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Effects of curriculum change on medical graduates' preparedness for internship

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2012-04-10
http://hdl.handle.net/10539/11452

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CHAPTER 5

PHASE 2: DISCUSSION OF RESEARCH FINDINGS

The discussion and conclusions for Phase 1 of the research on the development and validation of the "Model of the Competent South African Intern" were presented in Chapter 2.

The current chapter discusses the results of Phase 2 of the study on the effects of curriculum change on medical graduates' preparedness for internship. The bulk of the findings were reported in Chapter 4 but some new qualitative data are introduced in this chapter which illustrate a particular point or conclusion very well. Phase 2 addressed research objectives three and four, namely:

Objective 3

To compare graduates of the traditional MBBCh curriculum and the GEMP curriculum against the model of intern competence using these instruments.

Sub-objective 3.1: comparison of overall questionnaire scores for

Sub-objective 3.2: comparison in terms of hospital level allocation

Sub-objective 3.3: comparison in terms of population group

Sub-objective 3.4: comparison in terms of categories and items

Hypothesis: The graduates from the GEMP are better prepared for internship than the interns from the traditional medical curriculum

Null hypothesis: There is no difference in the preparedness for internship between the GEMP graduates and those from the traditional medical curriculum.

Objective 4

To relate intern performance to the content and methods of the relevant MBBCh curricula experienced.

5.1 DO THE QUANTITATIVE RESULTS ALLOW FOR THE REJECTION OF THE NULL HYPOTHESIS?

5.1.1 Interns' overall results

Based upon the evidence presented in the results section (Chapter 4) the answer for the interns themselves is a tentative "yes", one can reject the null hypothesis that there is no difference between the two groups of interns. The overall result for the fifty seven-item questionnaire has shown that there were highly significant differences (**p=0.0001**) between the interns' self reported ratings in the two study years. The GEMP interns in 2007 gave significantly more positive responses, indicating that they thought their undergraduate curriculum had "prepared them well" or had "fully prepared" them for internship, and significantly fewer GEMP interns reported that they were "not well prepared". It should be noted that the number of responses for all the questionnaire items together are so great that this may not necessarily reflect great or important differences.

Analysis of the scores in the nine competency areas of the model revealed a significant difference between the ratings of the two groups in six of the nine competency areas and most of the difference was in a positive direction for the GEMP interns. The areas in which the GEMP interns rated themselves better prepared than traditional curriculum graduates were medical problem solving and clinical judgement (**p=0.009**), holistic patient management and procedural skills (**p=0.0004**), community health (**p=0.0002**), effective communication skills (**p=0.018**) and self-directed learning (**p=0.0001**). These were to a large extent the areas which the GEMP specifically emphasized, falling under the PD theme, CD theme, systematic skills learning, communication skills and self-directed learning. These results could be interpreted as a greater personal confidence in the undergraduate preparation received and the opportunities afforded them to gain experience. Such confidence may be a positive phenomenon, provided that it is not misplaced and provided that the interns know their limits as well as when, and from whom, to seek assistance. The GEMP interns' ability to practice safely was corroborated by the 2007 supervisors' positive comments about the questionnaire

items "recognizing when his/her knowledge was not sufficient to safely undertake a procedure" and "asking the appropriate person for help when necessary". The supervisors did not rate the GEMP interns as significantly different from the traditional interns on these two items. Some of the supervisors' comments in 2007 are given below:

"These are important – she's very good, sensible and responsible"

"Never negligent – asks when necessary"

"Although generally confident recognises her limitations".

The only competency area in which the GEMP graduates rated themselves significantly less prepared than their counterparts from the traditional curriculum was the category relating to a sound theoretical knowledge of the basic medical sciences, with the greatest difference in the Pharmacology ratings (**p=<0.0001**) and a highly significant difference (**p=0.001**) for the other sciences such as Pathology, Microbiology and Pathophysiology. This finding is discussed in more detail under the nine competency areas. This perceived theoretical weakness on the part of the GEMP interns was not detected in the supervisors' or colleagues' ratings which showed no significant differences between the traditional and the GEMP groups in those areas. However, more supervisors in 2007 made critical comments about the GEMP interns' Pharmacology knowledge.

5.1.2 Supervisors' overall results

The overall ratings for the fifty seven-item questionnaire given by the supervisors' also showed a significant difference between the two years (p=0.03) but the direction of the difference was not as clear. Supervisors rated equal numbers of interns from the two groups in the lowest category, "not well prepared" (6% in both 2006 and 2007) and also in the highest category "fully prepared" (50% in each of the years). The differences in ratings occurred mainly in the middle two response categories.

The supervisors' ratings showed barely significant differences in only two of the nine competence areas. The first was "working with others in a team", where the GEMP graduates were acknowledged to be better prepared than their traditional curriculum counterparts ($p=<0.05$). The second was the category, "confidence and personal attributes" ($p<0.05$). Here the direction of the differences was not clear, with the greatest differences in the lower two categories. Half as many GEMP interns were rated "not well prepared" but more of them were considered only "fairly well prepared".

It is therefore not possible to reject the null hypothesis that there is no difference between the two groups of interns, based upon the supervisors' ratings. The following observation may have some relevance in attempting to explain this finding.

Despite the stratified and randomised sampling of graduates of the traditional curriculum in 2006, and the careful matching of the 2007 sample, a large number of supervisors, in both 2006 and 2007, independently mentioned to the researchers that they "just happened to have selected a particularly good intern". This observation led the interviewers to conclude that Wits graduates in general tended to be regarded highly in the intern training institutions and that the change in curriculum had not changed this overall perception.

In their general comments at interview, some supervisors reported the following:

> *"Wits graduates learn quickly and improve dramatically - others take a long time to learn, are not so easily trained" (3 comments)* (2006)

> *"Wits interns are generally more competent in theory and more hands-on than others. They usually stand out above the rest, more robust"* (2006)

> *"Wits has always been a superior university. The new GEMP curriculum is systems based. I had concerns about this, but the experience with the current Wits interns has annihilated these concerns. The new curriculum has made very little difference to the quality of the Wits interns"* (2007)

"I haven't seen much change in interns in general over the years. No remarkable difference between this year's Wits intern and last year's" (two comments) (2007).

Supervisor rating scales have been criticized as being susceptible to the "halo" effect with raters not distinguishing between different dimensions of performance (Pearson, Rolfe and Henry, 1998). Viewed in the light of this 'halo' positivity towards Wits interns, one might postulate that the failure of the supervisors' ratings to distinguish differences between the GEMP and traditional graduates could be a result of an unintended positive global comparison between Wits interns and those from other medical schools rather than focusing their detailed assessments on the individual interns. Certainly, a number of the qualitative comments made during the supervisors' interviews highlighted this tendency to generalise. Two examples of such comments are given below.

"All the interns here [Chris Hani-Bara] this year from the GEMP have a similar quality – good"

"The female interns have a better sense of responsibility and are good with admin, the males have better skills".

Clearly there are many interns who do not fit these generalised descriptions. It is difficult to know whether these supervisors had carefully considered each questionnaire item with respect to the particular intern concerned and only made this general comment at the interview, or whether this type of 'halo' perception of interns in general had also crept into the specific item responses.

Some supervisors commented on the GEMP curriculum specifically:

"From what I know of it, and from the interns we have, I think the new curriculum is good. The theory hasn't slipped and practical skills are good"

"The GEMP interns in general are very knowledgeable, competent, coping very well and have a good attitude"

"The new system gives a self-learning ethos and interns are very self confident on ward rounds, but they still have to learn the clinical skills when they come in. They seem more open to exchange of ideas and are confident at settling in. They become an integral part of the team – comfortable, engaging in discussions and offering opinions. The new system is more controlled, structured and more manageable".

One supervisor was disappointed at the lack of difference following such a major curriculum change.

"Wouldn't know the difference from the old curriculum – after all that effort in making the change"

The literature on clinical evaluation of interns is helpful in trying to understand the differences between intern and supervisor ratings of the same elements of competence. Burch, Nash, Zabow, *et al* (2005) have shown that there is a difference in the "expectations" of clinicians and interns regarding their competence in performing clinical procedures. These researchers noted a gap between the "actual" and "expected" standards for the basic skills of interns from five different medical schools. This was tested in an OSCE examination conducted at the commencement of internship. They found that none of the participating interns obtained an average score on the six procedures equivalent to the required minimum score determined by experienced teaching staff during an Angoff standard-setting process.

Higher expectations on the part of supervisors in the present study may similarly have accounted for some of the differences between supervisor and intern ratings, particularly in the categories on practical skills. In a relatively routine procedure such as intravenous cannulation, the interns in both groups surveyed rated their abilities far more positively than did their supervisors. In 2006, ninety one percent (91%) of the interns rated themselves as fully prepared but only sixty two percent (62%) of their supervisors did so. In 2007, eighty

seven percent (87%) of interns but only sixty one percent (61%) of supervisors responded with "fully prepared". Barnsley, Lyon, Ralston, *et al* (2004) found no correlation between Australian first year postgraduate medical officers' self ratings of confidence and their actual clinical competence as measured by a seven-station OSCE rated by a nurse and a medical staff member.

A study by Kegel-Flom (1975) supported the findings of the current research, concluding that the work of the doctor is viewed differently by colleagues, patients and by the doctor him or herself. She found greater differences between the three rater groups than the distinction between the different work areas assessed. However, she contended that each "viewer" contributed a unique and meaningful perspective to the overall assessment of the doctor's performance. Further findings were that supervisors rated intern performance higher than did peers or interns and that the supervisors' ratings were more variable, using the full breadth of the scale. Interns were more reluctant to give very high or low self ratings. In the current study, so few supervisors or interns gave scores in the lowest rating category that the two lower categories were combined for the purpose of analysis. Even collapsing these two categories did not prevent cells for certain items having expected counts of less than five, with a warning that it might be more appropriate to use the Fisher's Exact statistical test rather than the Cochran-Mantel-Haenszel chi-square test. These items are reflected in Appendix C.

Several studies refer to the fact that interns spend a disproportionate amount of time on administrative, clerical and routine tasks so that they were often working on their own and were not closely supervised (Dally, Ewan and Pitney, 1984; Arthurson, Mander-Jones and Rocca, 1976). It is possible that, during the early stage of internship at which the survey was conducted, many supervisors had observed only a few of the procedures to be assessed, whereas the interns were better aware of their own abilities and rate of progress.

The scores for the colleagues were not calculated as overall scores because their questionnaire only dealt with aspects of intern competence that they were qualified to assess and was therefore not comparable.

5.2 ANALYSIS OF THE RESULTS FOR THE TWO VARIABLES USED IN THE SAMPLE STRATIFICATION

5.2.1 Discussion of results in the three hospital levels

Although the majority of interns were allocated to training institutions in, or close to, urban areas and in large teaching hospitals, there were a number who were sent to smaller regional or district level hospitals, some in more rural areas. These were not usually teaching hospitals and the interns were often supervised by senior medical officers as there were fewer specialist consultants and no registrars. The overall questionnaire results were compared for the three hospital levels to see if there was any significant difference in the preparation of graduates from the traditional and GEMP curricula for service in the different hospital levels.

At the district level (Level I), there was no significant difference between the ratings of the 2006 and 2007 interns. It should be noted that the numbers of interns were very small with only nine percent of the interns in 2006 and seven percent in 2007 included in the sample despite oversampling. Their supervisors' ratings, however, showed a significant difference (Table 4.4) with only one percent (1%) of their overall item responses for the GEMP interns rated "not well prepared" compared to eight percent (8%) of the responses for traditional interns. More of the responses for the GEMP interns were rated "fairly well prepared" (35% versus 18%) or "well prepared" (41% versus 39%) but in the category "fully prepared" the overall item scores for the traditional graduates were rated more highly than the GEMP graduates (36% traditional versus 23% GEMP). This does not give one a clear picture of the differences between the two groups and may be due, in part, to the small numbers involved.

At the regional (Level II) hospitals the interns' ratings showed a significant difference (**p=0.0001**) with the GEMP interns clearly feeling better prepared than the traditional curriculum interns. The supervisors' ratings also showed a significant difference **(p=0.005)** with identical scores (7%) for the response category "not well prepared" and higher ratings for the GEMP interns in the "fully prepared" category (33% versus 28%). The hospitals at this level had fewer consultants and interns were able to participate more fully and independently

in patient management and took greater responsibility for their own patients as there were no registrars. There were also no undergraduate medical students competing for opportunities to practise procedures.

