

**A COMPARATIVE STUDY OF THE PERCEPTIONS OF
COMPETENCIES OF THE MEDICAL GRADUATES
AS ASSESSED BY THEMSELVES AND THEIR
SUPERVISORS IN A SRI LANKAN UNIVERSITY**

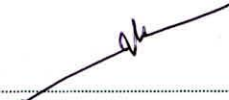
BY

ROHANA BASIL MARASINGHE

**Thesis submitted to the University of Sri Jayewardenepura for the
award of the Degree of Master of Philosophy in Medical
Education on 2005.**

DECLARATION BY THE CANDIDATE

The work described in this thesis was carried out by me under the supervision of Professor M.T.M. Jiffry (Senior Professor, Head of the Department of Medical Education and Health Sciences, Faculty of Medical Sciences, University of Sri Jayewardenepura), Dr. Palitha Abeykoon (Senior Advisor, World Health Organisation, Colombo) and Dr. Chris Stephens (Director of Education, Division of Medical Education, School of Medicine, University of Southampton, United Kingdom) and a report on this thesis has not been submitted in whole or in part to any university or any other institution for another Degree/Diploma.


.....
Rohana Basil Marasinghe

28/05/2006.
.....
Date

DECLARATION OF THE SUPERVISORS

We certify that the above statement made by the candidate is true and that this thesis is suitable for submission to the University for the purpose of evaluation.



Professor M.T.M. Jiffry
(Supervisor)



Dr. Palitha Abeykoon
(Supervisor)



Dr Chris Stephens
(Supervisor)

TABLE OF CONTENTS

	Page
I. LIST OF TABLES	vii
II. LIST OF FIGURES	xi
III. ABBREVIATIONS	xiii
IV. ACKNOWLEDGEMENTS	xv
V. ABSTRACT	xvii
1. INTRODUCTION	01
1.1. Background	01
1.1.1 General and higher education in Sri Lanka	01
1.1.2 Medical schools in Sri Lanka	02
1.1.3 Establishment and performance of the Faculty of Medical Sciences of the University of Sri Jayewardenepura.(FMS/USJ)	03
1.1.4 Medical curriculum at FMS/USJ	03
1.1.5 Importance of evaluation of medical curriculum	05
1.1.6 Place of the measurement of competency in evaluating curricula	06
1.2. Context of the study	06
1.3. Subject of study	07
1.4 Research questions	07
1.5 Aims and objectives of the study	07
1.5.1 Main objectives	08
1.5.2 Specific objectives	08
1.6 Significance of the study	09
1.7 Scope of the study	10

2.	REVIEW OF LITERATURE	11
2.1	The concept of curriculum and other related issues	11
2.1.1	The curriculum	11
2.1.2	Medical curriculum	16
2.1.3	Evolutionary steps of medical curriculum and specific features of each step	17
2.2	The concept of curriculum evaluation and other related issues	23
2.2.1	Evaluation & educational evaluation	23
2.3	Current trends on curriculum evaluation	30
2.3.1	Current schools of thoughts	30
2.3.1.i	The school of outcome based education	30
2.3.1.ii	The school of standards based medical education	34
2.3.2	Significant evaluation models	35
2.3.2.i	Traditional experimental design	36
2.3.2.ii	Program logic model	37
2.3.2.iii	Educational interaction model	39
2.3.2.iv	Realistic evaluation	42
2.3.2.v	Kirkpatrick evaluation hierarchy	43
2.4	Concepts and issues related to developing a curriculum evaluation model	47
2.4.1	Approaches to educational evaluation	47
2.4.1.i	Student-oriented approach	47
2.4.1.ii	Programme-oriented approach	47
2.4.1.iii	Institution-oriented approach	48

