

# UNDERGRADUATE PHYSIOTHERAPY RESEARCH TRAINING IN SOUTH AFRICA: THE MEDUNSA EXPERIENCE

**ABSTRACT: Background and Purpose:** Research interest has increased in physiotherapy in the past two decades. During this period, the physiotherapy department at the Medical University of Southern Africa (MEDUNSA) started its degree programme. The first undergraduate research projects (UGRP) were produced in 1985. The purpose of this study was to analyze the UGRPs conducted between 1985 and 1999 in terms of methodological trends (qualitative versus quantitative) and subject content.

**Methods:** A retrospective analysis of the 114 UGRPs carried out in the department was conducted. The projects were read and analyzed according to methodology, research context and topic categories. The 15-year period was analyzed in three 5-year phases (1985 - 1989; 1990 - 1994 and 1995 - 1999), using descriptive statistics.

**Results:** There was a gradual increase in the number of UGRPs during the study period in keeping with the increase in student numbers, with the last five years recording the highest number of projects. An interesting finding was a decline in experimental and clinical research, which was lowest in the last five years.

**Conclusion:** The findings are paradoxical, given the need for experimental research to validate current clinical practice. Non-experimental qualitative research is however important in the view of the national health plan. A balance between qualitative and quantitative research is therefore important and must be emphasized in student training. Student research projects need to be maximally utilized to improve departmental research output.

**KEY WORDS:** UNDERGRADUATE PROJECTS, RESEARCH TRAINING, PHYSIOTHERAPY EDUCATION.

## INTRODUCTION

The growth of any health care profession depends upon the ability of the profession to validate clinical practice and educational methods through objective scientific research. Professions today promote research for purposes of improving and increasing the body of knowledge and also because of the belief that research will justify and improve the quality of professional practice within disciplines. The physiotherapy profession is no exception and has demonstrated an active interest in research over the past few decades, hence the inclusion of research projects in the undergraduate physiotherapy programmes.

Most physiotherapy training programmes include principles of research theory and practice in the curriculum and students undertake research projects in their final year of study (Mitchel, 1989). The primary purpose of the research projects is to impart research

skills to the students, so that as qualified therapists they will have the skills to evaluate their practice and become evidence based practitioners.

## The MEDUNSA Scenario

The Physiotherapy department at the Medical University of Southern Africa (MEDUNSA) offers a four year BSc Physiotherapy degree, which includes a theoretical (Research methodology and Bio-statistics) and a practical (Undergraduate research project) research component in the 3rd and 4th year of study respectively. Research training was introduced at the inception of the degree programme and the first undergraduate research projects were produced in 1985.

The aim of the undergraduate research training is to teach the students the practical and scientific application of basic research methodology. The students are guided from problem selection through professional execution of the project to writing up a scientifically

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acceptable research report. The guidance is provided by lecturers who have special interest in the particular field of study being researched by the student. A research manual developed by the author is available for students use.

## Purpose of the Study

The government's introduction of outcome-based education in South Africa has resulted in institutions of higher learning becoming increasingly concerned about quality assurance. To judge quality, assessment and evaluation of outcomes are crucial.

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The purpose of this study was to analyze the UGRP's produced in the department since the inception of the degree programme. The projects were analyzed under the following themes:

- Trends in methodology
- Context of the project
- Trends in Research topic

### Motivation for the Study

The author was prompted to undertake this study because of personal interest in research. As a UGRP trainer in the department, the researcher had also observed with keen interest and constantly reflected on the developments that have taken place in the students' projects over the past 15 years.

### MATERIALS AND METHODS

The documents of the students UGRPs from 1985 to 1999 were retrieved from the departmental archives for review and analysis. The UGRPs were all read by the author and another lecturer and classified according to the methodology used, the context of the study and the topic of physiotherapy that the project focused on.