The results for the interns allocated to national or provincial (Level III) hospitals showed a significant difference (**p=0.0001**) in their ratings with fewer overall item responses recorded as "not well prepared" by the GEMP interns (10% versus 15%). At the upper end of the scale there were more "well prepared" responses given by the GEMP graduates (39% versus 34%) and in the category "fully prepared" the responses were similar. The supervisors' scores also showed a significant difference between the two groups of interns (**p=0.0007**) but with slightly more "not well prepared" responses for the GEMP interns. Equal numbers of responses were rated "fully prepared". The overall direction seemed to favour the traditional graduates. The hospitals at this level were often large teaching hospitals in the academic complexes of the various medical schools and many of the clinical staff had probably been involved in the various curriculum changes around the country. It was not possible to know whether their ratings were influenced in any way by experiences in their own undergraduate teaching hospitals but there were certainly no strong trends in any particular direction between the Level III hospital supervisors in the two study years.

5.2.2 Discussion of results for the three population groups

The overall scores were calculated for the three population groups as this was one of the factors used for sample stratification. It was important to determine whether the change to the GEMP had affected the performance of any of these groupings more than the others. These differences were significant (**p=0.001**) for all three racial groups. Of particular interest was the Black and Coloured group for the reasons given in the introduction. For the White and Indian interns the change seemed positive for the GEMP interns in that fewer rated themselves as "not well prepared". Also, as many White, and slightly more Indian, GEMP graduates felt "fully prepared" than the traditional curriculum group. Even more interesting was the fact that so many more Black and Coloured interns from the GEMP curriculum rated themselves as

"fully prepared" overall (47% as opposed to 37% of the traditional interns), seeming to indicate an improved sense of preparedness for internship.

The supervisor ratings also showed significant differences between the interns from the two different curricula. For the White interns this difference was highly significant (**p=0.0001**). Only five percent (5%) of the scores registered by supervisors in each group were in the category "not well prepared" but significantly more of the scores for GEMP interns indicated that they were "fully prepared" (38% as opposed to 29% of the traditional curriculum graduates). The supervisors' scores for Indian interns also showed a highly significant difference (**p=0.0001**) but the trend was in the opposite direction with eight percent (8%) of the GEMP interns being rated "not well prepared" compared to 5% of the traditional group and only twenty six percent (26%) of the GEMP group were rated as "fully prepared" compared to thirty two percent (32%) of the traditional interns. It is difficult to explain why there should be this difference in only one of the racial groups. A tentative suggestion is that many of the Indian interns chose to do their internship in Kwazulu-Natal which was experiencing a nursing strike at the time of the researcher's visit in 2007. Two of the hospitals were particularly badly affected with conditions uncertain and stressful. Many patients had been transferred to other hospitals in the Durban region, in turn putting pressure on those institutions. It is not possible to tell if this played a role, but it is noted here for the record.

Finally, the supervisors' ratings for the Black and Coloured interns also showed a significant difference (**p=0.044**) between the traditional and GEMP interns. It is not clear from Figure 4.11 in which direction the improvement was.

5.3 DISCUSSION OF THE QUESTIONNAIRE RESULTS

5.3.1 Discussion of the findings for the nine categories of the model

This section elaborates on the discussion of the results given in section 5.1 of this chapter. It presents more detail about the comparisons of intern competence of graduates from the traditional and GEMP curricula (Objective 3) and discusses in detail the implications of the findings relating responses to the respective curricula (Objective 4).

5.3.1.1 Category 1: Fundamental (theoretical) knowledge

A Comparison of competence (Objective 3)

There was no difference between the interns who graduated from the traditional medical curriculum and the GEMP graduates regarding the foundation sciences such as chemistry, physics and biology. These subjects were studied in the first year of medicine and were prerequisites for the graduate entrants. Anatomy and physiology were also not highlighted as problematic in either group. Most of the interns in the study had completed the traditional second year courses in these subjects. It should be noted that there were very few graduate entrants to the GEMP in the 2007 sample and the few that there were did not comment on problems with Anatomy during the interviews. However, the fact that graduate entrants are not required to have completed Anatomy and Physiology before entering the GEMP is an issue that might well need to be addressed as more graduates are admitted.

Highly significant differences were recorded in the ratings for a particular group of basic and pathological medical sciences. These were **p=0.01** for Pathology, Pathophysiology and Microbiology combined, and **p<0.0001** for Pharmacology. The GEMP graduates rated themselves as significantly less well prepared than the traditional interns in these subjects. The GEMP graduates, however, reported being significantly better prepared in the theoretical aspects of the human and social sciences (**p=<0.000001**).

The supervisors did not record significant differences in their scores for the four items included in this category and saw both groups as generally knowledgeable.

B Competence related to the curriculum experience (Objective 4)

Although there were few comments made regarding the specific items, many interns and their supervisors spoke about the theoretical preparation and teaching in their general comments at the end of the interviews. There were more supervisor comments about the 2006 interns (n=25) which included words such as "*overall well educated, well prepared, well trained, a solid base, education has stood them in good stead,* and *theoretical knowledge sound*". Although there were fewer comments in 2007 (n=15), the nature of the comments differed. The GEMP interns were described by their supervisors using phrases such as "*good grasp of theory, uses her knowledge effectively, knows how to apply, applies knowledge extremely well, good at integrating knowledge, able to integrate his knowledge exceptionally well and come to logical conclusions*". It is possible that although the GEMP interns did not feel that they had as much factual medical science knowledge as the traditional graduates, their supervisors recognised their ability to apply and integrate the knowledge that they did have. Another possibility is that the depth of an intern's knowledge, or perhaps his or her lack of knowledge, in certain fields of medicine would only become apparent later in the internship or during community service when more responsibility would be taken on and more complex procedures attempted.

Bickley (1993) reported similar findings at the Mercer University School of Medicine (MUSM) in the USA. They wrote of their PBL curriculum:

> *"It may not equip a student with as many instantly retrievable facts as might be gleaned from a conventional program, but, as Adkison and Volpe* [1992] *pointed out, it develops a subject "consciousness", something difficult to demonstrate. A fund of information becomes committed to memory but tends to be organized into concepts, easily accessible to recall in a practical context but not simply on demand when removed from the context"*.

The amount and depth of basic science knowledge required by medical students at graduation has been a subject of some controversy, particularly in the change to more integrated and problem based curricula. The body of solid scientific background traditionally required of medical students has grown to such an extent that most medical curricula have made attempts to identify core knowledge in order to reduce factual overload. Koens, Custers and Ten Cate (2006) investigated the views of science and clinical teachers at the University of Utrecht in The Netherlands on the depth of basic science knowledge required by new medical graduates at four levels - clinical, organ, cellular and molecular. The science and clinical teachers only found agreement at the clinical level. Predictably, at the other three levels the science teachers wanted to include more deep level content. Medical students on a newly changed curriculum constantly receive mixed messages from science and clinical teachers about their so-called "dumbed down" curriculum and this must inevitably cause a crisis in confidence which could account for the very significant differences in the Wits interns' ratings. One GEMP intern commented:

> *"Many of the clinicians who taught us were old curriculum orientated. They said we wouldn't be prepared but we were generally well prepared".*

Differences in the opposite direction were recorded for knowledge of the theory of communication and interpersonal relationships, where the traditional curriculum graduates clearly recognised their lack of knowledge while the GEMP graduates felt more confident in their exposure to these areas.

Several other studies have shown similar results. A postal survey conducted in Canada by Mann and Kaufman (1999) also studied the last graduates of a conventional curriculum and the first of a PBL curriculum. The results revealed that the only significant difference (**p=0.001**) between the self ratings of the two groups was for the item "adequacy of my knowledge base for solving clinical problems". The PBL group felt that their knowledge base was lacking. These authors suggested two reasons for this. The first was the possible insecurity created by a major curriculum change with fewer formal lectures and more self study and was part of the "growing pains" of a new curriculum. The second reason advanced

was similar to Koens *et al* (2006) regarding the sceptical comments made by some faculty which may have affected perceptions negatively. Both of these reasons probably apply to the current study.

Dean *et al* (2003) reported different results from the University of Sydney. They found that the interns from their problem based curriculum rated their basic science knowledge on a par with interns from a different traditional medical school as well as with those from another problem based school. The clinical supervisors gave the Sydney interns balanced comments on strengths and weaknesses in basic science knowledge but found them to be advanced in science knowledge compared with other medical graduates that they were supervising.

Mark Albanese (2000) has looked at effect sizes (ESs) in measuring improvements in knowledge and skills in reformed curricula and he concluded that it is unreasonable to expect typical effect sizes in knowledge acquisition in PBL curricula. He nevertheless supports PBL learning regardless of the fact that knowledge improvement does not necessarily occur. This is because the work environment for students and teaching staff is enhanced, making PBL a worthwhile goal. Albanese suggested, however, that the educational theory upon which PBL is based needs to be strengthened.

In order to understand the position of the two groups of interns in evaluating their theoretical preparedness for internship, it is important to remind the reader of the major differences in structure between the layered traditional curriculum and the integrated GEMP curriculum, and to briefly describe the Preliminary Concepts in Medical Science Block (PCMS) in the GEMP as this was frequently mentioned very specifically in the results. The first and second years of the MBBCh degree were similar for both groups of interns, with the major changes introduced from year three. The traditional curriculum covered the theoretical aspects of medicine in large, subject-specific courses offered in the third and fourth years of the medical degree, with afternoon lectures in the fifth year of study. There were no lectures in the sixth year. The teaching was almost exclusively lecture based, with practical sessions, some problem solving exercises and some rural and urban community health visits. The GEMP curriculum commenced in the third year of study with the PCMS Block which was originally conceived

as an introductory block to teach the terminology and basics concepts of the different medical sciences in preparation for the Problem Based Learning that was to follow. This took the form of a series of ten Body Systems blocks spread over years three and four, which integrated all of the medical and human science subjects around "paper" patient cases. The PCMS block was also intended to give the students a feel for the different fields of medical science. In the first year of the GEMP (the year undertaken by the GEMP interns in the 2007 sample) this introductory course was not examined. This probably gave the students the idea that it was less important so that they did not apply themselves sufficiently to their study of these subjects. The integrated nature of the PBL approach contributed to the lack of a solid "feel" for the different disciplines. This feature of an integrated curriculum is intentional but leaves room for investigation of the approaches used. In fact, the PCMS block was reviewed and improved even before these research results became known, but the empirical evidence reported in this study supports the decision taken to thoroughly examine the PCMS Block and to reinforce and re-examine its content throughout the subsequent Body Systems blocks.

Microbiology, Pathology and Pathophysiology

A Comparison of competence (Objective 3)

The study results show that the GEMP graduates felt themselves to have been disadvantaged by their lack of knowledge of Microbiology and Pathology. Although neither group gave many responses in the "fully prepared" category, the traditional graduates seemed more secure in their knowledge than did the GEMP graduates. There was a significant difference between their ratings (**p=0.01**) with almost one quarter of the GEMP interns feeling that they were not well prepared.

B Competence related to the curriculum experience (Objective 4)

The traditional curriculum graduates made very little mention of these subject areas in their comments other than to say that they were happy with the structure and teaching of the

courses. However, many said that it was done a long time ago and had, to a large extent, been forgotten.

The GEMP graduates commented frequently about the medical sciences and although they acknowledged good teaching, they were generally concerned about the fragmentation of the medical science subjects in the integrated curriculum and the fact that they were not sufficiently assessed. This was particularly true for Microbiology which had fewer lectures and practical sessions during the body system blocks. A few graduates admitted that they should have done more on their own but nevertheless thought that Microbiology should have been given greater emphasis in the curriculum.

The changes in Pathology and Microbiology teaching in medical schools worldwide, particularly the reduction in factual content, is partly related to the introduction of integrated and problem based curricula but the difficulties are exacerbated by severe funding cuts and staff shortages in these disciplines, especially in academic Pathology departments. Service commitments and research take precedence as the workloads increase so that teaching is often considered a chore or is even actively discouraged. Domizio and Wilkinson (2006) record their concern that the severely reduced Pathology content in the integrated curricula will result in graduates failing to understand the disease mechanisms upon which their clinical practice is based. This may lead to difficulty in fully understanding Pathology reports and deter young doctors from being attracted to the field when they make their career choices, leading to even greater shortages of pathologists in future years. These authors visit the debates around whether Pathology should still be taught at all, citing arguments that medical education involves more than just science and that attention must also be given to the humanities. There is a suggestion put forward that improved knowledge of the pathological basis of disease has not contributed substantially to improving morbidity and mortality rates (*ibid*. p. 3). The other side of the debate is that proper communication with colleagues and patients is dependent upon an understanding of the language of Pathology, that evidence based practice requires knowledge of the scientific basis of medicine and that many advances in public health are based on understanding underlying Pathology. These arguments offer areas for thought in future planning for the Wits GEMP curriculum.

