c. 3.3 - Teaching	**e)**		

32 responded.

12.50% work in government outpatient departments and 15.63% in the government hospital wards. 68.75% work in private outpatients and 12.50% in private hospital wards. 6.25% spend most of their time teaching.



Workplace	Percent
Government Outpatient	12.5
Government Ward	15.63
Private outpatient	68.75
Private ward	12.5
teaching	6.25

Question 4

Are you working in:

d. a) South Africa **or** **b) Another country** **Please specify:**

32 responded

81.25% of the participants are working in South Africa while 18.75% are working in the United Kingdom.

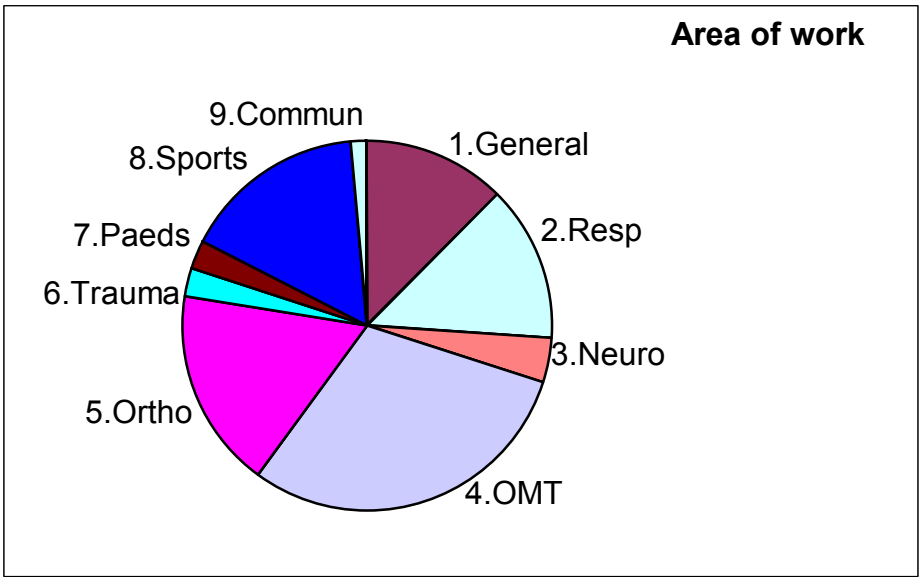
Question 5

In which area of practice do you spend most of your time?

a) General □	**b) Respiratory** □	**c) Neurology** □
d) OMT □	**e) Orthopaedics** □	**f) Trauma** □
g) Paediatrics □	**h) Sports** □	**i) Community** □
j) Other	□ **(please specify):**	

32 responded

The following indicate the percentage of participants who spend their time in the following areas:



Area	Percent
1.General	31.25
2.Resp	34.38
3.Neuro	9.38
4.OMT	75
5.Ortho	43.75
6.Trauma	6.25
7.Paeds	6.25
8.Sports	40.63
9.Commun	3.13
10.Other	0

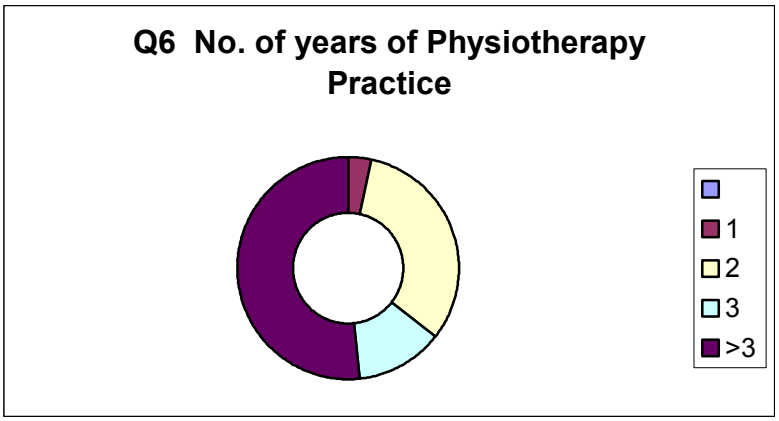
Question 6

Number of years of physiotherapy practice:

a) <1 □ **b) 1** □ **c) 2** □ **d) 3** □ **e) >3** □

31 responded

I graduate completed 1 year of physiotherapy practice, 10 graduates completed 2 years, 4 graduates completed 3 years, and 16 graduates completed more than 3 years of physiotherapy practice.

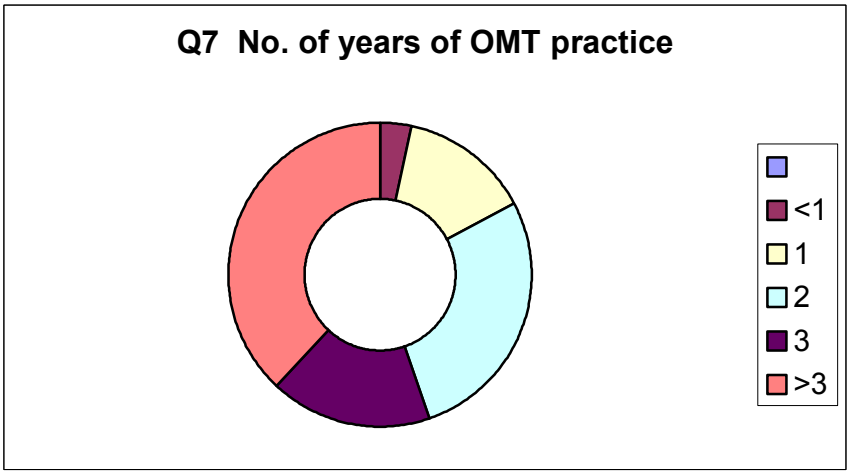


7. If OMT is included in your work, then indicate number of years of OMT practice:

a) <1 □ b) 1 □ c) 2 □ d) 3 □ e) >3 □

29 responded.

1 respondent practiced OMT for less than a year , 4 respondents practiced for 1 year, 8 practiced for 2 years, 5 practiced for 3 years and 11 respondents practiced for more than 3 years.



Section B

Undergraduate information

Question1.1

When should OMT be introduced into the undergraduate curriculum?

a) 1st Year □ b) 2nd Year □ c) 3rd Year □ d) 4th Year □

31 responded.

4 (12.90%) respondents felt OMT should be introduced into the second year of undergraduate study, 20(64.52%) felt third year was appropriate, and 7(22.58%) said fourth year was appropriate.

Interview: See appendix 4

- **Question 1**

Most respondents (64.52%) stated that OMT should be introduced in the 3rd year of study. Why do you think this so? Indicate if 'unsure' or 'don't know'.

Response:

Most of those interviewed said that they would prefer OMT introduced in the second year of study. However, they felt that others thought third year was more appropriate since the second year syllabus is very intense and loaded. Also, if they started the OMT curriculum in third year, they can apply their knowledge almost immediately in the clinical blocks. The fourth year of study would be too late to start.