### Methodology

The classification of research according to Leedy (1997) into qualitative and quantitative research approach was used. These two categories were further subdivided into specific methodologies as reflected in the results (Table 1).

### Context of the Study

The classification of each project in terms of whether it was in a clinical context or not as described by Robertson (1995) was followed. Clinical research referred to those projects in which there were reports of the implementation and the outcomes of treatment applied to patients. All other projects that did not report on the above were classified non-clinical.

### Research Topic

The projects were allocated to a specific topic category according to the focus of the study. Because some of the topics were comparative in nature and were concerned with more than one variable, the topic category was determined by

the variable of focus (i.e. the independent variable). For example, a study on 'The effects of TENS on post-Caesarian section pain' was classified under electrotherapy and not women's health.

### Analysis of Data

The 15-year study period was divided into 3 five-year phases for the purpose of comparison in order to discern trends over the three significant time spans. Phase 1 was from 1985 to 1989, phase 2 from 1990 to 1994 and phase 3 from 1995 to 1999. Descriptive statistics including frequencies, means and averages were used to analyze the data.

### RESULTS

One hundred and fourteen (114) UGRPs were analyzed for the entire study period (25 for phase 1, 30 for phase 2 and 59 for phase 3) as reflected in the pie chart in figure 1.

There was a steady increase in the number of projects from phase 1 to 2

Figure 1: Number of projects in the different phases of the study period

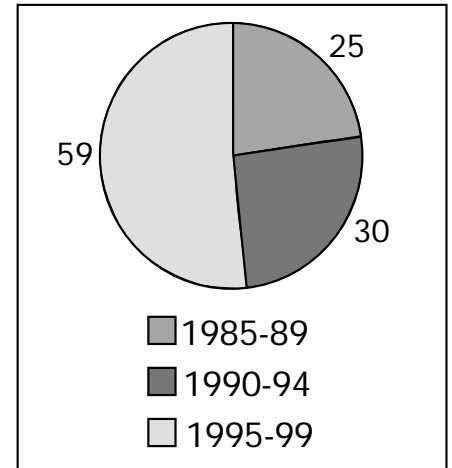


Figure 2: Comparison of experimental vs non-experimental research

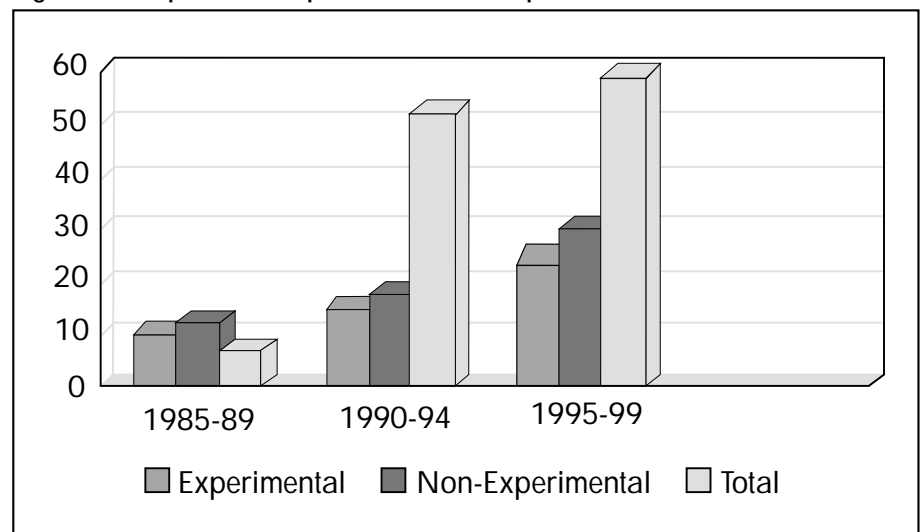
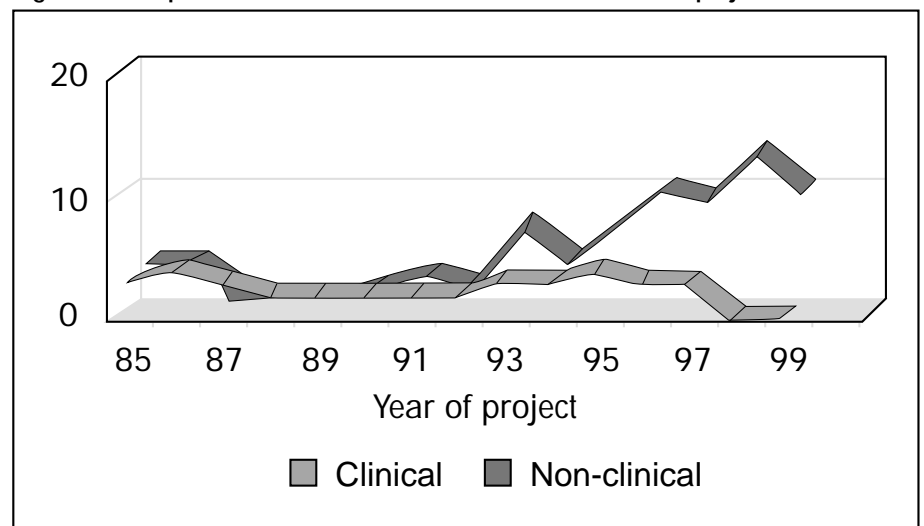


