INDEX

List of contents

1. Declaration ii
2. Dedication iii
3. Abstract iv
4. Acknowledgements v
5. Table of Contents vi
6. List of Tables x
7. List of Figures xii
DECLARATION

I, Maria Alexandra Fernandes Rodrigues, declare that this thesis is my own, unaided work. It is being submitted for the Degree of Doctor of Philosophy in Medicine in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other University.

_______________________________

_______ day of _________ 2006
To Sheyla, Danilo and Dalila who gave me the encouragement not only to start but also to finish this research.

To Bhangy, my husband, an unparalleled teacher, whose commitment and devotion to education served as an inspiration to develop this study.
ABSTRACT

The medical professional requires expertise in a wide range of disciplines as well as competence encompassing knowledge, skills and attitudes. Of these, the knowledge and skills gained in Anatomy play a fundamental role in contributing to the quality and performance of the medical practitioner. The present study aimed to evaluate the role of the teaching-learning Anatomy in the training of doctors at Universidade Eduardo Mondlane in Mozambique and therefore to contribute to the effectiveness of the medical curriculum to ensure that it produces high quality medical professionals. The following questions were addressed: i) Is the Anatomy course perceived by the students to be structured to address their needs regarding medical practice? ii) Is there a relationship between performance in Anatomy and other disciplines as recalled by the students? iii) Do medical students demonstrate a satisfactory knowledge of Anatomy in dealing with patients in practice? The study involved the medical students in the clinical cycle and the junior doctors employed at the Central Hospital of Maputo City. Data obtained by means of questionnaires, examination of clinical reports and interviews was analysed statistically by the SPSS programme. The results showed that overall the students have a positive view of how well the Anatomy course meets their clinical needs, and that there is a direct relationship between knowledge of Anatomy and the ability to perform in the clinical setting. There is however a need to review the current medical curriculum in order to achieve better integration between the courses and cycles and particularly to improve the efficacy of the teaching-learning process by selecting the content more appropriately and adjusting the assessment procedures. From this study recommendations may be made to help improve the students’ application of anatomical knowledge by increasing vertical and horizontal integration in the curriculum and introducing earlier exposure to clinical problem solving. Further studies are needed to better understand the impact of assessing the outcomes of the basic sciences such as Anatomy on the educational process as well as on medical practice.
ACKNOWLEDGEMENTS

I wish to express my sincere gratitude and appreciation to the following persons and institutions for their willing and invaluable assistance:

- Dr. Di Manning, my supervisor, for her expert guidance, encouragement, professional advice, and all the hours generously spent, which made this research exciting in collaboration of Dr. R. Aszvat, the co-supervisor who gave a good insight for starting the research

- Prof. Beverley Kramer who contributed a great deal to my study period at the University of the Witwatersrand.

- Prof. Maina for the support gave to the research. I have certainly profited from the broad experience of his staff in the educational and anatomical fields.

- Prof. Otilia Neves, Head of Department of Emergency and Casualty, Central Hospital of Maputo, and her staff for allowing me the opportunity to undertake this study which helped considerably in reevaluating the quality of use of the medical report and the medical students of the clinical years in 200-2003 and junior doctors working there for their cooperation

- Prof. Branco Neves, Head of Department of Anatomy at UEM and all my colleagues, too numerous to mention, for the insight gave to my work

- All members of my family for their endless patience, support and encouragement.

- The Capacity Building Project of the Universidade Eduardo Mondlane for the financial assistance.
# CONTENTS

## CHAPTER 1: INTRODUCTION 1 – 24

1.1 Background to the study 1  
1.2 The National Health System of Mozambique 2  
1.3 Eduardo Mondlane University (UEM) 4  
1.3.1 The medical course 4  
1.3.1.1 Basic cycle 8  
1.3.1.2 Clinical cycle 12  
1.3.1.3 Overall curricular structure 18  
1.3.2 Assessment procedures 19  
1.3.3 Disparity between the number of admissions and graduates 21  
1.4 Aim of the study 22  
1.5 Importance of the study 23  
1.6 Expected outcomes 24

## CHAPTER 2: LITERATURE REVIEW 25 – 63

2.1 Medical practice and its need for the basic sciences 26  
2.1.1 The need for the basic sciences in general 26  
2.1.2 The need for Anatomy and its role in medical training 31  
2.2 Undergraduate Medical Education: selecting and presenting the content 32  
2.2.1 General considerations 32
2.2.2 The Anatomy content 36
2.3 Undergraduate Medical Curriculum: methods of teaching-learning 39
  2.3.1 General considerations 39
  2.3.2 Teaching-learning of Anatomy 46
2.4 Evaluating the outcomes of teaching-learning in medical curriculum 49
  2.4.1 Measuring the outcomes 49
  2.4.2 General aspects of the outcomes of teaching-learning 54
  2.4.3 Teaching-learning outcomes related to Anatomy 58

