Do physiotherapy students perceive that they are adequately prepared to enter clinical practice? An empirical study

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Objective. To determine the perceived level of preparedness for clinical practice of third-year physiotherapy students.

Design. A prospective, descriptive study, using questionnaires to determine subjective perceptions and clinical test marks for objective measures of performance, was undertaken. Two different cohorts were recruited of third-year students entering clinical practice for the first time.

Method. A 17-item questionnaire relating to areas of competence was developed. Results of questionnaire scores and test scores from the 2 cohorts were amalgamated and analysed. Participants were grouped according to their clinical placement. The internal consistency of the questionnaire was tested using Cronbach’s alpha. As this was high at 0.847, the individual scores were added together and the mean score calculated. Analysis of variance (ANOVA) was used to establish if there was a significant difference in scores across different areas of competency and on test marks, across the different clinical settings.

Main outcomes measure. Means and 95% confidence intervals of the mean scores of each component of competence indicated a significant difference between the scores (p<0.001). One-way ANOVA and post hoc analysis revealed that the students perceived themselves as better prepared in affect (generic skills) than for intervention and overall preparedness ((F(4, 264)=4.8601, p<0.001). There were no significant differences between the competency mean scores (F(4,53)=0.804, p=0.528), or in the mean test scores, across the placements (F(4, 77)=0.438, p=0.781).

Results. Most of the students perceived their level of preparedness as relatively high across all areas of competence, regardless of placement. Students also achieved satisfactory (>60%) test scores, indicating realistic estimations of their ability.

Conclusion. The sense of readiness confirms the alignment of the classroom curriculum and clinical expectations, which has largely come about through the positioning of permanent clinical educators as essential links between the classroom and the clinical setting.

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and inconsistent, leading to high dissatisfaction levels.\(^{(17)}\) This situation may be in contrast to permanent academic staff, who are increasingly being required to undergo training in educational skills.\(^{(11)}\)

**Context**

At UCT, physiotherapy is offered as a 4-year Bachelor of Science degree within the Department of Health and Rehabilitation Sciences. A challenge facing the Division of Physiotherapy is to prepare students for the significant changes in healthcare delivery within the South African context, as highlighted by Shear et al.\(^{(19)}\) The design of the undergraduate curriculum should balance the need to provide undergraduate students with a strong foundation in the basic sciences, appropriate physiotherapy-specific skills and techniques, as well as developing critical thinking and the necessary generic skills needed in clinical practice. Ultimately, the obligation of the physiotherapy curriculum is to prepare students for the workplace, which is practical, socially interactive and contextually varied.\(^{(2,11)}\)

The initial 2 years of the programme concentrate on the basic sciences and principles of physiotherapy. Clinical exposure starts in the second year, with weekly sessions of supervised group clinical work. From the third year of study, students work independently in a variety of clinical settings, rotating through general hospitals, paediatric sites, care of the elderly, neuromuscular skeletal (NMS) clinics and community areas. In their fourth and final year, students work increasingly fulltime in more complex clinical areas.

Students require numerous skills to manage their own patient load at the different clinical sites. The theoretical, technical and generic skills needed are similar to those previously discussed by several authors.\(^{(4,9,13)}\) For the purpose of this study, they have broadly been divided into:

- theoretical knowledge
- planning of an assessment and treatment
- execution of an intervention
- generic skills such as communication, time management, confidence and emotional readiness
- overall sense of readiness, i.e. the students’ confidence that they are competent to practice at a third-year level.

At each site, students are supported by weekly clinical educator visits. These teaching sessions guide students in applying the above skills. Since 2009 at UCT, permanent clinical educators have been appointed to academic posts to support clinical education. In addition to being responsible for facilitating learning in clinical settings, the clinical educators participate on an equal footing with academic lecturers in all departmental activities, including curriculum planning. At the end of every clinical rotation of a 5-week block, each student’s performance is evaluated by a clinical educator and a clinician. The evaluation takes the form of a practical exam on a patient and an overall block performance mark, together comprising a clinical mark for each student.