Figure 3: Comparison between clinical and non-clinical research projects



**Table 1: Methodological Trends**

Study Phase	Qualitative Studies (n = 7)		Quantitative studies (n = 107)		TOTAL
	Historical Studies	Phenomenological	Experimental	Non-Experimental	
1985 - 89	4	0	10	11	25
1990 - 94	0	1	12	17	30
1995 - 99	0	2	7	50	59
<b>TOTAL</b>	4	3	29	78	114

**Table 2: Categories o Research Topics**

TOPIC	1985 - 89	1990 - 94	1995 - 99	TOTAL
<b>A: FAST GROWING TOPICS</b>				
• Sports	0	3	10	13
• Education	2	3	11	16
• Physiotherapy knowledge by others	1	2	4	7
• Disability	0	2	5	7
<b>B: SLOWLY EMERGING TOPICS</b>				
• Neurology	0	1	3	4
• Community	0	2	3	5
• Geriatrics	0	0	1	1
• Animal Health	0	0	2	2
• HIV/AIDS	0	1	2	3
<b>C: FLACTUATING TOPICS</b>				
• Back-Care	1	2	2	5
• Therapeutic Exc.	1	2	0	3
• 'Human Resources'	2	1	3	6
• Women's Health	0	2	0	2
• Cardiorespiratory	6	2	4	12
• Paediatrics	1	0	3	4
<b>D: TOPICS ON A DECLINE</b>				
• Electrotherapy	11	7	6	24
<b>TOTAL</b>	25	30	59	114

and a sudden hike in the last phase. This is in keeping with the departmental student intake which doubled from the early 1990's. Closer scrutiny revealed some contradictory findings in that the first 2 years of the first phase produced more projects than the first 2 years of the second phase.

**Methodological Trends**

The results revealed two interesting findings regarding methodological trends (table 1). Firstly, there is an overwhelming preponderance for the quantitative approach to research (n = 107) over the

qualitative one (n = 7).

The second finding of interest is the decline in experimental research as illustrated in figure 2.

In the first two phases of the study, experimental research constituted 40% of the UGRPs. This dropped to 12% in the last phase of the study, where only 7 out of the 59 projects were experimental in nature. The majority of the non-experimental projects were predominantly survey-type studies.

**Research Topic**

Table 2 shows a comparison of the

number of projects according to specific study fields over the three phases of the investigation. Four categories of topics namely fast growing, slowly emerging, fluctuating and declining topics were noted as the research topic trends.