Pharmacology

A Comparison of competence (Objective 3)

The difference in the ratings for the two groups of interns was highly significant (**p=0.0001**). Pharmacology was seen by both groups of interns as a subject that was difficult to learn as an undergraduate medical student and a source of great difficulty for new interns. Almost a quarter of the interns from the traditional curriculum felt that they were "not well prepared" to safely prescribe routine medicines and only nine percent felt "fully prepared". The insecurity regarding prescribing was even more evident in the GEMP graduates with close to half of the interns rating themselves "not well prepared" and only four percent as "fully prepared".

Undergraduate Pharmacology teaching and learning was also one of the areas that attracted the most comments during the interviews. Twenty interns and two supervisors in 2006 commented on the difficulties that they had experienced while thirty three interns and eight supervisors commented on this in 2007. The interns from both study groups felt under-prepared and embarrassed to have to keep asking for assistance with the choice of drugs and the dosages. They agreed that their abilities improve rapidly with practice, but nevertheless often found themselves in a difficult position early in their internship, not knowing what to prescribe or the dosages, routes of administration, drug interactions and side effects. The supervisors gave very few Pharmacology ratings at the extremes of the Likert scale with most scores indicating "fairly well prepared" or "well prepared" in both years. They seemed to have fewer expectation that interns would enter their internship training fully prepared and acknowledged that internship was the time to learn prescribing skills. During the interviews with both nursing sisters and intern colleagues, it became clear that this was a problem for almost all of the interns and not only Wits graduates.

The results of the current study were so similar to those reported in much of the literature that it seems strange that this aspect has not improved in Problem Based Learning curricula over the years. Woodward and Ferrier 1983 found that over 80% of the McMaster graduates who had graduated from their PBL curriculum felt under prepared in therapeutic management and

drug effects. More than twenty six years later Sim, Choo and Ng (2009) reported almost identical results. They found that although there had been adequate basic and clinical Pharmacology teaching the interns surveyed reported a need for other ways of learning about drugs and prescribing. Twenty five percent of them felt ill-prepared to prescribe at the point of graduation, only acquiring safe prescribing behaviours by the end of their first graduate year. They put this down to insufficient opportunities to practice prescribing skills, lack of exposure to reasoning about drug choices and decision making on drug therapy in a safe undergraduate environment. These authors planned to use their findings to develop a training programme on prescribing skills.

B Competence related to the curriculum experience (Objective 4)

The 2006 interns had a large block of detailed Pharmacology learning in their fourth year which they found difficult to retain and apply in the clinical setting. Ten interns in this group spoke about feeling unsure of dosages and said that they do not learn about dosages in the undergraduate years and have to carry the South African Medicines Formulary (SAMF) with them to get by during their internship. Nineteen felt that the way that Pharmacology is taught made it difficult to learn. It was a big course with much *"detailed, rigid learning and regurgitation"* which was taught early in the curriculum with little chance to integrate knowledge of physical illness with medication. Many called for more clinically based teaching of Pharmacology in MBBCh VI. One intern commented:

> *"The Pharmacology course was not structured to provide practical information. We were bombarded with too much theoretical information. Rote learning was encouraged and this does not promote knowledge or allow you to reason. As a new intern you have no sense of knowing why you give a particular drug".*

The 2007 interns, on the other hand, would have appreciated a more extended formal grounding in basic Pharmacology. They received a short and factually dense series of lectures in the Preliminary Concepts in Medical Science (PCMS) block, followed by more specific Pharmacology teaching over the two years of GEMP 1 and 2 which was relevant to each of

the integrated body systems blocks. The 2007 interns from the GEMP curriculum made similar comments to the traditional interns about the need for a more clinical approach to learning Pharmacology in the undergraduate clinical years. Many of their problems were also related to the practical aspects of prescribing which left the interns feeling inadequate, especially at the start of their internship. There were several requests for a continuation of the Pharmacology course in a more practical way during the clinical undergraduate years (GEMP 3 and 4).

According to the 2007 interns, one of the problems with the Pharmacology course in the GEMP undergraduate years was related to the structure of the curriculum and the perceived lack of continuity in the learning. Several interns criticized the PCMS block:

> "*This crash course in Pharm was horrific*", "*introduction was not done well, just a lot of theory*", "*skimmed over*", "*too short*" and "*insufficient grounding*".

They also commented that the PCMS block was not assessed sufficiently. The integrated examination system played a role in allowing students to get away with not knowing enough Pharmacology and some interns admitted to this in the interviews.

Both groups of interns felt that they would have benefited from additional applied Pharmacology in the clinical years of the undergraduate curriculum. Several useful suggestions for tackling learning issues in Pharmacology were suggested by the GEMP interns and the link between Pharmacology and Microbiology was mentioned by six interns as well as one of the supervisors. Pertinent comments include the following:

> *"The emphasis in the hospital is on drug treatment – the sisters ask us what to do and we don't know. We needed to have been in the wards to find out what is commonly prescribed - we need to get this well initially. Medical students should do what the Pharmacy students do in the wards"* (2007)

"We did have a couple of blocks but need to have it drilled in – didn't know dosages at all. I'm now slowly becoming more familiar from protocol books. It would definitely have helped to have been taught in a more formal way putting micro and Pharm together – these subjects complement each other and this would be a relevant way to learn them. More needed on antibiotics" (2007).

There were two supervisors in 2007 who were satisfied with the pharmacological knowledge of the GEMP interns however another ten criticized this area of the undergraduate training. The supervisors' comments pointed to a lack of "practical" knowledge of drugs, dosages, indications, contra indications, drug actions and side effects.

Many of the difficulties with the PCMS block and the lack of sufficient assessment are currently being investigated and already compulsory assessments have been introduced which should go a long way to increasing the students' awareness of the importance of the subject early on and encouraging them to gain a good grounding in the basic medical sciences in preparation for the integrated blocks. Lai, Moss, Nicholls *et al* (2007) highlight the link between drug-related morbidity and mortality and inappropriate prescribing, administration and monitoring. These authors suggested that problems in the quality of undergraduate and postgraduate training could be one of the causes.

Theory in the humanities

A Comparison of competence (Objective 3)

The final item in the category on fundamental knowledge was the application of theory in the human sciences relating to communication and interpersonal relationships. The intern ratings for this item showed highly significant differences (Fisher Exact: **p<0.000001**) with the GEMP interns rating themselves more competent than did the traditional curriculum interns. The supervisors were generally happy with the interpersonal skills of both groups of interns but in most cases they tended to attribute this to personality rather than education. Of the five critical comments made, four were directed towards traditional interns and one to a GEMP

intern. Chessman, Blue, Gilbert, *et al* (2003) found that measures of communication and interpersonal skills in one clinical performance examination were not consistent with similar measures in another setting. It is conceivable, given the complexity framework of this study, that the interns' interpersonal and communication competence might have been rated differently in a different clinical setting.

B Competence related to the curriculum experience (Objective 4)

Few supervisors commented on teaching in this area. In contrast however the interns themselves recognised its importance in their education. Here the GEMP interns felt significantly better prepared than the traditional interns and acknowledged the benefits of studying all aspects of medicine within a biopsychosocial context. The GEMP programme specifically targeted these insights and skills in the PD theme and it was clearly successful. The 2006 interns recognised the value of communication skills and good role models during their clinical training but admitted to a lack of preparation in the humanities. Many expressed the need for more formal teaching in this area. This need has been recognised internationally and the teaching and assessment of clinical communication has become central to undergraduate curricula in the United Kingdom. Von Fragstein, Silverman, Cushing *et al*, (2008) have described the development of a framework for teaching communication based on a communication curriculum wheel with concentric circles representing domains with respect for others at the centre, then moving outwards, theory and evidence, tasks and skills, specific issues, media and communicating beyond the patient. This document is to be introduced in all medical schools to support the teaching of communication skills.

5.3.1.2 Category 2: Medical problem solving and clinical judgement

The items in this category related to the collection of patient data, achieved by thorough yet focused history taking, careful physical examination and the eliciting of signs, the choice and responsible use of diagnostic testing procedures and good record keeping in order to analyse the data collected and use it to make reasoned clinical judgements. The GEMP curriculum was an integrated, problem based curriculum and much deliberate attention was given to

clinical reasoning skills both during the "paper problems" presented in GEMP 1 and 2 as well as in the clinical years. The students were introduced to the concepts of inductive and hypothetico-deductive methods of reasoning and were given opportunities to practice their reasoning skills. This also took place in the traditional curriculum, but not as purposefully.

A Comparison of competence (Objective 3)

The results of this study showed a significant difference (**p=0.009**) between the overall responses of the two groups of interns surveyed. The GEMP interns reported being better prepared overall, although none of the individual items were significantly different. The supervisors' ratings showed no significant differences for the category overall nor for any of the individual items. The qualitative results for some of the items were given in Chapter 4, but the area of clinical reasoning deserves further discussion.

An important item in this category was item 2.9 which dealt with the ability to analyse and interpret the patient data which had been obtained from the various sources so as to identify problems, develop hypotheses and come up with reasonable differential diagnoses. The ratings for the two groups showed no significant difference (p=0.41) despite the additional practice opportunities afforded the GEMP graduates during the problem based learning sessions in GEMP 1 and 2. Both groups had many clinical opportunities to practice this skill. Very few interns gave responses at the extreme ends of the rating scale but, of those that did, more of the traditional interns rated themselves as "not well prepared" (7% versus 1%) while slightly more traditional interns (13% versus 11%) rated themselves as "fully prepared". Most of the responses fell into the rating category "well prepared" where more of the GEMP interns rated themselves (57% versus 51%) (Appendix C1).

This lack of difference between the two groups might be considered disappointing, given the time an effort expended on developing challenging weekly "paper problem" cases and having trained facilitators guide the PBL groups through the problem solving process. But is this problem solving process the same as clinical reasoning? Is problem based learning merely a means of presenting an interesting context in which to learn basic medical sciences, or does it

assist in developing practical diagnostic competence? Schmidt, Machiels-Bongaerts, Hermans, *et al,* (1996) compared the diagnostic performance of students from problem based, integrated and traditional curricula and found that integration between basic and clinical sciences and an emphasis on patient problems may be the critical factors that determine superior diagnostic performance (rather than whether a curriculum is self or teacher directed). They claimed that problem based learning seems to live up to its expectations. Groves, Scott and Alexander (2002) developed Clinical Reasoning Problems, used together with a complementary Diagnostic Thinking Inventory, to systematically assess the evolution of the clinical reasoning process in their medical students. They argued that this, rather than the end result of diagnostic accuracy, was the important measure because "sound clinical reasoning is not always the only determinant of diagnostic accuracy" (*ibid,* p. 508). Factors such as luck, guesswork, and recall of previously encountered, similar cases may also play a part in diagnostic accuracy. The current Wits study did not differentiate between the clinical reasoning process itself and the accuracy of diagnosis and this may have been an omission in this section of the study. The lack of significant differences between the two groups might also indicate that the reasoning process introduced during the PBL sessions was not systematically addressed, nor was it formally assessed. This would involve greater emphasis during the facilitator training courses, as well as a more formal introduction of the process to the students during GEMP 1 and 2. The type of assessment described in Groves, Scott and Alexander (2002) and Groves, O'Rourke and Alexander (2003) could assist in significantly improving the clinical reasoning process.

Another reason for the lack of significant differences in this competence category might be the fact that both the traditional and GEMP students experienced the same academic teaching hospitals and, in many cases, were taught by the same consultants during their clinical years, when clinical reasoning skills are honed and practised.

5.3.1.3 Category 3: Holistic patient management and clinical skills

This category incorporated both the psychomotor skills necessary to perform clinical procedures effectively and the need to see the patient as a complete person who happens to be ill and not merely to concentrate on the disease to be treated.

A Comparison of competence (Objective 3)

The results for the category as a whole showed that both groups of interns felt well prepared with 42% of the traditional and 46% of the GEMP interns rating themselves as "fully prepared". The GEMP graduates indicated that they felt significantly better prepared to deliver holistic care than did the traditional interns (**p=0.0045**). The supervisors observed no significant difference in this competency area as a whole and scored almost equal numbers of interns from each of the two study years in the top and bottom response categories with only minor differences in the two middle categories. Some supervisors and colleagues commented that the Wits interns' procedural skills were lacking when they started their internship, but that they learnt very quickly and were soon competent.