**Objective**

The aim of this study was to examine the extent to which 3rd-year physiotherapy students are adequately prepared for independent clinical practice. Both subjective and objective data were used. The study objectives, in 2 cohorts of 3rd-year physiotherapy students, were to:

- determine whether the majority of students felt adequately prepared for their first independent clinical block
- examine whether there was any difference in the median rating of students’ overall levels of preparedness across the different clinical placements
- establish links between assessment outcomes as evidenced by block marks and students’ perceived preparedness.

**Method**

**Design**

This was a descriptive study utilising prospective student questionnaires to determine subjective perceptions and clinical test marks for the objective measures of performance.

**Participants**

The study took place over 2 years, with participants from 2 different cohorts of 3rd-year students being recruited. Students were asked to volunteer to participate in the questionnaire after being explained its purpose by the researchers, who were permanent clinical educators. Students repeating the 3rd-year clinical course were excluded from the study as only initial readiness for practice was being assessed.

**Instrumentation**

**Questionnaire**

A self-developed questionnaire was used which consisted of 17 items related to key areas of novice competence. Items were chosen based on the literature\(^{(9,12,13)}\) and the researchers’ own experiences in dealing with 3rd-year students entering clinical practice for the first time. The areas of readiness were broadly linked to the following components:

- theoretical knowledge of conditions seen in the clinical placement
- planning – which included questions on ability to obtain relevant information from patient folders, conduct a subjective and an objective evaluation, and identify and analyse patient problems
- intervention – which included execution and adaptation of practical skills and decision-making on treatment length
- generic competencies such as communication, time management, confidence and emotional readiness
- measure of perceived overall readiness for practice.

Answers were rated on a Likert scale from 1 to 5. The responses were made anonymously, but students were asked to provide their gender and in which clinical area they were placed. (There were 4 - 17 students in each placement, so identification of student responses was not possible.) A senior lecturer in the Education Development Unit, UCT, reviewed the questionnaire to ensure content validity. It was then piloted on 10 4th-year physiotherapy students. Feedback from the pilot study resulted in some minor grammatical changes being made.

**Testing procedure**

The questionnaire was administered in a lecture venue during the penultimate week of the first clinical block. Participants were informed of the purpose, benefits and risks of the study, as well as their right to withdraw at any stage. All participants completed an informed consent form (Appendices 1 and 2). Questionnaires were handed out and collected by the researchers, but there was no interaction between the students and the researchers after the procedure had been explained.

**Ethical considerations**

Ethical clearance for the study was obtained from the Human Research Ethics Committee of the Faculty of Health Sciences, UCT (HREC ref. 157/2012). Students were assured of anonymity and that the information obtained would
be used by the researchers for the purpose of an article only.

**Statistical analysis**

Results from the 2 cohorts were amalgamated and entered into an Excel spreadsheet and imported into Statistica for analysis. The participants were grouped according to their first clinical block within one of the following areas: paediatrics, general hospital, NMS clinic, care of the elderly, and community. Descriptive statistics were used to describe the frequency of responses to each question. The internal consistency of the 17-item instrument was tested using Cronbach’s alpha and, as this was high, at 0.847, the individual scores were added together and the mean score calculated for each student. An independent t-test was then used to compare the results of the two cohorts, and ANOVA was used to establish if there was a significant difference in different areas of competency, student scores on the block performance mark and on the questionnaire, across the different clinical settings.

**Results**

**Demographics of the sample**

There were a total of 93 students entering clinical practice – 50 in the 1st and 43 in the 2nd cohort. However, as repeating students had been excluded and only volunteering 3rd-years were included as participants, a total of 67 students took part in the study. Forty-one respondents were female and 18 male. Eight participants failed to indicate gender. The number of respondents was highest in paediatric areas (17) and lowest in community placement (4) (Table 1).

