

CHAPTER 6

FINAL CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

6.1 REVIEW OF THE PROBLEM IN THE LIGHT OF THE STUDY RESULTS

The present research set out to develop a valid model of the competent South African intern (Phase 1) and to devise a set of instruments from the model with which to measure the overall competence of two groups of Wits graduates who had experienced very different undergraduate curricula (Phase 2). This phase compared the results obtained from the interns, their supervisors, colleagues and patients using the instruments, as well as qualitative data obtained in face to face interviews. The 2006 interns were the last group of medical students to have undergone a traditional undergraduate medical curriculum while the 2007 interns were the first group to experience a reformed, problem based curriculum called the Graduate Entry Medical Programme (GEMP).

6.1.1 The relationship of the study findings to complexity theory

The framework of complexity theory was discussed in Chapter 1 and the results of this study confirmed the difficulty of conducting research in a complex environment. The interpretation of the study findings had to take into account the networks of circumstances in which the interns found themselves at the time of the survey and their adaptability. Some started in rotations in which they had gained considerable experience during their undergraduate years and where they felt more comfortable:

“Was in surgery for first rotation - the things we had to do were very basic” (2007)

“Was exposed to Bara as an undergraduate so not struggling. Some colleagues who had not been exposed to Bara are still struggling” (2007)

“Orthopaedics less stressful than medicine or surgery – there is time to give good patient care” (2007).

Others, particularly the traditional curriculum graduates, found themselves in very new environments, which were sometimes perceived as hostile, where they had to accustom themselves to new protocols and new cultures in addition to the more general stresses of internship.

“They seem threatened by Wits at this hospital – always making comparisons – they want to bring us down to scale – there’s a lot of politics and they are not welcoming here” (2006)

“...it would be helpful if new graduates were informed of the realities of the workplace before coming to hospitals like [Hospital X- Regional] - not like eg. Bara or Helen Joseph. Things happen more slowly, few specialists, have to take considerable responsibility. May be the only doctor in Casualty – 24 hr call every fourth day” (2006)

“There is a difference in systems and procedures in different places and you need to learn how to adapt” (2006).

The findings of the study highlighted the different perspectives on competence taken by the four groups of respondents – interns, supervisors, colleagues and patients. Variations in the questionnaire ratings were based upon these differing viewpoints. Interns judged their own competence through perceived feelings of confidence in their theoretical knowledge and previous clinical experience. Supervisors assessed observed competence and made comparative judgements in relation to other interns that they had supervised over the years but may not have observed interns in every situation that they were asked to comment on. Colleagues tended to be highly positive in their ratings while the patients were grateful to the interns for all attention received. They mostly spoke highly of the interpersonal communications with interns and the care and assistance that they had received.

Rees and Richards (2004) proposed that complexity theory underpins problem-based learning, reflection exercises and personal learning portfolios. All of these formed an integral part of the new GEMP curriculum at Wits. The traditional graduates had only minimal experience of reflective portfolios in a modified version of PBL in their Community and Child Health course during their fourth year of study. The GEMP graduates, on the other hand, had two years of a fully integrated PBL curriculum with regular portfolio writing exercises and much experience in group work. General comments made by the traditional curriculum graduates frequently referred to the sound knowledge base gained through formal teaching and the excellent clinical teaching received. The positive comments from the GEMP graduates recognized good teaching and clinical opportunities, but went further to talk about the value of the teaching approach used (the biopsychosocial approach), the teaching methods employed, the challenges and value of independent study and extensive community exposure, all of which helped to prepare them for the various experiences of internship. Some were critical of their perceived lack of a strong foundation in some medical science subjects. The pie charts in Chapter 4 show that only 16% of the GEMP interns made unsolicited general comments about the difficult working conditions and the internship environment while 34% of the traditional curriculum interns raised these topics. This might suggest greater adaptability resulting from the GEMP experience.

6.1.2 The more important findings of the entire study

The “Model of the competent South African intern” was important in verifying the areas of internship in South Africa that corresponded with findings elsewhere in the world, as well as identifying important areas such as community health and the impact of HIV/AIDS on medical practice which are more specifically relevant to the South African health care system. The categories and items were validated by a panel of clinicians and medical educators and a kappa test showed good internal consistency of the instruments developed from the model.