2.4.1.iv Stakeholder-oriented approach	49
2.4.1.v Outcome-oriented approach	49
2.4.2 Indicators used in evaluation	50
2.4.2.i Structural evaluation measures	50
2.4.2.ii Outcome evaluation measures	51
2.4.2.iii Process evaluation measures	54
2.4.3 Evaluation techniques	56
2.4.3.i Quantitative techniques	57
2.4.3.ii Qualitative techniques	59
2.4.4 Evaluation tools	62
2.4.5 Important concepts regarding evaluation techniques	65
3. METHODOLOGY	66
3.1 Sample selection	66
3.1.1 Inclusion criteria	66
3.1.2 Exclusion criteria	67
3.1.3. Enrolment of research subjects	67
3.2 Development of research tools	67
3.2.1 Questionnaire development	68
3.2.2 Semi structured interview guide	70
3.2.3 Ethical clearance	71
3.3 Data collection	72
3.4 Data analysis and interpretation	73
3.4.1 Analysis of survey data	73
3.4.2 Analysis of interview data	79

4. RESULTS	82
4.1 Sample distribution	82
4.2 Achievement of Institutional Objectives	86
4.2.1 Area 1 Professional values, attitudes and behaviour	86
4.2.2 Area 2 Scientific basis / foundation of medicine	89
4.2.3 Area 3 Clinical skills	92
4.2.4 Area 4 Communication skills	95
4.2.5 Area 5 Ethical and legal values associated with professional practice	101
4.2.6 Area 6 Population / community health and health system	104
4.2.7 Area 7 As a primary care physician (Primary care medicine)	107
4.2.8 Area 8 Administrative aspect	110
4.2.9 Area 9 Reflective practice	113
4.2.10 Area 10 Critical thinking and research	115
4.3 Competency of FMS/USJ graduates in managing common health problems	121
4.3.1 Common medical problems	123
4.3.2 Common paediatric problems	127
4.3.2 Common surgical problems	130
4.3.4 Common obstetric & gynaecological problems	133
4.4 Overall competency for the health problem management learning adequacies	138

5. DISCUSSION	141
2.2 The achievements of Institutional Objectives (IOs)	
of the FMS/USJ	144
2.2.1 Professional values, attitudes and behaviour	144
2.2.2 Scientific basis / foundation of medicine	146
2.2.3 Clinical skills	148
2.2.4 Communication skills	150
2.2.5 Ethical and legal values associated with professional practice	152
2.2.6 Population / community health and health system	153
2.2.7 As a primary care physician (Primary care medicine)	155
2.2.8 Administrative aspects	157
2.2.9 Reflective practice	158
2.2.10 Critical thinking and research	160
2.3 The level of competency of FMS/USJ graduates in managing common health problems of Sri Lanka	161
5.2.1 Common medical problems	162
5.2.2 Common paediatric problems	163
5.2.3 Common surgical problems	164
5.2.4 Common obstetric & gynaecological problems	165
2.4 Limitations of the study	167

6. CONCLUTIONS	169
6.1 The extent to which graduates were capable of demonstrating the achievement of Institutional Objectives (IOs) of the FMS/USJ	169
6.2 The level of competency of FMS/USJ graduates in managing common health problems of Sri Lanka	171
6.2.1 Common medical problems	171
6.2.2 Common paediatric problems	171
6.2.3 Common surgical problems	171
6.2.4 Common obstetric and gynaecological problems	172
6.3 Recommendations	172
6.3.1 Institutional objectives	172
6.3.2 Common health problems	176
7. REFERENCES	178
APPENDIX I	Publications & communications from this thesis
APPENDIX II	Questionnaires (HO) and (Consultants)
APPENDIX III	Interview guides (HO) and (Consultants)
APPENDIX IV	Ethical application
APPENDIX V	Item score
APPENDIX VI	Non respondent rate for each item
APPENDIX VII	Institutional Objectives
APPENDIX VIII	Individual health problems and its frequency of occurrence
APPENDIX IX	Curriculum vitae

