Learning clinical skills: student-stakeholder perceptions of clinical skills teaching and assessment.

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ABSTRACT

International trends in medical curriculum change include a focus on the development of clinical skills teaching. However, the literature on medical student perception of their clinical skills teaching is sparse: especially on student opinion informing curriculum change before, rather than during or after the fact. This summer student research project was timed to inform the Faculty Curriculum Committee (FCC) ahead of the development of a new clinical skills teaching programme at the University of Otago. The aim was to seek the medical student opinion towards current clinical skills learning in terms of learning opportunities, teaching method and contact with patients as well as skills assessment and feedback. A questionnaire, based on issues identified from international education literature review, was designed and piloted by available students and tutors. It was sent to all 2005 University of Otago medical students with 24.9% overall response rate (256/ 1028). Issues were explored further with four focus groups. There is a significant difference in the opportunities to watch and perform clinical skills between preclinical students (years 2 and 3) and clinical students (years 4, 5, and 6) ($P<0.0001$). All students feel that they are not (or had not been) exposed to enough clinical skills in second and third year. Students were concerned at the variability that exists between clinical team attachments in the learning opportunities, assessment and feedback of clinical skills learning. The low overall response rate was an inevitable consequence of conducting the research during student holidays. Study strengths are the large respondent numbers, good cohort-year representation and additional qualitative information. The recommendations to FCC were: increase early skills teaching; assessment transparency against clinical skill objectives; integrate clinical skills teaching throughout the curriculum; and for all institutions early student consultation on curriculum change could be advantageous.

Keywords
Medical undergraduate curriculum, early clinical contact, experiential courses, community-based learning, student perspective, education stakeholders, course evaluation, objectives, integration

INTRODUCTION

Over the past decade there has been a global trend of curriculum change in medical schools across the world. The reason for this is to better prepare students for work in the information age: accommodating changes to the clinical environment; the explosion in medical science information; and to address skills for future medical practice. Changes have included a major focus on the development of undergraduate clinical skills teaching given this era of day procedures and shortened hospital stays, where chronic care is increasingly devolved to general practitioners. Currently the University of Otago Faculty of Medicine Curriculum Committee (FCC) is planning significant curriculum change. Recently a university funded project through the Committee for Advancement of Learning and Teaching conducted an extensive literature review on the International Perspectives of Clinical Skills teaching. A key finding of this project had been the absence of any agreed international definition for what is and is not a clinical skill. Consequently, a broad definition of the term "clinical skills" was derived to include oral and written communication skills; physical examination; bedside clinical procedures and near-patient (no-touch) techniques; skills of clinical reasoning and evidence based decision-making; practical ethics; multidisciplinary teamwork and reflective practice.

Another finding had been paucity of information about student perception of their clinical skills learning, despite the global emphasis on clinical skills in the medical curriculum: in particular little use of student opinion to inform change before, rather than after the fact. This needs-based project was designed to supply information to FCC about student perceptions of clinical skills learning ahead of the development of a new clinical skills curriculum.

AIM

The project was designed to: seek the medical student perspective of their clinical skills learning in terms of learning opportunities, the teaching environment, valued teacher qualities, teaching methods, learning on patients, assessment and feedback.

METHOD

A survey was designed to elicit student responses towards issues of student concern which were identified in the international literature and through interviews with key student informants. Issues from the literature included teacher qualities, integration of skills teaching, and patient experiences, while student informants raised issues of learning opportunities at a preclinical and clinical level, team attachments, assessment, and feedback. The survey defined clincal skills to include "physical examination, near patient techniques (i.e. no touch bedside procedures eg urine and swab

test), communication skills and bedside clinical procedures."

The survey was piloted to available staff and students at the Wellington School of Medicine and subsequently revised. Likert scale questions (categories of: strongly agree, agree, no opinion, disagree and strongly disagree) provided a quantitative data base. A space for comments which followed every question formed the basis for the qualitative aspect of the questionnaire.