**Context of the Projects**

Most of the UGRPs in this study did not investigate clinical treatments. This was noted from the second phase of the study and it peaked in the last phase where non-clinical projects dominated every year in that phase, as reflected in figure 3.

## DISCUSSION

The apparent contradictory finding regarding the number of projects can be explained by the fact that in the first five years of Medunsa's UGRP training students conducted research as individuals. Thereafter group-work was introduced, so fewer projects were conducted even though student numbers had increased.

Regarding the dominance of the quantitative approach to research: this was understandable, given the clinical and practical nature of the profession and the fact that qualitative research is relatively new in the health sciences. The old medical model approach of the health sciences is also responsible for the 'disuse' of qualitative research. Therefore students find few, if any reference sources to guide them towards a qualitative approach to research.

The concurrent decline in experimental research noted in the students' choice of research methods can be attributed to the curriculum restructuring that took place in the MEDUNSA Physiotherapy department in 1995 that resulted in major changes being made to the clinical education programme. Prior to 1995, all Medunsa Physiotherapy students received their clinical education at Garankuwa hospital only, the main teaching hospital for the MEDUNSA-Garankuwa academic complex. This was because the student numbers were small and could be accommodated in one hospital. As a result, students carrying out clinical experimental research had unlimited and uninterrupted access to patients all year through.

Due to increased student numbers, it became impractical to do clinical training at Garankuwa hospital only. Alternative clinical placements were sought at different hospitals throughout the country and students rotated through these on a four-week basis. This rotation created a problem for students in terms of access to patients/subjects and continuity for experimental research. The problem was mainly due to financial and transportation constraints that are peculiar to the 'type' of student admitted at Medunsa (i.e. the disadvantaged student). Most of the students therefore opted for survey type research rather than experimental research.

The surveys were mostly epidemiological in nature using questionnaires

and very few used interviews. Research using surveys is viewed to be a weak method by research experts such as Leedy (1997) as it is subject to bias. However, a lot of valuable information can be gained using this approach.

The prevalence of non-clinical projects in this study is directly related to the fact that students preferred non-experimental research. Clinical research is mainly concerned with causality and is therefore experimental in nature.

Beenhakker (1991) indicated the need for experimental research and clinical trials in physiotherapy in South Africa. She was supported by Robertson (1995) who stated that physiotherapists need to be more aware of the importance of researching our clinical treatments and the range of methods available. Experimental research is expected to validate current practice and to satisfy demands for professional accountability. Robertson (1995) also argues that experimental research is expected to demonstrate and improve the effectiveness of physiotherapy modalities, interventions and techniques.

The following discussion focuses on trend analysis according to research topic, according to the four topic categories mentioned earlier in the results.

### Fast Growing Topics

#### • Sports physiotherapy

A dramatic increase in sports related projects especially in the last phase of the study period is noted and comes as no surprise. The development of professional sports in South Africa and the return of the country to international sports are directly responsible for the students' interest in conducting sports related UGRPs. A significant local factor that influenced the students to conduct research in this area is the fact that the sports physiotherapy lecturer who is also a specialist in the field is involved in national sport in the country. Therefore as a role model she directly influences the students. The sports physiotherapy curriculum also includes practicals at major events like the Comrades marathon, where students make contact with elite sports people and this further develops their interest in sports.

Most of the sports projects conducted by the students are epidemiological in nature, focussing on prevalence of sports injuries and the knowledge of sports persons regarding injury prevention strategies. These projects have produced valuable results which can be used to motivate the need for physiotherapy intervention in sport. What is lacking so far in the sports research is experimental evidence to prove the effectiveness of physiotherapy interventions. Maybe this is not an arena for student research, but it is a necessity for the physiotherapy profession, which still enjoys the respect of the sporting world.