LIST OF TABLES

	Page
Table 2.1: Summary of some definitions denoted for educational evaluation in the context of its constructing components	29
Table 2.2: Three main areas and 12 learning outcomes -adapted from Harden <i>et al.</i> , (1999)	32
Table 2.3: Nine major areas of international standards in basic undergraduate medical education -adapted from WFME report (2000)	32
Table 2.4: Kirkpatrick's 4 levels modified by Barr <i>et al.</i> , (2003)	45
Table 2.5: Indicators used in evaluating educational innovations (Wilkes & Bligh (1999)	50
Table 2.6: Comparison of Qualitative and quantitative research -adapted from Cook and Reichardt (1979)	58
Table 2.7: Commonly used evaluation tools in evaluation research -adapted from Wilkes & Bligh (1999)	62
Table 2.8: Comparison of selected parameters of evaluation tools (adapted from Harvey (1998)	62
Table 2.9: Main features of interview types - adopted from Patton (1990)	64
Table 3.1: Maximum score ^(a) for ten areas of IQs and relevant items for each area	76

Table 3.2:	An approximate guide to interpret the average score obtained for each area of IQs as subscales	78
Table 4.1:	The number selected, responded and the reasons for not responding to questionnaire	83
Table 4.2	The study population of the responding HOs and consultants by province, district and category of the hospital	84
Table 4.3:	Distribution of HOs and consultants in each discipline	85
Table 4.4:	Duration of the internship of HOs and the experience of consultants	85
Table 4.5:	The workload of HOs and supervisory work of consultants	85
Table 4.6	Responses pertaining to “Scientific basis / foundation of medicine	89
Table 4.7:	Responses pertaining to “Clinical Skills”	92
Table 4.8:	Responses pertaining to “Communication skills	95
Table 4.9:	Responses pertaining to “Ethical and legal values associated with professional practice”	101
Table 4.10:	Responses pertaining to “Population / community health and health system”	104
Table 4.11:	Responses pertaining to “Primary care medicine”	107
Table 4.12:	Responses pertaining to “Administrative aspect”	110

Table 4.13:	Responses pertaining to “Reflective practice”	113
Table 4.14:	Responses pertaining to “Critical thinking and research”	115
Table 4.15:	A summary of the analysis of responses pertaining to main ten areas of the IOs	118
Table 4.16a:	Items with scores below average (<2) values by two groups	119
Table 4.16b:	Items with scored above average (>2) values by two groups	120
Table 4.17:	The Number selected, responded and the reasons for not responding for the interview	122
Table 4.18a:	Responses for competency in managing common medical problems	123
Table 4.18b:	Responses for adequacy of training in common medical problems	124
Table 4.19a:	Responses for competency in managing common Paediatric problems	127
Table 4.19b:	Responses for adequacy of training in common Paediatric problems	128
Table 4.20a:	Responses for competency in managing common Surgical problems	130

Table 4.20b: Responses for adequacy of learning in common Surgical problems	131
Table 4.21a: Responses for competency in managing common Obstetrics & Gynaecological problems	134
Table 4.21b: Responses for adequacy of learning in common Obstetrics & Gynaecological problems	135
Table 4.22a: Responses pertaining to the competency in managing common health problems	138
Table 4.22b: Responses pertaining to the adequacy of learning in common health problems	138

LIST OF FIGURES

	Page
Figure 1.1: The SPICES model – adapted by Harden (2000a)	04
Figure 2.1: The hidden curriculum -adapted from (Harden, 2001a)	12
Figure 2.2: Different curricular models evolved in medical education	19
Figure 2.3: Performance measurement and the performance management can be evaluated at operational and strategic levels- adapted from Kaplan and Norton (1990)	25
Figure 2.4: Three-circle model for outcome-based education (adapted from Harden <i>et al.</i> , (1999)	31
Figure 2.5: Three-circle model for classifying learning outcomes (adapted from Harden <i>et al.</i> , (1999)	31
Figure 2.6: Traditional experimental design	36
Figure 2.7: Programme logic model -adapted from Cooksy, <i>et al.</i> , (2001)	37
Figure 2.8: Educational interaction model (interaction between educational influences and individual abilities)-adapted from Fischbein (1986)	40
Figure 2.9: Schematic diagram to illustrate the realistic evaluation as a cyclical process operating in an open system	42
Figure 2.10: Kirkpatrick's hierarchy of levels of evaluation and modified version by Barr <i>et al.</i> , (2000)	43