A "snowball" recruitment technique was used, via student e-mail and text messaging to make the initial contact with all medical students of 2005. The survey was placed on the web-based teaching platform, Blackboard, in a paper accessible by most students from second through to fifth year in 2005. Attached to the survey was a form inviting further contact for a focus group. Clinical students in Dunedin and Christchurch, who did not have access to the Blackboard-based survey, were sent the questionnaire as an attachment to their Student Webmail accounts. Since the 2005 Trainee Interns (TIs) had already graduated, the Resident Medical Officer (RMO) Units at Capital and Coast District Health Board (CCDHB), Canterbury District Health Board (CDHB) and the Otago District Health Board (ODHB) were approached for assistance in sending the questionnaire to new House Surgeons. While this method did not include all the 2005 Otago TIs, it did include some House Surgeons who had graduated from other medical schools. However, only responses from University of Otago graduates were received. Four focus groups were subsequently formed from student volunteers. The author attended each focus group meeting and taped and transcribed the discussions.

Quantitative data was analysed by both year of medical school and by comparison between preclinical and clinical students. Spearman's rank correlation coefficient could be applied to questions analysed by year of medical school where there were responses from three or more years. Wilcoxon signed-rank test was applied to all the questions for the analysis between preclinical and clinical students and to any question that was analysed by year of medical school but contained responses from two year groups only. Qualitative data collected from both the "comment" fields from the survey and transcribed focus group discussions underwent thematic analysis. The questions along with the quantitative and qualitative responses can be grouped into four themes: learning opportunity, clinical attachments, learning on patients and skills assessment. Qualitative and quantitative results are discussed together, below as the latter explains the reasons for the former.

RESULTS

There were 256 responses to the 1028 questionnaires, representing an overall response rate of 24.9 per cent, with responses from all year cohorts and clinical school represented (Table 1). Female students showed a higher response rate (158/256, or 61.7 per cent) than males (96/256, or 37.5 per cent) (2 or 0.8 per cent of students did not respond to this question). This compares to female student proportion of 56.3 per cent amongst all University of Otago medical students and male student proportion 43.7 per cent.

17 students from years 2 to 5 participated in the preclinical, Wellington School of Medicine (WSM), Christchurch School of Medicine (CSM) and Dunedin School of Medicine focus groups. The timing of House Surgeon runs and the tight timeframe of a summer studentship meant that no focus groups for new graduates (2005 TIs) could be organised. The qualitative discourse was derived from 43 pages of comments from questionnaire responses and 60 pages of transcribed focus group discussion.

Table 1: Response by year

Year by School	Responses	Sample	Response Rate (%)
Second	69	231	29.9
Third	58	218	26.6
Wellington 4th	23	70	32.9
Christchurch 4th	11	65	16.9
Dunedin 4th	16	64	25.0
Wellington 5th	11	66	16.7
Christchurch 5th	14	66	21.2
Dunedin 5th	27	68	39.7
Wellington 6th	12	66	18.2
Christchurch 6th	14	65	21.5
Dunedin 6th	1	49	2.0
Total	256	1028	24.9

Learning Opportunity

There was a significant difference in response between preclinical and clinical students to questions about the opportunity to watch and perform hands on clinical skills ($p<0.0001$) (Figure 1) as well as the opportunity to apply communication skills ($p<0.0001$). Preclinical students felt that there is not enough observation of clinical skills, while clinical students felt that the opportunities to observe and perform clinical skills were run dependent. Opportunities presented frequently but required students to be motivated in seeking them out. Students noted that a focus on written academic work takes time away from clinical skills learning.

Preclinical students feel that more time is needed to practice clinical skills. In contrast clinical students feel there is sufficient time to practice clinical skills but that does not necessarily correspond to a good learning experience. More advanced students felt that opportunities were missed for guidance and feedback from clinical teachers on patient contacts and clinical skills:

"free time to wander onto the ward and do exams myself without any supervision or feedback is of limited usefulness" - 5th Year Student

Generally students felt unprepared for their clinical years (Figure 2). Apart from communication skills, not many clinical skills were learned in years 2 or 3. However, it was agreed that fourth year orientation should include an introduction to history taking and the structure of the various physical examinations to bridge the clinical transition.