Question1.2.

Would you have preferred the second year syllabus to have incorporated some third year OMT subjects: (Please tick the appropriate box)

Q 1.2	Yes	No
a) Assessment and treatment techniques of Peripheral joints	1)	2)
b) Training of Basic OMT Clinical Skills in a Clinical Environment eg: Assessment and treatment techniques of Peripheral joints, exercise programs, application of myofascial release techniques.	1)	2)

Question1.2a

30 responded.

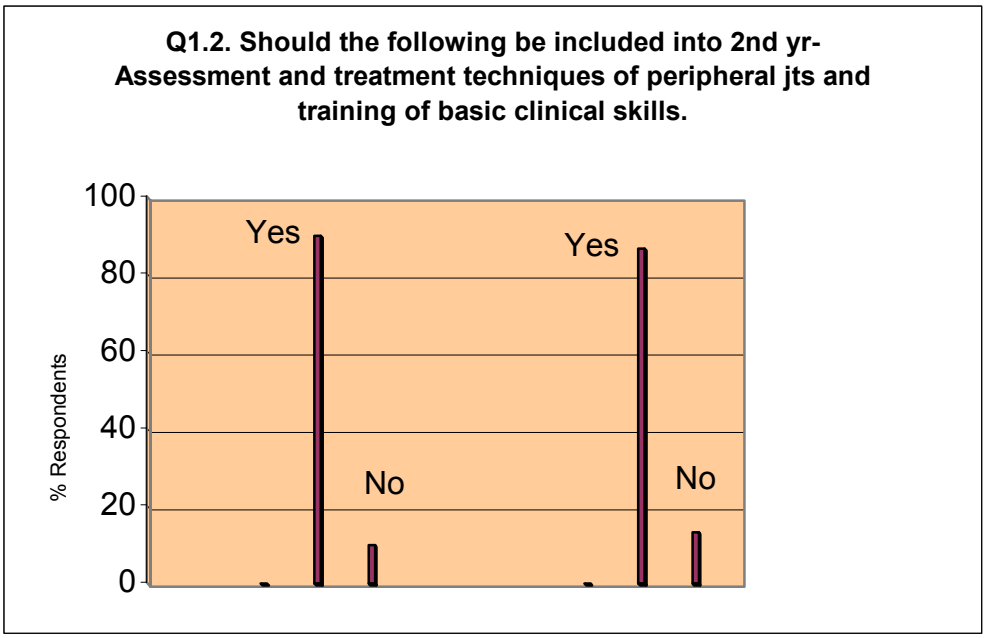
27 respondents (90%) felt that assessment and treatment techniques can be introduced in second year.

Question1.2 b

30 responded.

26 respondents (86.67%) felt that training of basic OMT clinical skills in a clinical environment can start in second year.

Q 1.2a) Assessment and treatment techniques of peripheral joints in second year		
Yes/No	**Numbers**	**Percent**
Yes	27	90
No	3	10
Q 1.2b) Training of basic OMT clinical skills in a clinical environment		
Yes/No	Numbers	Percent
Yes	26	86.67
No	4	13.33



1.3 What are your opinions concerning the curriculum content in third and fourth year?

(Please tick the appropriate box)

1.3.1 Third and fourth year curriculum content was relevant to clinical practice:

a) Agree □ **b) Neutral** □ **c) Disagree** □

31 responded.

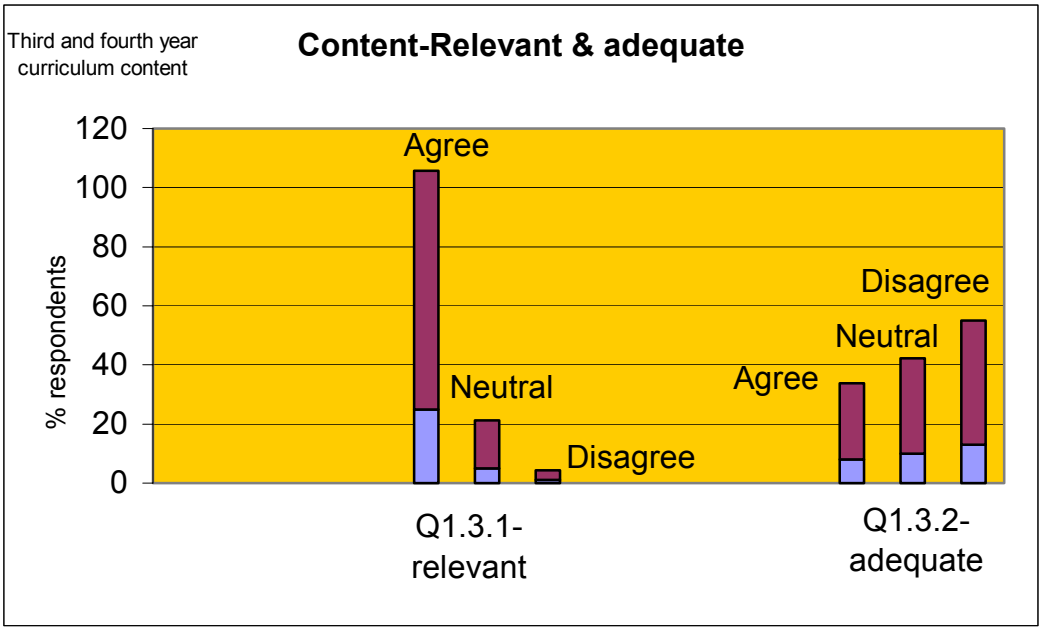
25 (80.65%) respondents agreed that third and fourth year curriculum content was relevant to clinical practice. 5 (16.13%) remained neutral and 1 respondent (3.23%) disagreed.

1.3.2 Was adequate for clinical practice:

a) Agree □ **b) Neutral** □ **c) Disagree** □

31 responded.

8 (25.81%) respondents agreed that third and fourth year curriculum was adequate for clinical practice, 10 (32.26%) remained neutral and 13 (41.94%) disagreed.



Interview: See appendix 4

- **Question 2 (regarding Section B question 1.3.1 and 1.3.2 from previous questionnaire)**

When asked about 3rd and 4th yr curriculum content, most (80.65%) agreed that the content was relevant to clinical practice but 42% stated that the content was inadequate. Why do you think the 3rd and 4th year curriculum content was inadequate?

Response:

The interview revealed that the respondents would have liked the concepts taught to be applied a lot more to the clinical situation. They would also liked to have spent more time in the clinical blocks applying what they have learnt. They wanted to be informed that other concepts beside Maitland are used and would have also liked more information on specific topics e.g. the sacroiliac joint.