CHAPTER 3: MATERIALS AND METHODS 64 – 87

3.1 Research design and subjects 65
  3.1.1 Study design 65
  3.1.2 Study population 66
  3.1.3 Sampling 67
3.2 Measuring instruments 69
  3.2.1 Questionnaire 70
  3.2.2 Clinical reports 74
  3.2.3 Semi-structured interviews 78
3.3 Limitations of the study 81
3.4 Data analysis 83
  3.4.1 Anatomy and the medical course 83
  3.4.2 Use of anatomical knowledge in clinical practice 84
3.5 Ethical procedures 85
CHAPTER 4: RESULTS 88 – 113

4.1 Characteristics of the Sample 89

4.2 Perceived influence of teaching-learning Anatomy on the quality of medical training/practice 90

4.2.1 Differences based on gender 92

4.2.2 Influence of year of study 93

4.2.3 Cohort effect 95

4.2.4 Performance in Anatomy and related courses 96

4.2.5 Performance in Anatomy and perception of students’ needs regarding medical practice 97

4.3 Quality of use of the anatomical knowledge in clinical practice 98

4.3.1 Use of anatomical terms in reporting history taking 99

4.3.2 Description of physical examination 100

4.3.3 A probable diagnosis 101

4.3.4 Request of diagnostic / therapeutic procedures 101

4.4 Usefulness of the clinical reports 102

4.4.1 Use of anatomical terms and description of the physical examination 102

4.4.2 Use of anatomical terms and the proposed diagnosis 104

4.4.3 Use anatomical terms and the requested diagnostic / therapeutic procedures 105

4.5 Perceived usefulness of Anatomy, the effect of teaching-learning
CHAPTER 5: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion 115

5.1.1 Research design 115

5.1.2 Findings 121

5.1.2.1 Is the Anatomy Course perceived by the students as structured to address their needs regarding medical practice? 121

5.1.2.2 Is there a relationship between performance in Anatomy and other disciplines as recognised by the students? 129

5.1.2.3 Do medical students demonstrate a satisfactory knowledge of Anatomy in dealing with patients in practice? 131

5.2 Conclusions 136

5.2.1 Research question 1 136

5.2.2 Research question 2 137

5.2.3 Research question 3 137

5.3 Recommendations 139

REFERENCES 141 – 154

APPENDICES 155 – 169

Appendix A: Questionnaire 155 – 163

Appendix B: Clinical report 164 – 165
Appendix C: Semi-structured interview 166 – 169
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1</td>
<td>Total time allocated for teaching <em>pre-clinical</em> courses in the Faculty of Medicine at UEM</td>
<td>9</td>
</tr>
<tr>
<td>Table 1.2</td>
<td>Total time allocated for teaching <em>clinical</em> courses in the Faculty of Medicine at UEM</td>
<td>14</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Number of participants by gender and year of study</td>
<td>89</td>
</tr>
<tr>
<td>Table 4.2</td>
<td>Cronbach’ s Alpha Coefficients of sub-scales and scale by year of study</td>
<td>91</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>Cronbach’ s Alpha Coefficients of sub-scales and scale by 4th year of study of the different academic years</td>
<td>92</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>Means and Standard Deviations by gender and t-test values for each sub-scale of the cross-sectional sample</td>
<td>93</td>
</tr>
<tr>
<td>Table 4.5</td>
<td>One-way analysis of variance on the sub-scales and the Total Scale, by year of study</td>
<td>94</td>
</tr>
<tr>
<td>Table 4.6</td>
<td>Means and standard deviations by academic year of the 4th year students and t-test values for each sub-scale</td>
<td>95</td>
</tr>
<tr>
<td>Table 4.7</td>
<td>Percentage distribution of the performance in Anatomy and related courses by year of study</td>
<td>96</td>
</tr>
<tr>
<td>Table 4.8</td>
<td>Phi coefficients relating the self-reported performance in Anatomy and related courses</td>
<td>97</td>
</tr>
<tr>
<td>Table 4.9</td>
<td>Means and standard deviations by performance in Anatomy and t-test values for each sub-scale and total scale of the cross-sectional sample</td>
<td>98</td>
</tr>
<tr>
<td>Table 4.10</td>
<td>Percentage distribution of the level of use of the anatomical terms by</td>
<td></td>
</tr>
</tbody>
</table>
senior students and junior doctors, in their clinical reports

Table 4.11 Percentage distribution of the quality of reporting the physical examination by senior students and junior doctors

Table 4.12 Percentage distribution of quality in proposing a diagnosis by senior students and junior doctors

Table 4.13 Percentage distribution of quality of reporting the diagnostic/therapeutic procedures by senior students and junior doctors

Table 4.14 Frequency distribution of the quality of the use of anatomical terms and description of the physical examination

Table 4.15 Frequency distribution of the quality of the use of anatomical terms and the quality of the proposed diagnosis

Table 4.16 Frequency distribution of the quality in suggesting a diagnosis and the quality of diagnostic/therapeutic procedures

Table 4.17 The interviewees’ comments

Table 4.18 Themes based on interviewees’ comments
## List of Figures

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1: Number of admissions and graduations from 1992 to 2001</td>
<td>21</td>
</tr>
<tr>
<td>Figure 3.1 Handling of intake patients at the Emergency Department</td>
<td>68</td>
</tr>
<tr>
<td>at HCM</td>
<td></td>
</tr>
</tbody>
</table>