> *"Doesn't seem to have done enough procedures in general – unsure of herself"* (Supervisor in 2006)

> *"She settled in nicely after a few weeks but struggled with confidence with practical abilities at first – she had difficulty with some procedures in the beginning but is fine now"* (Supervisor in 2007)

> *"We were in a paediatric ward. She was not that confident but willing to learn and learnt quickly".* (Colleague in 2007)

The differences in interns' judgment of their own competence in clinical skills and the expectations of the stakeholders was studied by Ringsted, Schroeder, Henriksen, *et al* (2001) who found that the experience of newly graduated doctors was very variable and that different

stakeholders such as senior consultants, junior doctors and nurses had different expectation of new medical graduates' abilities.

B Competence related to the curriculum experience (Objective 4)

The GEMP interns' confidence in their preparation for holistic patient care was explained by comments relating to the curriculum which had emphasised the biopsychosocial approach. One comment which sums up the learning was:

> *"Besides learning about a disease the curriculum has helped me to look at the patient as a person, as a whole, belonging to a certain family, community or society"* [2007]

This finding is supported by Schmidt, Dauphinee and Patel (1987) who reviewed fifteen studies that compared the competence of graduates from medical schools using innovative curricula to those of conventional medical schools. These authors quoted a 1984 study by Woodward at McMaster University as finding that the graduates from their problem based curriculum "consistently scored above the national average on the patient management part of the qualifying examination of the Canadian Medical Council" (*ibid*, p. 308).

<u>Procedural skills</u>

A Comparison of competence (Objective 3)

The study results for the items relating to the actual performance of clinical procedures indicated that both the 2006 and 2007 interns felt confident in their procedural skills. The 2007 group felt significantly better prepared overall concerning skills (**p=0.04** for item 3.4). The only skills which showed a significant difference were the insertion of an intravenous cannula (**p=0.03**) and the initiation of basic life support (**p=0.01**). In both procedures the GEMP interns rated themselves significantly better prepared than their traditional curriculum counterparts. The supervisors rated the traditional curriculum interns as significantly better

prepared in the insertion of an endotracheal tube (**p=0.009**) but with sixty one percent (61%) of the data missing this finding must be interpreted with caution.

B Competence related to the curriculum experience (Objective 4)

In their interview comments both groups of interns put their competence down to the practice opportunities provided during their undergraduate years, particularly at the Chris Hani-Baragwanath hospital. Regarding the initiation of basic life support, one GEMP intern commented:

> *"Emergency medicine block was fantastic – really prepared me for this hospital. I felt I was a safe doctor"* (2007).

The interns in both study years tended to overestimate their overall procedural abilities compared with their supervisors' ratings. In 2006 fewer traditional interns than GEMP interns (41% versus 47%) rated themselves as fully prepared in the basic clinical skills. Their supervisors, however, rated only 24% as fully prepared in each of these groups. The supervisors appeared to have had higher expectations of the interns, or perhaps anticipated a lack of practice in these skills and a need for more practical clinical experience, and used this as a yardstick for preparedness. Many supervisors commented that the interns in both years arrived relatively unprepared in clinical skills but learned these very quickly during internship.

The finding of a difference between the interns' perceptions of their procedural abilities and the supervisors' observations is supported by Burch *et al* (2005) at the University of Cape Town and by Barnsley *et al* (2004) in Australia. Both studies conducted objective structured assessments of seven procedural skills in an OSCE setting. The interns in these studies failed to meet the required standards.

In a review article of doctors' self assessments of their competence, Gordon (1991) examined the evidence and argued that, in the case of clinical skills rather than theoretical knowledge, the ability to make valid self assessments is not improved by conventional supervised clinical

training or by self reflection. It is improved under conditions of explicit criteria with intentional incentives, practice and feedback, as well as formal reconciliation with external tests and supervisors' judgements.

Caring behaviour

A Comparison of competence (Objective 3)

The second aspect of holistic management of patients was concerned with an awareness of the patients' needs, autonomy and right to information about their conditions and to be included in the planning of their care. It also involved compassion, empathy and respect for patients. Both groups of interns felt comfortable with this aspect of their roles and many of the supervisors in both years also commented positively. The GEMP graduates rated themselves as significantly better prepared (**p=0.01**) than did the traditional graduates in involving the patient and the family in planning care. There was no significant difference in the ratings for discussion of health care education with patients.

An interesting article by Morris Daniels (1960) gave a sociological perspective on affect and its control in medical interns' interactions with their patients, as well as the type of support that the medical system provides in this respect. He described two types of involvement that interns have with their patients, the first based upon the patient's illness and the second on a response to the patient's personality. Daniels *(ibid)* argued that emotional intensity can vary from (1) complete lack of emotional involvement, which is permitted by the medical system, through (2) a generalized compassion in the form of an intellectual understanding of the patient's problem and appreciation of the personal implication of illness and suffering but still rendering disinterested service (explicitly prescribed by the system), to (3) complete emotional identification where the intern empathically suffers with the patient (controlled indirectly through normative, instrumental and situational influences). A second, qualitatively different type of involvement was the display of positive or negative responses by the intern to the patient's personality. Sweet (2003) warns that the pressure to produce doctors who are "emotionally sensitive to their patients' needs" (*ibid*, p. 355) may be having an impact on the

doctor's wellbeing. Several responses to this article pointed out that caring in medicine is not an option, it is essential (Bundy, 2003) and that coping mechanisms need to be developed. (Chung, 2003) suggested that collegial support is a valuable aid to coping.

B Competence related to the curriculum experience (Objective 4)

The traditional interns commented that some of their clinical experience had provided them with opportunities to practice this type of holistic patient care, such as the visits to Alexandra Clinic but none related their comments to any formal teaching in the curriculum.

> *"Didn't learn much at Med School – minimal amount at Alex* [Clinic]"

In contrast, the 2007 interns were so much more confident about caring behaviour and this is probably directly attributable to the PD and CD themes. Three comments from GEMP interns explained how the emphasis on holistic care in their undergraduate curriculum had helped to prepare them for the caring role expected of them.

> *"The psychosocial was brilliant and really benefited me. I am able to help people now – it has allowed me to do this. I'm not frightened of dealing with emotional situations myself.*

> *"With HIV some doctors just send patients to counsellors. I feel comfortable to counsel them myself"*

> *"Wits teaching is very different from other universities. It's very patient based - it taught us to be more patient with the patients, to be more tolerant and not harsh".*

Chung (2003) writes that he does not consider it possible to practise medicine without some degree of human compassion but that uncontrolled compassion might make a health worker unsuitable for this type of work. He suggests that in preparing undergraduate medical students

it should be made clear that caring about patients is essential but recommends that they learn to leave their work problems in the work place and not talk shop in their free time.

5.3.1.4 Category 4: Community health

The GEMP curriculum at Wits introduced a greater emphasis on community centredness and the Community-Doctor theme formed one of the unifying vertical threads that ran through all four years of the programme. This type of curriculum change had been advocated by the Association of American Medical Colleges Project Panel on the General Professional Education of the Physician (GPEP) as far back as 1984 (Schmidt, Dauphinee and Patel, 1987). This document highlighted the need for medical education to remain responsive to society's needs and to place more emphasis on working with communities, as well as individual patients, to promote heath and prevent disease. Although medical schools were said to have responded to this report with curriculum changes to address these issues *(ibid*, 1987), only a few of the studies consulted in developing the model for the current study paid specific attention to Community Health and cultural awareness in their lists of competencies.

This competency area was retained in the South African model developed in this study despite the international trends. It was anticipated that a raised profile of community issues and needs in the GEMP, together with a greater understanding of cultural differences and responses to illness, would be valuable to all South African doctors. It was also hoped that it might lead to a greater interest in some medical graduates to eventually specialize in the field of community health.

A Comparison of competence (Objective 3)

The results of the current research study showed that the GEMP interns indeed felt significantly better prepared (**p=0.0002**) overall in this competency area than the interns who trained under the traditional curriculum. There were four items in this category in the questionnaire and three of the four also showed significantly higher ratings by the GEMP interns. These included working with ambulatory patients in the hospital clinics and outpatient

departments (**p=0.05**), taking into account the patients' home circumstances when planning for discharge and aftercare (**p=0.003**) and incorporating a knowledge of SA communities and cultures in caring for wide range of patients encountered in South Africa (**p=0.01**).

B Competence related to the curriculum experience (Objective 4)

The comments regarding family and community health in the two curricula differed considerably between the traditional and the GEMP interns. The traditional curriculum interns made very few comments but those that did were of the opinion that they could have been better prepared.

> *"More could be done on cultural factors – how patients of different groups respond to illness"* (2006)

> *"Social aspects of the curriculum could have been improved. The Wits curriculum concentrated on pathophysiological aspects"* (2006)

A few of the 2006 supervisors also commented on the general lack of intern awareness of socio-cultural issues:

> *"A weakness in general. Medical schools definitely need to do more – different cultures have different attitudes to disease"* (2006)

Despite the general feeling that this area needed more emphasis in undergraduate medical education, individual interns from the traditional curriculum did receive praise from their supervisors.

There were many more comments relating to this competency area from the GEMP graduates. Their curriculum was based upon a clearly identified biopsychosocial approach and the undergraduate students attended both urban and rural community visits and undertook projects throughout GEMP 1 and 2. They were also exposed to regular social, psychological,

emotional and community aspects that were integral to most of the weekly "paper cases" used for problem based learning. The clinical years also included a newly designed Integrated Primary Care (IPC) rotation. It is understandable, then, that community health concepts were more familiar to the GEMP interns. What is significant is the extent to which this exposure appeared to have positively influenced their practice. Some of the interns' comments given below highlight the areas of the curriculum that were most beneficial to their awareness of, and experience in, the area of community health.

> *"The biopsychosocial approach was good – you think of this all the time and do follow ups – especially things like arranging for home-based care and making referrals to other professionals"*

> *"The rotation in family medicine was good. The six week rural health block was brilliant, gave me confidence and was good preparation for working in OPD"*

The findings that the GEMP curriculum, with the CD Theme running through the four years, seemed to have prepared the graduates well for medical practice in South Africa. Rolfe, Pearson and Barnsley (1996) found that at least seven years after graduation the general practitioners from a community orientated curriculum had small but significantly more positive attitudes to community health than those from a traditional curriculum. Nazareth and Mfenyana (1999) have explained some of the difficulties experienced in running a community-based medical education programme in South Africa. These include the vast distances which students need to travel as well as the lack of basic facilities, electricity, water, communication and information systems, sanitation and clinical loads due to staff shortages in many poor rural areas. These inevitably affect both training programmes and service delivery.

5.3.1.5 Category 5: Professional values and attitudes/Ethics

A Comparison of competence (Objective 3)

The study results showed no significant difference between the ratings for the two groups of interns regarding their professional values and the ethical practice of medicine. The supervisors and colleagues in both years commented on the interns' competence in this area with mostly positive remarks and very few criticisms. The difference in the positive comments was the strength of the statements made by the 2007 supervisors. These were presented in the results section by are repeated here to make this point.

> *"She has stood out because she has a sense of duty that no other interns have",*
>
> *"I'm impressed with the way she discusses issues with patients"*
>
> "*I am impressed with the way she questions decisions giving consideration to everyday ethical issues".*

B Competence related to the curriculum experience (Objective 4)

Ethics

A formal course of medical Ethics was taught in the second year of the MBBCh for the traditional curriculum graduates and during the preliminary concepts block at the start of the third year for the GEMP graduates. However, the GEMP curriculum included ethical issues in many of the PBL paper cases, with occasional additional formal teaching sessions over the GEMP 1and 2 years as a part of the Personal and Professional Development theme. This learning was assessed as part of the integrated assessments. The GEMP students were also required to write reflective portfolio entries and these often raised ethical questions about situations that the students had observed or experienced.

Several interns commented on the teaching of Ethics in their respective curricula. The teaching was considered to be good by eleven (11) interns in 2006 but with little explanation as to why it was considered good. One intern mentioned the particular benefits gained from attending the Human Behavioural Sciences selective course in the second year. There were nine (9) interns in 2006 who felt that they did not have adequate Ethics teaching or exposure in the wards. One comment highlighted the role of the lecturer in teaching Ethics and instilling in students the importance of ethical medical practice.