Question 1.4

In your third and fourth year you were taught the Maitland concept of assessment and treatment techniques for peripheral and spinal joints.
Have you found this concept:
(please tick the appropriate box in 1.4.1.1 and 1.4.1.2)

1.4.1.1 a) Relevant □ b) Sometimes relevant □ c) Irrelevant □ to clinical practice

1.4.1.2 a) Adequate □ b) Sometimes adequate □ c) Inadequate □ for clinical practice

30 responded

14 (46.67%) respondents stated that they found the Maitland concept relevant and 6 (20.69%) found it adequate for clinical practice. 16 (53.33%) found it sometimes relevant, and 20 (68.97%) found it sometimes adequate for clinical practice.

3 (10.34%) respondents found it inadequate.

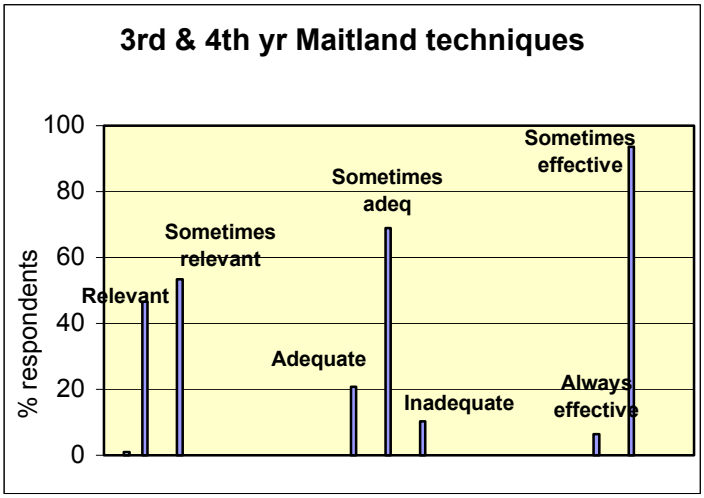
1.4.2 Are the techniques:

a) Always effective □ **b) Sometimes effective** □ **c) Ineffective** □

31 responded

2 (6.45%) respondents reported that Maitland techniques were always effective while 29 (93.55%) reported that they were sometimes effective in treatment.

Q 1.4.	Percent
1.4.1.1 Relevant	46.67
Sometimes relevant	53.33
1.4.1.2 Adequate	20.69
Sometimes adeq	68.97
Inadequate	10.34
1.4.2 Always effective	6.45
Sometimes effective	93.55



Question 1.5

1.5.1 **You were taught Maitland treatment techniques for peripheral and spinal joints:**

Would you:

a) like it to continue being taught the way it was taught to you? 1) Yes .

2) No □

b) prefer learning the principles only eg principles of applying an antero-posterior (AP) movement without teaching all APs on every joint? 1)Yes □

2)No □

c) prefer covering only the most commonly used Maitland techniques? 1)Yes □

2)No □

d) prefer learning principles of other joint mobilisation concepts? 1)Yes □

2)No □

Question 1.5.1a

31 responded

8(25.81%) respondents would like the Maitland technique for peripheral and spinal joints to continue to be taught the way it was taught to them. 23 (74.19%) would not like it to continue to be taught that way.

Question 1.5.1b

31 responded

10 (32.26%) would prefer to learn only the principles of applying a technique while 21 (67.74%) would not like it taught this way.

Question 1.5.1c
31 responded
17 (54.84%) would prefer covering only the most commonly used Maitland techniques while 14 (45.16%) would not prefer this.

Question 1.5.1d
31 responded
29 (93.55%) would prefer learning the principles of other joint mobilisation concepts while 2 (6.45%) would not.

1.5.2 Which techniques do you use in treatment: (Please tick the appropriate box for each aspect)

	Always	**Sometimes**	**Never**
a)Maitland (joint mobilisation)	1)	2)	3)
b)Barnes/Travell (myofascial release)	1)	2)	3)
c)Butler/Elvey (neural mobilisation)	1)	2)	3)
d)Other – Specify			
	1)	2)	3)

Question 1.5.2a
31 responded
18 (58.06%) always use Maitland joint mobilisation in their treatments while 13(41.94%) sometimes use these techniques in their treatment.

Question 1.5.2b
30 responded
19 (63.33%) respondents always use myofascial release techniques in their treatment while 11(36.67%) use them sometimes.

Question 1.5.2c
31 responded

6 (19.35%) respondents always use neural mobilisation in their treatment while 25(80.65%) use them sometimes.

The following responses relate to the techniques that the respondents added under ‘other’.
Question 1.5.2d
15 responded.
3(20%) always use ‘Mulligan’ techniques in their treatment while 12(80%) use them sometimes.

Question 1.5.2e
7 responded.
1(16.67%) always apply the ‘McKensie’ concept in treatment while 5(83.33%) sometimes apply it.

Question 1.5.2f
1 person said that they apply the ‘Rocabado’ concept in treatment.

Question 1.5.2g
3 responded
1 respondent (33.33% of the those who use the technique, and 3.12% of the total sample) always uses the ‘Cyriax’ method of treatment while 2(66.67% of those who use the technique, and 6.25% of the total sample) use it sometimes.

Question 1.5.2h
None of the respondents stated that they use dry needling in their treatments.

Question1.5.2i
3 responded.
1(33.33% of the those who use the technique, and 3.12% of the total sample) always uses muscle energy techniques in their treatment while 2(66.67% of those who use the technique, and 6.25% of the total sample) use it sometimes.

Question 1.5.2j
1 respondent (3.12% of the total sample) stated that they always use exercise in their treatment.

Question	Technique	Percent
Q1.5.2a	Maitland (joint mobilisation	58.06
Q1.5.2b	Barnes/Travell (myofascial release)	63.33
Q1.5.2c	Butler/Elvey (neural mobilisation	19.35
Q1.5.2d	mulligan	9.67
Q1.5.2e	mckensie	3.22
Q1.5.2f	rocabado	3.22
Q1.5.2g	cyriax	3.22
Q1.5.2h	dry needling	0
Q1.5.2i	muscle energy	3.22
Q1.5.2j	exercise	3.22

Interview: See appendix 4

- **Question 3**

94% of the respondents would like to learn the principles of other joint mobilization concepts. Are there any specific OMT concepts you would like to see included in the curriculum?

Response:

Those interviewed indicated that they would have liked information on other joint, soft tissue and neural mobilization concepts , psychosocial aspects and certain conditions.

- **Question 4**

How do you think OMT techniques should be taught?

Response:

Those interviewed wanted to cover more of the application of techniques taught i.e. how and when to use them in the clinical situation. They wanted to spend more time learning fewer

techniques and have more assistance in the practical sessions when these skills were being taught.

Question 1.6

How would you describe the OMT undergraduate course content with regards to the following aspects? Please tick the appropriate box for category A and the appropriate box for category B)

	A		B	
	Varied/ Diverse Information	**Stereotyped and Limited Information**	**Clinically Based**	**Not Always Relevant to Clinical Practice**
1.6.1 **Assessment**	1)	2)	3)	4)
1.6.2 **Treatment**:				
a) Joint, neural and myofascial release techniques	1)	2)	3)	4)
b) Exercise therapy	1)	2)	3)	4)
c) Biomechanics	1)	2)	3)	4)
d) Ergonomics	1)	2)	3)	4)
e) Function	1)	2)	3)	4)
f) Balance and proprioception	1)	2)	3)	4)

The following tables describe responses regarding diversity and clinical relevance of subject matter.

