

ARTICLE

## Importance and Impact of a Longitudinal Ethics, Law and Professionalism Curriculum on Medical Students' Knowledge and Professional Attitudes

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## **ABSTRACT**

### ***Introduction***

With an ageing population and rising complexity of care, helping medical students to develop an ethically, legally, and professionally sound approach to clinical practice is becoming even more important. This cross-sectional study explores how medical students' knowledge and application of ethical principles and professional attitudes develop during a longitudinal programme in health ethics, law and professionalism. Our research aims to evaluate the impact of longitudinal medical ethics curriculum on medical students' knowledge of ethical principles and professional attitudes as they transition from pre-clinical to clinical years.

### ***Methods***

Anonymised self-reported questionnaires assessing ethical knowledge and decision-making were administered to two groups of medical students in 2015 and 2016—preclinical year students [Year 2 (n=162)] and clinical year students [Year 5 (n=167)]. The study focused on Years 2 and 5 students as our aim was to evaluate how their perspectives differed after the end of both the pre-clinical and clinical years. Information on demographics were also collected.

### ***Results***

As expected, more Year 5 as compared to Year 2 students had a positive attitude and confidence towards medical ethics and decision-making. Although Year 2 students had limited patient exposure, their knowledge of key medical ethics principles was comparable to the Year 5 graduating medical students. However, there was variance between pre-clinical and clinical students' normative assessment of factors and practices in clinical ethical decision-making in scenarios such as resuscitation, disclosure of avoidable errors, truth concealment, and euthanasia.

### ***Discussion***

Medical ethics teaching has a positive impact on knowledge but strategies should be implemented to mitigate the effects of clinical exposure and to ensure more uniformity in normative assessment.

### ***Conclusion***

Longitudinal programme in health ethics, law and professionalism did enhance knowledge and professional attitudes in both preclinical and clinical year students. There was evidence of ethical erosion in a few of the domains for students in clinical years.

## INTRODUCTION

### *Background*

With an ageing population, increasing complexity of healthcare, and use of digital and social media in decision-making, the consensus among medical educators is that medical ethics should be integrated into medical education (Walton, 1995) such that future doctors are prepared to handle ethical issues which have far-reaching implications on many aspects of medical practice, from health policy to social justice and global health. The Romanell Report (Carrese *et al.*, 2015), which examined the state of medical ethics education in the US in 2015, has a view that professional formation should be a priority of medical ethics curriculum.

Medical ethics education should focus in aiding students to determine ethically, legally, and professionally sound courses of action in ethical dilemmas. This should be interlinked with helping graduating doctors develop effective communication skills and attributes such as empathy (Kurtz, Draper, Silverman, 2017; Hargie, Dickson, Boohan, & Hughes, 1998). Such development is becoming more important in recent years due to the shift from disease-focused to patient-centred care. Most official complaints have been related to poor communication skills and (real or perceived) lack of respect and care rather than issues related diagnosis and treatment (Taylor, Wolfe, & Cameron, 2002; Fallowfield & Jenkins, 2004).

Students need to recognise that medicine is an innately ethical enterprise, given that patients are vulnerable and medical aid is intrusive as it engages both the patients' minds and bodies (Pellegrino & Thomasma, 1993). Early studies have shown that "ethical erosion" is not uncommon among medical students during their clinical training (Feudtner, Christakis, & Christakis, 1994). Developing appropriate professional attitudes and ethics knowledge amongst medical students is essential to their training (Veatch & Sollitto, 1976; Pelligrino, Hart, Henderson, Loeb, & Edwards, 1985), and assessment of such training needs to be done to see which methods are most effective in changing practices to improve patient care and outcomes.

Although most medical schools incorporate medical ethics in the curriculum, few studies have been done to evaluate the impact of medical ethics curriculum on medical students' knowledge of ethical principles and also professional attitudes (defined here as the normative assessment of aspects of patient care that form the basis for decision-making) as they transit from pre-clinical to clinical years (Giubilini, Milnes, & Savulescu, 2016; Eckles *et al.*, 2005). This cross-sectional study explores this development among students undergoing the Health Ethics, Law and Professionalism Programme (HeLP) at the National University of Singapore, Yong Loo Lin School of Medicine (NUS YLLSoM) and the impact of longitudinal ethics, law and professionalism teaching on their knowledge and attitudes.