> *"I did not enjoy Ethics, it was vague, never gave answers, tutors rubbed me up the wrong way. I have my own principles and can justify my own decisions"* (2006).

More GEMP interns in 2007 commented positively about their Ethics teaching which was integrated and examined throughout the GEMP as an important part of the themes. Calman and Downie (1987) describe some practical issues in planning a course to teach Medical Ethics and suggest a mix of Moral Philosophy and practical medical problems using student projects, buzz groups, case histories and discussion points. The student learning portfolios and debates held during the GEMP augmented lectures and may have assisted the GEMP graduates to apply their knowledge.

Akabayashi et al, (2004) suggested that structure, design and curriculum do influence the degree to which students' ethical reasoning skills change during the course of their undergraduate education. In addition to the formal teaching received, medical students might also be influenced by emulating good role models during their clinical years or consciously trying not to be like bad role models. Whatever the reasons, the different types of teaching experienced by the traditional and GEMP graduates did not appear to lead to significant differences in their ethical practice during the early months of internship.

Patients' rights and Medico-legal aspects

The area of medico-legal issues and rights was highlighted by both groups of interns as an area needing more emphasis in the undergraduate curriculum. Several of the interns in 2006

did not seem to know very much about their patients' rights and claimed that they were not taught about this and had little exposure generally.

"I don't know my own or the patients' rights. We had no medico-legal training".

The GEMP interns in 2007 also found this area difficult and lacked experience as students.

"We were taught the theory but no practical experience. It's different when you have to do it".

It is not possible to say whether one group of interns was better than the other in this respect. Clearly medical legislation and the rights of both doctors and patients is an area that needs to be addressed more systematically. Even simple introductions need awareness by interns that a patients' anxiety, pain, confusion or forgetfulness may render this insufficient. A name badge correctly displayed is of great benefit to the patients and their families. It is the patients' right to know the name of the doctor caring for them. The interns suggested having a medico-legal expert talk to students. This might also make for an interesting PBL case in the GEMP.

5.3.1.6 Category 6: Effective communication skills

A Comparison of competence (Objective 3)

The overall ratings given by the interns on communication skills showed a significant difference between the two groups (**p=0.018**). Graduates from the GEMP rated themselves significantly better prepared than did the traditional curriculum graduates. The supervisor and colleague scores showed no significant differences.

The GEMP graduates' confidence in their abilities showed particularly in the item on counselling a dying patient or bereaved relatives (**p=0.002**). This aspect of the doctor's role is difficult for most people but the HIV/AIDS pandemic has brought many of the interns in contact with death and dying on a scale not experienced in the past. This has included coming

to terms with the death of many young people and children. Interns in both years found breaking bad news and counselling dying patients difficult. An example of their comments is:

> *"We don't see dying patients as students. Students are not the ones responsible. We are responsible this year – it's a big jump"* (2006).

The supervisors tended to comment rather generally without mentioning how the curriculum had or might have helped the interns.

> *"The dying patient is always such a stress – you get the ability to cope only by experience"* (2006)

> *"You are never really prepared until you have to do this"* (2007).

Despite the interns' and supervisors' comments about how difficult the interns found it to break bad news, their nursing colleagues indicated that many of the interns managed this difficult role very well and gave examples to back up their statements.

> *"His first day on duty we had a death and I felt he knows his calling. The family came before we were ready. He spoke to the patient's relatives so kindly, with empathy. He told them everything, so well. Lowered his voice 'al sagter' to reach them"* (2006).

Perhaps the most important people to talk about the interns' communication skills were the patients themselves. During the interviews with the patients there were a number of questions that dealt with the interns' communication skills which were described in Chapter 4 on results. These related to the ability to communicate in the patient's language or an alternative language that he or she understood well, introducing him or herself by name, giving the patient sufficient time to ask questions, explaining the patient's condition and the treatment plan and breaking bad news.

The patients in both years were very satisfied with the communication skills of both groups of interns and particularly the fact that they were treated collegially rather patronised or "talked down to".

> *"Yes. She knows how to talk. She doesn't see me like she's a doctor and I'm a patient (lower than her). She addresses me in the same way that she speaks to other doctors"* (2006)

> *"I can't think of a single thing that could be improved in this doctor. I have known other doctors who are aloof and talk down to patients, but not her. She is wonderful"* (2007).

One difference detected between the patients' comments in the two study years was that the patients in 2007 were able to describe in more detail what the intern had said that was helpful to them. They seemed to have a fuller understanding of their conditions and often knew the medical terminology and used it correctly so that it became clear that the doctors had explained the condition and treatment satisfactorily and ensured that this was understood. A few examples follow which illustrate the difference between the responses of patients in 2006 and 2007.

Typical interview responses in 2006 were:

> *"He prescribed medications - I do know what it is for. After the scan they will decide on further treatment"* (2006)

> *"Treatment is OK – I get tablets and injections. I have enough information. She told me everything"* (2006).

The patients in 2007 gave fuller answers to this question:

"Yes. He explained about chemotherapy and the side effects. It can damage my kidneys over a long period. It made me sweat, feel cold at the same time, sick like nausea. Doctor explained to me that this is the medication he was talking about" (2007)

"She explained all about the test - I had to have a gastroscopy. She explained how I would feel, why it made me bleed a little bit inside. She'll tell me the results as soon as she has them" (2007).

Although the patients in both years were asked exactly the same question, "Has your doctor asked you if you know about the treatment and what is best for you? Did you understand everything?" their answers differed in quality and richness of detail. Both groups of patients said that they knew about their treatment and that the intern had explained everything to them but the patients in 2006 did not offer details of their understanding of the treatment. In 2007 the answers that were given indicated a fuller understanding of their conditions and treatments through talking to the intern concerned.

B Competence related to the curriculum experience (Objective 4)

The traditional curriculum offered fewer formal opportunities for the undergraduate students to gain an understanding of the theories behind good communication and to practice communication skills under supervision prior to commencing their clinical training.

The GEMP, on the other hand, introduced a vertical theme called the Patient-Doctor theme which underlined the importance of good communication. Students also had many opportunities to practice their own communication skills through speaking out loud. In the PBL groups of six to eight students, each individual was required to participate by offering information, defending a position, giving and receiving feedback on performance, making presentations to the group or the class and communicating with the PBL facilitator. In the clinical skills laboratory students practiced obtaining histories from simulated patients and had to talk the examiner through the clinical procedure that they were performing during their

regular Objective Structured Clinical Examinations. The weekly "hospital day" then allowed the students to practise what they had learned by taking histories from patients in the wards and presenting these to a clinical supervisor.

They students communicated in writing through their portfolio entries and had an interview at the end of GEMP 2 to talk about their choice of portfolio topics and to reflect on their experiences. It is likely that all of these activities served to give this group of graduates more confidence in their ability to articulate their thoughts.

At another level, the minor conflicts that inevitably arose had to be dealt with by the groups themselves and this may have also helped the GEMP graduates to avoid or resolve conflicts in the workplace better. One of the GEMP interns commented:

> *"With the PBL scenario we learned how to deal with different personalities – it was good to be rotated among different groups"*.

The difficult task of breaking bad news was discussed earlier. The traditional curriculum graduates felt that they had not been sufficiently prepared in their curriculum and that the short hospice visits were insufficient to develop these coping skills. Some also had personal difficulties with this. The GEMP interns felt better prepared to deal with this type of communication and related this to the vertical themes such as the PD and PPD themes.

Rolfe and Pearson (1994) highlighted some of the benefits, described in various studies, which have been shown to accrue from effective communication between doctors and their patients. These include improved patient compliance, accuracy of diagnosis through better history taking, better patient education and recall of advice given, patient satisfaction and a better reaction to potentially distressing procedures or bad news. This supports the findings of this study that the patients in 2007 had a better understanding of their conditions and treatment.

5.3.1.7 Category 7: Working with others in a team

A Comparison of competence (Objective 3)

The interns and their colleagues reported no significant differences in the overall scores for this category but the supervisors did record a significant difference (**p=0.0453)** with the GEMP interns considered better at working in a team than the traditional interns.

Only one of the individual items showed a significant difference, recorded by the colleagues in the wards. This was item 7.1 on the interns' ability to develop good professional relationships with others in the health care team including nursing staff, colleagues, therapists and administrators (**p = 0.041**). Here fewer GEMP interns were rated "not well prepared" (1% versus 7%) and more were rated "well prepared" (23% versus 10%). However, more traditional interns (83% versus 76%) were rated by their health team colleagues as "fully prepared". This does not give a clear direction of improvement in the GEMP interns but there were fewer GEMP interns who did not get on well with colleagues.

The colleagues were generally happy with the working relationships in the wards and made complimentary comments in both years.

Where there were difficulties with working relationships the colleagues, particularly the nurses, thought that this was a personality issue with a particular intern rather than a matter of training, or else a matter of the particular ethos at a hospital. One comment suggested that there might be a lack of understanding and respect for the roles of other team members such as the nurses.

> *"Sometimes she tends to block us out - doesn't realise the value of the knowledge and experience of sisters"* (2007).

Where conflicts arose in the workplace these seemed to be mostly between the interns and their senior medical colleagues or with the nursing staff rather than other allied health professionals such as physiotherapists, dieticians, social workers, pharmacists or technicians.

> *"Some interpersonal conflicts have arisen - being asked to do unreasonable things like drawing up unnecessary tables and charts. There is no time for this if one is to deal properly with one's patients. Seniors are unprepared to listen to reason. Also one is reprimanded for things beyond your control"* (2006).

It should be mentioned here that interpersonal relationships are often reciprocal and therefore influenced by the approach or response of the other person or persons involved. This aspect is shown up if the supervisor and intern comments are seen in relation to each other. Two examples are given below to illustrate this point.

An intern at one of the regional hospitals made the following comment during her interview. She was visibly upset as she said:

> *"I used to have faith in seniors – I believed them but now I find that I cannot always trust them. There is an attitude problem with seniors here. They don't manage the patients adequately. Some patients need more active management. I don't get help from above when I believe something further needs to be done for a patient – the patients are regarded as terminal too quickly"* (2006)

This intern's supervisor was well aware of how the intern felt and independently made the following comment:

> *"She is very patient-orientated and caring. She tries hard to do more than is possible, even for terminal patients and won't accept that nothing more can be done – sometimes seems to think that her seniors are not doing enough for the patients".*

B Competence related to the curriculum experience (Objective 4)

The interns' comments at interview revealed that both groups felt their undergraduate clinical experience had given them opportunities to learn to work with others in a team.

"Working as part of a team in the wards helped development in these areas".

As students they had learned quickly that it was necessary for everyone to *"pull their weight"* and to contribute to the health care team. Many of the interns and supervisors in both years put this down to personality and upbringing rather than undergraduate medical training.

A few of the traditional interns in 2006 commented that the diversity of students and staff at Wits helped people learn to get along with others.

"The diversity of the class at Wits is a big factor here".

Several of the GEMP interns related the ability to work cooperatively with others to their undergraduate education.

"Our curriculum brought colleagues together well and fostered good relationships and knowledge of others' skills"

"Teamwork was encouraged in the GEMP".

The GEMP interns reported fewer conflicts and one offered a suggestion to include assertiveness training into the curriculum.

"Some assertiveness training would help. I felt I was being taken advantage of (particularly by nurses) during the first few weeks when I was out of my depth. You have to be assertive without being rude" 2007.

The supervisors in both years gave a range of comments, some very complimentary and positive and others more critical. The supervisors said that it was difficult to determine whether good interpersonal skills were dependent upon personality or whether any aspects could be related to teaching or the curriculum.

Rolfe, Andren, Pearson, *et al* (1995) conducted a survey on Australian interns who were evaluated by their supervisors on fourteen competencies, one of which was "Relationships with other professionals". These authors found that the interns from their problem based curriculum were rated significantly better on these relationships than interns from the other participating institutions. They related this competence to their programme which included small group learning, early contact with patients and the formal teaching of interpersonal skills. This programme is similar to the GEMP curriculum and supports the current findings.

5.3.1.8 Category 8: Self-directed learning

A Comparison of competence (Objective 3)

The study results regarding whether or not each curriculum had prepared interns to become self-directed learners and had provided them with the skills to keep up to date with the medical literature revealed that the GEMP graduates rated themselves significantly better at this than did the traditional curriculum graduates (**p=0.0001**). Seventy eight percent (78%) of the GEMP interns considered themselves "well prepared" or "fully prepared" compared to forty six (46%) percent of the traditional curriculum interns. The comments made during the interviews indicated that some interns in both years did try to keep their knowledge up to date but that time, resource constraints and physical tiredness after the long hours on duty prevented the majority of them from even making an attempt to keep up to date.

