**An important but stressful part of their future work: medical students’ attitudes to Palliative Care throughout their course.**

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Box 1. Statements presented in the questionnaire

Table 1. Numbers of participants

Figure 1. Percentage of respondents agree

Table 2. Cross-sectional analysis by year in course

Table 3. Change over time years 1 to 3 and 4 to 6

Table 4. Change over time years 1 to 2, 2 to 3, 4 to 5, 5 to 6

Appendix. Summary of the Medical Course and Palliative Care curriculum

at the University of Cambridge School of Medicine.

**ABSTRACT**

**Background.** Palliative Care education for medical students is important. Knowledge concerning drugs and services can be readily taught and skills of communicating with terminally ill patients and their families are increasingly being addressed. Developing positive attitudes towards caring for patients near the end of life is more challenging.

**Aims.** To examine medical students’ attitudes towards Palliative Care in each year of their course, investigate changes in these attitudes over time during their course and identify gender differences in attitudes and attitudinal change.

**Methods.** Questionnaires administered to four cohorts of pre-clinical core science and clinical medical students at the University of Cambridge Medical School in 2007 to 2010, with annual longitudinal follow-up in subsequent years; 1027 participants in total.

**Results.** Students started their medical course with broadly positive attitudes towards Palliative Care, which largely persisted into the final years. During the core science component some attitudes became more negative, whereas during the clinical component some attitudes became more positive. Over the whole course there was evidence of increasingly positive attitudes. No significant effect of gender on attitudes or attitudinal change was found. Although statistically significant, all of these changes were small.

**Conclusion.** Medical students’ attitudes towards their future role in caring for people with Palliative Care needs were broadly positive. Core science was associated with increasingly negative attitudes and clinical studies with increasingly positive attitudes. For teaching faculty, the challenge remains to address negative and foster positive attitudes towards Palliative Care during medical school.

**Key words:** Medical student, education, attitudes, Palliative Care.

**Introduction**

Palliative Care (PC) for patients approaching the end of their lives is an important, but stressful part of a newly qualified doctor’s work 1 2. In the first year after qualification, a junior doctor cares for an average of 40 patients who die and a further 120 patients close to the end of life 3. On at least three occasions they will inform a patient of terminal illness, answer a patient’s questions about terminal illness and inform relatives about terminal illness and that a patient has died 4. Many newly qualified doctors feel poorly equipped for these tasks 5 2, and report having had little meaningful contact with dying patients while students 6 7.

Medical students find it stressful dealing with terminally ill patients and coping when breaking bad news and encountering relatives’ grief 8. Students value education in PC, particularly clinical experience with patients and their families 9 10, though teaching faculty find this challenging to arrange 11.

Recent years have seen an increasing emphasis on including PC in undergraduate curricula, both in policy 12 and practice 13 14. Medical school faculty focus on dispelling misconceptions and fears, and developing positive attitudes towards students’ future roles in providing PC 15. It has been reasoned that it is important to make students aware of their own attitudes towards death and dying 16: “rather than only attempting to create from undergraduates masters of pain and symptom control, teachers need to set out to develop their attitudes by creating a sensitive awareness of the needs of the dying and their families” 17. As Doyle has commented “What does it profit a doctor if he can prescribe opioids yet not know how to listen actively to those who need his help and humanity? Palliative medicine and pain control are as much exercises in communication as they are in applied pharmacology”. 18

Learning about PC involves developing appropriate knowledge, skills and attitudes. Knowledge concerning symptoms, medication and services can be learned with relative ease. The skills needed in talking with patients and their families about life-limiting illness are more challenging to teach and learn, although recent years have seen significant developments in communication skills teaching 19. Developing students’ attitudes towards PC is of great importance 15, since attitudes predict future behaviour 20: positive attitudes towards hospice philosophy and care are associated with increased referrals for hospice care 21. Lifetime attitudes are formed during the student years 22, although some doctors report their brief exposure to PC as students were subsequently “negated by the system” 23.

While some cross-sectional studies have examined aspects of medical students’ attitudes to PC 24 25 26 27 28 29, few have studied attitudinal changes longitudinally over time. The School of Clinical Medicine at the University of Cambridge has undertaken a longitudinal cohort study of the factors in medical student education which influence the quality of patient care in subsequent medical practice. Data from this study concerning one such factor, medical student attitudes to PC, is reported.