### ***Health Ethics, Law and Professionalism (HeLP) Programme***

The NUS Yong Loo Lin School of Medicine (YLLSoM) is an undergraduate medical school wherein students enter directly from high school. The first 2 years of the medical undergraduate curriculum focuses mainly on the basic medical sciences, interspersed with clinical exposure to reinforce the teaching of basic sciences. This is followed by 3 years of clinical teaching and training, where students are rotated to various clinical departments. Students spend their fifth year (final year) as interns in major clinical postings (i.e. Medicine, General Surgery, Paediatrics, and Geriatrics) ranging from 3 to 8 weeks under the Student Internship Programme (SIP).

Recognising that a solid foundation in medical ethics is essential in modern medical practice, the medical curriculum at YLLSoM was revised in Academic Year (AY) 2008/09 to include a "longitudinal track" in Health Ethics, Law and Professionalism (HeLP), designed and implemented by the NUS Centre for Biomedical Ethics (CBmE). Table 1 shows the programme content for HeLP.

Table 1  
*Content and structure of the Health Ethics, Law and Professionalism (HeLP) programme*

Year of Study	Phase	Teaching Hours	Curriculum
1	I	Lectures: 11 hours  Tutorials: 14hours (7 x 2 hours sessions)  Interactive Sessions: 2hours	<ul style="list-style-type: none"> <li>• Introduction to Health Ethics, Law and Professionalism</li> <li>• Respect for persons: The Human Body ; Consent ; Privacy and Confidentiality</li> <li>• Professionalism: Different perspectives</li> <li>• Beneficence – Best interest and fiduciary responsibilities</li> <li>• Justice: Healthcare Financing and Resource allocation</li> <li>• Non-Maleficence: Beginning of Life – Ethical Implications</li> <li>• Coming to an end – Defining death – Ethical implications</li> </ul>
2	II	Lectures: 7.5 hours (includes 1 hour for e-lecture)  Tutorials: 10 hours (5 x 2 hour sessions)  Seminars: 4 hours	<ul style="list-style-type: none"> <li>• Ethics and Communicable Diseases</li> <li>• Truth-telling in Medicine</li> <li>• Futile Interventions</li> <li>• Ethics and Medical Genetics</li> <li>• Best Interests and the Mental Capacity Act</li> <li>• Duty of Care and Medical Negligence</li> <li>• Professionalism and Ethics During Clinical Training Years</li> </ul>
3	III	Lectures: 5.5 hours  (Combined Teaching Sessions)  Tutorials: 8 hours (Ethics Board Round – 4 x 2 hours sessions)  Interactive Sessions: Nil	<ul style="list-style-type: none"> <li>• Ethics Board Rounds: Group Presentation</li> <li>• CTS:                             <ul style="list-style-type: none"> <li>i) Inter-professionalism and Cultural Diversity</li> <li>ii) Consent in Context</li> </ul> </li> </ul>

4	IV	Combined Teaching Sessions (CTS) totaling 19 hours	<ul style="list-style-type: none"> <li>• Professionalism</li> <li>• Health Economics</li> <li>• Law Seminar</li> <li>• Patient Safety Workshop - Iatrogenic injuries (Intro, Perioperative complications, Fatal ADR, Medication errors), and why ethics and professionalism are integral to patient safety</li> <li>• Trauma – approach to multiple trauma, perioperative care, death in ICU, HOTA, Bereavement)</li> <li>• CHP Ethics and Risk Assessment</li> <li>• Global Health, Professionalism knows No National Boundaries: Studying, Working, and Volunteering Abroad</li> </ul>
5	V	Lectures: Nil  Tutorials: 8 hours (4 x 2 hours sessions)  Interactive Session: Nil	<ul style="list-style-type: none"> <li>• Ethics Tutorial (Medicine Postings)</li> </ul>

\***Abbreviations:** Combined Teaching Sessions (CTS); Adverse drug reactions (ADR); Intensive Care Unit (ICU); Human Organ Transplant Act (HOTA); Community Health Project (CHP); Student Internship Programme (SIP)

HeLP is integrated with the curriculum through all five years of medical school (see the Appendix on P. xx for details). It is implemented by a diverse group of teaching faculty comprising bioethicists (with educational backgrounds in philosophy, law, and sociology) and clinicians, which allows for a multidisciplinary approach to the design and teaching of the HeLP curriculum. Its objectives are to cultivate key professional attributes (honesty and integrity; responsibility and participation; respect and sensitivity; compassion and empathy), enhance ethical sensitivity and reasoning skills, and ensure an understanding of relevant laws and regulatory frameworks amongst future physicians.