#### • Physiotherapy education

The increase in the number of physiotherapy education related projects is of notable interest, especially in the last phase of the study. Students as consumers of education are beginning to question the value of the product they receive and the packaging thereof. This is a good development as it indicates empowerment on the part of the students. It is also good for the educators (*and possibly unsettling!*) because educators need to be accountable for their teaching. Feedback from students is therefore an important and integral part of curriculum evaluation and any research related to this can only boost a department's efforts in curriculum development.

Closely linked to education is the increase in topics related to knowledge of physiotherapy among other health professionals, an essential pre-requisite for teamwork. The following titles of two topics reflect this:

- *Knowledge of medical students about conditions treated by physiotherapy (1996)*
- *The knowledge of medical interns about the differences between occupational therapy and physiotherapy (1997)*

These topics suggest that the students have an interest in the education of other health care members as well, and are interested in effective teamwork in service delivery.

#### • Disability

The Government policy on disability as reflected in the National disability strategy

(1997) and the emerging voice of disability movements in the 1990's probably alerted the students to the importance of disability as a health aspect. Hence the rise in projects on disability from 1995 onwards. The stance of the profession on community physiotherapy and the creation of community posts by government are other factors which contributed to increasing students' awareness of this aspect and thus their research interest.

### Slowly Emerging Topics

- **Community Physiotherapy and Neurology**

Besides having influenced methodological trends, curriculum changes also had an impact on students' choice of research field. The curriculum changes were such that certain subjects were allocated more contact hours while in other subjects the number of hours was decreased. These changes might have given students the impression that some subjects are more important and they therefore decided to do research in those subjects.

This influence is particularly noted in community physiotherapy. This subject initially had only 20 hours allocated in the 4th year of study; and this was increased to 60 hours, spreading from 2nd year to 4th year. The number of community related students' projects subsequently increased in the period 1995 - 1999, in the areas of disability, neurology and community physiotherapy. These three areas are interrelated because neurological disorders are responsible for most of the disabilities that the community physiotherapist deals with on a regular basis.

- **HIV/AIDS and Geriatrics**

The nationally and internationally topical issues of HIV/AIDS and Geriatrics were surprisingly not as attractive to students, such that in the entire study period they registered 3 and 1 projects respectively. Previous researchers have shown that geriatrics is not attractive to physiotherapy students as a speciality (Amosun 1999, Coren et al 1985) and this was reflected in this study.

HIV/AIDS is however an issue of such topical interest that one would

expect it to attract research attention. Perhaps role modelling is a problem here, in that students do not see a lot of qualified physiotherapists publishing articles on this topic.

- **Animal physiotherapy**

A new area that is rapidly developing both nationally and internationally is animal physiotherapy. Animal physiotherapy is now recognized as a speciality and was accepted as one of the special interest groups of the South African Society of Physiotherapy (SASP) at the SASP National Assembly of March 1999.

Although viewed by some physiotherapists as not being a necessity, it is important in sport physiotherapy and interest is growing among Medunsa students in this field. The question whether this apparently luxurious aspect of physiotherapy should be encouraged, given the basic health needs of our country, is beyond the scope of this paper as it is a service issue and not a research training one. However, the author acknowledges the need to bridge the 'research-service' gap.

### Fluctuating Topics

- **Women's health**

Issues relating to women's health have not caught enough of the students attention, especially in the period 1995 - 1999. The South African government has a firm stance regarding the emancipation of women and gender equity. From this national perspective, one would expect students to have an interest in researching women's issues as physiotherapy plays a very important role in women's health.

The question then arises: 'why the lack of interest?' Could it be because women's health is a relatively new aspect of physiotherapy? Could it be because the current curriculum does not embrace a lot of relevant women's issues? Both assumptions are probably true and valid. Hopefully in the near future the situation will improve, especially because the World Confederation of Physical Therapists admitted a Women's health subgroup to the international association in May 1999. This move will possibly foster a move by training institutions to give more attention to Women's health.