Q1.6.1A and 1.6.2A

Subject matter	**Percent of respondents that felt information was diverse**	**Percent that felt information was limited**
Assessment	37.5	56.25
Balance (f)	25	65.63
Biomechanics ©	37.5	59.38
Ergonomics (d)	21.88	62.5
Exercise (b)	18.75	71.88
Function (e)	46.88	40.63
Joint, neural and myofascial techniques (a)	28.13	50

Q1.6.1B and 1.6.2B

Subject matter	Percent of respondents that felt information was relevant to clinical practice	Percent of respondents that felt information was not relevant to clinical practice
Assessment	62.5	43.75
Balance (f)	75	34.38
Biomechanics ©	62.5	40.63
Ergonomics (d)	78.13	37.5
Exercise (b)	81.25	28.13
Function (e)	53.13	59.38
Joint, neural and myofascial techniques (a)	71.88	50

1.6.3 Please tick the appropriate box

	Adequate Information	Inadequate Information
a) Information on patient education, advice and counselling (related to OMT)	1)	2)
b) Psychosocial aspects, interpersonal skills and communication skills for neuro musculoskeletal patients	1)	2)

Question 1.6.3a

31 responded.
14(45.16%) indicated that they had adequate information on patient education, advice and counselling (related to OMT) while 17(54.84%) indicated that the information was inadequate.

Question 1.6.3b

31 responded.
11(35.48%) indicated that information on psychosocial aspects , interpersonal skills and community skills was adequate while 20(60.45%) indicated that it was inadequate.

Question 1.6.4

Did you have adequate instruction in applying the above skills?

a) Yes □ b) No □

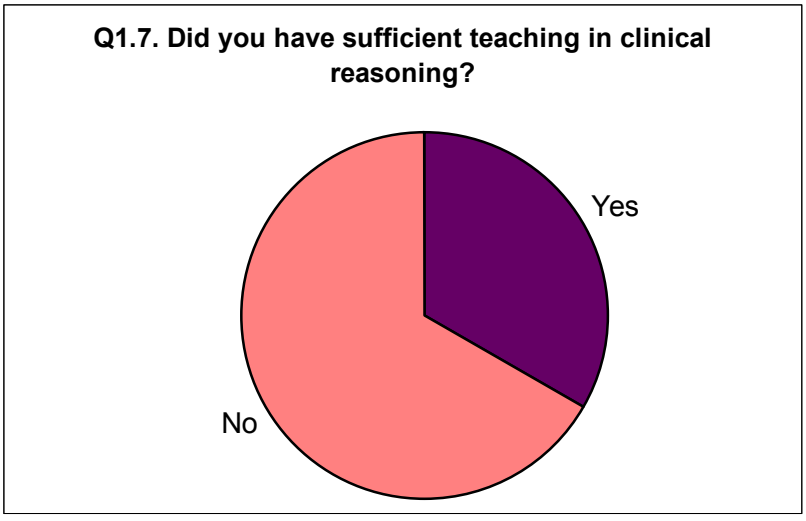
31 responded.
12(38.71%) said they had adequate instruction in applying these skills while 19(61.29%) said they didn't.

Question 1.7

Did you have sufficient teaching in clinical reasoning i.e. were you able to diagnose the structure at fault/the biomechanical basis for pain or abnormal movement?

a) Yes □ b) No □

30 responded.
10(33.33%) indicated that they did have sufficient teaching in clinical reasoning while 20(66.67%) indicated that they did not.



Interview: See appendix 4

- **Question 5**

Most respondents (67%) said that they did not have sufficient teaching in clinical reasoning while 33% said it was adequate. How would you like to see clinical reasoning skills being taught or stimulated in the curriculum (clinical and theoretical curriculum)?

Response:

Clinical reasoning may be facilitated by problem solving exercises and bedside teaching. Feedback from the lecturers and supervisors are also useful.

Question 1.8

Your course content together with readings helped you to adequately manage:

a) all patients encountered □ b) most patients encountered □

c) some patients encountered □ d) none of the patients encountered □

31 responded.

22(70.97%) felt that the course content and readings helped them to adequately manage their patients while 9(29.03%) felt that it helped them manage some patients.

Question 1.9

1.9.1 In your opinion, were there any important aspects:

lacking in your OMT training?

a) Yes □ b) No □

30 responded.

According to 24 (80%) respondents, there were important aspects lacking in the curriculum. 6(20%) did not think so.

If yes, please specify:

Summary of responses:

Application of the OMT concept and actual OMT techniques in the clinical setting.

Explanation of how the techniques work.

More biomechanics and functional anatomy.

Information on the sacroiliac joint and temperomandibular joint.

1.9.2 In your opinion, were there any important aspects:

you think should be included into the OMT curriculum?

a) Yes □ b) No □

31 responded.
29(93.55%) said that more information should be included into the OMT curriculum while 2(6.45%) did not feel this way.

If yes, please specify:

Summary of responses:

More clinical teaching and application of OMT techniques
Posture and ergonomics
Information on psychosocial aspects and counselling.
Other OMT concepts and alternative therapies.

1.9.3. In your opinion, were there any important aspects:
you think should be excluded from the OMT curriculum?

a) Yes □ b) No □

31 responded.
9(29.03%) said that certain aspects should be excluded from the OMT curriculum while 22(70.97%) did not feel this way.

If yes, please specify

Summary of responses:

Certain mobilising techniques
Repetition of basic principles.

Question 1.10

Did you find that the prescribed curriculum allowed for innovation and your own creative ideas?

a) Often □ b) Seldom □ c) Never □

If 'seldom', or 'never' was ticked,
substantiate:……
31 responded.
10(32.26%) found that the prescribed curriculum allowed for innovation and their own creative ideas.
13(41.94%) seldom found this. 8(25.81%) never found this.

Summary of responses:

There was a regimental approach to teaching especially regarding the use of techniques (techniques had to be performed and used in specific ways).

The curriculum was too 'textbook orientated' and did not allow flexibility.

Interview: See appendix 4

Question 6

Only 32% of the respondents felt that the curriculum allowed for innovation and their own creative ideas. The rest felt that the curriculum seldom or never offered this opportunity. What methods may be used to allow the student to be creative and innovative in OMT?

Response:

Exposure to other approaches and methods of treatment would allow creativity. Allowing the student to explore and modify treatment techniques with guidance from qualified staff may encourage creativity as well.