Figure 2.11:	Schematic illustration showing reliability and validity	65
Figure 4.1:	Bar chart to illustrate responses on “Professional values, attitudes and behaviour”	88
Figure 4.2:	Bar chart to illustrate responses on “Scientific basis / foundation of medicine”.	91
Figure 4.3:	Bar chart to illustrate responses on “Clinical skills”	94
Figure 4.4:	Bar chart to illustrate responses on “Communication skills ”	100
Figure 4.5:	Bar chart to illustrate responses on “Ethical and legal values associated with professional practice”	103
Figure 4.6:	Bar chart to illustrate responses on “Population / community health and health system”	106
Figure 4.7:	Bar chart to illustrate responses on “As a primary care physician (Primary care medicine)”	109
Figure 4.8:	Bar chart to illustrate responses on “Administrative aspect”	112
Figure 4.9:	Bar chart to illustrate responses on “Reflective practice”	114
Figure 4.10:	Bar chart to illustrate responses on “Critical thinking sand research”	117

ABBREVIATIONS

ACGME	Accreditation Council for Graduate Medical Education
CAL	Computer-Assisted Learning
CHPs	Common Health Problems
CIPP	Context-Inputs-Processes-Products
CNAA	Council for National Academic Award
CNS	Central Nervous System
CSTH	Colombo South Teaching Hospital
CVA	Cerebro Vascular Accidents
CVS	Cardio Vascular System
DREEM	Dundee Ready Education Environment Measure
FGS/USJ	Faculty of Graduate Studies, University of Sri Jayewardenepura
FMS/USJ	Faculty of Medical Sciences, University of Sri Jayewardenepura
GCE - O/L	General Certificate of Education – Ordinary Level
GCE (A/L)	General Certificate of Education – Advanced Level
GDM	Gestational Diabetes Mellitus
GIT	Gastro Intestinal System
GMC	General Medical Council
GNP	Gross National Product
GP	General Practitioners
GUT	Genito Urinary System
HO	House Officer
IOs	Institutional Objectives
IRQUE	Improving Relevance and Quality of Undergraduate Education
L/T	Learning and Teaching

MBBS	Bachelor of Medicine and Bachelor of Surgery
MCQ	Multiple Choice Questions
MOH	Ministry of Health
NHSL	National Hospital of Sri Lanka
PBL	Problem Based Learning
PIH	Pregnancy Induced Hypertension
PPH	Post Partum Haemorrhage
PROM	Preterm Rupture of Membrane
PVD	Peripheral Vascular Diseases
QA	Quality Assurance
SAARC	South Asian Association for Regional Corporation
SBS	Subject Benchmark Statements
SD	Standard Deviation
SDMCG	Scottish Deans' Medical Curriculum Group
SEQ	Structured Essay Questions
SJP	Sri Jayewardenepura General Hospital
SLMC	Sri Lanka Medical Council
SPICES	Student-centred, Problem based, Integrated, Community-based,
TB	Tuberculosis
TH	Teaching Hospital
TQM	Total Quality Management
UGC	University Grant Commission
UV	Utero Vaginal
WFME	World Federation on Medical Education

ACKNOWLEDGEMENTS

I wish to thank all those who contributed in diverse ways to the work involving my study:

in particular, I would like to express my sincere thanks and heartfelt gratitude to my three supervisors; especially to my internal supervisor, Senior Professor M. T. M. Jiffry; for the fine inspiration concerning every new idea, for the guidance whenever it was needed, for the constructive criticism which was readily forthcoming and providing opportunities for enhanced training;

to Dr. Palitha Abeykoon for helping me to focus the study purposefully and facilitating the unhindered progress in my study.

Dr Chris Stephens, for the unstinted guidance in enhancing and elevating the quality of the work.

My sincere gratitude to Professor Sirimali Fernando for the encouragement extended throughout my study.

I wish to thank Dr David Silvium and Dr. Joanna Murray for their invaluable comments which enabled me to refine the methodology in qualitative methods and to Mr. D. Jayasinghe for his help in statistics and reappraising the quantitative methods of the study.