While HeLP has undergone multiple revisions in terms of topic coverage and teaching pedagogy, the Four Principles theoretical framework developed by Beauchamp and Childress (2001)—autonomy, beneficence, non-maleficence, and justice—from which to analyse and address ethical situations in medicine remains consistent. Students are introduced to the four principles in the first year or phase of HeLP as the foundation of clinical ethics, and learn how these principles may relate to other ethical, legal or professional concepts in order to understand and appreciate their application to professionally sound medical judgment and practices in both the pre-clinical and clinical years. In

the session “Beneficence–Best interest and fiduciary responsibilities” (Phase I) for example, students will be led to consider the ethical requirements of beneficence in providing care to both adults and children; how a doctor’s fiduciary responsibilities to her patients are based on beneficence; and, what it means to respectfully promote the “best interests” of patients which should balance both beneficence and considerations of patient autonomy.

Current pedagogy consists of didactic lectures (including short e-lectures for a flipped classroom approach), interactive lectures (i.e. lectures with in-class exercises), as well as tutorials with students presenting case analysis in groups, seminars, ethics board rounds, and combined teaching sessions. While the course content listed below consists mainly of structured teaching, ethical issues are also discussed during medicine, surgery and geriatric clinical postings.

*Preclinical ethics courses: Year 1 to 2 (Phase I to II)*

In the pre-clinical years, students have limited exposure to real patients. Most of the skills are learnt through interaction with standardised patients. The key aim is to equip students with basic knowledge of ethics, law and professionalism by integrating pertinent topics in ethics and law with the teaching of pathology and patterns of diseases. For example, students are taught respect for the human body before their anatomy classes in Phase I. Faculty from the Centre for Biomedical Ethics (CBmE) and clinician teachers are tasked to teach the students, and most of it happens in the classroom through case analysis.

For example, in Phase II, under the topic “Truth-Telling in Medicine”, students will discuss an ethical dilemma arising from a family’s request for truth-concealment in a patient with a diagnosis of cancer, based on the possibility of the patient refusing treatment if she is made aware of her diagnosis due to her cultural upbringing.

*Clinical ethics courses: Year 3 to 5 (Phases III to V)*

During their clinical years, HeLP would be integrated in the core rotations (medicine, geriatrics, pediatrics, obstetrics-gynecology, psychiatry and surgery) through ethics rounds, discussion groups and skills training. Faculty from CBmE and the core rotation departments would be primarily responsible for ethics teaching during the clinical years.

The basic concepts of medical ethics covered in Phases I and II would be revisited in Phases III to V through analyses of the cases written by the HeLP team (see Table 2) or the students themselves to enable contextual analysis using the 4 Principles and other frameworks.

Table 2

*Case study – Ethical issues in dealing with allocation of financial aid*

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**Scenario:**

Mr G is a 62-year-old married man with poorly controlled hypertension, hyperlipidemia, and diabetes mellitus. He presents at the outpatient clinic requesting a referral to the medical social worker (MSW) as he is currently unable to meet the costs for a recent hospital admission where he was treated for a diabetic foot ulcer. To Medical Student P, the patient appears unkempt with an unwashed odor. Mr G informs P that he is an unskilled laborer and has been unable to stop his habit of smoking a pack of cigarettes each day due to his stressful home life and ongoing depression. He also revealed that loan sharks are after him for outstanding gambling debts.

**Ethical dilemma:** The student wonders if this patient deserves the financial support given his lack of compliance with medical advice and his self-inflicted problems.

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Bedside learning, that is, using real-time moments in individual patient care to teach medical ethics is employed. However, such learning opportunities tend to be highly limited due to logistical issues and a lack of clinical teachers with the requisite training and time to commit to such a resource-intensive undertaking.

### ***Evaluation of students during HeLP***

Students are formally evaluated on their medical ethics knowledge through group case presentations, modified essay questions examinations, and objective structured clinical examinations.

## **METHODS**

### ***Ethics approval***

Ethics approval was obtained from the NUS Centralised Institutional Review Board on 27th March 2015 (NUS-IRB Ref No.: B-15-046). Informed consent from each respondent was also obtained before the questionnaire was administered.

