Changing trends in the performance of medical students: a case study

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Abstract

This study was done to investigate how female students are performing in a programme which has traditionally been dominated by males and with stereotyped beliefs that male students perform better than their female counterparts. The study brought to the fore that female medical students are outperforming male students. The research also describes the student’s profile and learner characteristics and study preferences. The authors are of the opinion that studies such as this will contribute towards eliminating the biases, stereotyping and prejudices against women in the traditionally male dominated medical profession.

INTRODUCTION

The restructured South African higher education system is expected to establish, among others, equity targets with the emphasis on learning programmes in which more blacks and women students should be included. However, access to learning programmes such as medicine has always been male dominated. Throughout the 20th century the education of females was considered something of a problem in terms of how much and what types of learning programmes they enrolled for (Hyde-Clarke Humphries 2000:27). In some areas of learning, masculinity, male perspectives, male experiences and histories were depicted as central and normal, whilst perspectives on female learning were devalued and omitted. It is only recently that it was recognised that female achievement differed from that of males, both in level and in subject (Coats 1994:11) and that female students are not inferior to their male counterparts. In fact, in some instances, like in our study, female students start to outperform males. Given the latter fact, the authors decided to investigate the academic performance of female students studying Medicine at the University of the Free State. We were particularly interested in investigating which factors contributed to this and what deductions can be made from this phenomenon.

Potential contribution of the study to higher education

This was a case study conducted among female students studying medicine, as one of the male dominated professions, but the insight gained thereof is applicable to

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other male dominated professions such as accounting and engineering. The information about academic and non-academic factors affecting the academic performance of females in this study is also applicable not only to accounting and engineering but also to other females studying in higher education institutions. It is important to note that the recommendations regarding the maintenance of the high academic performance of females made in this study are also applicable to other learning programmes. Some of the recommendations mentioned are:

When selecting students for learning programmes that are male dominated, the applications of female students should be analysed so that when they start their studies they are given special attention. Academic support programmes can play a very important role by monitoring the academic performance of these students and motivating and supporting them.

Other support initiatives such as mentoring, study groups and extra tutorials can be applied to support the female students. Other females who are qualified medical doctors, accountants and engineers can be involved by mentoring the female students.

Theoretical perspectives on the academic performance of females

Petersen and Gravett (2000:16) refer to literature documenting the position of women in higher education in North America, Australia and Europe which generally describes women as outsiders in academia and questions whether it is possible for women to pursue academic careers successfully, given the patriarchal nature of academia. In African studies, females’ education has been plagued by a pedagogic difference, which stresses the differences between male and female. This literature also draws attention to the fact that for many decades, disciplines such as Accounting, Medicine and Engineering were reserved for male students. Also in South Africa studies about the position of women in South African higher education confirmed that, in spite of progress reported, the academic environment is to a great extent still male dominated (De la Rey 1998:30). We all know by now that there is no scientific and particular reason for female students not to enrol for certain qualifications and for not making a success thereof. Aspects which are indeed contributing towards students’ success, are academic factors (eg admission variables, learning styles, teaching methods and the learning environment, among others) and non-academic factors (eg gender, personality and academic support, etc).

ADMISSION VARIABLES

The issue of assessment for admission into the university and its prediction on academic success is important. In the case of South Africa, concern about predictors of university academic performance is greatly due to racially discriminating education policies. As a result, doubts have been expressed about
the adequate comparability of standard entrance criteria, such as final school examination performance. However, previous research on factors associated with university performance has consistently shown that final school aggregate is the strongest predictor of academic success (Badenhorst, Foster & Lea 1990:39). The criteria medical schools use to select medical students are quite uniform. They include academic ability, insight into medicine, extracurricular activities and interest, personality, motivation, as well as linguistic and communication skills. However, very few studies provide a comparative analysis of the predictive power of the wide variety of factors used in combination for selecting medical students (Ferguson, Madeley & James 2002:8).

