

PIQUE-ing an interest in curriculum renewal

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Background. The primary aim of undergraduate medical training at South African medical schools is to prepare the graduates adequately for internship. If we are to attain this objective, it is crucial to evaluate the ability of our graduates to cope with the demands of internship.

Objective. To determine the extent to which first-year interns from Stellenbosch University (SU) considered that their undergraduate education prepared them for internship.

Methods. The Preparedness for Internship Questionnaire (PIQUE) is based on Hill's Preparation for Hospital Practice Questionnaire, with additional questions covering core competencies and exit outcomes that SU has determined for its medical curriculum. Participants were asked to respond to a series of statements preceded by 'My undergraduate medical training prepared me to ...', and also two open-ended questions. SU's MB ChB graduates of 2011 ($N=153$) were invited to participate in the online survey.

Results. Although the response rate was only 37%, graduates generally thought they had been well prepared for most mainstream clinical activities. However, there were areas in which respondents considered they could have been better prepared, specifically pharmacology, medicolegal work, minor surgery and the non-clinical roles that interns encounter.

Conclusion. PIQUE appears to be a useful tool that can assist with curriculum renewal by highlighting areas that graduates feel they could be better prepared for. This challenges us to identify how curricula and teaching can be adjusted accordingly.

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Background

Medical education needs to prepare graduates for clinical practice by providing them with the basic clinical skills, knowledge and attitudes that they require once they commence their internship years.^[1,2] Newly qualified medical graduates are required to progress swiftly from apprentices to practitioners as they move from the relatively protected academic environment to service in the public health system. In South Africa, this system is characterised by considerable variability in terms of resources and management.

In recent years medical education has included a wide range of innovative teaching and learning approaches, particularly in the domain of clinical skills training.^[3,4] Even if these innovations are typically based on sound pedagogical principles, it is necessary to evaluate their effectiveness. These studies often seek to obtain the perceptions of interns regarding the extent to which their undergraduate years prepared them for the internship experience.^[3,4-7] While some of the studies adopt qualitative methods by conducting semi-structured interviews to elicit student perspectives,^[8] a survey design to reach larger numbers of interns is a common approach.

Evaluation studies provide insight into the intern's experience and point to a number of generic issues. The first year of internship is often described as stressful. During this year interns are responsible for patient care, learn new skills and assist in procedures without prior experience.^[1,2,6] Some interns find the application of their knowledge to practise rather challenging.^[6] An Australian study reported that interns felt well prepared to conduct basic procedures, complete ward round documentation, complete routine patient assessment, request investigations, review ECGs and communicate with other staff.^[7] However, this group described feeling less prepared for

handing over to night staff, managing medication and fluid status, assessing unstable patients, admitting patients and communicating with parents and families.

Other studies describe how intern confidence in their skills increased over time,^[6,8] while qualitative studies add a richer texture to the picture of preparedness as interns identified issues such as the 'stress of transition' and the difficulty of dealing with others, with uncertainty and with death.^[8] These studies are strongly context bound, which raises questions as to their applicability in South Africa. In his 2002 study on community service (CS) for health professionals in South Africa, Reid^[9] called for health sciences faculties 'to address the gaps between the skills and attitudes of their graduates and the realities of the health of the South African public as experienced by community service professionals'. We would argue that the need to address these deficiencies includes the internship experience, which falls between formal studies and the CS year, and that South African studies investigate these gaps.

Although there are broad guidelines with regard to what should be included in undergraduate medical curricula internationally,^[10] and most countries have national guidelines or regulations such as those promulgated by the South African Minister of Health in consultation with the Health Professions Council of South Africa (HPCSA),^[11] interns reflect the training that they received at the institutions at which they studied. The way in which curricula are conceptualised, the teaching approaches that are adopted (e.g. traditional models, problem-based learning, competency-based approaches), and the clinical training locations (e.g. academic hospitals, primary care clinics, rural schools), influence the student's experience and, therefore, the intern's sense of preparedness.