### ***Questionnaire***

To measure student's attitudes towards medical ethics, knowledge and values, we used a questionnaire adapted from Gruber *et al.*'s (2008) paper on changes in medical students' attitudes towards end-of-life care. A total of 329 self-reported questionnaires (Year 2: 162; Year 5: 167) were administered and returned.

This 35-item questionnaire was modified to cover various ethical areas and includes a 5-point Likert scale.

1. Students' attitudes toward medical ethics
2. Students' knowledge and values of:
  - i) Medical ethics
  - ii) Conflicts between autonomy and beneficence
  - iii) Respect for human rights
  - iv) Confidentiality
  - v) Advanced care planning
  - vi) Mental capacity
  - vii) End of life care

### ***Data analysis***

All statistical analyses were performed using IBM SPSS Statistics for Windows, Version 23.0. (IBM Corp; Armonk, NY). The questionnaire was analysed descriptively first, and the frequencies and percentages were reported. The Chi-square test was used to compare the attitudes, knowledge and values between Year 2 students and Year 5 students. Only these two groups were studied as our aim was to evaluate how much their perspectives differed after the end of both the pre-clinical and clinical years. The association of gender, race, and religion with the students' attitudes, knowledge and values were studied by using Chi-square test. A *p*-value of less than 0.05 was considered statistically significant.

## RESULTS

### *Demographics*

A total of 329 students participated in this survey (AY 2015/16), 162 of 280 (57.9%) pre-clinical Year 2 students and 167 of 280 (59.6%) clinical Year 5 students responded.

### *Students' attitudes and confidence in addressing ethical issues*

Final year students had a more positive attitude towards medical ethics and felt more confident in managing ethical decisions and issues in a clinical setting (Figure 1).

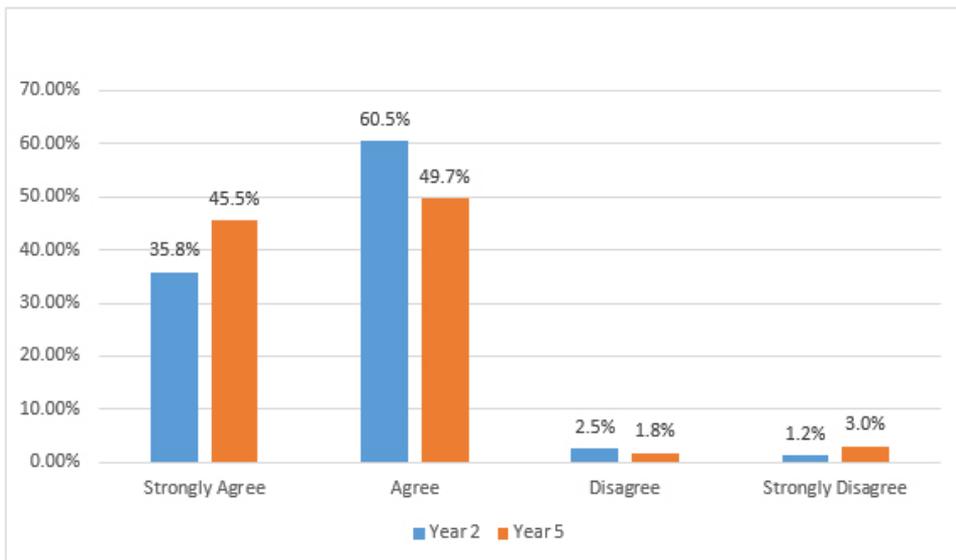


Figure 1. Students were presented with the statement: “Learning medical ethics is useful” ( $p=0.001$ )

### *Ethical knowledge*

Overall, while the majority of both Year 2 and Year 5 medical students understood the 4-Principles—respect for autonomy, beneficence, non-maleficence and justice—it was interesting to note that 34.2% of Year 5 students compared to 19.8% of Year 2 were unable to define justice ( $p < 0.05$ ). This lack of understanding of justice by graduating medical students would affect how ethical issues relating to justice are approached in the later sections.

### *Clinical application of medical ethics*

An analysis was also done of the data collected on students' attitude towards the clinical application of medical ethics, specifically on their attitudes and understanding towards the principles of medical ethics and medical disclosure. The results can be seen in Table 3 (next page).