A study conducted by the University of New Castle in Australia examined the relationship between a number of admission variables and performance in its medicine degree. Students entering its medical school are classified according to four categories. The first classification is the ‘academic candidates’ who have scored in the top one to two percent of matric results. These applicants undergo written psychometric tests, but are only selected on the basis of their performance during an objective, structured interview. The second classification is the ‘composite candidates’ who have scored in the top 10% of matric results. The third classification is the ‘eligible Aboriginal’ or ‘Torres Islander candidates’ who must obtain either a pass level in at least one year of higher education degree, or score marks at secondary level that would allow them to matriculate to university. These candidates are selected according to performance during interviews with community and faculty members as well as performance in group problem-solving and self-directed learning tasks. The last classification, being the ‘overseas candidates’, must meet a standard level of English competency and achieve a satisfactory level of academic ability as judged by performance in final examinations at either secondary or tertiary level. These students must also score high on the objective structured faculty interview (Kay-Lambkin, Pearson & Rolfe 2002:154). It was found that those students entering the university through the first pathway, being the ‘academic candidates’, show better academic performance. Students entering through the third and fourth pathway, being the ‘eligible Aboriginal’ or ‘Torres Island candidates’ and the ‘overseas candidates’, experience academic difficulty.

According to Meleca (1995:59), there is agreement that Grade Point Averages (GPAs) and Medical College Admission Test (MCAT) scores are valid indicators of academic ability. It is also believed that pre-admission academic information should be used in conjunction with other data sources. Meleca (1995) believes that universities should use a system which combines cognitive and non-cognitive variables when selecting medical students. Although data from a number of studies show that the link between individual aptitude from medical education and medical school achievement is in substantial, validity studies carried out by several investigators provide evidence to the contrary.
LEARNING STYLES

A factor associated with academic performance is the particular learning style utilised by a student. This is the strategy that a student brings into the learning situation and is influenced by personal characteristics, previous learning experiences, and the learning environment. A learning style is also associated with whether the student follows surface, strategic or deep approaches to learning. A student who is a surface learner memorises lists of superficial knowledge; the strategic learner focuses on the requirement of assessment; whilst the deep learner searches for understanding and meaning (Aaron & Skakun 1999:260). A person’s learning style is a combination of three factors. First, it is how one perceives information. Second, it is how one organises and processes information. Third, it is the conditions necessary to help the learner to take in and store information learned (Dryden & Vos 1994:347).

Potgieter (1999:11), who identifies four categories of learning styles in Kolb’s Experiential Learning Model, makes another useful distinction in terms of learning styles. These are the so-called convergent, divergent, assimilative and accommodative learning styles.

The first category consists of individuals who exhibit the convergent learning style. These individuals like to solve problems, make decisions, and apply ideas practically. They are good at dealing with situations where a single correct answer or solution to a problem is required and they organise knowledge to focus on specific problems by means of hypothetical-deductive reasoning. They prefer dealing with technical problems rather than social and interpersonal issues and are relatively unemotional.

The second category, being the divergent learning style, is different from convergers. Individuals in this category adapt by viewing concrete situations from many perspectives and tend to organise many relationships into a meaningful gestalt. They stress adaptation through observation rather than action. People in this category perform well in situations which require the generation of alternative ideas and implications. They enjoy relating to other people and are emotional in nature.

The third category is the assimilative learning style. People in this category prefer inductive reasoning, creative theoretical models, while also assimilating dissimilar observation into integrated explanations. They are more concerned with ideas and abstract concepts. These individuals are less focused on people and therefore have some aspects in common with convergers.

People in the last category, being the accommodators, have as their greatest strength adaptation through opportunity-seeking, risk-taking and action. They also find it easy to adapt to rapidly changing circumstances. They solve problems in an intuitive trial-and-error manner and rely more on others for information than on their own analytical ability. Accommodators are at ease with people, but are sometimes perceived as impatient.
According to Ferguson et al (2002:6) results from studies using Kolb’s learning style model suggest that students with a convergent learning style tend to perform better than those with the other three identified learning styles. Adopting a strategic or convergent learning style seems to be a successful strategy for students who wish to succeed. Convergers also perform well in conventional examinations where there is only one correct answer to a question. This is attributed to a preference for using hypothetical deductive reasoning. Assimilators may also have the same advantage when test formats require a single best answer. The two styles have a common preference for abstract conceptualisation, which demonstrates a significant correlation with performance on objective, single best answer, multiple-choice examinations. Knowledge of the strengths and weaknesses of various learning styles, along with their implications for academic performance, may give students insights into their own conceptual patterns and thus allow them to modify non-productive habits and strengthen beneficial ones (Lynch, Woelfl, Steele & Hanssen 1998:66).