The Profile of the Stellenbosch Doctor is articulated as follows:

'... doctors who have the knowledge, skills and attitudes to optimally utilise the opportunities available during the two-year internship so as to function autonomously in the primary health care sector thereafter, and who have acquired the ability and insight to develop further personally and professionally.'^[12]

In recent years the MB ChB programme at SU has undergone significant reform. These changes have consistently been informed by prevailing trends in medical education and the body of scholarship with regard to teaching, learning and assessment. This has resulted in changes to both the nature and structure of clinical exposure during the six years of the programme, and we considered it necessary to explore the extent to which our graduates feel prepared for internship. While we routinely evaluate all our programmes by student feedback, tracking the opinion of graduates occurs less frequently.

Our research question was therefore to determine the extent to which our graduates felt prepared for internship. Our intention was twofold: to provide some validation for the ongoing curriculum renewal activities and to present a snapshot of the perceptions of our graduates at a particular point in their internship. We aimed to use the findings to inform decision-making with regard to future refinement of our curriculum.

Methods

A survey design was adopted. As this study was nested within a larger research project, ethical approval for the survey was obtained as part of the former study (HREC approval: N12/03/014). The Preparedness for Internship Questionnaire (PIQUE) was designed based on the Preparation for Hospital Practice Questionnaire (PHPQ) used by Hill *et al.*^[2] in their 1998 study in Australia. To customise the questionnaire for our context, additional questions were included to ensure that we covered the range of core competencies that had been adopted by the faculty and the Profile of the Stellenbosch Doctor.^[12] The final questionnaire comprised two sections.

Section 1 asked the participants to respond to a series of 48 statements preceded by 'My undergraduate medical training prepared me to ...'. It was emphasised that they were not being asked whether they were exposed to training in these areas, but rather how prepared

they considered themselves to carry out these functions/tasks (Appendix 1).

A rubric was given to the participants for their scoring (Table 1).

Section 2 of the questionnaire comprised two open-ended questions, asking interns to elaborate on three competencies that they believed they were particularly well prepared for and three competencies that they could have been better prepared for in their role as interns.

Face validity was confirmed by five faculty experts. Changes were made based on comments and suggestions by the team. The questionnaire was translated into Afrikaans and the accuracy of the translation was checked by re-translating back into English. After piloting the survey with second-year interns ($n=5$) to assess validity, some of the questions were rephrased for clarity.

After obtaining ethics approval, we sourced contact information for 153 of the 177 SU MB ChB graduates of 2011 who were in their first year of internship. An invitation to participate in the online survey was e-mailed to them. The survey was available from July to September 2012 using the university's online web-based e-Survey

service. Up to four reminders were sent to non-responders during the duration of the survey. A unique anonymised identifier was assigned to each respondent.

Results

The response rate was 37% ($n=56$). Responses were captured on an Excel spreadsheet. The Likert-scale questions were subjected to descriptive analysis, while the open-ended questions were organised thematically.

Firstly, we calculated a mean overall preparedness score per intern (Fig. 1). Those who scored 4.5 or higher were deemed to be 'fully prepared'. 'Well prepared' interns were placed between 3.5 and 4.4, and so forth. Importantly, there were no interns who felt less than 'fairly well prepared' across the full set of questions.

The responses to each task were then analysed. For the purposes of reporting, responses of 'fully prepared' and 'well prepared' were combined as 'well prepared', while 'a little prepared' and 'not prepared' were combined as 'less than adequately prepared'. We then reported on the tasks where the frequency of 'well-prepared' or 'less than adequately