Question 1.11

Were you adequately exposed to current research in OMT i.e. through actual teaching or research articles within the reading files?

a) Often □ b) Seldom □ c) Never □

31 responded

12(38.71%) felt they were often exposed to current research in OMT through actual teaching/research articles in reading packs. 17(54.84%) felt they were seldom exposed to this while 2(6.45%) felt that they were never exposed to this.

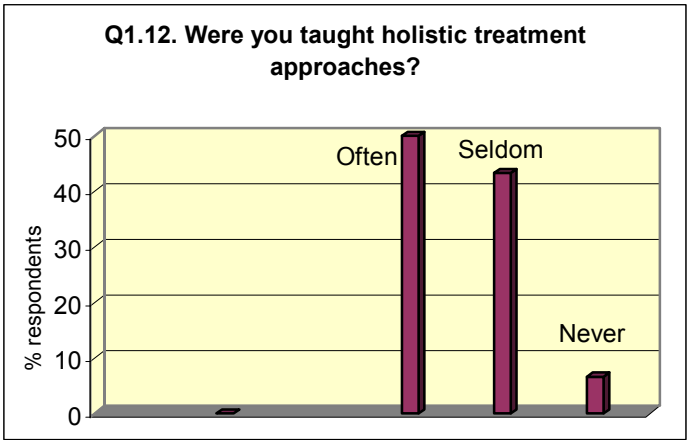
Question1.12

Were you taught holistic treatment approaches?

1) Often □ 2) Seldom □ 3) Never □

30 responded.

15(50%) indicated that they were often taught holistic treatment approaches. 13(43.33%) indicated that they were seldom taught these while 2(6.67%) indicated they were never taught these.



Question 1.13

Would you have liked more information about OMT related alternative and complementary therapies eg. Chiropractic, osteopathy, biokinetics, podiatry? (Please tick the appropriate box for each)

a) Yes □ b) No □

31 responded.

31(100%) would have liked more information about OMT related alternative and complementary therapies.

Question 1.14

Were the total of eight weeks of clinical time adequate in third and fourth year?

a) Yes □ b) No □

30 responded.

2(6.67%) agreed that the total of eight weeks of clinical time were adequate in third and fourth year while 28(93.33%) disagreed.

Question 1.15

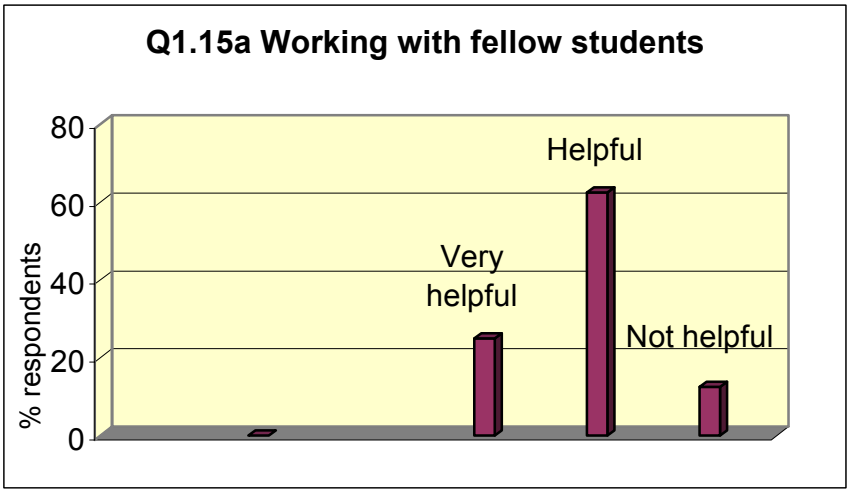
What helps teaching application of theory to practice? (Please tick the relevant box for each)

Clinical Learning	Very Helpful	Helpful	Not Helpful
a) Working with fellow students	1)	2)	3)
b) Supervision	1)	2)	3)
c) Patient presentation	1)	2)	3)
d) Working with senior students	1)	2)	3)
e) Discussing patients with lecturers	1)	2)	3)

1.15a)

32 responded.

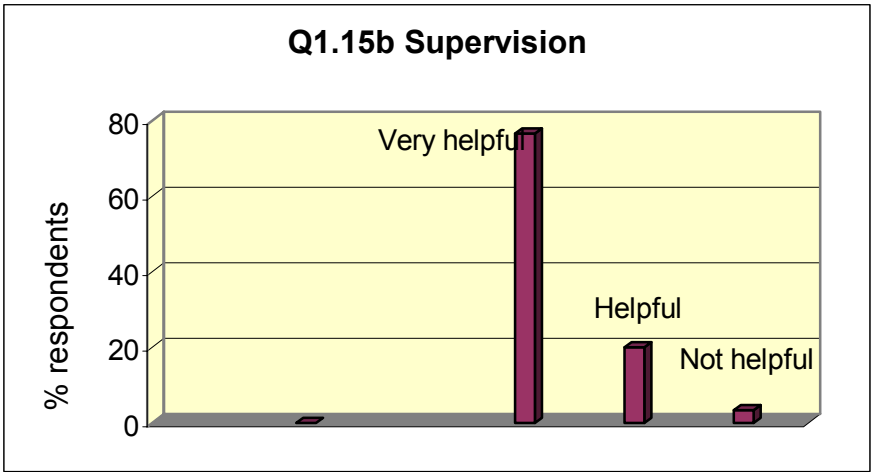
8(25%) found working with fellow students very helpful, 20(62.5%) found this helpful, and 4(12.5%) did not find this helpful.



1.15b)

30 responded.

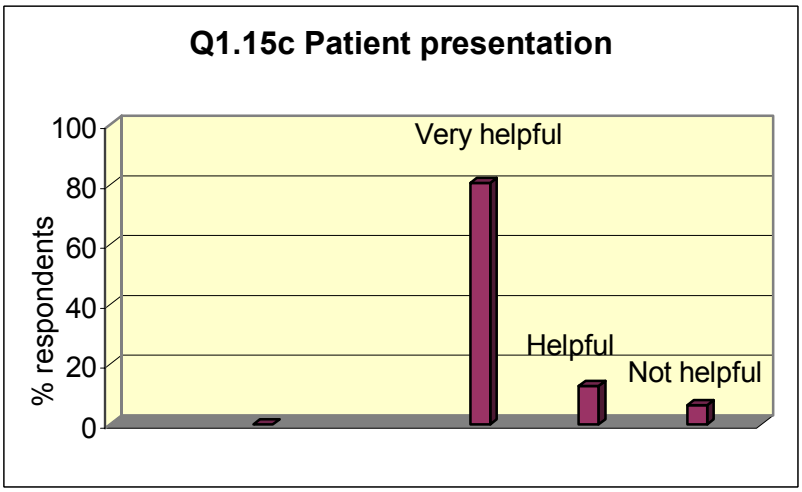
23(76.67%) found supervision very helpful, 6(20%) found it helpful, and 1(3.33%) did not find it helpful.



1.15c)

31 responded.