THE IMPACT OF THE LEARNING ENVIRONMENT

Students’ approaches to learning are influenced by the learning environment created by the characteristics of teaching and learning, of the lecturers, the atmosphere, the academic self-perception and social self-perception. The students’ perceptions of these aspects of their learning environment usually correlate with their approaches to learning. The way in which the learning environment is perceived by students, may foster them to be highly engaged in learning, while at the same time these environments may foster low levels of quality engagement in other students. A supportive learning environment and interventions that remedy unsatisfactory elements of the environment should be designed and implemented if effective and successful learning and high academic performance are to be achieved. However, students may experience and perceive the same learning environment differently. This perception may be related to their previous experience in a previous learning environment and will influence the way in which they will approach learning. The way they will approach their learning will determine academic outcomes, and thus performance (Prosser & Trigwell 1999:81; Pimparyon, Roff, Mcalleer, Poonchai & Pema 2000).

In a constructivistic learning environment learners are supposed not to be passive recipients of explicit knowledge and instruction, but rather active participants using high order thinking skills and multiple perspectives of a phenomenon to construct their own knowledge and meaning. This signals a shift from reproduction and rote learning to higher order learning activities and an emphasis on deep and investigative styles of learning. Such a learning environment relies heavily on student-independent self-regulated strategies (Jacobs & Hay 2000:5). Most medical courses aim to promote and sustain learner autonomy. This is the ultimate aim of establishing lifelong learning in accordance with the general
Medical Council’s requirements and the demands of the rapidly changing world of medical practice. Autonomy implies the learner’s ability to manage a learning environment to meet personal needs. This, in turn, implies flexibility and potential responsiveness of the environment itself.

NON-ACADEMIC FACTORS ASSOCIATED WITH ACADEMIC PERFORMANCE

The most relevant non-academic factors for this study can be classified under personality, gender and support factors.

Personality

Eight personality sub-scales have consistently emerged as predictors of success in higher education studies. These are dominance, tolerance, wellbeing, responsibility, achievement via conformance, and achievement via independence. Dominance has been shown to correlate with multichoice questions scores. Tolerance has correlated with the ability to use numerical data and make calculations. Wellbeing and achievement via conformity are correlated with success in oral examinations. Other relevant personality traits associated with performance are perfectionism and maladaptive perfectionism. Perfectionism may be a relevant personality characteristic to study in medical students. Faultless performance, meticulous attention to detail and high levels of competency generally represent desirable characteristics of medical students and physicians, yet students with excessively high standards may have difficulty completing assignments and may experience additional self-imposed pressure. Adaptive perfectionism in medical students is associated with conscientiousness and high academic expectations. Students with highly perfectionist personalities may experience dissatisfaction with academic performance despite acceptable academic performance. Maladaptive perfectionism is associated with neuroticism and symptoms of distress (Ferguson et al 2002:4).

A personality trait of social anxiety and phobia is prevalent within a university population. Students with social anxiety and phobia have problems with academic adjustment and academic success. As a result, they may receive poor grades due to a lack of class participation; avoiding classes requiring public speaking; and having difficulty in interacting with figures of authority and classmates (Strahan 2002:2). Previous investigations have identified a number of personality traits that may have an impact on the emotional adjustment and/or academic performance of medical students. It has been proven that dependent and self-critical personality traits lead to symptoms of depression in medical students. Personality variables such as enthusiasm, resourcefulness and imaginativeness have shown to correlate with academic success. Conscientiousness, agreeableness, extroversion and, to a
lesser extent, neuroticism have been associated with intellectual satisfaction (Enns, Cox, Sareen & Freeman 2001:1034).