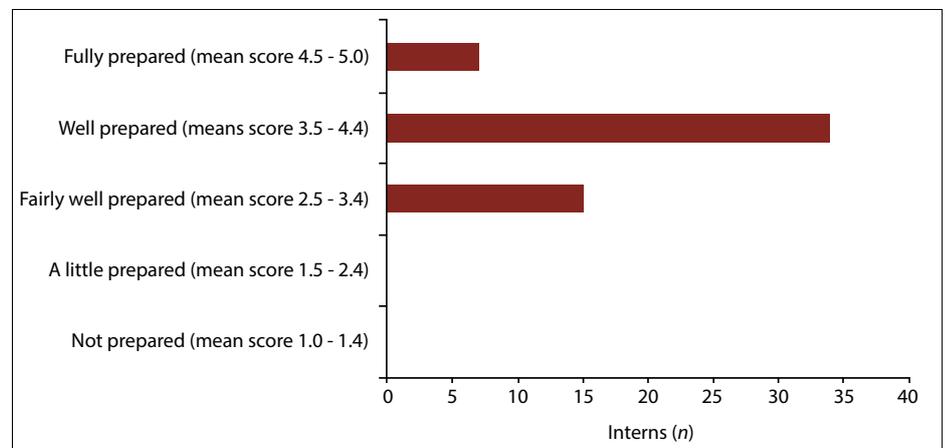


Fig. 1. Number of interns per overall preparedness category.

Table 1. Scoring rubric used in questionnaire

Score	Preparedness Category	Description
1	Not prepared	I did not know how to do this/I do not feel prepared to do this yet, even with supervision
2	A little prepared	I was rather unsure of how to do this/I needed someone to guide me through the process
3	Fairly well prepared	I was fairly sure of my ability/I was willing to try with some help
4	Well prepared	I felt that I knew how to do this/I could do this, but would have liked to have someone to check my work
5	Fully prepared	I knew how to do this really well/I felt able to do this well without any assistance

prepared' was deemed to be significant by being more than one standard deviation above the mean.

A significant number of interns thought that they had been 'well prepared' for the tasks listed in Fig. 2. Observing the score per task (potential range: 1 - 5), the mode was 5 for 'carry out a comprehensive physical examination', 'carry out basic ward procedures (e.g. drips, catheters)', 'treat each patient as an individual', and 'approach senior staff for help when I feel uncertain'. Undergraduate training seems to be delivering on these important basic tasks. It also appears that training occurs in an environment in which students feel able to admit to being uncertain and to ask for help.

Although the responses pointed more to preparedness than lack thereof, it is instructive to review those tasks for which a significant number of the interns felt 'less than adequately prepared' (Fig. 3).

The task for which the greatest number of interns in the cohort felt 'less than adequately prepared' was knowing how to approach medicolegal documentation.

When observing the tasks across the 5-point scale, however, there were only three tasks for which more than one or two interns felt that they had been 'not at all prepared'. These were knowing what to do with medicolegal documentation ($n=8$), knowing their professional role and responsibility in the event of social protest ($n=6$), and selecting drugs on the basis of the cost versus risks and benefits ($n=4$).

Of the 15 interns who had overall preparedness scores in the 'fairly well prepared' (lowest) category, the majority considered that they were 'less than adequately prepared' for the tasks set out in Fig. 4.

The responses to the open-ended questions clarified issues for which the interns thought they could have been better prepared. These included:

- small surgical procedures – dermatological and minor theatre procedures
- emergency medicine – being responsible for a resuscitation
- dealing with the workload – knowing how to triage patients, and time management
- work relationships – conflict at work, dealing with differences of opinion
- personal issues – stress management, life-work balance in the face of long hours
- management of common conditions.

