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Bedside Teaching: Specialists vs. Non-specialists

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Abstract

Background

Bedside teaching (BT) is a valuable learning experience for medical students. In 2010, the BT curriculum at the University of Dundee was revised, so that specialised tutors facilitated these sessions. The aim of this study was to compare student opinion of BT delivered by specialist and non-specialist teachers.

Methods

A retrospective survey was sent to two medical student year groups who received teaching delivered by either specialist or non-specialist teachers during Year 2.

Results

A 24.5% response rate was achieved, of which 49.4% received specialist teaching. Responses indicated that specialist tutors improved communication skills ($p = 0.034$), were less intimidating ($p = 0.01$) and gave greater opportunity to ask questions ($p = 0.028$) than their non-specialist counterparts. Overall, students taught by specialist teachers rated BT as more valuable ($p = <0.001$). A positive correlation was noted between the frequency of patient interaction and the overall value of BT ($p = <0.0121$). However, there was no significant association between the main teaching location and the overall value of BT.

Discussion

Findings indicate that specialist tutors provide students with a better understanding of disease processes. Several students from the specialist group noted that their tutors

linked theory to practice. However, one student noted that specialist tutors discussed cases which were too complicated for their level of study. No significant difference was found between the two groups regarding whether teaching was at an appropriate level. Specialist teachers therefore allow a number of improvements over the use of non-specialist teachers for BT.

Background

In the age of patient-centred care, it follows that teaching should occur in the presence of the patient, the definition of bedside teaching¹ (BT), in order for learners to acquire skills relevant to their future clinical practice. Indeed, in one study, all respondents felt BT was the most effective way of learning clinical skills but only 48% of learners felt they had enough BT.² In some medical curricula BT has become a patient-based discussion in a conference room, as faculty are more familiar and comfortable with lecture-style teaching.¹⁻⁴ It has been found through observation that the median time spent at bedside was 2.5 minutes compared with 69 minutes in the classroom.⁵

Literature is limited comparing the effectiveness of specialists and non-specialists in the delivery of BT. One study notes that OSCE scores of medical students taught by either specialists or generalists do not significantly differ.⁶ However, this study also noted that specialists felt less confident in teaching particular skills, such as cardiorespiratory examination, compared to generalists.⁶ Recent changes from non-specialist to specialist-led BT at the University of Dundee Medical School provided a useful opportunity to determine if specialist teachers offer any improvements over the use of non-specialist teachers. It was hypothesised that specialist teachers would deliver a more valuable BT programme. The University of Dundee currently delivers “system-based teaching” and so specialists were employed to deliver BT during their specific teaching period. Previously, non-specialists would deliver BT, regardless of the system being taught.

Methods

This retrospective cohort study aims to determine differences in student opinion regarding the BT received in year two of the five-year medical curriculum. Two different year groups were studied: the 2008-09 intake year which received non-specialist led BT and the 2010-11 intake year which received specialist led BT. Non-specialist teachers were defined as foundation year doctors, core trainees (doctors undergoing their first two years of specialty training), specialist registrars or consultants who specialise in a system different to that being taught. Specialist teachers included specialist registrars or consultants who specialise in the system being taught.

Following literature review, a questionnaire was designed and distributed to medical students from intake years 2008-09 and 2010-11 who received non-specialist and specialist BT during Year 2, respectively. Intake year 2009-10 were excluded as they received a mix of both specialist and non-specialist teaching. The mean response and standard deviation in response to each question was calculated for both year groups. This p value and power of the results were calculated in Sigmaplot 12 using a One way ANOVA on Ranks and the power calculator.

Results

Overall, 79 out of 322 (24.5%) invited students completed the survey. Of these responses, 40 (50.6%) were from the non-specialist group and 39 (49.4%) were from the specialist group. Results can be found in Table 1 and Table 2.

It was found that no significant relationship exists between the main location of teaching and whether BT was valuable overall, however, the more often patient interaction formed part of BT, the greater the overall value of BT ($p = 0.0121$).

Furthermore, in general, the non-specialist group had a higher standard deviation than that of the specialist group which may represent greater variability in the standard of teaching.

Table 1 – Questions which showed significant difference between cohorts

Question	Min-Max score	Non-specialist Mean (SD)	Specialist Mean (SD)	P value	Power
Did BT improve your communication skills?	1-3	2.50 (0.775)	2.82 (0.5)	0.034	0.549
Were tutors intimidating?	1-3	1.88 (0.639)	1.36 (0.519)	0.01	0.829
Tutors gave opportunity to ask questions?	1-3	2.76 (0.519)	2.97 (0.487)	0.028	0.783
Overall, was BT a valuable experience?	1--5	3.78 (0.788)	4.59 (0.882)	<0.001	0.995

SD – Standard Deviation

Table 2 – Questions which showed no significant difference between cohorts

Question	Min-Max score	Non-specialist Mean (SD)	Specialist Mean (SD)	P value	Power
Did BT improve your exam technique?	1-3	2.75 (0.581)	2.87 (0.334)	0.489	0.189
Did BT improve your investigation interpretation?	1-3	1.93 (0.621)	2.00 (0.587)	0.510	0.064
Did BT improve your knowledge of disease processes?	1-3	2.18 (0.574)	2.51 (0.517)	0.061	0.509
Did BT improve your knowledge of disease management?	1-3	2.38 (0.634)	2.56 (0.493)	0.127	0.189
Did BT improve your OSCE performance?	1-3	2.28 (0.607)	2.56 (0.504)	0.163	0.392
Were tutors confident?	1-3	2.95 (0.399)	2.92 (0.524)	0.959	0.066
Were tutors knowledgeable?	1-3	2.93 (0.523)	2.90 (0.522)	0.634	0.060