Women tend to feel better equipped with the interpersonal skills necessary for developing an empathic relationship with patients. Men, on the other hand, appear to feel more confident in attributes associated with the ‘great detective’ style of patient interaction. Women value the psychological aspects of care more than men and tend to perform well in such skills (Clack & Head 1999:103).

**Gender**

There is evidence of gender-related differences in response to the learning environment in school children. Boys are found to be independent of contextual cues, working on their own without reference to others. Girls are more concerned with what others around them are able to achieve and look for external evaluations, assessment and feedback. While boys attribute failure to a lack of basic ability, girls are more prepared to accept that it might be a question of hard work. They are also prepared to accept that better understanding of and collaboration with the environment might improve their performance. These effects seem to persist throughout higher education. Highly achieving men attribute success and failure to themselves and their own innate ability and effort. Male students who perform poorly may thus believe that this indicates low ability and may then avoid the risk of appearing incomplete with further loss of self-esteem by refusing subsequent challenges. Highly achieving women also rate ability highly, but attribute success more to external forces than men. Males are known to evaluate themselves against a strongly internalised set of standards. It seems likely that men who achieve well are those who frequently evaluate themselves against the same set of standards against which their achievements will be judged. Women’s standards seem to more closely reflect social influences and their sense of self-efficacy appears to be heavily dependent on what is happening around them. Because women make their standards more readily available for checking against those of others, they seem less involved in stressful, heavily internalised self-assessment (Chaput de Saintonge & Dunn 2001:1025).

**Support**

Support of students in education could be financial, emotional, religious and/or academic. Support persons could be family and friends, while emotional support could come from friends, family, faculty members or God (Jacobs 2002:4). Academic support is one of the buzzwords at universities nowadays. Everyone is concerned with maintaining standards and exit levels while allowing greater access. Different higher education institutions have developed academic support programmes to bridge the gap between school and university. Institutions use strategies such as foundation courses; offering separate first-year subjects such as
English; making help available to those who need it; building academic support into every first-year course by focusing on reading and writing skills, discipline-related concepts and vocabulary; helping students to reflect and solve problems (Kilfoil 1996:205).

INVESTIGATING THE ACADEMIC PERFORMANCE OF FEMALE STUDENTS IN THE LEARNING PROGRAMME FOR PROFESSIONAL MEDICINE (PPM)

When the new learning Programme for Professional Medicine (PPM), also known as Curriculum 2000, started in the year 2000, the authors developed an interest in the admissions and academic performance of female students selected in the programme. According to records available from the administration office of the School of Medicine at the University of the Free State, the number of females admitted to the PPM is increasing annually. In the year 2000, out of the total admission of 90 students, 46 were females and 44 were males. In the year 2001, out of a total of 125 students, 70 were females and 55 were males, whilst in 2002, 84 females and 56 males were admitted.

As far as academic performance of the learners in the new PPM is concerned, the following was found: Out of the 46 females in 2000, 18 obtained 75% and more in three or more modules as compared to 10 males out of the 44. Out of the 70 females in 2001, 33 obtained 75% or more in three or more modules as compared to 15 males out of the 55. Out of the 84 females in 2002, 37 obtained 75% or more in three or more modules as compared to 16 males out of 56. This trend in academic performance indicates that the performance of the female students correlates with the trend in their applications – namely being high academic achievers.

THE RESEARCH PROBLEM

Despite the fact that there is a change in the trend of academic performance of medical students, the perception notwithstanding exists that the medical profession is still male dominated and that males perform better academically than females. It was this perception that gave impetus to this study. The main research question was to determine what causes female students in the PPM to achieve high academic performances and how consistent they are with their performances.