**Aims**

1. To examine medical students’ attitudes to PC in each year of their course
2. To investigate change in these attitudes over time during their course
3. To identify gender differences in attitudes and attitudinal change

**Methods**

**Sample & Procedure**

The medical course at Cambridge comprises a pre-clinical core science component (Years 1 - 3) and a clinical component (Years 4 - 6). On average 280 students, typically aged around 18 years, enter the core science component. At the end of Year 3, half of these continue into the clinical component in Cambridge, others transferring elsewhere for their clinical studies. Students have limited patient contact during the core science years: PC teaching only takes place during the clinical years (see Appendix). During the years studied there were no significant changes in the PC course content.

From October 2007 to October 2010, all students entering Years 1 and 4 (the first years of core science and clinical components respectively) were invited to take part in a longitudinal study comprising an annual questionnaire survey. This contained validated instruments measuring attitudes towards PC, anxiety, depression, death anxiety and questions concerning personal experience of bereavement.

Questionnaires were sent out early in each new academic year: these were paper-based in 2007 and 2008 for all students and in 2009 for clinical students. An online version was used for core science students in 2009 and for all students in 2010 and after. Questionnaires were labelled by study number only; a data manager sent one reminder after two weeks. Participation was voluntary, with a prize awarded annually by lottery to a small number of participants. Data concerning empathy 30, depression 31 and personal experience of bereavement 32 have been published elsewhere. The study was approved by the University of Cambridge Psychology Ethics Committee.

The construct of “medical student attitudes to PC” is wide-ranging, including attitudes towards patients’ experiences, the personal impact of providing PC, their future roles as doctors in providing PC and existential issues. For the present study, a broad range of attitudes was investigated, in contrast to previous studies where attitudinal measurements have focused on the use of opioids 27, the personal impact of PC 28 29 , fear of death 29 or self-efficacy in PC 29.

Measurement of such a broad range of attitudes is problematic: the main well-validated measures available 28 29 were too focused for the purposes of the present study and self-designed questionnaires used by other authors 33 34 20 were not robust in terms of their design or psychometric properties. Sullivan’s questionnaire for a national survey of US medical students and doctors was used. This is based on student focus groups, a literature review, national consensus and peer scrutiny. It has evidence of convergent validity in similarity of responses across groups and was considered the most appropriate, best scrutinised and validated instrument for our purposes 35.

The analysis presented below is based on the eight individual attitude statements developed by Sullivan. For ease of presentation, and based on expert opinion, these can be grouped under three domain headings: the doctor’s responsibility, psychological aspects and personal impact (Box 1). Students responded using a 5-point Likert scale (1 = completely disagree, 3 = neither agree nor disagree, 5 = completely agree).

*Insert Box 1 here*

**Data analysis**

Data analysis was cross-sectional and longitudinal. For cross-sectional analysis, data were entered into SPSS Version 21 36. Mean and standard deviation of responses in each year were calculated and gender differences investigated using the Mann-Whitney U test. On account of the large number of analyses undertaken, a significance level of 1% was used.

Longitudinal analysis of change over the full six years of the course was limited by the fact that half the core science students leave Cambridge at the end of Year 3 to pursue clinical studies elsewhere. The main longitudinal analysis was thus divided into core science (Year 1 to 3) and clinical (Years 4 to 6) components. Fifty-five students from the 2007 cohort, who remained in Cambridge for the clinical component and who responded in each year, were followed over the full 6 years of the course. A separate longitudinal analysis of this subsample was undertaken using the Wilcoxon Signed Ranks Test.

Data were entered into R Software 37 for longitudinal analysis, using the ‘ordinal’ package in R 38 to undertake an ordinal mixed effects regression analysis (cumulative logit link mixed model 39 fitted with the adaptive Gauss-Hermite quadrature approximation with 3 quadrature points 38). This takes account of the ordinal nature of the response variables and the presence of multiple responses per individual. Separate ordinal regression analyses were performed for the core science and clinical components. All regression models consisted of a random effects term for student, with course year as a fixed effect (explanatory factor variable). Year of entry and gender were included as fixed effects (explanatory factor variables) in order to obtain cohort and gender adjusted effects of change over time. All models included threshold coefficients, although these are not reported for reasons of clarity and conciseness. Interactions between gender and course year were tested separately, and on the one occasion where interaction terms were significant at the 1% level, a stratified analysis was performed which consisted of fitting separate ordinal regression models within each gender group, with only cohort and course year included as the fixed effect terms.

Odds ratios were calculated with 99% confidence intervals and p-values. On account of the large number of analyses undertaken, a significance level of 1% was used throughout with 99% confidence intervals.