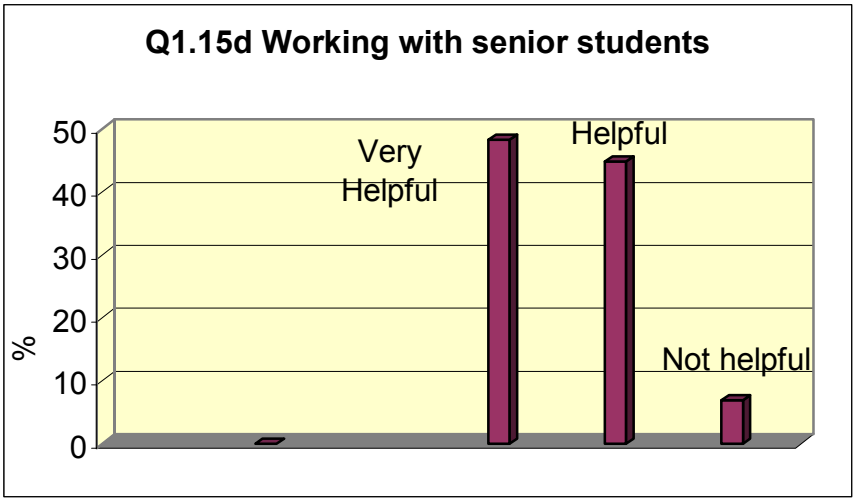
25(80.65%) found patient presentation very helpful, 4(12.90%) found it helpful, and 2(6.45%) did not find it helpful.



1.15d)

29 responded.

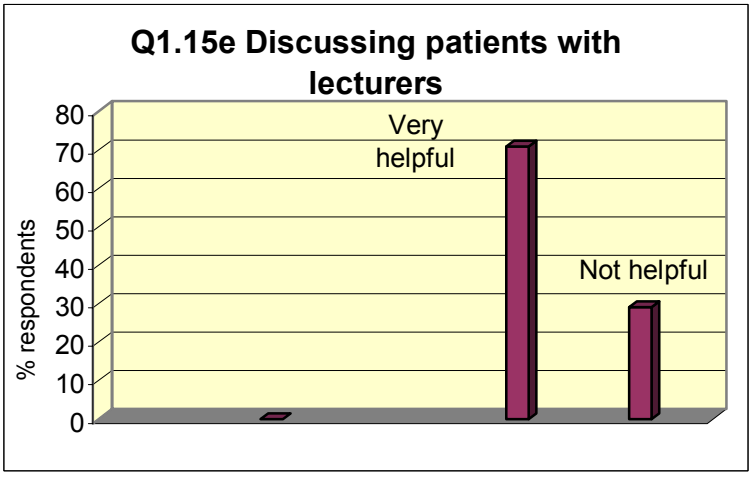
14(48.28%) found working with senior students very helpful, 13(44.83%) found this helpful, and 2(6.90%) did not find it helpful.



1.15e)

31 responded.

22(70.97%) found discussing patients with lecturers very helpful and 9(29.03%) found this helpful.



Question 1.16

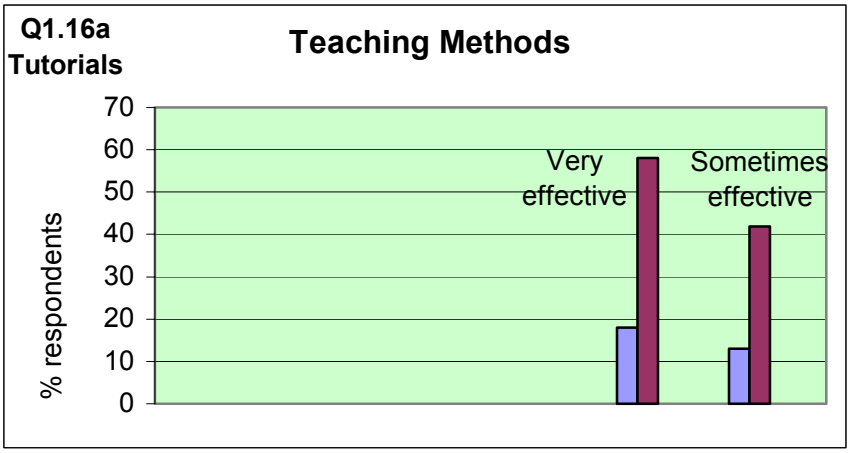
How effective are the following?

Theoretical Learning	**Very Effective**	**Sometimes Effective**	**Ineffective**
a) Interactive learning eg tutorial groups	1)	2)	3)
b) Practicals	1)	2)	3)
c) Workshops	1)	2)	3)
d) Lectures	1)	2)	3)

1.16a)

31 responded.

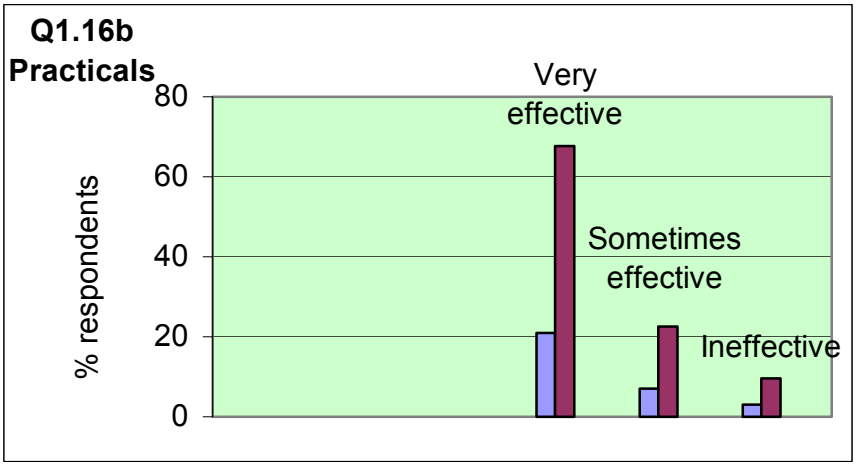
18(58.06%) found interactive learning e.g. tutorials very effective while 13(41. 98%) found it effective sometimes.



1.16b)

31 responded.

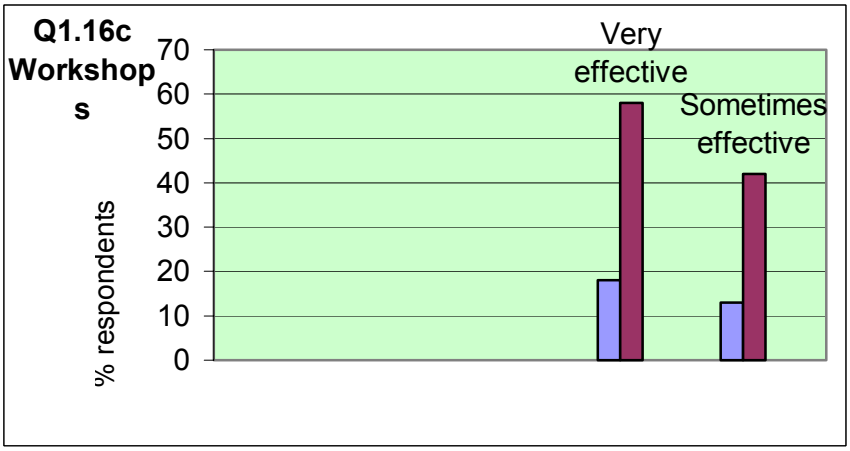
21(67.74%) found practicals very effective, 7(22.58%) sometimes found them effective, and 3(9.68%) found them ineffective.