This study differed from many others in the literature as it included validation by triangulation of respondents as well as triangulation of research methods. This ensured that the findings

reflected the views of all stakeholders about the competence of the two groups of interns. The trends identified in the quantitative analysis were augmented by qualitative data which added a depth and richness to the understanding of the complex issues of interns' performance within the different hospital settings. The samples were carefully selected and matched to eliminate as many confounding variables as possible, and the 100% response rate ensured no "volunteer bias".

Detailed results and discussions have been provided in the preceding chapters but in general it may be concluded that the findings supported the hypothesis set in Objective 3 of the research study. The interns from the GEMP curriculum considered themselves better prepared than those from the traditional curriculum in five of the nine categories identified in the Model of the Competent South African Intern and in one category they rated themselves less well prepared. Their supervisors also rated them better prepared in two of the nine categories with no significant difference in the other seven categories. Nurse colleagues and intern peers reported no significant category differences between the GEMP and the traditional interns. The lack of agreement between the three groups of respondents was supported by the findings of other researchers.

Additional findings to emerge from the research were that Wits graduates from both curricula were well received and were generally highly regarded for their theoretical knowledge and ability to learn fast. The supervisors, colleagues and patients observed little difference between the two groups but the interns themselves rated their subjective feelings of preparedness somewhat differently and were able to relate these differences to the curriculum that they had experienced (Objective 4). The GEMP interns from the reformed curriculum felt less prepared in two areas within the category pertaining to basic medical science knowledge, namely Pharmacology and Microbiology, and to a slightly lesser extent, also Pathology. These interns, however, felt significantly better prepared than the graduates of the traditional curriculum in interpersonal and communication theory, medical problem solving and clinical judgement, holistic patient management and skills, community health, communication skills and self-directed learning, items which received special attention in the content and delivery

of the GEMP curriculum. These findings are supported by other studies reported in the medical education literature.

The patients interviewed gave insights into the holistic approach and interpersonal skills of the interns. In both years were they highly satisfied with the care given by the interns with only limited qualitative differences in how they expressed their satisfaction. These comments suggested that a more in-depth understanding of their medical condition and treatment had been gained from some of the communications with the GEMP graduates.

6.2 CONCLUSIONS

Given that the traditional curriculum at Wits had been in place and had been honed and improved over a period of more than eighty five years, while the GEMP had only been running for four years at the time of the study, it is important to note that the supervisors saw the GEMP graduates as being equal to, and in some respects better than, the traditional graduates at the commencement of their internship training. With more years of refinement and a considered response to the results of evaluation procedures, it is likely that the GEMP curriculum will continue to improve over time. It is important that further research should guide methods to develop better continuity between the undergraduate years and to continue to improve the integration of knowledge, the PBL process, the skills and understanding of the facilitators, student assessment, clinical experience and evidence based medical practice.

The strengths and weaknesses of the new curriculum at Wits, as identified in this study, remain very similar to those reported by Woodward and Ferrier (1983) for the early graduates from McMaster and by many of the schools worldwide that have adopted this type of problem-based curriculum. The fact that the GEMP interns perceive the basic sciences to be problematic is of some concern and requires further investigation and possible action at Wits. Lessons learned from this study indicate that the clear strength of the traditional curriculum was its strong base in the medical sciences and this needs is an aspect that needs to be reviewed in the new curriculum. However, the results also indicate that the hybrid-type problem based learning curriculum has reached a point where it constitutes a viable, often

enjoyable, way of learning. The success of such a curriculum change is dependent upon medical schools embracing it wholeheartedly and adapting the content and methods to their own unique situations and financial and staffing resources. The GEMP has been shown in this study to surpass the traditional curriculum in many areas in the eyes of the interns themselves. The improvements suggested by the interns and their supervisors can assist in overcoming those areas identified by the study as problematic. These are summarized in the following section.

6.3 POSITIVE ASPECTS OF GEMP CONFIRMED BY THE STUDY

Certain positive aspects of the GEMP were highlighted by the interns who had graduated from this curriculum, as well as some of the supervisors, intern peer colleagues and even graduates of the traditional curriculum.

Fellow interns from other medical schools and supervisors remarked on the broad knowledge base in the medical sciences and especially the humanities, and the generally excellent counselling and communication skills. The GEMP interns put this down to the emphasis place on the biopsychosocial approach throughout the GEMP. Several interns who graduated from the traditional Wits curriculum had raised this as a problem area, highlighting the fact that they had learned mostly about the disease processes without paying sufficient attention to a more holistic approach to patient care.