Students reported a median of 3 - 4 (moderate to good) preparation on every item (Table 2). They reported their own preparation for the block as good (median 4) and were confident in their ability to extract information from patients (median 4) and their folders (median 4). They were satisfied with their ability to communicate, both with patients (median 4) and clinical staff (median 4), with 12 and 17 reporting excellent preparation in this area. Although their initial confidence levels were poor (median 2), these had improved to ‘good’ at the end of the block (median 4).

The mean scores for each section and the total score indicated that the components related to theoretical understanding and generic competencies (affect) had the highest mean score, whereas the students scored themselves lowest in terms of overall preparedness for the block (Fig. 1).

One-way ANOVA revealed that the students perceived that they were better prepared in some areas than others (F(4, 264) = 4.8601, p<0.001). Post hoc analysis indicated that the difference was between the higher affect (generic skills) scores and the lower perception of preparation for intervention and overall preparedness.

**Comparison of total questionnaire scores across placements**

Although the scores in NMS were the highest, there were no significant differences between the mean scores of the different placements (F(4, 53)=0.804, p=0.528) (Fig. 2).

**Mean score of clinical marks across the different clinical areas**

There was no significant difference between the mean scores of the clinical marks allocated to the first cohort of students (67.3±5.8) and the second cohort (68.03±6.5; t=-.54, p=0.46). They were therefore amalgamated and ANOVA indicated that there was also no significant difference in the mean scores across the areas (F(4, 77)=0.438, p=0.781) (Fig. 3). (Note that the marks of all students were included in this analysis and not only those who filled in the questionnaire.)

**Discussion**

The results indicate a surprisingly high perception of preparedness, by the majority of students, on starting their first independent clinical block. This was contrary to the expectations of the authors and to much of the literature.

The scores are particularly high in the areas of communication with both patients and staff. It may seem contradictory that despite feeling prepared, the students’ confidence levels were low at the start of clinical block. However, it would be unlikely that students who had never treated patients would feel confident before entering the clinical arena. They appeared to gain considerable confidence over the course of the block.

How realistic were the self-reports of clinical competencies? Some studies have linked the validity of self-reporting to actual ability.

In this study, it appears that the students did not overestimate their own ability as the cohort achieved similarly satisfactory clinical mark scores from all the clinical placements, with an average ranging from 65 - 68% – a ‘satisfactory’

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**Table 1. Placements attended by respondents on their first block**

<table>
<thead>
<tr>
<th>Placement</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>13 (19.4)</td>
</tr>
<tr>
<td>Paediatrics</td>
<td>17 (25.4)</td>
</tr>
<tr>
<td>Care of the elderly</td>
<td>11 (16.4)</td>
</tr>
<tr>
<td>Neuromuscular skeletal</td>
<td>13 (19.4)</td>
</tr>
<tr>
<td>Community</td>
<td>4 (6.0)</td>
</tr>
<tr>
<td>Missing information</td>
<td>9 (13.4)</td>
</tr>
<tr>
<td>Total</td>
<td>67 (100)</td>
</tr>
</tbody>
</table>

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**Fig. 1. Means and 95% CIs of the mean scores of each component (n=58; 9 missing). There is a significant difference between the scores (p<0.001).**

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performance, according to marking guidelines. However, it is impossible to correlate scores when the replies were anonymous, and there might have been individual discrepancies between perception and objective measurement.