Clinical Attachments

The comments across the clinical years noted that variability exists between different teams on different runs. Clinical students value being able to learn clinical skills by attachment to a clinical team (Figure 3). The crucial factor determining whether the experience was deemed valuable or not by the students was whether the team was welcoming of the student and involved them in the care of patients.

Figure 1: How often did you have the opportunity to perform "hands on" clinical skills?

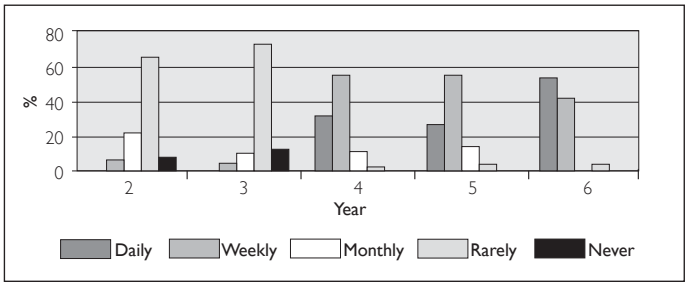


Figure 2: The clinical skills I learned in preclinical school and 4th year orientation week prepared me for clinical school

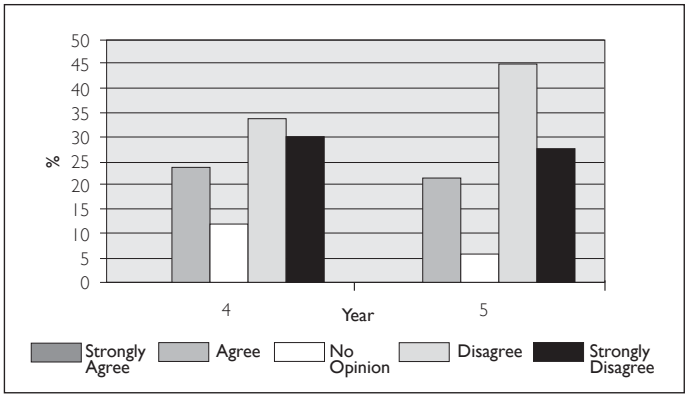


Figure 3: In general during a run, clinical skills teaching is fostered by assigning students to a clinical team.

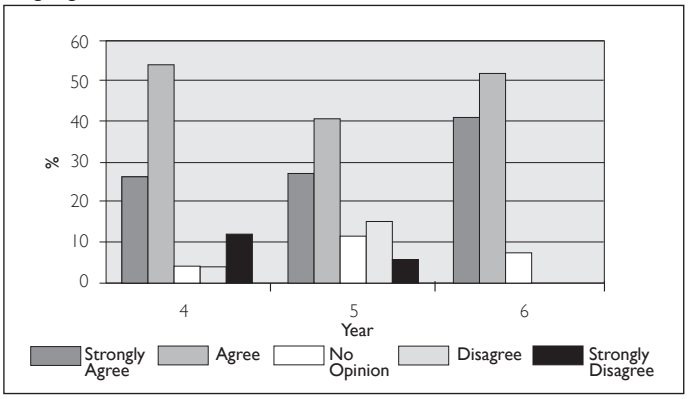


Figure 4: The value of Simulated Patients, Peer Examination and Real Patients as tools in the learning of clinical skills

