Undergraduate teaching and assessment needs in ethics and professionalism on clinical ward rounds involving medical students, Faculty of Health Sciences, Stellenbosch University (SU): a non-experimental descriptive study.

by

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Declaration

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Abstract

Background: The theoretical / cognitive component of ethics and professionalism teaching to undergraduate medical students at Stellenbosch University (SU) is well developed, but a concern exists about the need for teaching and assessment of clinical ethics and professionalism on ward rounds. Some teaching does take place during clinical rotations in the form of role modelling as part of the hidden curriculum. Opportunities should be created for explicit teaching of ethics and professionalism beyond the hidden curriculum. Assessment of the cognitive component of ethical and professionalism occurs, but assessment of clinical ethics and professionalism during clinical rotations remains a challenge.

Methods: This was a non-experimental study and included three subgroups of undergraduate medical students in their clinical years as well as a random sample of educators involved in clinical training. Questionnaires were distributed to the students and educators. This was followed by focus group interviews among the students.

Results: A majority of the students (88%) had indicated that they had experienced ethical and professional dilemmas while working in the wards or during ward rounds. The main dilemmas revolved around inadequate consent processes, lack of confidentiality and privacy, disrespect for patients, poor communication and students being expected to perform tasks they were not trained for. An average of 64% of students indicated that ethical and professional issues were not discussed during the clinical rotations in hospitals. Seventy-eight percent of students indicated that they did not feel free to discuss their own feelings or beliefs on ward rounds. All of the educators felt that there was a need for increased teaching and assessment of the medical students during their clinical rotations.

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Conclusions: Deliberate opportunities need to be created for teaching ethics and professionalism on clinical ward rounds. This could be a shared responsibility between the clinical departments with continuous input throughout the clinical years of study. Strong institutional support and commitment are necessary to make the teaching sustainable and successful. Structured opportunities need to be developed where students can discuss ethical and professional issues in a safe environment. Further research is needed for the development of an appropriate curriculum and assessment tools.

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Background

The need for training of medical students in ethics and professionalism remains undisputed. Accrediting bodies worldwide emphasize the need for competence of health care professionals in ethics and professionalism. At institutions where formal ethics teaching occurs, concerns about the need for teaching and assessment of clinical ethics and professionalism on ward rounds has been expressed [1]. Opportunities for explicit teaching of clinical ethics and professionalism, beyond role-modelling, shrink dramatically during the clinical years when students need it the most.

One of the common trends in the development of medical education internationally is "the greater awareness of the role of the medical doctor, professional requirements and medical ethics" [2]. In South Africa the outcomes for undergraduate medical education and training are described in a document published by the Health Professions Council of South Africa (HPCSA) and include reference to objectives relating to professional attitudes and behaviours [3]. Graduates must have the appropriate attitudes and behaviour patterns to ensure quality health care. The White Paper 3, a document published by the Department of Education in South Africa, mentions the improvement of quality of teaching and learning, establishment of a free and open academic climate, as well as the creation of an institutional environment that is based on tolerance and respect [4]. The paper further mentions that the institutions of higher education in South Africa should develop mechanisms which will create a secure and safe campus environment, set standards to determine behavioural norms for staff and promote sensitivity concerning racial and cultural differences.

The medical education programme at Stellenbosch University(SU) is designed to train a doctor who will acquire the necessary knowledge, skills and professional attitude to utilise the opportunities available in order to function independently and effectively within a primary care setting. This is specified in a document called the "Profile of the Stellenbosch Doctor"(Table 1). The theoretical/cognitive component

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of ethics and professionalism teaching to undergraduate medical students at SU consists of 6 formal introductory lectures in ethics in their first year of training, followed by 8 lectures in their 2nd year. During the 5th year of training, students attend a compulsory 3 week rotation in ethics, human rights and law. This rotation comprises lectures, small group discussions and group assignments. The teaching is co-ordinated by the Centre for Medical Ethics and Law, Faculty of Health Sciences. In addition students also receive formal lectures in practice management and professionalism at the beginning of their fifth year. Some teaching does take place on ward rounds during clinical rotations, but most of the informal professionalism teaching occurs by means of role modelling, which is usually by junior staff with minimal clinical experience.

Cruess and Cruess describe general principles for teaching professionalism [5]. The paper highlights the importance of role models, faculty buy-in and faculty development to maximize positive and to minimize negative aspects of the informal or hidden curriculum. In the USA professional organizations, such as the American Board of Internal Medicine (ABIM), collaborating under the umbrella of Project Professionalism, have stated that professionalism includes numerous elements, among which, are altruism and respect for each other, and additional humanistic qualities such as empathy, honour, integrity, ethical and moral standards, accountability, and excellence such as a commitment to lifelong learning, duty and advocacy [6].