This sense of preparedness and competence can perhaps be attributed to an improved alignment between the taught curriculum and the needs of the clinical arena, as discussed by other authors.\cite{4,7,11} Students confirmed that they had adequate and appropriate theoretical knowledge to manage the pathologies encountered in clinical practice. This alignment has been supported by the inclusion of clinical educators within academic teaching clusters, at UCT. These clusters meet regularly to review course content and objectives. Input from clinical educators ensures that course content matches the health needs of the population, which students manage at clinical sites, as recommended by Stevens.\cite{22} By facilitating the link between the students’ theoretical knowledge and its practical application, the clinical educators are able to build on the students’ ability to implement and manage an intervention.\cite{4,23}

Interestingly, most students reported a low sense of perceived overall preparedness on starting their first clinical block; but, when asked to rate their preparedness for specific competencies in theoretical knowledge, planning, intervention and even generic skills (affect), they reported adequate levels of preparedness. This rating might indicate that, despite being anxious on starting independent clinical practice, they felt supported by the clinical educators throughout the block, ensuring a safe learning environment in which to implement their knowledge and improve their confidence in their abilities, as suggested by a systematic review of education models.\cite{17} Contrary to concerns in the literature that students were less prepared in terms of generic skills, the respondents reported a higher level of perceived competence in generic skills (affect) (with a mean score of just under 70%) than in areas of specific clinical competence in implementing an intervention (which has a mean score of just over 65%). Clinical educators are also ideally positioned as appropriate role models for students, by reinforcing professional behaviours and generic skills within the clinical arena,\cite{24} which could explain the students’ confidence in these skills.

The appointment of permanent academic clinical educators with additional training in educational skills\cite{1} has resulted in a more standardised approach to supervision and a uniform understanding of the level of competence required to perform adequately within clinical practice at 3rd-year level. This conclusion is supported by the fact that there was no significant difference in students’ overall preparedness or the marks obtained, across the different clinical placements. Similarly, there was no difference in marks between the two different cohorts. The consistency of clinical marks speaks to similar expectations among UCT clinical educators. Fewer students were placed in the community block as this is a new placement. The large confidence intervals in both the total scores and the clinical block placements are indicative of the small number of respondents and the need to develop an appropriate assessment for performance in a non-traditional physiotherapy training setting.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{Fig2.pdf}
\caption{Mean total scores per clinical placement area (n=58). (NMS = neuromuscular skeletal.)}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{Fig3.pdf}
\caption{Clinical marks across the placements (N=78 as all 3rd-year students in the 2 cohorts were included).}
\end{figure}
Limitations of the study include the need to rely on self-reporting, which may produce biased results. In addition, the questionnaire was answered anonymously and consequently the responses could not be linked with the clinical performance marks. It might be that there is little correlation between perception of preparedness and objective clinical performance.

It would appear that, in general, the students at UCT are given adequate training, preparation and support within the academic and clinical arenas, enabling them to perform competently when independently responsible for patient management for the first time.

Conclusion

According to the literature in clinical education, students often struggle to make the transition from the classroom to the clinical arena.[1,4-10] In contrast, this study demonstrates that 3rd-year physiotherapy students at UCT felt adequately prepared, across all aspects of clinical competencies, on their entry to clinical practice. The level of preparedness was not affected by which clinical setting they were sent to. This sense of preparedness was mirrored by their assessment of readiness. This sense of readiness speaks to the alignment of the classroom curriculum and clinical expectations within the Division of Physiotherapy at UCT, between perception of preparedness and objective clinical performance. The alignment has come about through extensive curriculum review, leading to both horizontal and vertical alignment across the years of training. This has coincided with the appointment of permanent clinical educators, each specialising in a particular field, as vital links between the classroom and the clinical setting, which could have enhanced the preparedness of physiotherapy students at UCT.

We recommend that the integration of clinical and theoretical teaching, be a major focus of physiotherapy training. The employment of academic, permanent clinical educators who, together with academic lecturers, have enhanced the preparedness of physiotherapy students at UCT. The appointment of permanent clinical educators, each specialising in a particular field, has contributed to the preparedness of physiotherapy students at UCT.