The supervisors and some intern peers commented that the balance between theory and practical skills was good. Although sometimes seen as initially less competent in clinical procedures than interns from other medical schools, the GEMP interns were acknowledged as being very quick to learn and confident to practice these skills, quickly catching up with the others while maintaining good theoretical knowledge.

The GEMP interns were known for having a generally caring attitude and sense of duty, practising patient advocacy and standing up for patients' rights were features that were often

mentioned. They were also recognised by their supervisors as having a self-learning ethos and being very open to the exchange of ideas, often engaging in discussions and offering opinions.

Supervisors who had worked within the Wits Academic Complex commented that the clinical years of the GEMP were more controlled and structured and therefore more manageable.

6.4 CHANGES SUGGESTED BY THE STUDY

The interns sampled in the study came up with many thoughtful and practical suggestions for overcoming some of the difficulties that they had experienced at the start of their internship. The suggestions of the traditional curriculum interns have to some extent been met by the curriculum change but the suggestions from both groups are valuable in planning improvements to the GEMP curriculum in the future.

Pharmacology teaching

Some of the perceived weaknesses identified by the GEMP graduates were also perceived as weaknesses in the traditional curriculum. An example of this is Pharmacology, including therapeutic management, knowledge of drug effects and side effects and prescribing, which was also mentioned by intern peers as an area of difficulty for many interns regardless of the medical school where they trained. A countrywide study specifically directed towards Pharmacology teaching in South African medical curricula needs to be conducted but, in the interim, collaboration with educators of Pharmacy students at Wits might be valuable in finding a way to introduce Clinical Pharmacology into the medical curriculum during the clinical undergraduate years. This area was identified by both the traditional and GEMP graduates who felt the need for better preparation in practical prescribing skills. Some ideas for more stimulating and innovative methods of teaching Clinical Pharmacology have been reported in the literature. A short report which looks at prescribing-related training offered to medical students and junior doctors (Lai, Moss, Nicholls, *et al* 2007) offered suggestions for a process aimed at overcoming poor prescribing based on Miller's triangle of clinical competence. Such an approach to teaching medical students would be valuable not only for

prescribing behaviour for new doctors but also for collaboration in teaching between health educators from different disciplines which could enrich both teachers and students and would ultimately benefit patients.

Microbiology

There seemed to be a feeling amongst the GEMP interns in this study that the integration of Microbiology into the body systems blocks had “robbed” students of the opportunity to grasp the bigger picture of Microbiology as a field of study. This was not evident in the traditional curriculum where, although many details were soon forgotten, immersion in the subject had allowed for a more global understanding of the field. This issue was addressed by Manning (2008) who concluded that in the integrated GEMP curriculum both the classification and framing of knowledge are weakened. She argued that this holds implications for both course structure and teaching in the programme and suggested that there needs to be ideological consensus amongst the teaching staff. In the case of Microbiology teaching this would mean making clear to students the links between the subject knowledge expected of them and its relevance to the practice of medicine, the careful socialization of all participants into the process and making clear the criteria for evaluation. The same might apply to Anatomical Pathology, but this was less problematic for the graduates and was more systematically assessed during the GEMP.

Clinical Skills

The GEMP interns were mostly very satisfied with their clinical experience and the changes suggested were for improved hospital teaching during GEMP 1 and 2 and more opportunities to practise patient management in the clinical years.

6.5 LIMITATIONS OF THE STUDY

The possible biases and limitations of the study were discussed in Chapter 3 on research and included the following issues:

- The study populations were both somewhat atypical (being the last group of one and the first group of another curriculum) each with a possible desire to prove their worth.
- The fact that their undergraduate curricula ran concurrently for three years following the introduction of the GEMP meant that this overlap may have led to some “cross-contamination” of experiences. The timing of the research was however determined by the window of opportunity offered at the time of curriculum change and had to be utilised despite these limitations. Similarly the timing of the survey visits had to accommodate the need to catch the interns early enough, so that the influence of their undergraduate education was not overshadowed by their internship experiences, balanced with the cross sectional nature of the research design and the fact that not all of the competency behaviours had been observed by then
- Respondent bias such as “politeness bias”, prejudice, halo effect, personality differences and personal insight were possible for interns, supervisors, colleagues and patients
- Researcher bias and conflict of interest are potentially present in all insider research.