Table 3

*Results of students' attitudes and understanding of the Principles of Medical Ethics and Medical Disclosure (Year 2, n=162; Year 5, n=167)*

Principles of Medical Ethics	Year	Strongly Agree	Agree	Disagree	Strongly Disagree	p-value
If a mentally capable patient refuses treatment, which the doctor thinks is potentially lifesaving, the doctor should still accept the patient's wishes	2	46.9%	48.1%	3.7%	1.2%	0.148
	5	38.9%	53.3%	6.7%	1.1%	
If a mentally capable patient refuses treatment, which the doctor thinks is necessary but not lifesaving, the doctor should still accept the patient's wishes	2	58.0%	39.5%	2.5%	0.0%	0.041
	5	44.3%	53.3%	2.4%	0.0%	
All patients should have attempted resuscitation if resources are available	2	27.2%	37.0%	32.1%	3.7%	0.250
	5	18.0%	42.5%	34.7%	4.8%	
Age is a factor in deciding if I will resuscitate the patient	2	6.2%	18.5%	46.9%	28.4%	0.004
	5	8.4%	33.5%	41.3%	16.8%	
Quality of life is a factor in deciding if I will resuscitate the patient	2	16.0%	38.3%	32.1%	13.6%	0.001
	5	31.7%	55.1%	10.2%	3.0%	
Comorbidities are a factor in deciding if I will resuscitate the patient.	2	8.6%	34.6%	45.7%	11.1%	0.001
	5	19.2%	62.9%	13.2%	4.8%	
Doctors should discuss with the patient whether or not to withhold CPR, if the patient has capacity.	2	51.9%	34.6%	8.6%	4.9%	0.002
	5	60.5%	37.1%	0.6%	1.8%	
Doctors should discuss with the patient's family whether or not to withhold CPR, if the patient has capacity	2	12.3%	35.8%	40.7%	11.1%	0.003
	5	20.4%	47.3%	23.4%	9.0%	
Ultimate decision for resuscitation lies with the doctor	2	9.9%	48.1%	34.6%	7.4%	0.001
	5	31.7%	53.3%	14.4%	0.6%	
Aggressive pain relief in the dying is justifiable	2	13.6%	59.3%	23.5%	3.7%	0.030
	5	24.6%	58.1%	14.4%	3.0%	
<b>Medical Disclosure</b>						
Medical information given to the patient should include everything	2	33.3%	49.4%	16.0%	1.2%	0.579
	5	30.5%	55.7%	12.0%	1.8%	
All risks and side effects should be disclosed prior to starting any procedures or medications	2	56.8%	34.6%	8.6%	0.0%	0.078
	5	61.7%	34.1%	3.0%	1.2%	
Avoidable errors should be disclosed	2	55.6%	43.2%	0.0%	1.2%	0.023
	5	47.3%	47.3%	4.8%	0.6%	
A cancer diagnosis should be withheld from a patient if asked to by the family	2	1.2%	24.7%	59.3%	14.8%	0.001
	5	2.4%	7.2%	65.3%	25.1%	

Patient Confidentiality						
Patient Confidentiality should be maintained in all instances	2	33.4%	25.9%	37.0%	3.7%	0.023
	5	51.2%	23.3%	21.1%	4.4%	

While 95% and 92% of both Years 2 and 5 students respectively agreed and strongly agreed to the statements that they would uphold patient autonomy in situations where mentally capable patients refuse treatment regardless of whether it is life sustaining, Year 5 students were not more likely than Year 2 students to uphold patient autonomy in the context of non-life sustaining treatment.

Meanwhile, the majority of respondents, 64.2% of Year 2 and 60.5% of Year 5 students agreed and strongly agreed to the statements that all patients should have resuscitation if resources are available regardless of age, comorbidities and quality of life. With respect to age as a specific consideration, only 58.1% of Year 5 students agreed and disagreed that it would not be a factor in deciding resuscitation, ( $p < 0.05$ ). 13.2% of Year 5 students compared to 45.7% of Year 2 students disagreed and strongly disagreed that quality of life should be a factor in deciding resuscitation ( $p < 0.05$ ). Similarly, 18% of Year 5 students compared to 56.8% of Year 2 students disagreed and strongly disagreed that comorbidities should be a consideration in deciding resuscitation ( $p < 0.05$ ).