B Competence related to the curriculum experience (Objective 4)

The traditional interns reported that their research skills were mostly dependent upon their own interest, personal computer skills and prior knowledge rather than systematic training

within the curriculum. All entrants to the medical degree have to pass a very basic computer test prior to admission or during their first year. However the 2006 interns reported that they had not been taught or encouraged to use these skills during their undergraduate education. Some blamed the system citing lack of facilities or lack of interest from the lecturers and clinicians. Others admitted that they had not shown sufficient interest and could have done more to improve their skills during their undergraduate years.

The GEMP was designed to develop a self-directed approach to learning. The interns who had completed the GEMP were privileged to have had free access to computers, specific training in online searching and research skills and many opportunities to practice this. In spite of all the encouragement and resources for self-study in the GEMP, "not all students appear to have engaged with the anticipated self-directed learning process" (Manning, 2008, p. 11). Scheduled self-directed learning time was often used for socialising and some students used it to work for gain (*ibid*). Thus, even with the knowledge gained during the undergraduate years and the availability of computer and library facilities at intern training hospitals, most of the GEMP interns did not carry this through to their internship. The reasons given were generally lack of time and exhaustion.

This is an area of the undergraduate curriculum that would be important to follow up in any future cohort studies undertaken. It would be interesting to know whether the early confidence in research skills and EBM that was gained during the undergraduate years will persist into later years or encourage more of the GEMP-trained doctors to pursue medical research.

5.3.1.9 Category 9: Confidence and personal attributes (intangible personal resources)

A Comparison of competence (Objective 3)

The results for this category as a whole showed no significant difference in the scores given by the interns themselves or those of their colleagues. The supervisors' scores reached significance (**p=0.0446**) with fewer low ratings given to the GEMP interns (but with slightly

more of the traditional graduates rated as "fully prepared". A closer examination of the responses of the interns compared to those of their supervisors revealed that the interns rated themselves less well prepared than did their supervisors. In 2006, fewer interns rated themselves "fully prepared" than their supervisors (22% versus 38%) and in 2007 the same pattern emerged (23% versus 35%). At the other end of the scale more interns than supervisors gave "not well prepared" responses (19% versus 9% in 2006 and 14% versus 4% in 2007). Clearly, the supervisors were less aware of the difficulties experienced by the interns. This may relate to the halo effect mentioned at the start of this chapter where the supervisors compared interns from Wits with those from other medical schools and found that both groups of Wits interns seemed to be holding their own.

Data from the interviews did, however, show up qualitative differences between the two groups of interns. The pie charts (Figures 4.55 and 4.56) show that more traditional graduates raised issues about the internship environment (12% versus 2%) and about confidence and coping (21% versus 14%). Tables 4.75 and 4.76 show that there were eighteen (18) negative comments from the 2006 interns about confidence and coping and eight (8) from the 2007 interns. Also in 2006 there were fifteen (15) negative comments about the internship environment compared to two (2) in 2007. The interviewers were also aware of a greater degree of anxiety in the 2006 interns about the time taken to participate in the study.

When the interviewer discussed these areas in relation to the specific questionnaire items which dealt with this area of intern competence (taking responsibility and being accountable for the interns' role in patient care, coping with the long hours, managing time so as to balance work and home life and coping with uncertainty), forty one (41) interns in each of the years commented that despite the stressful conditions they felt that they were coping well. Many indicated that initially they had felt overwhelmed but soon settled into the routines of internship.

Hill, Rolfe, Pearson and Heathcote (1998) studied the preparedness of graduates from traditional and non-traditional medical schools for hospital practice. Their results suggested that the interns from the non-traditional, problem based curriculum perceived that they were

better prepared than their traditional counterparts with regard to confidence and coping with stress. This result differs from the findings of the current study.

The literature on intern stress (Firth-Cozens, 1987; Rolfe, Pearson, Sanson-Fisher, *et al*, 1998; Daly and Willcock, 2002; Tanne, 2002; Joshi, 2002; Sweet, 2003; Hayes *et al*, 2004; Sun, Saloojee, Jansen van Rensburg and Manning, 2008 and Milstein, Raingruber, Bennett, *et al*, 2009) has highlighted the almost universal problem of stress and burnout during internship.

Firth-Cozens (1987) found that although overwork was given as the most stressful aspect for junior doctors in Sheffield in the United Kingdom, the number of hours worked and the number of beds for which the intern was responsible were not related to symptoms of stress but rather to the resulting lack of sleep and poor diet. The incidence of distress was found to be unacceptably high and levels of emotional distress were greater than those reported for other occupations. She also found that there was greater stress in teaching hospitals than non-teaching hospitals. Of importance to many interns was the effect of the job on their personal lives, serious treatment failures and talking to distressed relatives. One of the GEMP graduates highlighted the stressfulness of this last aspect of internship in a comment during the interviews.

> *"The difficulty for interns is the non-clinical stuff – dealing with the dying patient and family, dealing with difficult patients and trying to explain things to them. These things are very difficult – you have to have been there and done it yourself, You can't read it up in books"* (2007).

High stress levels were strongly correlated with perceptions of the job and the first postgraduate year remained a risky one for those with high levels of emotional distress (*ibid*). In our study, one intern reported just such a response:

> *"Three of my friends have dropped out because of depression and not knowing how to cope"* (2007).

Sixteen (16) traditional curriculum interns in 2006 and eighteen (18) GEMP interns in 2007 reported that they did not feel that they were coping adequately. This makes it important to explore the issues of intern stress and identify those stressors that are common to interns the world over and those that are unique to the South African situation.

Sun *et al* (2008) published a study on intern stress in the South African situation which was completed as part of a research project during the fifth year of medicine at Wits. These authors ranked the main stressors for interns in hospitals in the Johannesburg area from one to eleven and it is clear that undergraduate preparation was not considered a major stressor. The list is:

1. work hours
2. work load
3. HIV
4. equipment
5. staff shortages
6. quality of care
7. teaching
8. financial issues
9. travel
10. undergraduate preparation
11. domestic issues.

The first six of these matched the issues raised in the current study. Both traditional and GEMP curriculum graduates commented on the long hours and the exhaustion. The patient load was mentioned more frequently by the GEMP graduates (11 comments in 2007 as opposed to only three in 2006) and in many comments this was linked to staff shortages. Both groups mentioned that they were supposed to take responsibility for approximately twenty five patients but on intake the number could reach fifty. The workload problem in South Africa was exacerbated by HIV and AIDS and this aspect was frequently raised by interns in the current study. One intern in 2006 said:

"HIV and AIDS has taken over – nearly all patients in this hospital are HIV positive. Nothing can prepare one for such horror" (2007).

Another aspect of the patient load was the severity of the illnesses seen, which may also have been related to the HIV and AIDS issue. A GEMP graduate explained:

"Internship is very stressful. The patient load is very high and patients are often on deaths door. It's very difficult to handle. This is the nature of patients at Bara – it's hard" (2007).

The working conditions were a further source of stress for the interns in this study. Here there was a notable qualitative difference between the comments of the two intern groups. The traditional curriculum graduates found it stressful having to adapt to new and different circumstances:

"The only real problem was the change of environment and the need to adjust to new people and new systems" (2006)

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

"I did not cope at all at first. I felt like a headless chicken! It was very stressful and I often get sick" (2006).

The GEMP graduates were more concerned with the physical working conditions and lack of resources, both for the comfort and convenience of the staff and for patient care:

"The working conditions at [Hospital X] are terrible. We can't talk to patients as much as we would like to. The poor environment is not conducive to keeping doctors or patients happy. There are cockroaches everywhere. The doctors' room is dirty with an ancient mattress, no heating and no kettle. The place is unfriendly.

> *There is a gap between students* [interns] *and registrars – a dead zone. No one teaches us much – we are not allowed to do extra courses. We are here for 2 years doing all the drudge work and not getting any opportunity to study more. It's frustrating"* (2007)
>
> *"Internet access is a big problem here (Hospital Y) – limited to only 2 hours a day so it's difficult to do any research"* (2007)
>
> *"I am given too many clerical jobs – this gets me down a lot. I feel like I have forgotten so much – I don't know how to make it more reinforced"* (2007).

As with the study of Sun *et al* (2008) the interns interviewed in this study found that their social and family life was curtailed. This had been expected and was not raised as a major stressor except where there were babies or young children at home in which case it was particularly difficult to get enough sleep. Sleep deprivation was one of the major stressors in some of the international studies (Firth-Cozens, 1987) but was only mentioned specifically by two interns in 2006. Others complained of tiredness but it was not clarified whether this was physical tiredness or lack of sleep.

The symptoms of distress reported in the Firth-Cozens (1987) study included an increase in alcohol and recreational drug use, disillusionment with career choice, depression, memory problems, difficulty in decision making and taking prescription medications for anxiety. Sun *et al* (2008) found similar manifestations of psychological distress in the Johannesburg interns who showed higher rates of self-reported depression than that found in the international literature. This study did not ask for details on intern stress and the interns in the study did not report many signs of depression such as weight change, crying, loss of a personal sense of well-being, loneliness or anxiety related to role stress.

Daly and Willcock (2002) found moderate levels of burnout in interns at midyear on two of the subscales of the Maslach Burnout Inventory, namely "a sense of personal accomplishment" and "emotional exhaustion". This was not unexpected, given the nature of

internship but a third subscale indicated a high level of a component of burnout known as "depersonalization", particularly where good supervision and support systems were lacking. In the current study an intern from the GEMP curriculum mentioned the benefit of a supportive group in assisting her to cope.

> *"I am with people I know so our group is supportive. The sisters are really nice. I ask and accept their advice".*

B Competence related to the curriculum experience (Objective 4)

When asked to relate their ability to cope to their undergraduate curriculum, both groups indicated a need for some form of preparation during the senior undergraduate years for the pressures and workloads of internship as well as more information on what might be expected in the different level hospitals and the contracts which had to be signed.

> *"... it would be helpful if new graduates were informed of the realities of the workplace before coming to hospitals like* [Hospital X – a regional hospital]. *It's not like Bara or Helen Joseph. Things happen more slowly, there are few specialists and, we have to take considerable responsibility. We may be the only doctor in Casualty – 24 hr call every fourth day"* (2006).

The most commonly mentioned area of undergraduate training that helped prepare graduates for the stresses of internship was the experience gained at the Chris Hani-Baragwanath Hospital in Soweto. This was true for both groups. This large, overcrowded teaching hospital prepared students to deal with enormous numbers of patients, limited resources and long hours. They praised the dedication of the consultants and registrars at all the training hospitals and the excellent teaching received. One intern in 2006 summed it up, saying:

> *"At Wits* [we were] *badly beaten but in a good way – consultant – registrar – intern hierarchy – we learn to take hard criticism and get something out of it. There is an element of elegance brought to education by senior colleagues – you learn things and*

make connections over and above what can be learned from textbooks. I miss academic life even after having been bruised – the challenges keep you up to date" (2006).

The issue is whether there was a difference between the two curricula at Wits which assisted the graduates to better cope with stress. Feeling well prepared for responsibility and the rigours of internship is crucial. The results of the questionnaire show that from the interns' point of view, GEMP interns gave higher preparedness ratings than traditional interns.

A second aspect of the GEMP curriculum which was frequently mentioned in the interviews was the opportunity afforded students to get to know many fellow students very well. They worked and studied together in PBL groups, health practice day groups and theme session groups. These groups remained together long enough to build relationships of trust, learn about conflict in groups and its resolution and make lasting friendships. Students had opportunities to interact with students of other cultures and racial groups that they might not have had during casual contact in lecture theatres. In addition, they interacted weekly with their PBL facilitators who were members of the academic staff or clinicians, some young and some older and more senior. They learned to use the language of medicine from their facilitators and communicated collegially, yet politely, with seniors.

"With the PBL scenario we learned how to deal with different personalities – it was good to be rotated among different groups" and *"The curriculum brought colleagues together well and fostered good relationships and knowledge of others' skills"* and *"The PBL system was good on this. We learnt to work together and respect each other.*

The personal attributes of responsibility and accountability, self-confidence and the ability to cope with the long hours and heavy patient loads while still maintaining some balance between work and private life require personal resilience and experience in dealing with and overcoming challenges. However, the scores and comments indicate that the curriculum can play a role in preparing graduates, especially in the clinical years where the concepts of accountability and responsibility to patients, care team, hospital, professional associations and

laws of the country are introduced. Patient loads can also be gradually increased in the final year to prepare medical students more effectively to deal with the stresses of internship.