**Results**

Seven hundred and twenty five core science and 383 clinical students participated. Mean age of respondents was 18.4 years (SD 1.1) in Year 1 and 21.4 years (SD 1.7) in Year 4. Women comprised 53.1% (385) of core science participants and 54.0% (207) of clinical participants. Eighty one clinical students had previously participated in the study during their core science years: the total participant number was therefore 1027 (Table 1).

Initial cohort response rates varied from 49.5% to 77.8%. Among core science students women were more likely to respond than men (Fisher's exact test, p<0.001). Among clinical students there was no significant gender difference between responders and non-responders (Fisher's exact test, p=0.157). Among core science students, 291 (40.1%) of those participating maintained their participation in all three years. Among clinical students, 193 (50.4%) of those participating did so.

*Insert Table 1 here*

**Cross-sectional analysis**

The proportions of students indicating that they agreed (“agree” or “strongly agree”) with each of the eight statements, for each year of the course, is shown in Figure 1. At the start of the course, students had mostly positive attitudes towards PC, with some suggestion of differences between years.

*Insert Figure 1 here*

Respondents’ mean score and standard deviation for each statement, for each year of the course, are shown in Table 2; a higher score indicates greater agreement.

*Insert Table 2 here*

**The doctor’s responsibility.** The overwhelming majority (>93%) of respondents in each year agreed that doctors have responsibility to help patients prepare for the end of life (mean 4.36 to 4.63). There were lower levels of agreement that doctors have responsibility to provide bereavement care (core science 50% to 60% of respondents, mean 3.47 to 3.65; clinical 65% to 80%, mean 3.79 to 4.02).

**Psychological aspects.** There was strong agreement (>95% of respondents in each year, mean 4.61 to 4.72) that psychological and physical suffering can be equally severe. There were lower levels of agreement that depression is treatable in terminally ill patients (>60% of respondents in each year agreed, mean 3.66 to 3.87) and that patients can be truthfully told a terminal prognosis without destroying hope (>65% of respondents in each year agreed, mean 3.72 to 4.08).

**Personal impact.** Statements 6, 7 and 8 are negatively-phrased attitudinal statements concerning the personal impact of providing PC: caring for the dying being depressing, dreading dealing with family members and feeling guilty after a patient’s death. Students’ attitudes in all years were close to neutral (between 40% and 60% of respondents indicating agreement, mean 2.75 to 3.52).

The only significant (p<0.01) gender difference was that Year 2 women were more likely to have positive attitudes towards doctors’ having a responsibility to provide bereavement care. No significant gender differences were otherwise found. Table 2 suggests that Year 6 students’ mean attitude scores were generally higher than those of Year 1 students, particularly with regards to doctors’ responsibilities and psychological aspects.

Cross-sectional analysis thus revealed broadly positive attitudes towards PC at both the start and end of the course, although responses concerning the personal impact of PC were neutral at best. There was a suggestion of more positive attitudes towards the end of the course: longitudinal analysis below investigated attitudinal change over time as students progressed through the course.

**Longitudinal analysis.**

In order to investigate individual students’ changes in attitudes over time, an ordinal mixed effects regression analysis was undertaken. Table 3 presents odds ratios (OR) for the changes between the start and end of core science component (Years 1 and 3) and the start and end of clinical component (Years 4 and 6): these refer to the odds of having a higher outcome score in the later year (Year 3 or 6) relative to the earlier year (Year 1 or 4). (An OR of 3.00 indicates that a student has a three times greater odds of indicating a higher level of agreement in a later year compared to an earlier year, whereas an OR of 0.5 indicates that a student has a two times greater odds of indicating a lower level of agreement in a later year compared to an earlier year). Because of the large number of analyses undertaken, a significance level of 1% was used.

*Insert Table 3 here*

During core science years 1 to 3, three statistically significant changes in attitudes over time were identified, all of which were negative with regards to PC. Levels of agreement decreased towards doctors’ responsibility to help dying patients prepare for death (S1 OR=0.646, 99% CI 0.427 to 0.979, p=0.007) and towards doctors’ responsibility to provide bereavement care (S4 OR=0.569, 99% CI 0.399 to 0.812, p<0.001); levels of agreement increased towards the statement that PC is depressing (S6 OR=1.917, 99% CI 1.325 to 2.772, p<0.001)*.* There were no significant changes in attitudes towards psychological aspects, which may reflect students’ limited patient contact during core science.