RESEARCH METHODOLOGY

According to Mouton (2001:65), secondary data analysis can be used by using existing data. This type of data analysis was used to obtain information on the entry points and the examination results of the female students in the PPM. A quantitative approach is typically used to answer questions about the relationship among measured variables with the purpose of explaining, predicting and
controlling phenomena (Leedy 1997:104). This approach was used to analyse the students’ examination results. A qualitative approach is typically used to answer questions about the nature of the phenomena with the purpose of describing and understanding phenomena from the participants’ point of view (Leedy 1997:104). An open-ended questionnaire was used to describe and understand factors contributing to the high academic performance of the female students. The research approach used in this study is a case study because the investigation was done at School of Medicine at the University of the Free State. The research explores the academic performance of female students over a period of time. According to Leedy (1997:157), a case study is a type of qualitative approach in which the researcher explores a single entity or phenomenon bound by time and activity and collects detailed information by using a variety of data collection procedures during a sustained period of time.

**SAMPLING AND RESEARCH PARTICIPANTS**

The researcher selected female students who had obtained three or more distinctions in the six modules of the first-year examination of the first semester. In the end, 87 students were selected as a sample, resulting in 36 first-year students who had started their studies in the PPM in the year 2002; 33 second-year students who had started their studies in the PPM in the year 2001; and 18 third-year students who had started their studies in the PPM in the year 2000. A response rate of 69% was obtained.

**ACADEMIC PERFORMANCE OF THE TARGETED GROUP**

- 39% of the third-year students had obtained three or more distinctions during their first examination.
- 47% of the second-year students had obtained three or more distinctions during their first examination.
- 49% of the first-year students had obtained three distinctions or more during their first examination.

The study indicates that the first-year female students obtained more distinctions than the second- and the third-year students. The reason for the increase in the number of distinctions from the year 2000 to 2002 could be that the 2000 group, who were in their third-year of study in 2002, were the pioneers of the new curriculum. The second group in 2001 could have received more support and advice from the 2000 group on how to approach their studies. The 2002 group was in the fortunate position of having two groups giving them advice and acting as their mentors.
**BIOGRAPHICAL DATA OF THE RESPONDENTS**

The respondents were required to indicate their race group. According to our findings, more white students than any other race are high academic achievers. This number corresponds with the number of white students admitted to the PPM. The number of black students was the same as the number of coloured students. There seems to be a discrepancy in these numbers, since the number of black female students admitted is more than that of the Coloured female students. The fact that black students do not have a good academic scholastic background should be taken into account. The fact that there were only two Indian female students who were high academic achievers, is acceptable, since the number of Indian students admitted was fewer than that of any other race.

All the respondents were single. The fact that the students were unmarried means that they did not have any responsibilities associated with marriage and therefore had enough time to study. All the respondents in the study were between 17 and 22 years of age. They seemed to be students who were self-disciplined, since students at this age usually have problems in managing their personal, social and academic life, especially in universities where they are expected to be independent. Most of the students were from Afrikaans public schools with a few from private English-medium schools. 90 percent of the respondents were admitted with their first application. The M-score of the respondents ranged between 42 and 54. An M-score of 54 is far above the required 36. This is an indication that these students had the intellectual ability to be high academic achievers.

**PREFERRED LEARNING STYLES**

Five of the students indicated that they utilised more than one learning style. Since medicine is a profession dealing with people, it is surprising that most of the respondents used a convergent learning style. Convergers are individuals who are relatively unemotional. In the case of medical students, the ideal would be to have more divergers or accommodators who enjoy relating to people, are emotional, and who are at ease with people.

**Table 1:** Learning styles of the respondents

<table>
<thead>
<tr>
<th>Learning style</th>
<th>Response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convergers</td>
<td>47%</td>
</tr>
<tr>
<td>Diversers</td>
<td>30%</td>
</tr>
<tr>
<td>Assimilators</td>
<td>17%</td>
</tr>
<tr>
<td>Accommodators</td>
<td>22%</td>
</tr>
</tbody>
</table>
INTELLECTUAL ABILITY

The respondents were required to pass judgements on their intellectual ability, ranging from highly intelligent to below average. 17% of the respondents indicated that they perceived themselves as highly intelligent, whilst 63% perceived themselves as being highly above average, and 20% indicated average.

STUDY METHODS EMPLOYED BY THE RESPONDENTS

The respondents had an opportunity to select more than one option from a given list to indicate which study methods they employed.