Opportunities must be created for explicit teaching of ethics and professionalism beyond the use of role modelling alone. Instead of reflecting at leisure, as medical students do about an end-of-life patient-care scenario during their formal training, they must be trained to talk to the family of a critically ill patient about do-not-resuscitate orders with little time at their disposal – a hands-on approach. Goold suggested that the training in clinical ethics and professionalism should not be the purview of any one specialty [7]. She stated that there are many concerns common to different departments and that there

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must be opportunities for joint programmes and interprofessional education in the context of ethical patient care. Du Preez noted how important it is to ensure continuous inputs in ethics and professionalism throughout the curriculum [8]. A strategy suggested by her is the concept of "Golden Threads" to denote nine generic and professional skills that do not stand alone as modules, but could be woven into the fabric of the six-year learning programme. The nine "Golden Threads" suggested by her include: "interpersonal skills, group and team work, professional attitudes, bioethics, problem solving and critical thinking, research-based clinical practice, health and the law, economy and health and the epidemiological approach to health". A similar strategy was also mentioned by Moodley [1]. Role models play an important part in the professional socialization of medical students. Students learn from both negative and positive role models. Spike stated that the goal must be to find role models who know the issues and are capable of explaining them to others as well as of demonstrating them [9]. A disadvantage common to both the "Golden Threads" and the role play models is the loss of senior and committed staff who withdraw due to the high work load, financial discrepancies between the state and private sectors, low morale or retirement.

Assessment of the cognitive component of ethical and professionalism teaching at SU is established. Teaching of clinical ethics and professionalism on ward rounds and a revised curriculum may need a new form of assessment. Du Preez suggested an instrument to monitor students' professionalism during their clinical years that consists of seven criteria for the clinical approach and six criteria for professional behaviour: "respect; empathy; interpersonal relations; maturity; integrity and responsibility" [8]. Each of these criteria is rated on a nine-point Likert scale. However, the assessment of these criteria in students in the clinical situation remains a challenge.

The teaching of clinical ethics and professionalism to undergraduate students is important as they are confronted by important professionalism and ethical issues during their clinical rotations. The aim of this

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study was to establish the current practices and the need for ethics and professionalism teaching and assessment on ward rounds at SU. The information obtained from this study may help with future development of a revised curriculum for undergraduate medical students at Stellenbosch University.

Methods

This was a non-experimental descriptive study using a mixed methods (qualitative and quantitative) approach. The study was conducted in the Faculty of Health Sciences of Stellenbosch University in Cape Town, South Africa. The main teaching hospital is the Tygerberg Academic Hospital, but undergraduate medical students also rotate through smaller regional and rural hospitals like Paarl Hospital, Worcester Hospital and Karl Bremer Hospital, all situated in the Western Cape Province of South Africa. These hospitals serve a largely indigent population, many of whom are from disadvantaged backgrounds. The languages spoken by the patients are mainly Afrikaans, isiXhosa and English. The majority of students are Afrikaans or English speaking.

Study population and Sampling

The study population consisted of three subgroups of undergraduate medical students in their clinical years and included the 4th, 5th and 6th years. The groups were all involved in clinical training in the different hospitals mentioned above. In each study year group there are approximately 175 students. The reason for selecting the specific year groups was that the 4th year students had not yet done their formal training in ethics and professionalism, the 5th year students had just completed their formal lectures in ethics and professionalism and the 6th year student's work as student interns in the wards.

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A random sample of educators involved in clinical training at the different hospitals mentioned earlier was selected to participate in the study. The departments and or disciplines selected included the various surgical disciplines, internal medicine, paediatrics, family medicine, psychiatry, and obstetrics and gynaecology.

Data Collection

The study was conducted during the last semester of 2010. A questionnaire was circulated among the undergraduate medical students and was followed by focus group interviews on a selected random sample of medical students. The questionnaire was anonymous and consisted of 27 items with open and closed questions. The items in the questionnaire covered both ethical and professional issues and were identified after consulting various papers and textbooks on ethics and professionalism. The investigator ensured that the students received the questionnaire, which they had to complete and return as soon as possible after completion. The questionnaires were also circulated via a web-based survey tool for questionnaires (SurveyMonkey™). Three focus group interviews followed the questionnaire survey. Each focus group consisted of 12 students representing each of the study years. The focus group data were used to triangulate with the questionnaires. An independent interviewer was used to run the interviews to prevent bias during the interview.

A separate questionnaire was sent via a web-based survey tool for questionnaires (SurveyMonkey™) to the selected random sample of clinical educators. This questionnaire consisted of 13 items with open and closed questions. The focus of the items covered in this questionnaire was to obtain information about the formal training of the educators in ethics and to acquire the educator's views regarding the need for teaching clinical ethics and professionalism on ward rounds. One of the items requested the educators' input regarding assessment of the students in the clinical setting. This survey was done at the same time as the questionnaire survey of the medical students.

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The students and the educators were assured of their privacy and confidentiality. Ethics approval for the study was obtained from the Health Research Ethics Committee at SU.

Data analysis

The data from the questionnaires and the interviews were analysed separately by the investigator. The data of the group interviews were analysed as a whole by means of coding. After coding the data were summarized, and organized into themes and captured on a computer. The questionnaire data were organized, grouped and captured on the computer.