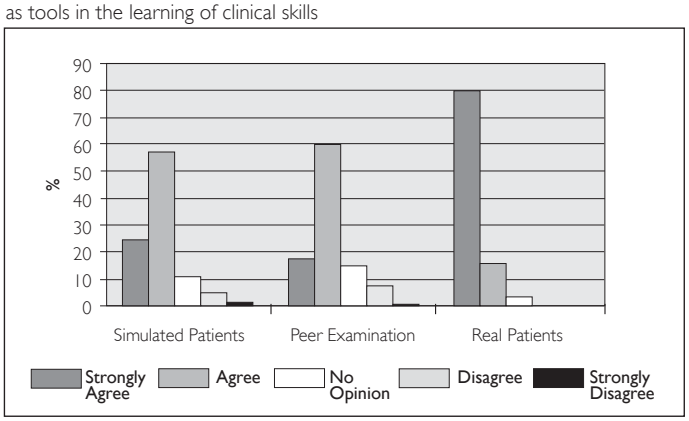
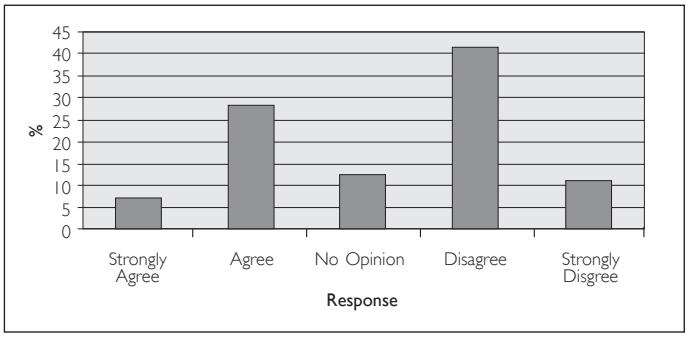


Figure 5: Clinical students responses to "In general during a run, I receive appropriate feedback on the development of my clinical skills"



"Only if the team accepts the medical student, does not ignore them and makes an effort to include them and encourage their learning rather than ignoring and/or belittling them" - 5th Year Student

Learning on patients: simulated, peer or real

Across the student cohort, responses indicated that simulated patients and peer examination are acceptable tools for learning clinical skills, but there is a higher preference for real patient contact, which increases as the years progress (P=0.004) (Figure 4). Preclinical student responses emphasised that simulated patient situations did not feel realistic. Clinical students acknowledged the value of simulated patients due to limited numbers of real patients but they commented on their limitations in terms of physical examination.

"actors can't well fake heart murmurs or pleural effusions" - 5th Year Student

Skills Assessment

Clinical students were divided over whether the assessment of clinical skills is comprehensive. Students felt that the skills that were assessed were done so comprehensively, but there were skills taught that were not assessed and in their view should have been. 60.6 per cent of preclinical students had "no opinion" on whether clinical skills were assessed comprehensively as they believe clinical skills are not assessed at a preclinical level. Clinical students were concerned that there was often a discrepancy between clinical skills objectives, teaching and assessment.

"Unfortunately the practical support required to achieve these objectives is often not provided" - 5th Year student

Likewise they were dissatisfied with the feedback they received on their clinical skills development. (Figure 5) Most feedback occurred at the end of the run, which prevented the students from using the feedback to improve their skills during the run.

DISCUSSION

The questionnaire design was a compromise, bearing in mind findings that effort and attention to detail was necessary to keep the questionnaire as short as possible, with a respondent friendly design to elicit a higher response rate.[1] The literature informed selection of a Likert scale response with the categories: strongly agree, agree, no opinion, disagree and strongly disagree.[2,3] A more quantitative approach to student questionnaires usually leads to a higher response rate, assuming that "there are a number of independent variables that influence student evaluation, attitudes or expressions of satisfaction".[2] It was unlikely that student opinion of clinical skills learning would be comprised of a number of independent variables, which created a need for qualitative data. A "Comments" space at the end of every question also ensured that all the questions were omnicompetent .[4]

The major strength of this project was in the qualitative data. This information explains the reasons for the quantitative responses and the intricacies of medical student perception towards the teaching of clinical skills at the University of Otago.

While the overall response rate of 24.9 per cent to the questionnaire is low, the study population of interest were 2005 University of Otago medical students and the sample population included all of these students. A 25 per cent sample of any large student population should be representative. However, any future study should attempt to increase the response rate from Trainee Interns as they are they have experienced clinical skills teaching at all year levels. The reasons for the low response rate could potentially be a source of bias. The student webmail system was the primary form of communication, but any student without summer holiday access to a computer or who was not checking their webmail over the summer break would not be sampled. The secondary means of communication was snowballing which can be a source of bias: more likely to exclude any student overseas, students without a mobile phone, students in relative isolation over the summer especially in rural communities or with limited social contacts from their peers.