These open-ended questions also provided additional information on what interns believed they were well prepared for. These included:

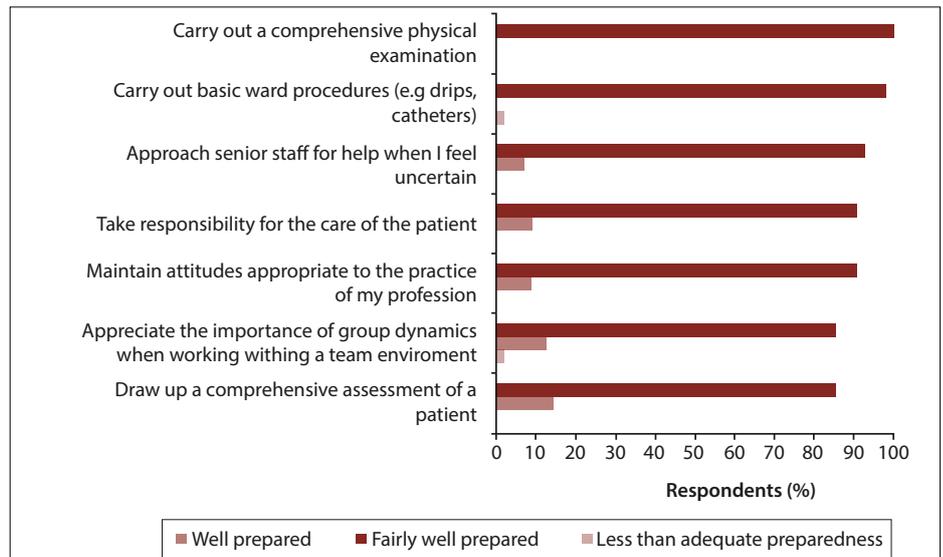


Fig. 2. Tasks for which a significant number of the respondents felt 'well prepared'.

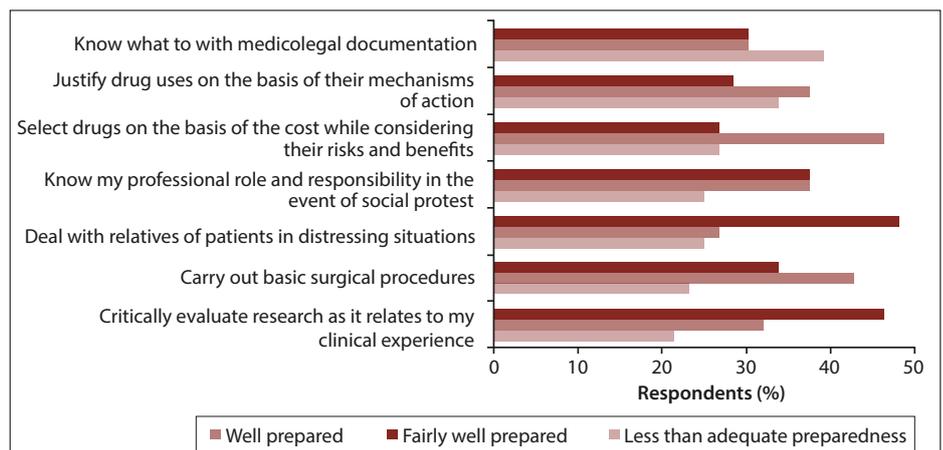


Fig. 3. Tasks for which a significant number of respondents felt 'less than adequately prepared'.

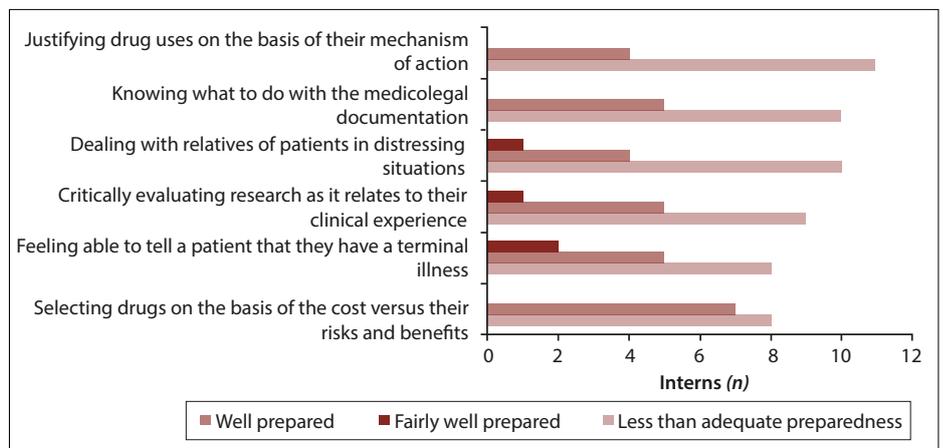


Fig. 4. Tasks for which the majority of fairly well-prepared interns ($n=15$) felt 'less than adequately prepared'.