Table 2: Study methods employed by the respondents

<table>
<thead>
<tr>
<th>Study method</th>
<th>Response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual study</td>
<td>75%</td>
</tr>
<tr>
<td>Discussions</td>
<td>10%</td>
</tr>
<tr>
<td>Making notes/summaries</td>
<td>53%</td>
</tr>
<tr>
<td>Mind maps</td>
<td>25%</td>
</tr>
<tr>
<td>High emphasis on memorising</td>
<td>60%</td>
</tr>
<tr>
<td>Attentively reading through material</td>
<td>29%</td>
</tr>
</tbody>
</table>

Most of the respondents preferred to study alone and did not like to engage in discussions. It is interesting to note that the respondents preferred memorising. There seems to be a relationship between the memorising and the learning style of the respondents, because individuals who are convergers, prefer situations where a single correct answer to a question is required. The tendency would be to memorise the answers. It is hoped that the type of memorising that they preferred is memorising with understanding, rather than rote memorising which does not lead to understanding.

TEACHING METHODS

The low percentage of class discussions, seminars and group projects indicate that most of the respondents preferred studying on their own.
Table 3: Teaching methods preferred by the respondents

<table>
<thead>
<tr>
<th>Teaching methods</th>
<th>Response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct study of material in textbooks/notes</td>
<td>60%</td>
</tr>
<tr>
<td>Self-instruction by using audio-visual media</td>
<td>8%</td>
</tr>
<tr>
<td>Lectures</td>
<td>60%</td>
</tr>
<tr>
<td>Demonstrations</td>
<td>55%</td>
</tr>
<tr>
<td>Small group discussions</td>
<td>30%</td>
</tr>
<tr>
<td>Class discussions</td>
<td>10%</td>
</tr>
<tr>
<td>Group projects</td>
<td>8%</td>
</tr>
<tr>
<td>Seminars</td>
<td>8%</td>
</tr>
</tbody>
</table>

**TIME MANAGEMENT**

One would expect high academic achievers to study according to strict schedules. However, this does not seem to be the case in our study. Only 47% of the respondents indicated that they used a timetable to study. This response demonstrates that one can still be a high academic achiever in spite of not having a rigid timetable. Most probably the respondents were sufficiently internally self-disciplined and motivated and did not need external mechanisms to regulate their learning.

**CONSISTENCY IN ACADEMIC PERFORMANCE**

The researchers were interested in analysing the consistency rate of the respondents in as far as how they continued obtaining distinctions throughout their years of study. This question was relevant to the second- and the third-year students only, because at the time of the study they had written more than one examination.

**CONSISTENCY AMONG THE SECOND-YEAR STUDENTS**

The scale of 1–6 only applies to the first semester of the first-year, since that was the only time that they had the module on general skills. They wrote five examination papers in the subsequent years of study. Most of the distinctions were obtained during the first semester of the first-year. There is a decrease in the number of distinctions from the second semester of the first-year until the first semester of the second-year. This is an indication that the students had not been
consistent with their high academic performance. The reason for the decline in the number of distinctions could not be determined. The researchers recommend a further study to determine the reason for the decline in the number of distinctions among the second-year students.

Table 4: Consistency among second-year students

<table>
<thead>
<tr>
<th>Level of study and semester</th>
<th>Number of modules passed with a distinction and the response rate Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>1 M  2 M  3 M  4 M  5 M  6 M</td>
</tr>
<tr>
<td>1st semester</td>
<td>2  7  8  7</td>
</tr>
<tr>
<td>2nd semester</td>
<td>1  6  6  5</td>
</tr>
<tr>
<td>2nd year</td>
<td>1 M  2 M  3 M  4 M  5 M</td>
</tr>
<tr>
<td>1st semester</td>
<td>4  3  4  3  2</td>
</tr>
</tbody>
</table>