Every effort was made throughout the study to remain constantly aware of these potential biases and wherever possible to take steps to reduce their influence on the research findings.

A limitation which became evident while writing up the study was the impossibility of reporting in detail on all the data collected. A decision had to be made to limit this to overall categories and only items which showed significant differences between the two curricula. Quantitative data from the items not reported as well as their comments from the different respondent groups hold useful information which is helpful in ensuring that the best aspects of the traditional curriculum are retained while making improvements to the GEMP. These data will be useful in writing up articles for publication on more specific aspects of the research.

6.6 RECOMMENDATIONS ARISING FROM THE STUDY

There remain some interesting and unanswered questions which require research beyond the limits of this study.

Recommendation 1

Even before the end of the data collection period it became obvious that a follow-up study on these two cohorts of interns would be helpful in ascertaining which of the benefits of the new curriculum, identified in the survey, persisted into independent practice. It was also important to know whether the perceived shortfalls in theoretical knowledge remained a problem in later years. The two cohorts have already been followed up during their community service years and a further study in about five years might be valuable. The need for a longitudinal cohort study is supported by Ferguson, James and Madeley (2000) who recommend long term prospective cohort studies or case-controlled studies to examine the predictors of success after qualification. However, the problem of confounding due to post-MBBCh experiences intensifies with time.

Recommendation 2

This study was not aimed at comparing the performance of interns who were graduate entrants to the third year of the medical degree with school leavers who had entered at first year level. There would be value in a future study comparing these two groups regarding both their undergraduate achievement and their internship performance. This would best be achieved once a significant number of graduate entrants had graduated.

Recommendation 3

This study did not examine age as a factor influencing intern competence but this might be important to take into account in future research as the number of graduate entrants to the GEMP increases. They are likely to be older than direct admissions from school.

Recommendation 4

The intern respondents made suggestions as to how the Pharmacology course could be made more relevant to medical practice. These included:

- The inclusion of applied pharmacology in the clinical years, similar to that taught to Pharmacy students, in which the medical students are guided in the prescribing of commonly used drugs, how to select these, dosages, drug interactions and side effects
- The formal teaching of Microbiology and Pharmacology in an integrated way for some aspects such as antibiotics.

Recommendation 5

Revision of the Microbiology course, particularly in the PCMS block to give a solid foundation and then to link some of the Microbiology teaching to the Pharmacology, particularly around the prescribing of antimicrobials during the clinical years of GEMP III and IV.

Recommendation 6

The more structured teaching of clinical reasoning during the PBL sessions, with the possible use of an outline to guide the process. A systematic assessment of this process, similar to that described by Groves, Scott and Alexander (2002) could be introduced into the integrated examination at the end of GEMP II.

Not arising directly from this study, but an important aspect raised in the literature consulted (Frye, 2000) is the influence of the curriculum change on the teaching staff of the Faculty of Health Sciences and the clinicians who assist with clinical teaching in the Wits academic complex of hospitals. This would be an important area for future study.

6.7 JUSTIFICATION FOR CONTINUING AND IMPROVING THE GRADUATE ENTRY MEDICAL PROGRAMME

The changes introduced in the medical curriculum were welcomed by many of the teaching and clinical staff but for others it was difficult to come to terms with it. The study should be able to reassure those who opposed the change that the graduates from the new curriculum have not let the University down and have in many respects exceeded expectations in the directions that were anticipated and for which the curriculum change had been planned. This will hopefully improve further as the curriculum is adapted and streamlined and well researched improvements implemented.

Finally, the period of change has been stimulating and challenging for the Faculty as a whole and has raised issues of education for discussion in many different situations where previously this was not the norm. As with many changes, it is difficult to imagine going back to the old methods and the many protagonists in the theatre of medical education at Wits all play an important role in ensuring that the momentum is not lost and that they remain open to the possibilities that lie ahead in the field of medical education. South Africa as a country has taken up the challenge of change in so many areas and medical education too strives to renew itself in line with changing circumstances and needs.

“A state without the means of some change
is without the means of its conservation”

Edmund Burke 1729-1797 (*Reflections on the revolution in France*)
(*Burke, 1960, p. 80*)