- working life – long hours and a good work ethic
- confidence to do the ward work and make decisions
- advanced clinical abilities – drawing up a differential diagnosis and forming a management plan.

Discussion

In general, graduates from SU considered that they had been well prepared for most mainstream clinical activities. However, there were also areas respondents thought they could have been better prepared for. These primarily included the domains of pharmacology, medicolegal work, minor surgery, and the non-clinical roles encountered by them.

It is prudent to recognise that the aim of internship in South Africa, regulated by the HPCSA, is two years of additional experiential learning for MB ChB graduates. It can only be performed in HPCSA-accredited institutions and under the supervision of senior medical practitioners. Adequate completion of the internship requires proof of competence by supervisors and satisfactory completion of a standardised logbook designed by the HPCSA. It is, therefore, also recognised that certain knowledge and clinical skills and even attitudes could potentially be acquired during the internship years rather than during undergraduate medical training.

This begs the question: Are there clear expectations of what training should be completed prior to internship, and what can be expected during this period? As some graduates are allocated to non-teaching hospitals for their internship, one can speculate whether the supervising staff are likely to teach the tasks in which the graduates thought they were less than adequately prepared.

Although the response rate was only 37%, the findings of this study are reassuring as they suggest that medical graduates from SU perceive themselves to be adequately prepared for evaluating and managing individual patients, and for essential clinical duties and responsibilities associated with good patient care. Activities that a significant number of SU graduates considered themselves less than adequately prepared for mostly relate to administrative duties, but also to some important clinically related knowledge, skills and attitudes with regard to pharmacology, teamwork, breaking bad news, dealing with patients' relatives, evidence-based medicine and quality improvement practice.

The above findings may point towards opportunities for change in the content of the SU medical curriculum. Some of these issues have already been recognised and addressed, e.g. the introduction of clinical pharmacology and emergency medicine modules in the penultimate year of the six-year programme, as well as a longitudinal evidence-based healthcare theme extending over the entire curriculum.

Recent international and national developments in health professions education are beginning to impact on South African training institutions and curricula.^[13] These include the importance of transformative learning to aid our graduates in becoming leaders and change agents in the health system. Interdependence in education relates to, *inter alia*, the ability of SU graduates to function optimally in healthcare teams and as change agents.^[14] The finding that 16% of this cohort of graduates felt less than adequately prepared to participate in activities that contribute to the effectiveness of the healthcare facility in which they worked, indicates a need for training change agents that are better prepared for such activities. More than 85% of the cohort, however, felt well prepared to appreciate the importance of group dynamics when working within a team. This seems to indicate that the emphasis we place on interdisciplinary education in the SU curriculum has the desired outcome.

Our results suggest that it may be necessary to help clinician teachers to find ways to expose students to tasks such as completing medicolegal documentation and breaking bad news, as well as activities such as team

dynamics and dealing with patients' relatives. There may also have to be more opportunities for students to practise some of the basic procedures such as lumbar punctures and intercostal drain insertions while under the supervision of clinical teachers during undergraduate training.

Conclusion

The current international focus on the social accountability of medical schools has become important for the Medical and Dental Professions Board of the HPCSA. One of the main characteristics of a socially accountable training institution is its willingness to track its graduates and measure their performance after they leave the institution. This study is a first attempt at determining how well recent SU graduates are prepared for functioning as interns.