According to Table 3, 27% more Year 5 students as compared to Year 2 students agreed and strongly disagreed to the statement that doctors should ultimately decide whether patients received resuscitation ( $p=0.001$ ). 19.6% more Year 5 students as compared to Year 2 also strongly agreed to the statements that patients and family members should be involved in end-of life discussions.

In addition, more Year 5 students (82.7%) compared to Year 2 students (72.9%) agreed and strongly agreed to the statement that aggressive pain relief in the dying, even at the risk of hastening death, is justifiable if the primary aim is pain relief ( $p < 0.05$ ).

### *Medical disclosure*

While the majority of Years 2 and 5 students reported that patients should receive full medical disclosure during clinical consults and that they would disclose all risks to patients while counseling for a medical procedure, it was surprising to note that most who disagreed and strongly disagreed to the statement that avoidable errors should be disclosed to patients were Year 5 students; 5.4% of Year 5 students compared to only 1.2% of Year 2 students (Figure 2).

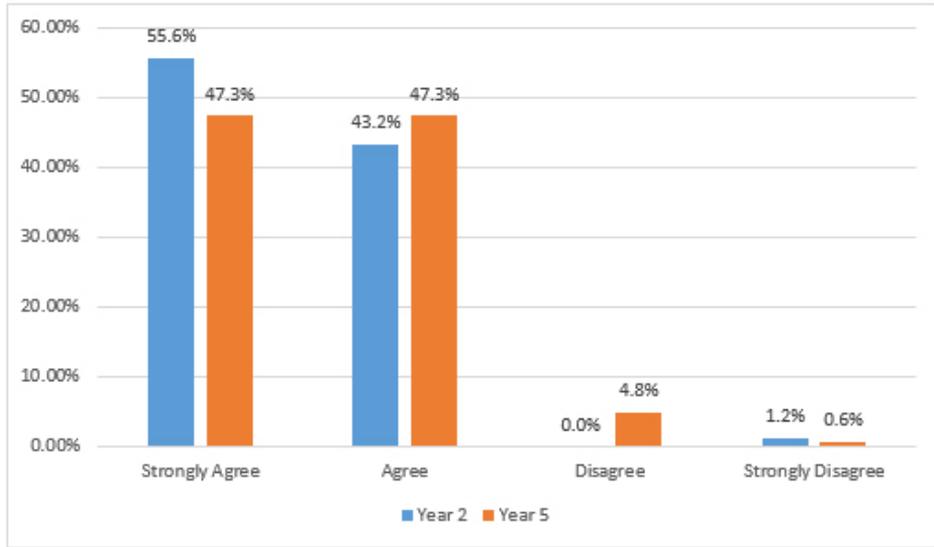


Figure 2. Students' responses to the statement: "Avoidable errors should be disclosed" ( $p=0.023$ )

### *Patient confidentiality*

17.8% more Year 5 students compared to Year 2 students strongly agreed that patient confidentiality should be maintained in all circumstances ( $p < 0.05$ ). In addition, while 16.3% less Year 5 than Year 2 students agreed and strongly agreed to the statement on acceding to the family's request not to disclose a diagnosis of cancer to the patient, the number of those who strongly agreed with truth concealment doubled from 1.2% in Year 2 to 2.4% in Year 5 ( $p=0.001$ ).

### *Practiced-based learning*

#### *Mental capacity*

95% of both Years 2 and 5 students believed they understood that assessment of mental capacity involves a clinical interview which tests the patient's ability to meet all four criteria of capacity defined by the Mental Capacity Act (Attorney-General's Chambers, 1998). This thorough understanding of the Mental Capacity Act is reflected in 99% of Year 2 and Year 5 students being aware that all physicians should be able to determine mental capacity and that the responsibility does not lie solely with the psychiatrist ( $p < 0.05$ ).

#### *Legalisation of euthanasia*

11.6% more Year 5 students as compared to Year 2 students felt strongly that euthanasia should be legalised and considered in patients who are terminally ill.

## DISCUSSION

This cross-sectional study explored the impact of a longitudinal programme in health ethics, law and professionalism (HeLP) on the knowledge and attitudes of medical students.

We found that Year 5 (final year) students had a more positive attitude towards medical ethics and felt more confident in managing ethical decisions and issues in a clinical setting. This can be attributed to the significant increase in case analysis allowing tutors and students to identify and develop a response to ethical issues and dilemmas. And, as expected, Year 5 students showed improvements in their ethical assessment of specific aspects of patient care such as resuscitation, which is likely to be based on the knowledge they acquired in their earlier HeLP training; the exceptions were a few domains such as medical disclosure of avoidable errors and truth concealment.