CONSISTENCY AMONG THE THIRD-YEAR STUDENTS

Table 5: Consistency among the third-year students

<table>
<thead>
<tr>
<th>Level of study and semester</th>
<th>Number of modules passed with a distinction and the response rate Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>1 M  2 M  3 M  4 M  5 M  6 M</td>
</tr>
<tr>
<td>1st semester</td>
<td>1  2  4  2</td>
</tr>
<tr>
<td>2nd semester</td>
<td>1  3  1  2</td>
</tr>
<tr>
<td>2nd year</td>
<td>1 M  2 M  3 M  4 M  5 M</td>
</tr>
<tr>
<td>1st semester</td>
<td>3  3  2</td>
</tr>
<tr>
<td>2nd semester</td>
<td>1  3  4</td>
</tr>
<tr>
<td>3rd year</td>
<td>1 M  2 M  3 M  4 M  5 M</td>
</tr>
<tr>
<td>1st semester</td>
<td>4  3</td>
</tr>
</tbody>
</table>

The third-year students in the year 2002 were the pioneers in the PPM, since they were the group who started with the new curriculum in the year 2000. This is the
group who will give a clear picture of the consistency of the female students in the PPM. The main findings were that the number of distinctions on the scale of 3–5 decreased during the second semester of the first-year. However, the number of distinctions started to rise from the first semester of the second-year until the first semester of the third-year. The trend is that the third-year students who were the pioneers of the PPM were consistent with their high academic performance.

OTHER FACTORS CONTRIBUTING TO THE HIGH ACADEMIC PERFORMANCE

Students were in the last instance requested to identify any other factor that contributed to their academic performance. The following responses were indicated most frequently:

- Most of the respondents mentioned God as another factor contributing to their academic performance. They specifically mentioned ‘Trust in God, talent from God, academic blessing from God, and a desire to be a Christian doctor’.
- Dedication.
- Motivation.
- Study groups.
- Studying previous test/examination papers.
- Self-confidence and discipline.
- A balanced lifestyle.
- Good time management.
- Perfectionism resulting in conscientiousness.

RECOMMENDATIONS REGARDING SUSTAINING THE HIGH ACADEMIC PERFORMANCE OF FEMALE STUDENTS

Since the study has highlighted the high academic performance of female students in the medical field, it is important that female students should be motivated and supported to continue performing high. The motivation and support should not only be provided to the female students who are identified as high academic achievers, but should also be provided to all female students admitted to the medical programme. The researchers believe that when the females in the medical profession continue outperforming their male counterparts, the stereotyping in the male-dominated medical profession will be eliminated. Continuation of high academic performance of female students will lead to the recognition of the other qualified females in the medical profession. The hope is expressed that this will lead to female academics appointed in more senior academic and management positions in medical faculties. It is therefore important that measures be taken to sustain the academic performance of those females who have proven to be high academic achievers. Measures should also be taken to improve the academic
performance of all the female students in the medical programme. These measures could include, among others, the following:

- Analysing the applications of all the female students who have applied for medicine to determine their school academic performance: applications show which students need more academic support than others. Support structures such as the Division of Student Learning and Development (DSLD) and the mentoring programme can give special attention to these female students. Students who are high academic performers should also be motivated to use the support structures in order to sustain their performance. The DSLD can provide support by means of equipping learners with critical cross-field skills.
- Early identification of the learning styles of the female students to strengthen their dominant learning preferences and modify the learning styles that are not appropriate for a particular learning content is imperative.
- Encouraging the students to consult their lecturers in cases of subject-specific academic support.
- Making the learning environment more conducive and positive so that the students can perceive it that way, and thus develop effective learning approaches.
- Encouraging the students to form study support groups.
- Involving other female medical professionals to support female students.
- Conducting further studies to determine both positive and negative factors affecting the academic performance of female students.
- Enhancing the positive factors which affect the academic performance of female students and eliminating the negative factors which affect their academic performance.

CONCLUSION

The research in this study was undertaken because of the realisation that the female students’ access to the medical programme is increasing. The increase in access has been accompanied by success in their academic performance. In addition, the academic success of the female students proved to be higher than that of the male students. Based on the above information, an investigation was done to look into the reasons contributing the high academic performance of the female students. The study has shown that there are a variety of factors that enabled the female students to achieve higher academically. In spite of the different factors identified, it seems that the females in the study were a self-disciplined group of individuals who had been blessed with the intellectual ability to be high academic achievers.
REFERENCES