Adequacy of practical skills
  0 7 39 20 1 3 2 - 5

Application of practical skills
  1 11 34 18 3 1 3 1 - 5

Ability to adapt physiotherapy treatment
  0 5 32 27 3 2 3 2 - 5

Ability to decide on cessation of treatment
  0 8 34 23 2 3 2 - 5

Ability to communicate with patient
  1 3 16 35 12 4 1 - 5

Ability to communicate with clinical staff
  1 1 6 42 17 4 1 - 5

Time management skills
  0 5 27 30 5 4 2 - 5

Initial confidence levels
  2 34 24 6 1 2 1 - 5

Confidence level at end of block
  0 2 15 42 7 4 2 - 5

Emotional preparedness for block
  1 15 25 24 2 3 1 - 5

Average number of responses in each category
  0.4 7.7 27.8 26.8 4.1

Table 2. Perceived competency: Median scores obtained on each question (N=67)

Non-existent (1)  Poor (2)  Moderate (3)  Good (4)  Excellent (5)  Median  Range

Overall preparedness for block
  0 2 47 18 0 3 2 - 4

Own preparation before block
  0 4 28 32 3 4 2 - 5

Theoretical knowledge of conditions encountered
  1 6 35 24 1 3 1 - 5

Ability to obtain information from patient folder
  0 4 18 38 5 4 2 - 5

Confidence in subjective evaluation
  0 3 19 38 7 4 2 - 5

Ability to objectively assess patients
  0 10 37 19 1 3 2 - 5

Ability to identify patient problems
  0 11 32 21 3 3 2 - 5

Ability to identify appropriate interventions
  0 8 33 26 0 3 2 - 4

Research

References


Appendix 1

Information and informed consent form for students

Dear Student

General Information
The study has been approved by the Faculty of Health Sciences Human Research Ethics Committee reference number 157/2012. The UCT clinical educators are attempting to improve the standard of clinical education by researching whether 3rd-year physiotherapy students are adequately prepared for clinical practice in their first clinical block. As part of the study, you will be asked to complete an anonymous questionnaire. The questionnaire will be administered during one of your lecture periods during your fourth week of clinicals.

In conjunction with the questionnaire, the researchers may need to access your marks from the 1st clinical block of 3rd year.

The information obtained from this questionnaire will be used solely by the researchers for the completion of a journal article and will not be made available to other parties.

Informed Consent
I confirm that the exact procedures and possible complications of the above research have been explained to me. I understand that I may ask questions at any time during the data collection. I realise that I am free to withdraw from the study without prejudice at any time, should I choose to do so. I have been informed that all the information required by the researchers will be held in strict confidentiality, and will be revealed only as part of statistical analyses.

I have carefully read this form. I understand the nature, purpose and procedure of this study. I agree to participate in this research project of the UCT clinical educators.

Name (in full) of student:
Signature:
Date:
Researchers:

Appendix 2

Questionnaire
Please complete the following:
Date of birth:
Sex (male/female):
Clinical block:

Using the scale 1=non-existent, 2=poor, 3=moderate, 4=good, 5=excellent, please rate the comments below, by circling the number that best matches your opinion.

1. Rate your theoretical knowledge of the conditions you encountered on your first block

2. Rate your ability to obtain information from the patient's folders within the designated time period

3. Rate the confidence with which you were able to conduct a subjective evaluation

4. Rate your ability to objectively assess your patients

5. Rate your ability to identify your patient's problems

6. Rate your ability to identify appropriate interventions for the stated problems

7. Rate the adequacy of the range of practical skills you have been taught in the classroom.

8. Rate your ability to apply these practical skills when managing your patients on your first block

9. Rate your ability to adapt and/or cease physiotherapy treatment

10. Rate your ability to communicate effectively with the patients

11. Rate your communication with staff members at your clinical sites

12. Rate your time management while on the block

13. Rate your own preparation done before the block

14. Rate your initial confidence level in managing your first clinical block

15. Rate your confidence level towards the end of the block

16. Rate your emotional preparedness for managing situations faced on the first block

17. Rate your overall preparedness for the block