1.16c)

31 responded.

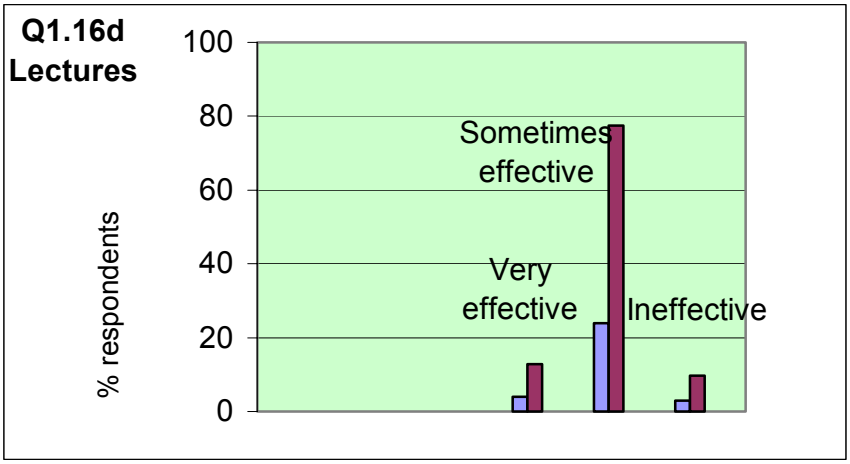
18(58.06%) found workshops very effective while 13(41.94%) found them effective sometimes.



1.16d)

31 responded.

4(12.90%) found lectures very effective, 24(77.42%) found them effective sometimes, and 3(9.68%) found them ineffective.



Question 1.17

1.17.1 Should an optional course be offered?

a) Yes □ **b) Unsure** □ **c) No** □

31 responded.

25(80.65%) felt that an optional course should be offered, 4(12.90%) were unsure and 2(6.45%) did not want this.

1.17.2 If an optional course was offered, what information do you think should be included in it?

Summary of responses:

The optional course should include the following:

Clinical teaching: Improving clinical skills (more supervision) and teaching in the clinical setting.

Including patient presentations.

Ergonomics.

Headaches and the sacro-iliac joint (and difficult joints to treat).

Manipulation.

Other OMT concepts.

Chronic conditions.

Exercise therapy.
Biomechanics and functional anatomy.
Exposure to OMT research.
Preventative therapy including exercise programmes and advice and education of patients.
Counselling and communication skills.
More sports physiotherapy

Question 1.18

Do you think that undergraduate student interaction with post-graduate program lecturers is beneficial:

a) Yes □ b) No □

30 responded.
29(96.67%) thought that undergraduate student interaction with postgraduate programme lecturers is beneficial while 1(3.33%) did not think so.

POST-GRADUATE

2.1 Please give information about OMT courses you have attended since you qualified.

Year in which course was done	Name of Course	Duration of course e.g. weekend

2.2 Which courses listed above best supplemented your undergraduate knowledge and why?

Summary of responses for 2.1 and 2.2:
OMT1
Alternative therapies.
Dry needling.
Post-surgical spines.
Courses on the neural and myofascial system and treatment of these.
Courses on specific joints/conditions e.g. sacroiliac joint, temperomandibular joint, lumbar spine and headaches.

APPENDIX 6

ETHICAL CLEARANCE FORM

APPENDIX 7

THE CORE OMT CURRICULUM CONTENT

THE CORE OMT CURRICULUM CONTENT

Introduction to the OMT curriculum

Physiotherapists who use OMT are concerned with the prevention and treatment of joints, soft tissue, and neural pain and dysfunction. This may be achieved through various physical modalities including exercise, passive joint movement (including mobilization and manipulation), traction, massage, myofascial release techniques, neural mobilization, postural and functional rehabilitation and patient education. These techniques and modalities have been considered as most important and are commonly used when managing patients. The concepts and techniques included in the curriculum will be discussed.

Manual physiotherapy concepts

Various therapists have developed different OMT concepts (Petty and Moore, 2001). Many therapists have been involved in expanding and evolving the examination and treatment of joints, muscles and nervous tissue. Methods of examination and treatment are continuing to be developed.

Joint mobilization

During the 1950's, Grieve and Maitland developed and used joint assessments and treatment techniques. Maitland is widely regarded as one of the most important original contributors to the assessment and treatment methods used in the management of neuromusculoskeletal conditions (Petty and Moore, 2001). The Maitland concept is taught as part of the core curriculum. Other concepts mentioned below are referred to.

The following manual therapy concepts were described by Petty and Moore (2001). Cyriax developed techniques for joint and soft tissue diagnosis and treatment. McConnell has looked at peripheral joints and provided a method of

evaluation of the patellofemoral joint. Kaltenborn provided alternative methods of joint examination and treatment. McKenzie demonstrated how specific spinal regions may be examined, and developed a ‘hands-off’ approach to treatment. Mulligan uses treatment techniques where accessory and physiological movements are combined. Although all these concepts are useful in practice, there is not enough time in the undergraduate course to teach all of them in detail. Reference is made to some of these in teaching.

Spinal manipulative therapy (SMT) has been shown to change range of movement of muscle, cause alterations to muscle testing responses, and cause changes to tissue compliance. SMT activates descending pain inhibitory control systems e.g. the noradrenergic or serotonergic systems (Katavich, 1998).

A study done by Ben-Sorek and Davis (1988) showed that mobilisation techniques were becoming more widely used by physiotherapists to treat joint dysfunction. In response to this, curricula have been expanded to prepare students adequately.

Soft tissue

Treatment of soft tissue structures forms an important part of physiotherapy. Before treatment, a postural assessment is performed to determine areas of myofascial tightness. Vision motion analysis of functional positions e.g. standing is done. This is followed by palpation where factors like tissue texture and skin mobility is noted (Petty and Moore, 2001). Selective tension tests developed by Cyriax may be used to determine whether the affected structure is contractile/ non-contractile. Extrinsic, intrinsic and task related factors are also taken into account.

John Barnes, Francine St George and Travell and Simons have all contributed by developing different techniques to treat soft tissue (Petty and Moore, 2001; Steffan, 1996).