In addition, we found that there was a variance in the way pre-clinical and clinical students normatively assessed factors and practices in clinical ethical decision-making. This variance could be due to various factors: “ethical erosion” (to be explained further in the following paragraphs), real-world clinical exposure to patients and their families, and sociocultural influences.

Year 5 students were more likely to consider quality of life and patients’ comorbidities in decisions on resuscitation compared to Year 2 students. This was most likely influenced by real-world clinical exposure. The decision to resuscitate is often multi-factorial, taking into account the patient’s specific situation, such as the pre-morbid state and expected quality of life. Resuscitation in medically futile circumstances might represent a violation of an individual’s right to die with dignity. Considering that the physician’s fiduciary responsibility is to act in the best interests of the patient, it is imperative that students, as future doctors, be aware of the circumstances in which resuscitation is medically indicated.

Conversely, Year 5 students were more likely to disagree that avoidable errors should be disclosed to patients, compared to Year 2 students (5.4% vs 1.2%,  $p=0.023$ ). This is perhaps related to the problem of “ethical erosion”. In contrast to pre-clinical years which are predominantly spent in lecture halls or classrooms, students during clinical years, as studies have shown, are generally isolated from most of their peers (Fryer-Edwards, Wilkins, Baernstein, & Braddock, 2006). This decreases interaction amongst peers, and students end up having fewer opportunities to connect with their peers regarding professionalism and ethical acceptability of behaviour. Moreover, students in clinical years are exposed to ethically and professionally challenging conflicts

(Veatch & Sollitto, 1976; Pellegrino, Hart, Henderson, Loeb, & Edwards, 1985) where they learn what to do from existing practices. Unique conflicts experienced by medical students in their clinical years include concealing their level of inexperience from patients, as guided or influenced by their superiors, while seeking to establish trust with patients and to act in their best interests. These experiences—the “hidden curriculum”—might negatively influence future behaviour. Clinical year students might have witnessed supervisors providing minimal information to patients after committing medical errors. A study conducted by Martinez and Lo (2008) on medical students’ experiences with medical errors found that 46% of medical errors were not disclosed to patients; some were discouraged from reporting by senior physicians and had witnessed some senior physicians attempting to conceal errors (Martinez & Lo, 2008). They might also be more aware of potential litigation issues stemming from medical errors. Other barriers might also include the intrinsic psychological difficulty in confronting one’s mistakes and apologising for them.

In addition, Year 5 students were twice as likely to strongly agree with truth concealment when families’ request non-disclosure of cancer diagnosis to patients as compared to Year 2 students (2.4% vs 1.2%,  $p=0.001$ ). Exposure to the context of practice is again a possible explanation. A study conducted in Singapore by Tan *et al.* (1993) found that “84% of doctors agreed to the family’s request of not telling the truth to the patient” (Tan *et al.*, 1993).

While doctors in Western countries generally stress autonomy and “truth telling”, many of those practicing in Asian and Middle Eastern countries stress beneficence and non-maleficence where illness and end-of-life care are regarded as a shared family decision (Beauchamp & Childress, 2001; Sugarman & Weiss, 2000). Physicians in these countries may feel that it is ethical to first disclose any fatal diagnosis or prognosis to a family member or to collude with the family to withhold information (Fan & Li, 2004). Although Singapore is a cosmopolitan country, certain traditional values and beliefs are still upheld.

The rationale for truth concealment in certain cultures involve the following (Kagawa-Singer & Blackhall, 2001; Hern, Koenig, Moore, & Marshall, 1998; Frank *et al.*, 1998):

1. Discussions of serious illness and death are regarded as disrespectful
2. Disclosure may extinguish patient’s hopes
3. Discussions of serious illness may lead to further despair and suffering
4. Voicing the condition causes death or terminal illness to become real

It was also interesting to note that more Year 5 students felt that euthanasia should be legalised in terminally ill patients. This is despite euthanasia not being permitted in Singapore. This comparison demonstrates differences in attitudes that may exist between pre-clinical and clinical students, the latter of whom have probably worked closely with suffering and terminally ill patients and acquired an experiential understanding of what it means to care for them in their impending future as physicians.