5.4 THE ISSUE OF PERSONALITY

An interesting study by Jean Twenge (2009) looked at the psychological differences between previous generations of students and those of recent years which she calls the "Generation Me". These differences are based upon the findings of IQ tests, personality traits, attitudes, reading preferences and expectations of mainly undergraduate students and high school students. Twenge's results showed that Generation Me students tend to score more highly on assertiveness, self-liking, narcissistic traits and high expectations but also show stress, anxiety, poor mental health and lower self-reliance. Twenge suggested that the new generation of students benefit from more structured yet interactive learning experiences, presented in shorter segments with more media delivered material. She also advised on the need to temper their overconfidence. David Musson (2009), commenting on Twenge's work, highlighted the fact that personality influences performance and suggested that medical educators and employers see this relationship rather differently. While the correlation between personality and performance seems obvious to most people outside of education, the selection procedures for medical students do not generally use personality testing. He suggested that this was based upon the old arguments that personality testing is unscientific and personality as a construct is unstable and poorly predictive, yet meta-analytical studies have found that the construct of "Conscientiousness" is a predictor of job performance in all occupational groups (*ibid*). Musson (2009) indicated that data on the ideal personality traits of doctors are lacking, however a study by Lievens, Possier, DeFruy and De Maeseneer (2002) found that medical students scored highest on extroversion and agreeableness and suggested that this might be beneficial for interpersonal skills and teamwork in doctors' future professional practice. Cave, Woolf, Jones and Dacre (2009) found that the personality traits of conscientiousness and extroversion were associated with high preparedness for internship.

In Category 9 of the current research the term "personality" was mentioned frequently by interns, supervisors, colleagues and patients, especially when accounting for interpersonal and

communication competence of interns, while conscientiousness was commented upon positively, especially by the supervisors. This study has touched only peripherally on the subject of personality through the attempt to measure it broadly in the final category (category nine) on confidence and personal attributes. Here the GEMP graduates in 2007 rated themselves better prepared than did the 2006 interns, although the results were not significant. The supervisors' scores, however, showed a significant difference (**p=0.0446**) and rated the GEMP interns as better prepared. This perception might have been a result of the problem based learning environment which met many learning needs of "Generation Me" identified by Twenge (2009) which may have given the interns confidence to question or make suggestions.

Not formally a part of this study, but interesting to record here, is the fact that the GEMP sample had completed a series of personality tests in the first year of the GEMP curriculum (MBBCh III), followed by one-on-one feedback sessions with Wits educational psychologists. This was considered important at the outset of a new curriculum which was so dependent upon group work for its success. It also relieved the teaching staff of having to deal with group and personality issues at a time when they were busy introducing many curriculum changes all at once. The personality tests were revisited during the Personal and Professional Development theme sessions in a lecture series called "Know yourself". Although none of the GEMP interns mentioned the personality testing in their interviews, they might have gained some insights into their own personalities and ways of handling stress which was not the case with the traditional curriculum graduates who had not experienced such a personality awareness programme. The influence of personality on the responses of the various respondents is difficult to judge but it needs to be taken into account when attempting to interpret the results of research conducted within the framework of complexity theory.

5.5 COMPARISONS WITH PREVIOUS WITS INTERNS AND OTHER UNIVERSITIES

After completing the questionnaire, supervisors were asked to compare the competence of the sampled intern under consideration with Wits interns supervised over the last few years. The supervisors in 2007 rated fewer of the GEMP interns as weaker than past Wits interns and

more of them as similar. However, fewer were rated "superior" (see Figure 4.53 in Chapter 4). The difference using a Chi-square test was not significant (p = 0.17). When comparing the sampled interns to interns who had graduated from medical schools other than Wits, the 2006 supervisors found that five percent (5%) of the traditional graduates were weaker, forty four percent (44%) were similar and fifty one percent (51%) were superior to other medical graduates. In 2007 none of the supervisors rated the GEMP interns as "weaker" than others, while forty nine percent (49%) considered them similar and fifty one percent (51%) rated them "superior" (see Figure 4.54). Again this difference was not significant (p = 0.15). This result supports the discussion at the beginning of this chapter that the supervisors of interns were satisfied that the GEMP had in no way lowered the standard of Wits interns.

Several of the supervisors added comments to their comparisons. The general consensus was that the Universities of the Witwatersrand (Wits), Pretoria (UP) and Cape Town (UCT) produced the best interns with UCT particularly strong academically and Pretoria superior in practical clinical skills. Interns from the universities of Pretoria, the Free State and Stellenbosch were considered the best at coping with the workload. The Wits interns were thought to have a good balance between theory and clinical skills and whereas certain procedural skills were lacking initially, the Wits interns were quick to learn and caught up very quickly. The possibility of "politeness bias" cannot be excluded here. Flynn (2006, p. 142) states that "norms of politeness can act as a source of bias". The supervisors may subconsciously have given the response that the researcher wanted to hear, or have been too discreet to say anything derogatory about Wits interns because the researchers were themselves from Wits.

5.6 INTERVIEWS WITH PATIENTS

It was not always possible to arrange patient interviews and where this was achieved there was often a fairly limited selection of patients available who knew the particular intern well enough to complete the interview. In 2006 there were fifty four (53) patients interviewed and in 2007 there were forty four (44). Where an interview was conducted in Afrikaans, the simpler comments were translated into English by the researcher. However, where the

fullness of the meaning might be lost in translation the Afrikaans comments were left with an English translation in parenthesis.

The reason for using only a structured interview with a global interviewer score rather than a questionnaire for patients in this study was due, in part, to the wide ranges of literacy, language and condition of the patients. Questionnaires are difficult for illiterate patients and some might have had considerable difficulty allocating a score on a rating scale. The method that we used is supported in the literature by Epstein and Hundert (2002, p.230) whose meta-analysis of three studies concluded that "… global rating scales of interpersonal skills may be more valid than behavioural checklists". We deemed it more useful to have a single interviewer rate each patient's overall response to the open-ended questions. This was done by evaluating the actual experiences which the patients reported about their communications with the intern concerned. The score allocated was based on the scoring rubric given in Chapter 4.

The structured interview schedule asked questions of patients that related to certain categories of the model such as effective communication, interpersonal skills, professional attitudes and values and community health. The answers were recorded verbatim and thematic analysis used to tease out the factual details pertaining to the interns' interpersonal skills. In addition to what the patient said, it was also possible to assess the way it was said as suggested by van Zyl and Bowman (2007).

Makoul (2008), in his paper on improving communication with all patients, refers to the concept of "cultural competence". Betancourt (2002, p. 3) defines cultural competence as:

> *"a set of behaviours and attitudes and a culture within the business or operation of a system that respects and takes into account the person's cultural background, cultural beliefs, and their values and incorporates it into the way health care is delivered to that individual"*.

Makoul (2008) warns that there is the danger that this could lead to stereotyping and oversimplification of culture and suggests that more recent approaches speak of the patient's frame of reference which is an essential part of patient centred care. Makoul (2008) also explains health literacy as "the degree to which individuals can obtain, process and understand the basic health information and services they need to make appropriate health decisions". (Makoul, 2008, p. 1051). It is important that medical education helps students to improve their communication with all patients, not just those from different cultural backgrounds or with low health literacy.

"Most doctors are good doctors in the eyes of most patients" (Coulter, 2002, p. 668). This was certainly true in the current study and it was not easy to distinguish between the patients' comments about the traditional interns in 2006 and the GEMP interns in 2007. The patients admitted to public hospitals in South Africa tend to be grateful for any care and seldom complain. The traditional medical model tended to demean and disempower patients with the doctor on a pedestal and the patients placed in a dependent position so many patients were delighted with the care and communication that they had experienced. They valued being treated with respect and, sadly, it sometimes sounded as they had not always received this in past encounters with the medical profession. Both groups of patients indicated that they were very satisfied with way that Wits interns communicate.

> *"She knows how to talk. She doesn't see me like she's a doctor and I'm a patient, lower than her. She addresses me in the same way that she speaks to the other doctors" (2006)*

> *"She speaks nicely. She always smiles. She's polite – just nice. She treats me like a colleague" (2007).*

In this study several patients spoke with gratitude of the doctors' humaneness and humility, especially their willingness to take the time to listen attentively, explain and answer questions. The patients showed a desire for information and were pleased to be able to understand their condition and the treatment.

"Yes, she's very kind and explains things to me. I like to know these things" (2006)

"Yes, he's very friendly. When he comes to assess me he's very approachable. I can talk to him about all my problems" (2006)

"Very helpful and understanding. She explained to me in lay and medical terms appropriately. She gave me her cell phone number in case of need – to help me" (2007)

She's so nice, very nice. Because sometimes questioning her – she listens to me. I'm free when I talk to her. She's got a nice smile. She listens. I ask lots of questions" (2007).

These comments are supported by Schattner, Rudin & Jellin (2004) who conducted a study to define patients' priorities regarding different physicians' attributes. From a list of twenty one attributes thirty percent (30%) of the patients selected the physicians' attentiveness as being valued by them.

The area where the differences between the traditional and GEMP interns was the most evident was in response to the questions "Has your doctor told you what is wrong with you, what did he or she say?" and "Has your doctor asked you if you know about the treatment and what is best for you"? Looking at the words used by patients in 2006 and 2007 when explaining what the doctor had told them, it is clear that the GEMP interns had given accurate and understandable information so that the patients could generally give a clear account of their condition and treatment.

The patients' in 2006 had certainly been told about their conditions and had some understanding of the causes and treatment but they were rather vague about the details. The following is a selection of their explanations:

"She explained about burns and grafts. I understood well" and *"She says I have a disease from mosquitoes called malaria"*

"Not the actual name but it is a woman's problem".

Regarding the patients' understanding of the treatment planned for them:

"No not really. She said I must have treatment with a big machine that will burn the disease within me"

"Yes, I used to take tablets but since admission I've had injections in my abdomen. I asked questions and got satisfactory answers".

The patients interviewed in 2007 seemed to take more interest in the question and were able to give fuller answers, often using medical terminology correctly.

"Yes, she always explains what's wrong. I have a DVT – it's a clot in the blood veins."

"He explained abut chemotherapy and the side effects – it can damage my kidneys over a long period. It made me sweat, feel cold at the same time, sick like nausea. Doctor explained to me that this is the medication he was talking about".

Regarding the patients' understanding of their treatment, the patients in 2007 said:

"She consulted with me. First in December she said they will try ERCP, how they do it, how I will feel. She explained that I must bring someone with me to go home. She also explained well to my son. I returned on 17th to clinic. She explained about the cholecystectomy to remove the last 3 stones. And about the J-vac"

"Yes, she explained all about the test I had to have - gastroscopy. She explained how I would feel. Why it made me bleed a little bit inside. She'll tell me the results as soon as she has them".

It appeared that the patients in 2007 were able to communicate better with their doctors regarding health care issues than those in 2006. The possible reasons for this might be:

1 Chance selection of patients
2 More patients were able to speak English than in the previous year
3 More interns could speak languages other than English
4 Interns in 2007 were prepared to spend time to ensure that patients understood.

The supervisors and colleagues are often not present to observe interns talking to their patients during admission, history taking, examination as well as ongoing communications such as giving information about the patient's condition, diagnostic tests required, treatments, health education and discharge planning. The contributions from the patients therefore add an important dimension to the study and helped to cross-validate the interns' self reports.

5.7 COLLEAGUES' VIEWS

The colleagues who were asked to rate interns were either members of the nursing staff in the wards or other interns working in the same unit who had the closest daily contact with the sampled interns. They were selected by the researcher during the visits to the various intern training facilities and the choice was based upon how closely they had worked with the interns in the sample. In some cases the interns were well known to the nursing staff and worked closely with them while in other units the nurses did not know the interns well and so it was preferable to select peer interns. Wherever possible peers from another medical school were selected to complete the questionnaires and interviews. It was not always easy to find appropriate respondents with time to complete the questionnaires and interviews, especially when the research visit coincided with intakes, clinic times, theatre schedules or changes in shifts. The proportion of intern peers to nurses differed significantly in the two study years (Yates $\chi^2 = 2184$, df = 1, **$p<0.001$**). In 2006, twenty five percent of the colleagues were intern

peers and 70% were nurses, with 5% of the colleagues unavailable to rate the traditional curriculum interns. The proportions were reversed in 2007 with 59% of the colleagues being intern peers and 38% nursing staff with 3% of the colleagues not available. The impact of these differences is not known but the fact that there was only item out of fifty seven that was scored significantly differently by colleagues in the two years seems to indicate that it was not great.