Neurodynamics

Examination and treatment of the nervous system may be an important part of treatment. Neural elements may undergo elongation, sliding, cross sectional changes, angulation, and compression. These dynamic features occur at many sites and affect both the central and peripheral nervous systems. If protective mechanisms fail, symptoms may result. Specific tests are used to examine the integrity of the system. These tests may then be used as techniques to treat adhesions and tethering of the neural system (Shacklock, 1995).

Rehabilitation

An important focus of OMT, integral to the practice of the profession, is exercise therapy, posture assessment and correction, movement analysis and correction of movement patterns, and functional rehabilitation. Normalisation of movement will restore function and alleviate pain and therefore physiotherapy is directed at active movement (Rabey, 2001).

Muscle imbalance

Janda, Jull, Richardson, White and Sahrmann have been instrumental in the recent development of methods of examination and muscle function (Petty and Moore, 2001). Muscle imbalance syndromes are commonly diagnosed when a patient presents with pain from the neuromusculoskeletal system.

Acute pain and impairment of motor control by the central nervous system results in poor movement patterns that have an adverse effect on joint and muscle mechanics. Muscle reactions initially affect the local symptomatic region but may eventually spread through the whole system resulting in changes in posture. Physiotherapists therefore advocate testing flexibility and strength of muscle and assessing postural and movement patterns.

Treatment includes correction of muscle length and strength and movement imbalances. Neurological and biomechanical factors have to be addressed. Active therapy is encouraged with an emphasis on functional and recreational activities (Petty and Moore, 2001).

Exercise

Research of the musculoskeletal system has demonstrated the beneficial effects of movement on all joint tissues. The stress of exercise allows for the maintenance of muscle bulk and bone mass. Back and joint pain usually responds favourably to movement. The physiotherapist uses movement and exercise as the principle tools in the treatment of low back pain and peripheral joints and there has been abundant research to show the value of movement (Twomey, 1992; Goldby, 1997).

Exercise therapy is a broad field in OMT and encompasses mobilization exercise, exercise for treating pain, and increasing muscle strength, postural correction exercise, and exercise based on motor learning to normalize movement patterns. Strengthening exercises have traditionally targeted mobiliser/global muscles. Physiotherapists now pay a great deal of attention to the stabilizer (local deep postural muscles). Spinal stability is paramount in the rehabilitation of spinal and postural syndromes (Richardson and Jull, 1995; Richardson et al, 1999).

Common manual therapy interventions

In addition to teaching the various components of OMT in isolation, one needs to expose students to the multidimensional approach used in practice. Physiotherapists seldom use one intervention at a time. Combinations of modalities are used. In OMT, the actual combinations are not standard, but depend on what the physiotherapist has found to be successful in the management of a condition. Research shows that a multi-dimensional approach to the treatment of neuromusculoskeletal conditions is effective.

A study by Li and Bombardier (2001) surveyed physiotherapy approaches to the management of acute and subacute low back pain. Patient education and exercise were the most common interventions for acute lumbar impairment. This was in keeping with another study (Pinnington, 2001) where it was found that therapeutic exercise was used frequently. In the sub-acute phase, one third of the physiotherapists said they would use mobilization techniques and increase physical activity.

A postal survey of one thousand five hundred physiotherapists done in the United Kingdom showed that Maitland and McKenzie therapies were the most popular approach. These were followed by exercise therapy. Exercises included abdominal strengthening, passive stretching and neural tension (Pinnington, 2001).

A study by Jackson (2001) showed that modalities used were passive treatments in ninety five percent of cases. Manual therapies were used in ninety three percent and electrotherapy in seventy nine percent of cases. Both of these latter modalities were used in combination in seventy one percent of cases. In addition to the combination of physiotherapy modalities, the author comments on psychological factors in the discussion. These factors may be the predictors of treatment outcome. Clinicians encourage the use of the biopsychosocial

approach. Cognitive behavioural approaches are now being explored and have been found to be effective in the management of back pain. The physiotherapist should therefore also address influencing factors e.g. psychological beliefs about pain.

Previous studies have found that the choice of treatment may be influenced by the therapists' academic degree. In addition, physiotherapists' own perceptions of effectiveness influences what they use (Li and Bombardier, 2001).

It can be concluded from the above discussion that the practice of OMT is becoming increasingly complex. Students should not only be taught individual techniques or modalities and the application of these, but how and when to combine various components of OMT therapy. The ability to appropriately combine therapies for each individual patient may be facilitated by developing clinical reasoning skills in students. This aspect will be discussed later. Students cover one join mobilization concept i.e. the Maitland concept and therefore are not required to choose between various types of joint mobilising techniques. This skill is developed at a postgraduate level. However students should be competent in selecting appropriate modalities or techniques taught in the undergraduate curriculum to formulate treatments.

Additional content related to OMT

Biopsychosocial model

Shacklock (1999) advocates education of the patient about pain mechanisms and the integrative action of the central nervous system. Reference is also made to the concept of abnormal 'illness behaviour' and beliefs. There are several facets of this concept relevant to OMT. One of these involves the physiotherapist giving, and the patient expecting a great deal of treatment (which is inappropriate since the central cause has not been detected by either of them).

The second is ‘somatic focus’ where attention is focused for instance, on body sensations and proprioception. Here, somatic structures are implicated as the only source of pain. This can lead to pain avoidance where the patient chooses not to perform certain activities or movements due to the fear that pain will be provoked. The physiotherapist can play an important role in appropriate questioning and observation of sickness and related behaviour. These concepts should be considered in assessment and become part of treatment. In these cases, manual techniques should be given less emphasis. In fact, active movement and educating the patient about their pain would be very beneficial (Shacklock, 1999; Rabey, 2001).

When dealing with pain where maladaptive beliefs have set in, passive therapy should be performed only until the patient is able to perform some normal movement themselves (Shacklock, 1999; Rabey, 2001). The curriculum should therefore teach students about the social and psychological impact on a patient’s pain. They need to be aware that this dimension to pain exists and that they will need to think beyond the anatomy and pathology itself. Teaching these skills is part of the explicit and implicit curriculum. They can be taught by being given information on this subject (explicit) and watching clinicians in practice (implicit) (Rabey, 2001).

Complementary and alternative medicine (CAM)

This is not part of the core curriculum taught in this department but past graduates were questioned as to whether they felt it should be included. A study by Murdoch–Eaton and Crombie (2002) was done to see if inclusion of CAM made a difference to students’ awareness and knowledge of it. Students that had knowledge of CAM were able to advise family members but did not feel adequately informed to advise patients. Undergraduate physiotherapy curricula focus on conventional medical practice. When considering what content to include in the OMT curriculum, it is the core content that is given priority.

Therefore there may not be enough time allocated to include this subject. Also, there is not enough scientific evidence to support CAM. This is another reason why it may not be included in the curriculum.

Finally, the core OMT curriculum should include teaching of the OMT concepts described above (CAM is not a part of OMT). Combinations of therapy should be discussed in class and in the clinical setting.