Our findings show that “ethical erosion” arising from isolation should be counteracted. Circumventing negative influences and misconceptions prevalent during the clinical years should involve ward-based problem-based learning and discussions through the clinical years. These teaching methods will promote active introspection on the part of both students and teachers, and bring intuition and practices into a critical light. In addition, good clinical role models and leaders in ethics should also be engaged to integrate knowledge, skills and attitudes to help address challenging experiences faced by students during early clinical training through the exchange of ideas and best practices in problem solving.

Medical ethics education should also prepare students for ethical dilemmas arising from truth-telling to terminally ill patients. Students should be able to differentiate when honesty is an absolute versus a situational good; the latter assessment calls for applying relevant ethical principles with an understanding of clinical and other social facts to derive unique, case-by-case solutions. The key to addressing this challenge is through good communication and access to advanced skills training. Explorations of doctor-patient-family relations will help provide valuable insight into the values, beliefs and dynamics of the stakeholders. Culturally sensitive end-of-life care can be provided if the physician can elicit and follow culture preferences concerning medical disclosure and advanced care planning. Ultimately, the autonomy or the best interests of the patient should always be upheld.

With regards to ethical challenges arising from end-of-life care, more emphasis on clinical education addressing the issues of palliative care, reducing suffering, and increasing knowledge of hospice and palliative care services may be the most appropriate way to deal with the issue of euthanasia.

Ethics education has increased both in quantity and quality over the past forty years (Silverberg, 2000; DuBois & Burkemper, 2002). Whilst medical ethics is predominantly taught in the pre-clinical years, in recent years there has been a significant increase in ethics education in the clinical years as this is where patient-centred care is being delivered (Lehmann, Kasoff, Koch, & Federmann, 2004).

In the pre-clinical years, medical ethics education should aim to provide students with the knowledge to outline a principled approach to addressing common issues in medical practice, such as truthfulness with patients, respect for patient autonomy, and managing conflicts of interest. Ethics education in the clinical years, on the other hand, should provide students with opportunities to deepen what they have learned in their pre-clinical years and to demonstrate ethically sound and professionally reasonable responses to ethical problems based on their own experiences or exploiting moments in patient care at the bedside. Our study did highlight the impact and importance of the longitudinal HeLP curriculum in enhancing students' ethical assessment of considerations and practices, which is important for good decision-making in their future careers. Since this study, HeLP teaching has been scaled up in the clinical years. Combined teaching sessions facilitated by clinicians and ethicists were introduced to Phase IV to increase discussions of pertinent topics faced by students at this stage. Discussions on the integration of ethics teaching during clinical ward rounds in hospitalised patients (facilitated also by clinicians and ethicists) is ongoing at the time of writing.

This study has a number of strengths. For one thing, it is the first study done exploring the impact of the new medical education curriculum among medical students in Singapore. The findings of this study show that the longitudinal teaching of ethics, law and professionalism promotes a positive attitude, and results in a significant increase in students' ethical knowledge and ethical assessment at the end of medical school. Variance in assessment suggests that there are many factors influencing students' views and approaches to ethical challenges. For instance, students' professional behaviours and attitudes can be profoundly affected during clinical rotations. They might be exposed to ethically challenging circumstances which, if left unaddressed, may lead to "ethical erosion". Students would need to be conscious of medical practices that perpetuate unethical behavior, which can affect their ability to cultivate and uphold appropriate professional behaviours as future physicians.

The study also has some limitations. For the survey, the characteristics of the non-respondents for the survey might differ from the respondents, thus resulting in bias in the measurement of outcomes. Response bias might also result as respondents might feel pressured to give socially or ethically acceptable responses. There is a level of subjectivity which is also not acknowledged as the participants' responses are based on their individual interpretations of the question.

## CONCLUSION

It was found that the longitudinal programme in health ethics, law and professionalism (HeLP) did enhance knowledge and professional attitudes in both pre-clinical and clinical year students at YLLSoM. There was evidence of ethical erosion in a few of the domains for students in the clinical years. The findings also indicated that a longitudinal programme teaching and learning ethics, law and professionalism such as HeLP is necessary to develop sound ethical practices in medical students as they transition from the pre-clinical to clinical years. Such a programme should be scaled up in the clinical training years and embedded at bedside interactions to promote uniformity in assessment and counter the effects of ethical erosion.

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## APPENDIX. REVISED HELP CURRICULUM