A potential bias lay in the different methods of distributing the questionnaire to different class cohorts. This was also a significant strength since diversity of contact methods enabled more students to be included in the sample than if only one method was used.

Learning Opportunity

It was quite clear that clinical students had greater opportunities to watch and practice both their hands on and communication skills. Consequently later in the questionnaire when asked if they felt they had sufficient time to practice their clinical skills, clinical students were more likely to agree with the statement. Students think that clinical skills teaching needs to increase at the year 2 or 3 level; this is consistent with international thinking that such a move increases the ability for students to contextualise their theoretical learning and makes the transition to clinical school easier.[5]

Of particular concern are the varying experiences of fourth year orientation week, which impacts on the future learning of clinical skills as many skills

are taught for the first time. The focus groups were of the consensus that history taking and basic physical examinations should be learned in year 2 or 3 to make the transition from preclinical to clinical school easier, as indicated in the international literature. The clinical transition is a time of great stress for students due to "changes in learning environment, teaching styles and expectations".[6] Removing some of the material that clinical students would be required to learn from de novo may reduce some of this stress.

In later clinical years, students have sufficient time to practice clinical skills but the time was not used effectively due to a lack of feedback and guidance. This would suggest that there is a lack of structure to the learning of clinical skills in the latter years of the medical course.

Clinical Attachments

The responses to whether being attached to a team on a run promotes the learning of clinical skills suggests that there is a lack of structure to the way clinical skills teaching fits into the curriculum. There appeared to be huge variation across all the runs at the three clinical schools as to firstly whether students were attached to clinical teams and secondly whether being attached to those teams promoted the learning of clinical skills. The responses indicate that when the teams work well the experience can be very valuable for learning clinical skills. Somewhat disturbing is the finding that even in sixth year students largely experience passive skills learning via tutorials, ward rounds and demonstrations.

Learning on patients: simulated, peer or real

There has been criticism in the literature that actors can make students feel a sense of prefabrication[8] and that peer examination has risks surrounding discovery of medical problems which students tend to experience negatively.[9] Both of these issues were raised by students in their responses and while they scored real patients as being more valuable a majority of students find both simulated patients and peer examination useful clinical tools. As clinical signs include "normal findings", both simulated patients and peer examination have a valuable role in getting students very familiar with "normal" to know when it is not. It is important however to remember that the use of these methods can never fully substitute for real patients in the minds of medical students, as only real patients have pathological clinical signs.

Skills Assessment

The student perception that there is variability in the comprehensiveness of clinical skills assessment across both the clinical schools and attachments fits with the idea that currently the clinical skills component of the curriculum is under developed. A common idea was that there was not the infrastructure or teaching commitment to support the objectives. The variable and non specific feedback that students receive at the end of a run in the clinical years reflects the lack of structured planning and the busy nature of clinical skills teachers which causes care provision to compete with teaching duties.

CONCLUSION

The student comments indicate a lack of, and lack of adherence to, an integrated clinical skills thread in the undergraduate medical curriculum. Preclinical students feel that they should have more time and opportunities to learn clinical skills. Clinical students, agree that students should be taught the basics of physical examination and history taking before they start clinical school. Sufficient time to practice their own clinical skills is not fully utilised due to a lack of opportunities, direction and feedback. The assessment of these skills was often, but not always comprehensive. In general, the feedback students received lacked the necessary frequency and detail to be of significant use. In order to address these issues the FCC must continue to develop a clinical skills thread across all years of the undergraduate medical curriculum. Medical students are a principal stakeholder in the process of any curriculum change; their views must be sought out to reach a consensus with subject experts and educationists as to the directions of any curriculum change and to inform research into such changes.

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