Did tutors teach to an appropriate level?	1-3	2.78 (0.522)	2.72 (0.48)	0.067	0.086
Were tutors, overall, good teachers?	1-3	2.68 (0.523)	2.87 (0.496)	0.093	0.434
Where did the majority of teaching occur?	1-3	2.18 (0.669)	2.03 (0.683)	0.617	0.103
Was BT mainly patient interaction or lecture based?	1-5	3.90 (0.766)	3.77 (0.691)	0.577	0.098

SD – Standard Deviation

Discussion

Students who received specialist teaching reported a greater improvement in communication skills than those receiving non-specialist teaching ($p = 0.034$, Power = 0.549). A possible explanation for this is that specialist teachers have a much greater awareness of 'specialist' questions to ask. For example, asking about pets and occupation for consideration of interstitial lung disease on the respiratory ward, whilst such questions may be omitted by non-specialists. Further research through direct observation of BT may help to confirm this hypothesis.

An interesting finding is that there was no significant difference in the students' perception of the level of knowledge between specialists and non-specialists ($p = 0.634$, Power = 0.060) indicating that although specialists will have a greater knowledge base in their subject area, this is not apparent to students.

Other studies have expressed that BT is beneficial for teaching skills such as physical examination, history taking, communication skills and professionalism,^{2, 7, 8} However, results from this study show that it does not matter whether specialist or non-specialist clinicians are employed to teach examination technique, investigation interpretation or disease management. Similar findings were noted by Zakowski where student's OSCE scores did not differ when comparing students taught by specialists or generalists.⁶

Responses indicate that specialist teachers were less intimidating than their non-specialist counterparts ($p = 0.01$, Power = 0.829). This finding was unexpected as non-specialist teachers included foundation year doctors. However, it has been shown that senior physicians are more likely to admit their own imperfections, which may make

them appear less intimidating.⁹ In addition, this result may be related to the finding that specialist teachers gave more opportunity for asking questions than non-specialists ($p = 0.028$, Power = 0.783). This is mirrored by other studies which have noted that subject matter experts had greater interaction with students, provided more answers to students' questions and suggested more topics for discussion.⁶ Overall, students who were taught by specialist teachers rated their BT programme as more valuable than those who received non-specialist teaching, confirming our initial hypothesis ($p = <0.001$, Power = 0.995).

A potential drawback of employing specialist teachers is that they may teach at too high a level for students in their early years of study. Student responses were approaching significance in support of this hypothesis ($p = 0.067$, Power = 0.086) and with a low power, a false negative result cannot be excluded. A greater sample size would reduce the probability of committing a Type II error. Interestingly, one student from the specialist tutor cohort noted that 'A lot of the time we [saw] something way too complicated or something not covered in lectures'. However, the finding that specialists allowed greater student understanding of disease process was also approaching significance ($p = 0.061$, Power = 0.509), and again, a false negative result cannot be excluded given the low power. In support of this finding, several students noted that specialist tutors 'linked what we were learning to real patients.' It may therefore be that specialists capitalise on the opportunity to link theory to practice at the bedside. Further study is required to determine whether specialists improve understanding of disease processes or teach at too high a level for students in their early years of training.

No correlation was found between the main location of BT and the overall value of BT. However, interestingly, it was found that the greater the frequency that teaching sessions involved patient interaction, the higher the overall value of BT ($p = 0.0121$), indicating that although the full BT session need not take place at the bedside to be useful, students greatly value patient interaction as a teaching resource.

This study was subject to some limitations. This study had a low response rate to the survey of 24.5%, limiting the power of the results obtained. This perhaps relates to the length and complexity of the survey distributed. In general, the intake year 2008-09 had a higher standard deviation than that of intake year 2010-11. Given that this study is retrospective, it is difficult to determine whether this represents a true finding of greater variability in the standard of teaching delivered by non-specialists or whether this represents recall bias, as those who received non-specialist teachers received their 2nd year teaching three years prior to this study, whereas those who received specialist teachers received their BT one year before. A prospective study design would eliminate this source of bias. Future studies should aim to directly observe BT to identify potential reasons for improved teaching by specialists. In addition, surveying tutors' opinions of BT may also be of value. One area which was not tested in this study was the hypothesis that a correlation may exist between a teacher's experience and how valuable students rate their teaching experience. Future studies may find it of interest to test this hypothesis.

In conclusion, students perceive that specialist teachers gave greater improvement in communication skills, greater opportunity to ask questions and were less intimidating than their non-specialist counterparts. Specialists may also improve student's

knowledge of disease processes although it may be that specialists teach at too high a level for students in the early years of their training. Overall, those who received specialist tutors rated their BT as more valuable than those who received non-specialist teachers indicating that the utilisation of specialist tutors improves the quality of BT thus, confirming our initial hypothesis.

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