It was not appropriate for colleagues, especially the nurses, to comment on the intern's theoretical knowledge and judgement, nor could they be expected to assess self directed learning or community health knowledge when the interns followed up their patients in the clinics. Thus, the five categories of the model which the colleagues were asked to rate were restricted to the interns' holistic management of their patients and practical skills in performing clinical procedures, their ability to communicate appropriately with colleagues, seniors and patients, the professional values that they demonstrated and their ethical practice of medicine, their role as team players in the ward or unit and the personal attributes that they displayed, especially when working under pressure.

Colleagues' views were also reported in the results section. There were very few significant differences in their ratings of the traditional curriculum and GEMP interns. The colleagues in both 2006 and 2007 tended to rate the interns highly, with insufficient ratings in the lowest two response categories for valid statistical analysis. The colleague's ratings were therefore collapsed into three categories, "less well prepared", "well prepared" and "fully prepared".

The data were not analysed to compare the overall ratings for nursing staff and peer interns in the two study years. Given the uneven proportions of nurses to intern peer in the two groups, this might have affected the data. Such an analysis should probably be included if the study were repeated in future years.

The data from the colleagues is important for the following reason. The interns often judged themselves more highly than their supervisors judged them. Since the performance, which is what the supervisors see, is the actual measure of competence, the level of competence is

actually quite low. However, for the five categories where the colleagues give data, the rating of the colleagues is the highest of all and they are also observing performance. If fact, the colleagues are often in a position to observe more frequently and more closely than supervisors although with the caveat that they might be less experienced or accepting a lower standard.

Only one item in the colleagues' questionnaire showed a significant difference between the two groups of interns (Fisher's Exact test, **p = 0.041**). This item looked at the interns' ability to develop good professional relationships with others in the health care team, such as the nursing staff, colleagues, therapists and administrators. This was an important question for health team colleagues and they were invited to comment on this aspect after completing the questionnaires. An interesting finding was the qualitative difference in the interview comments with nurse colleagues frequently taking on a somewhat maternal concern for the interns and valuing friendliness in their interpersonal relationships while the intern peers generally took a more professional stance.

A few examples of the nursing staff's comments were:

> *"We are all the same - even the ward clerk she calls her Sis Jacobeth"*
>
> *"I'm so proud of him; he's so brave, always smiling, worked harmoniously"*
>
> *"I even remember when a sister was admitted she went to the ward to visit [her]"*

while their intern peers used more professional language:

> *"Developed great relationships with all members of the hospital on a professional basis"*
>
> *"With the physio she's good, very professional"*
>
> *"Work ethic is good, very professional"*.

The comments given by the colleagues regarding individual items have been included in the results section in Chapter 4. They generally related to research objective 3 and were used to compare interns in the two study years. However, one intern peer from a different medical school, who was working in Cape Town with several of the 2007 GEMP interns, made the following observation regarding the Wits curriculum (Objective 4):

> *"If I could choose any other institution to do my medical degree again I would choose Wits. It seems as if they have found the perfect balance between academic and practical training. All the other institutions seems* [sic] *to favour either one or the other [theory or practical skills]. All the Wits students I have met are well balanced individuals with a great academic foundation and adequate skills training – whatever I have done in the department as a student more than a Wits student they have already caught on* [sic] *during the first few months of internship".*

5.8 RELATING GRADUATES' PREPAREDNESS FOR INTERNSHIP TO ASPECTS OF THE UNDERGRADUATE CURRICULUM

Objective 4 of this study required that the findings regarding the interns' performance be related to the content and methods of the relevant MBBCh curricula experienced by the two groups of interns. This has been done to a large extent throughout the discussion but in conclusion it is interesting to read the retrospective views of the two groups of interns about how they experienced their undergraduate medical curricula.

The interns from the traditional curriculum were generally very happy with their undergraduate training. The areas which were especially appreciated were the science lectures and the clinical teaching received in the large academic hospitals. The "rite of passage" into medicine for most of these graduates was working at the Chris Hani-Baragwanath Hospital.

> *"My Bara experience stood me in good stead – consultants, even the older ones were very up-to-date, clued-up. This filters down to the students".*

Three main areas of the traditional curriculum were identified by the traditional graduates as less helpful in preparing them for internship.

The first was the fact that much of what was learned was "cutting edge" medicine, and the complex cases seen at the tertiary hospitals served to reinforce this high level learning. Although interesting and stimulating, the graduates were placed at something of a disadvantage when faced with general practice situations and outpatient clinics which dealt with everyday complaints and less complex conditions. Excerpts from some of the comments in this area are collected below:

> *"There was a large volume of Pathology with too much emphasis on unusual conditions. More time could be given for patient management. This would have been more beneficial"*

> *"Teaching at Wits was much too complicated. They should teach more of the basics at primary care level – teach at GP/doctor level instead of specialist management"*

> *"The curriculum was too 'advanced' – too much tertiary level content. Too academic. Too much focus on rare diseases (e.g. unusual types of cancer) and sophisticated tests".*

A second theme concerned the organisation of the clinical years in the traditional curriculum with little control over what was learnt and the lack of systematic teaching during these years.

> *"We were not taught in a formal teaching scenario in 6th year - just bits and pieces from different departments. We were not properly taught – the registrars were always in a hurry. The curriculum needs to be more structured on the wards to ensure that all students gain experience in all necessary procedures"*

"The old course had drawbacks. It relied a lot on the willingness of individual students to learn – we could slip through without doing any practical procedures. The new system is more controlled"

"I lost motivation at Medical School – not enough challenge. Not given enough responsibility in the clinical years. If I didn't turn up – no implications – no one would have died. I was able to pass on the minimum. Didn't attend as much as should – one of the weaker students. Never had a full day at Med School in my life. I feel guilty and I do more now. I never miss work – always noticed if absent – I feel I have become hardworking and diligent. A general criticism of system: not picked up if not attending – so knowledge is not sufficient. There should be stricter rules, stricter control over students. Many students often don't attend".

The third area of the clinical years that the interns felt had failed to prepare them adequately was the lack of practice in continuing patient management and the more administrative aspects of running a ward.

"Wits is clinically excellent but needs to focus more on management. Managing a patient on a daily basis is not enough – we had to deal only with initial problems. Maybe Pretoria interns are better prepared for internship – as 6th year students they do much more patient management. We should be more involved in the management of patients at university - you arrive here and have to manage patients yourself. Management is not a focus in the medical school curriculum – it should be a major focus"

"The curriculum could focus more on skills needed to run a ward efficiently. I felt I was not well equipped to do this. The administrative side both at varsity and in the hospitals was lacking".

The GEMP graduates identified very different areas of their curriculum as most beneficial. They spoke often of the benefits which accrued through more self directed learning and

seemed to be stimulated by the challenge to cope on their own. This may have resulted from having to face everything as a "first" in their new curriculum.

> *"In our education system, you had to direct your learning yourself. You were driven by what you wanted to learn. We were prepared for a career of life long learning – that you have to go on and learn more and read up about patients. I read up about common things before the rotation starts – the curriculum encouraged this. Other interns complain about working here – I think it's a brilliant experience"*

> *"The GEMP allowed me to think for myself – the old system threw things down your throat. It also allowed participation in discussing the management of patients, being critical and questioning"*

> *"Moving from an academic situation to a Level II hospital actually boosted my confidence. You always have seniors with you at the academic hospitals, whereas here you are often left alone to cope and this has been good for me"*.

The areas of the GEMP curriculum which the graduates raised as needing improvement (in Chapter 4,0 under "Interns' general comments") are important to note and to take into account in reviewing the curriculum and developing it further. There were four main themes which are crystallised in the excerpts below. The subject areas that have already been dealt with in detail under the nine categories of intern competence will not be covered again here and only the themes relating to the organisation and structure of the GEMP will be discussed.

The first theme is that of the GEMP 1 and 2 years. Many of the graduates felt that the two years were overly "dragged out" and they found themselves becoming bored with the repetitiveness of the PBL problems. Manning (2008) addressed some of the issues around the use of the scheduled self study time in the timetable and the provision of weekly note packs with the necessary core readings. This discouraged the search for new information to a large extent and even perpetuated the rote learning study approaches of some of the students, particularly those who were weaker academically.

"I was very bored in GEMP 1 and 2 – it was very slow. There was so much self study time – I even started doing another degree when in GEMP. GEMP 1 and 2 could easily be made into one year. Provision of notes meant that we had very little to do for ourselves. Giving out objectives was a problem – we were told we didn't need to learn anything more – if lecturers went beyond the objectives, students would protest, often rudely"

"There was a lot of time available to use in GEMP 1 and 2. We were not under any form of pressure. We had a lot of periods when we were encouraged to sit and study but most people didn't. The workload was not so demanding"

"In GEMP 1 and 2 too much time was wasted (This is a common consensus) – many students wrote USMLE exams and/or got part time jobs. PBL scenarios are not what is important in real life. GEMP 3 and 4 are what is important".

A second area of comment was that of the clinical learning, both in the clinical skills unit and during clinical practice in the hospitals. The fact that academic studies continued into the sixth year (GEMP 4) was appreciated but it was felt that even more clinical responsibility would have prepared the students better for internship.

"Students could be more involved in patient care in the final years – it's crucial to function as a junior doctor in 6th year. I have grown a lot in 6th year – it was a good challenge as I was expected to be more involved in patient care (could be even more involved) and also to have to do academic studies"

"More patient exposure and involvement in patient care is needed starting in GEMP 1. Formal clinical skills were a waste of time".

The third area which gives insight into the interns' perceptions of their undergraduate training is the lack of continuity between the two sections of the GEMP.

"There was not a good continuation from GEMP 2 to GEMP 3. GEMP 2 did not prepare us for GEMP 3 – there was no flow from one to the next. There was a similar lack of continuity from year 2 to GEMP 1"

"GEMP 1 and 2 did not prepare us well for GEMP 3 and 4. Theoretical patients on a computer screen is very different from the real world"

"PBL is a group exercise and it's very different when you have to work on your own".

A number of the GEMP interns commented on their initial nervousness at being the first group from a new curriculum to graduate and their concern that they would be disadvantaged in their internship. However, all were reassured when they realised that they were doing fine.

"Our curriculum was good – I don't see any big discrepancies between us and other universities. Overall I felt quite adequately prepared, especially as compared with interns from elsewhere. In particular, I felt confident with procedures and theoretical knowledge. I think Wits is doing better than other medical schools – we had to do things, we had log books and we were monitored – this was good"

"As students we were very nervous about how the new curriculum would turn out – but now we know that we didn't lose anything. The theory and the way we focused on blocks was very good"

"Other than Pharmacology, no major gaps – I can do all the basic stuff well. There are a lot of good doctors and professors at Wits"

"I'm thrilled with GEMP it was fantastic. The degree I have gives a beautiful rounding to everything".

5.9 SUMMARY

This chapter has discussed the most pertinent findings of the study and has attempted to relate these to the main research objectives and some of the literature. The comparisons of competence between of the traditional and the GEMP graduates (Objective 3) showed that both groups were considered good interns and had upheld the name of their University. The strengths of the traditional curriculum, particularly in the theoretical grounding and clinical experience gained, came through very clearly and the gaps identified tended to be in the humanities such as communication and interpersonal skills and a lack of teaching about common and general practice ailments. The GEMP graduates reported significant gaps in specific subjects although this was not noted by their supervisors. They stressed their appreciation of the biopsychosocial approach taken in the GEMP and felt that this, and their clinical exposure, had benefited them in the clinical situation. The groups were not rated significantly differently by their supervisors, who gave balanced ratings and comments. Both groups were positively rated by their health team colleagues and their patients were extremely satisfied with the care given by the interns in both years. Traditional and GEMP graduates also highlighted the strengths and weaknesses of their respective curricula (Objective 4) and suggested some improvements.

This chapter has attempted to determine where the findings of the study support the literature and develop or extend it, as well as where these results differ from, or challenge, other studies in the literature or where aspects have emerged in an interesting relationship to previous research. Final conclusions and recommendation for further study are presented in Chapter 6.