However, it is not a trivial task to determine which outcomes should be achieved during undergraduate training and which should be left to the relatively unpredictable environment of internship training. One would assume that basic clinical competence in the management of common and emergency conditions is a definite prerequisite for entering internship. Other non-lifesaving competencies related to matters not directly linked to the care of individual patients and best learnt in an experiential manner, might be safely relegated to the period of internship training, assuming that this be under adequate supervision. Performing basic surgical procedures are skills that might best be learnt during internship – with adequate supervision and teaching skills. This highlights the need for ongoing discussion between universities and those responsible for internship supervision to clarify what each party can reasonably expect of the other.

This survey highlights issues relevant to curriculum content. We should therefore ensure that curricular outcomes at SU include these tasks. As a team interested in faculty development, we also observe that there might be implications for ongoing professional development of clinicians as teachers. Many of the tasks for which the graduates believed they were less well prepared for are covered in existing curricular outcomes and most are part of everyday practice in any clinical training environment. This survey has provided insight into areas that could be pursued in helping clinician teachers to instruct students more effectively regarding tasks that they feel inadequately prepared for.

PIQUE appears to be a tool that can help with measuring the preparedness of medical graduates for their internship and for assisting with the ongoing renewal of curricula by highlighting areas for which SU graduates feel they could have been better prepared. As many of these appear to be in non-clinical areas, it challenges us to identify which elements of curriculum renewal are required to ensure that our graduates are well prepared for most of what awaits them in internship.

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Appendix 1. Preparedness for internship questionnaire

My undergraduate medical training prepared me to:

1. Handle most clinical emergencies
2. Cope with stress caused by my work
3. Recognise my own clinical limitations
4. Carry out basic surgical procedures
5. Discuss health risk behaviours with patients
6. Maintain attitudes appropriate to the practice of my profession
7. Cope with my own emotions in distressing clinical situations
8. Evaluate the impact of family factors on illness
9. Discuss relevant preventive health strategies with patients
10. Serve in administration and leadership roles if necessary
11. Carry out basic ward procedures (e.g. drips, catheters)
12. Justify drug uses on the basis of their mechanisms of action
13. Continually evaluate my own performance
14. Draw up a comprehensive assessment of a patient
15. Understand the interaction of social factors with disease
16. Appreciate the importance of a patient's cultural/ethnic background
17. Balance my work and personal life
18. Take responsibility for the care of the patient
19. Apply my knowledge of basic sciences to clinical conditions
20. Manage 'difficult' patients
21. Appreciate the impact of poverty and unemployment on illness
22. Feel able to tell a patient that they have a terminal illness
23. Evaluate my learning experience
24. Carry out a comprehensive physical examination
25. Behave in a calm manner in difficult situations
26. Invest time in developing my skills

continued...

Appendix 1 (continued). Preparedness for internship questionnaire

My undergraduate medical training prepared me to:

27. Appreciate the importance of group dynamics when working within a team environment
28. Know how to prioritise my day's activities
29. Select drugs on the basis of the cost versus their risks and benefits
30. Participate in activities that contribute to the effectiveness of the healthcare facility in which I work
31. Feel competent to counsel a distressed patient
32. Record clinical data systematically
33. Be sensitive to the needs of nursing staff
34. Provide education to patients
35. Demonstrate efficient and appropriate use of diagnostic procedural skills
36. Treat each patient as an individual
37. Deal with dying patients
38. Approach senior staff for help when I feel uncertain
39. Identify my own learning needs
40. Critically evaluate research as it relates to my clinical practice
41. Co-ordinate a comprehensive patient management plan with allied health professionals (e.g. physiotherapists)
42. Know my professional role and responsibility in the event of social protest
43. Know how to approach ethical dilemmas
44. Deal with my emotion when a patient of mine dies
45. Know what to do with medicolegal documentation
46. Function effectively in a resource-constrained environment
47. Know how to respond to the healthcare needs of the community within which I have been placed
48. Deal with relatives of patients in distressing situations