During clinical years 4 to 6, four statistically significant changes in attitudes were identified, all of which were positive towards PC. Levels of agreement increased towards doctors’ responsibility to help dying patients prepare for death (S1 OR=3.025, 99% CI 1.717 to 5.238, p<0.001) and towards doctors’ responsibility to provide bereavement care (S4 OR=1.917, 99% CI 1.210 to 3.036, p<0.001), attitudinal changes in the opposite direction to those during core science. Levels of agreement also increased towards depression being treatable in terminally ill patients (S3 OR=1.900, 99% CI 1.190 to 3.034, p<0.001) and towards truth-telling not destroying hope (S5 OR=2.108, 99% CI 1.338 to 3.321, p<0.001). There were no significant changes in attitudes towards the personal impact of providing PC, despite clinical students’ considerable experience with dying patients. No significant gender interaction was found for any of these analyses in core science or clinical, indicating no difference in attitudinal change between male and female students.

Year by year longitudinal analysis of attitudinal change is presented in Table 4. Where statistically significant change was found, this was nearly always during the first years of both core science and clinical components (p<0.01 for three statements in each component). No significant change was found in core science between years 2 and 3 and only one significant change in clinical between years 5 and 6 (S6, caring for the dying is depressing). Significant gender interaction was only found on one occasion, male core science students being more likely to agree they dread dealing with patient and family member emotional distress (S7) in year 3 compared with year 2 (OR 2.041, 99% CI 1.140 to 3.653, p=0.002). The analysis revealed a notable lack of influence of gender on attitudinal change over time (Tables 3 and 4).

*Insert Table 4 here*

The subset of 55 students from the 2007 cohort who completed questionnaires in all of their six years was too small for the above ordinal regression analysis. Comparison of individual students’ attitudes in Years 1 and 6 using the Wilcoxon signed rank test revealed that attitude scores in Year 6 were significantly higher than in Year 1 for doctors’ responsibility to help patients prepare for death (S1, z=-3.95, p<0.001) and for doctors’ responsibility to provide bereavement care (S4, z=-2.75, p=0.005). No significant differences were found regarding impact on patients (S2, 3, 4) or personal impact (S6, 7, 8).

**Discussion**

**Key findings.**

This study gives new information on medical student attitudes towards Palliative Care and how these attitudes change during their course. Students started their course with positive attitudes towards their responsibilities as doctors and psychological aspects of PC, which largely persisted in their final year. For these two domains the potential for an increase in positive attitudes during the course was limited by a “ceiling effect” of being high on course entry. Attitudes concerning the personal impact of PC were neutral at best, which may adversely affect their student learning, subsequent engagement with their roles as doctors and the clinical care they provide. There is potential for improvement in this domain during the course. While attitudes were remarkably stable throughout the course, some statistically significant changes over time were found, albeit small.

During the core science component, when Cambridge students currently have limited patient contact and no PC teaching, attitudes became increasingly negative over time; towards the doctor’s role in helping dying patients prepare for death, providing bereavement care and PC being depressing. In contrast, during the clinical component, which is based on patient contact and contains a considerable amount of PC teaching, over time attitudes became increasingly positive: towards helping dying patients prepare for death, providing bereavement care, the possibility of maintaining hope when giving truthful terminal prognoses and the treatability of depression amongst the terminally ill. Core science studies appear to foster negative attitudes towards PC, while clinical studies appear to foster positive attitudes. Most of these changes occur during the first year of each component.

Some of these changes may be in part related to teaching that is not specific to PC. The students’ 8-week clinical Psychiatry placement, integrated between secondary and primary care during Year 5, may in part influence the increase between Years 5 and 6 in positive views toward the treatability of depression in the terminally ill (S3). More generally, the increase during clinical years in positive attitudes towards the doctor’s role in helping dying patients prepare for death (S1) and providing bereavement care (S4) may in part reflect a wider developing appreciation of the psycho-social aspects of medical care that arises from learning from patients in real life settings, in contrast to the knowledge-based focus on the somatic and pathophysiological during Core Science.

The lack of effect of gender on attitudes or attitudinal change is notable, although it is acknowledged that the analysis may have had insufficient power to detect clinically important differences.

Newly qualified doctors from the Cambridge course are thus starting their careers with broadly positive attitudes towards their role in caring for dying patients, and more positive attitudes towards their responsibilities for PC provision and bereavement care than at the start of their course.

**Comparison with the wider literature.**

Whilst older studies found medical students to hold broadly negative attitudes towards PC, more recent studies have reported more positive attitudes 20 25 40 33 41 42 as found in the present study. This may reflect a greater appreciation in Western society over recent years of the importance of addressing the needs of patients approaching the end of life. Comparison with the cross-sectional US study of Sullivan et al, from which our questionnaire was derived, is limited by the US data aggregating responses from junior doctors, senior teaching faculty and final year students. That study found broadly similar responses to those reported here, the majority agreeing or strongly agreeing with S 1 to 5 and more ambivalent responses to S 6 to 8 26.