- **Others**

The notable fluctuating trend in back-care, therapeutic exercises and cardio-respiratory research makes one curious. Back-care education is such a strong marketing tool for the physiotherapy profession in South Africa one would expect great research interest in this area. Whether this trend is due to pure lack of interest or to the fact that these areas have been sufficiently researched to plateau levels in the profession remains a question that needs to be answered.

### Topics on a Decline

- **Electrotherapy**

Electrotherapy research appears to be slowly declining and this is probably due to the experimental nature of such research and it's associated problems. These were discussed under methodological trends. The decline in Electrotherapy projects can also be attributed to the curriculum restructuring which resulted in a decrease in the number of electrotherapy lecture hours and modalities taught.

A decline in electrotherapy research was also noted and reported by Mitchel (1990) in a South African publication. These trends differ from an American one as reported by Robertson (1995), where an increase in electrotherapy research was observed. These contrasting results can be explained by the differences in the two 'worlds' in question. America being a first world country is technology driven and therefore produces machine-dominated publications, unlike the developing South Africa. The South African research trend has an important implication, that of relevance to the needs of the country. This is discussed later.

### IMPLICATIONS FOR TRAINING

There is a need for physiotherapy schools to produce physiotherapists who are accountable and better able to render service. This can be best achieved by inculcating a research culture at undergraduate level. Students should get out of the mentality of '*doing research to get my degree*' and aim to make research an integral part of their professional lives. This is to a large extent being realized, as is evidenced by the students' choice

of research topics which are relevant to their profession and communities.

In her keynote address entitled "Physiotherapy Education, where do we go from here?", Lebeloane (1999) challenged South African educators to move towards a more relevant and Afro-centric curriculum. This challenge was received with much reservation, given the Euro-centric nature of the Physiotherapy curriculum, and the human nature to resist any change from the status quo.

Reflecting on the UGRPs of Medunsa students, especially in the last phase of the study, it is evident that teaching is becoming relevant to the needs of our country. The topic trends show that students are now interested in issues affecting the community (e.g. disability) and issues of human resources in health-care, an indication that they are aware of and concerned about health issues in their own country. This is in line with the goal of the South African Qualifications Authority (SAQA) to ensure that "education and training serve national requirements for growth and development" (Lebeloane, 1999)

Although many undergraduate research projects have been conducted in the Medunsa Physiotherapy department, most of these are stored in departmental archives, instead of being used to prove the need for or the worth of physiotherapy. Much of the research is of a quality that could be developed into mini-dissertations for postgraduate research, as suggested by Luck (1997).

To prevent the long-standing problem of '*projects accumulating dust*' from continuing, it is recommended that the following mechanisms be put in place:

- Involve the UGRP students in departmental projects, where the department conducts a major project and students are supervised on specific aspects or phases of the project. Some of the previous years' UGRP recommendations could be taken up as departmental projects and given to new students for this purpose. However, Kitchen (1999) cautions that there is a risk of students 'being used instead of being taught' when this approach is followed.
- Students who have completed projects worthy of post-graduate follow-

up should be encouraged to enroll for higher degrees. Assistance should be offered as far as their projects are concerned, all the way up to publication. In this way the undergraduate projects will contribute to the research output of the department and the physiotherapists developed at the same time

### CONCLUSION

An analysis of the UGRPs conducted in the Medunsa physiotherapy department revealed an increase in the number of projects between 1985 and 1999. The students' choice of research topic and method are influenced by the curriculum, national events and policies and trends in physiotherapy research nationally and internationally. A methodological preference for non-experimental research and a dominance of topics relating to education, sports and disability was noted in general. There is a need to strike a balance between experimental and non-experimental research and also to encourage qualitative methods and clinical research.

Undergraduate research projects are valuable to departmental research output. However, the Medunsa experience has revealed that these projects have not been utilized to maximum potential. Many options for maximizing the value of the UGRP are available and should be explored for the benefit of the students, department, profession and physiotherapy patients..

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