It is my obligation to extend my gratitude to Director General of Health Service, Dr. Kahada Liyanagamage and to Dr. Stanley de Silva, Director Education & Training Unit for granting permission to collect data in the hospitals; and my heartfelt thanks goes to all the Directors/MS of the hospitals and their staff who helped me in many ways to collect data for the study.

My warmest thanks goes to all the consultants and House Officers for devoting their time and providing their frank opinion in this study.

I am specially thankful to the staff of the Department of Medical Education and Health Sciences who helped me in many ways; to Miss Sujatha Seneviratne, to Dr. P.E.K.B. Ranatunge, Dr. M.D.A.Rodrigo, Dr. A.M.Rizvi, Dr. W.A.A. Abeywardene, Dr. U.L.M. Fahmy, Dr. M.M.M.Farzan, Dr. T.Athukorala, Mr. MK Munasinghe, Mr. B.J. Ramanayaka, Mr. Manjula Bandara and Mr. Liyanage.

I am really thankful to Mr. Daya Samaranyaka, visiting lecturer in English at the English Language Teaching Unit of the University of Sri Jayewardenepura for his commitment in proof reading and the preparation of the manuscript.

My heartfelt gratitude goes to the senior staff members and the colleagues who helped me in various stages of the study.

I am forever thankful to my mother and sister who helped me in many ways.

I DEDICATE THIS THESIS TO THE STUDENTS OF THE FACULTY OF
MEDICAL SCIENCES

**A COMPARATIVE STUDY OF THE PERCEPTIONS OF
COMPETENCIES OF THE MEDICAL GRADUATES AS
ASSESSED BY THEMSELVES AND THEIR SUPERVISORS
IN A SRI LANKAN UNIVERSITY**

ROHANA BASIL MARASINGHE

ABSTRACT

The aim of the study was to evaluate the medical curriculum implemented at the Faculty of Medical Sciences of the University of Sri Jayewardenepura (FMS/USJ) through the performance of medical graduates. Two objectives were formulated to assess, (1) the extent to which graduates were capable of demonstrating the achievement of Institutional Objectives (IOs) of the FMS/USJ, and (2) the level of competency of FMS/USJ graduates in managing common health problems of Sri Lanka.

Two comparable questionnaires were administered to intern House officers (HOs) of 95/96 batch and to their immediate supervisors (consultants) in order to obtaining the perception of competencies of the medical graduates needed to achieve Institutional Objectives (IOs) of the FMS/USJ. The quantitative responses obtained by HOs and their consultants were compared to calculate the statistically significant differences. Qualitative data obtained by the interview was analysed to recognise the rational explanations and elaborations in subsequent triangulation of data.

Similarly, HOs and their consultants were interviewed to assess the level of competency of FMS/USJ graduates in managing common health problems in Sri Lanka. Perception of the present competencies and learning adequacies at the undergraduate period were obtained to identify strong and weak areas of the curriculum. Thematic analysis was performed to identify and clarify issues emerged pertaining to the improvement of medical curriculum.

Results, overall revealed that the average perception of the achievement of IOs of FMS/USJ is satisfactory, although self-rating by HOs 56.1% (112.1/200) were higher than that of the consultants 49.4% (99.8/200). Out of the ten categories identified, the IOs related to the category of “Professional values, attitudes and behaviour” obtained the mean highest score both by HOs 62.5% (2.5/4) and consultants 60% (2.4/4). The HOs 42.5% (1.7/4) and consultants 37.5% (1.5/4) secured the least for the category of “Critical thinking and research”.

Common health problems perceived by HOs and consultants were considered separately in four internship disciplines (i.e. Medicine, Paediatrics, Surgery and Obstetrics & Gynaecology). Mean score for each area was more than six, in a ten-point scale. Similar to the IOs, the self-perception by HOs rating was higher than that of perception of the consultants. In general, present competencies of HOs in ‘managing each health problem’ was higher than that of the ‘learning adequacies’ during the undergraduate period and, the interview disclosed that it could mainly be attributed to the practical experience gained at the internship. Furthermore, the interview in-depth revealed the specific areas to be improved in the curriculum.