This study is novel in the longitudinal analysis of attitudinal change over time, which to our knowledge has never been undertaken before. Considerable stability in attitudes was found during the course, with some negative changes during core science years and several positive changes during clinical years. Previous cross-sectional research reveals a mixed picture: some studies found little difference between students at different stages of their course 43, others more negative attitudes in later stages 44, while another reported students arriving with positive attitudes retained them while those starting with more negative attitudes were more positive by graduation 42. Specific education sessions have been found to improve attitudes towards PC 45, but the durability of such change is unknown: others have found no improvement in attitudes after hospice and palliative care electives 46. While medical school curricula have increased time allocated to PC over recent years, the impact has been variable 47. These uncertain, and at times contradictory, results from the literature may in part reflect the cross-sectional and small scale of many previous studies: the present study is novel in being one of the largest studies to date and in the longitudinal data analysis undertaken.

Bloom’s taxonomy of knowledge, skills and attitudes 48 would suggest that while the knowledge required for PC provision (such as the use of morphine and other drugs) can be readily learned, as may the skills required for effective and sensitive communication with patients and families, it is in changing medical students’ attitudes that the future care of patients may be most fundamentally changed and with longest-lasting impact throughout a future doctor’s career. Attitudes correlate well with knowledge 20 and affect patient care provision 49, but are challenging to change. Practical clinical experience with patients, with reflective practice, is effective in challenging and changing attitudes 41. Medical students frequently report being excluded from meeting patients near the end of life 6 7 11 and having little experience of PC 41, although experience with such patients strongly predicts self-perceived competence in the area 26. The Cambridge clinical course seeks to address this, particularly in the final year when the emphasis is on apprenticeship and reflective practice after meeting individual patients near the end of life 50 51.

**Study strengths and weaknesses.**

This study was conducted at one medical school with high academic entry criteria and a strong emphasis on core science in the first three years, a model found in some UK and US medical schools: these data may thus not be representative of students in other medical schools. In particular, it is unknown whether students at other schools with more early clinical experience also develop negative attitudes towards PC in the early years of their course: the present authors are current repeating this study at 14 other UK medical schools with a range of integration of core science and clinical components, that will help to address this issue.

Although response rates varied between cohorts, a good overall response rate was achieved: analysis of non-responders by the only available variable of gender broadly supports the generalizability of results to the population of Cambridge medical students 32. Despite some attrition longitudinally, participation was maintained for nearly half of students who responded in their first year. While the structured questionnaire has the advantage of having obtained information from over one thousand students, this study lacks qualitative information concerning the complexity of these attitudes, which could usefully be addressed by a qualitative approach. The potential for social desirability of responses is also acknowledged.

This study has several implications for PC teaching faculty, who could usefully consider the ways in which their courses are developing students’ attitudes towards all three PC domains, especially students’ concerns about the future impact of caring for patients near the end of their lives. The increasingly positive attitudes found among clinical students towards their future responsibilities as doctors in palliative and bereavement care may in part reflect a wider growing professionalism, although there is room for further improvement in those areas. The greater awareness of psychological aspects of PC, including the treatability of depression and combining truthfulness and maintaining hope reflects a maturing understanding of the challenges and possibilities when caring for those approaching death. The extent to which these changes are due to clinical training in general, or dedicated PC teaching in particular, remains unclear: this will be investigated in our multi-centre national replication of this study.

The neutral attitudes and lack of change concerning the personal impact of PC as depressing and a source of dread and guilt remains a challenge for teachers and cause for pastoral concern. The extent to which this reflects a maturing awareness of the challenges inherent in providing such care remains unclear. The negative attitudinal changes identified during core science are cause for concern, although countered by positive change during clinical: this is an issue that the authors are working with core science colleagues to address.

**Conclusion.**

This study is unique in its description of medical student attitudes towards Palliative Care over several years of student intake, with a longitudinal component investigating attitudinal change during the course. It found:

* Attitudes towards their future roles as doctors and the psychological aspects of care were positive on entry to the course and remained positive in the final year.
* Attitudes towards the personal emotional impact of caring for patients near the end of life were more negative at both start and end of the course.
* Over time, significant but small attitudinal changes occurred; negative changes during core science and positive changes during clinical.
* Over time students developed an increasing awareness of their future responsibilities in helping dying patients prepare for the end of life and in providing bereavement care.
* No large changes in attitudes occurred during any component of the course, indicating the difficulty of promoting attitudinal change.

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