Results

A total of 142 student questionnaires were analysed (14 from the 4th years - response rate of 7.6%, 104 from the 5th years - response rate of 59% and 24 from the 6th years – response rate of 14%). Of the students who completed the questionnaire, 66% were female, which correlated well with the gender composition of the undergraduate medical students at Stellenbosch University.

A high percentage (an average of 88%) indicated that they had experienced ethical and professional dilemmas while working in the wards or during ward rounds. Focus group interviews revealed that most of the dilemmas occurred during rotations in the surgical disciplines. During the focus group interviews the students indicated that they experienced the dilemmas more frequently in the main teaching hospital than in the smaller rural hospitals. For the purposes of this paper the ethical and professional dilemmas were grouped into several major categories (Table 2). Overlap of some of the dilemmas occurred as students indicated more than one dilemma. The most common dilemmas referred to were inadequate consent processes, lack of confidentiality and privacy, disrespect for patients, poor

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communication with patients, students and other medical personnel and students being expected to perform tasks that they were not trained for. Lack of informed consent was reflected by all three subgroups of students as follows: “doctor’s not asking consent to take blood for HIV test”. Confidentiality and privacy was often breached on ward rounds: “when a patient’s disease profile is being discussed between 10 people (students and doctors) stand around the patient’s bed, the whole room (other patients and staff) can hear everything” and “the patient being undressed to examine her breasts, without asking the patient if it is ok to examine her in front of the group of students” as well as “doing a rectal examination without consent and without drawing the curtains”. An average of 64% of the students indicated that ethical and professional issues were not discussed during the clinical rotations in hospital. According to the students the work load of lecturers and time constraints during the clinical rotations played a major role in this problem. The students identified various issues that should be discussed on the clinical ward rounds ranging from clinical decision making based on various ethical principles to patient and student rights.

Due to the relatively short rotation time of the students through the different clinical disciplines, the students are seldom involved in end-of-life patient care scenarios and do-not-resuscitate decisions that are made. In this study the investigator used the issues around the resuscitation of patients during the clinical rotations of the students through the medical, surgical and labour wards to identify several ethical dilemmas. An average of 87% of the students indicated that they had witnessed resuscitation during any of their clinical rotations through the different clinical disciplines. Just taking into account the “bad outcomes” in resuscitations that the students had witnessed, an average of 77% indicated that they had not been involved in the discussion around the outcome of the resuscitation. The majority of students indicated that medical personnel had excluded them and the family during the discussion after the resuscitation. More than half of the students indicated that they had been part of the team during the resuscitation, but that they were mostly used to fetch equipment and take blood to the laboratory.

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During the focus group interviews a large proportion of students had indicated that they were just on the clinical platform to do the “donkey work” and been “treated as administrative clerks”. This statement was made by the students rotating through the main teaching hospital, whereas the students rotating through the rural hospitals felt much more “appreciated and respected”.

Sixty percent of the students indicated that the morale of the staff was positive. This was despite the strikes for better salaries, the shortage of personnel, mainly in the nursing cadre, and financial constraints in the national and provincial medical budget. The students, who indicated that the personnel morale was low, referred to the work load in the wards, financial constraints, the shortage of nursing and medical staff and the lack of communication between the medical personnel as possible causes.

Ninety-three percent of the students indicated that they had experienced positive role modelling from medical and nursing personnel in the clinical setup. Several senior personnel from various disciplines were mentioned by the students for their positive role modelling, whereas the role modelling of the interns was seen as less positive. During the focus group interviews the junior nursing personnel were identified as having a bad attitude and as showing lack of respect towards the undergraduate medical students. An open question in the survey confirmed this: “during my obstetrics and gynaecology rotation…..nursing staff……were rude, unprofessional, disrespectful and lazy…….spoke rudely and vulgarly to patients, especially the young / unmarried ones”.

The limited availability of consumables and equipment in the main and rural teaching hospitals was identified by 69% of students as having a possible negative effect on the treatment and management of patients. The issues raised by the students ranged from lack of basic consumables such as syringes, needles, sterile and non-sterile gloves to postponing of surgical procedures due to lack of theatre time to unnecessarily prolonged hospitalization of patients.

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Seventy-eight percent of the students overall indicated that they did not feel free to discuss their own feelings and beliefs on ward rounds. This was less common among the 6th year group where 55% had indicated that they did not feel free to discuss their own feelings and beliefs. The senior students seemed more assured of themselves during the group interviews. The issues that were raised by the majority of the students included the hierarchy of the medical team on ward rounds, with the doctors exhibiting a superior attitude towards the students. There was "belittling of students, patients, fellow medical doctors and nurses" on ward rounds. The students felt inferior and said that no-one is really interested in their feelings and beliefs. The large groups of students and medical personnel on ward rounds as well as time limitations and the heavy work load were also mentioned as possible causes for the undergraduate medical students not feeling free to discuss their own feelings and beliefs.

Results from the questionnaire survey of the educators.

A total of 20 educators out of 65 (31%) responded to the questionnaire sent via the web-based survey tool for questionnaires. Sixty percent of the responders were males, of whom 80% had been teaching for more than 5 years. The highest percentage of responses came from the educators working in the paediatric department. Responses were also received from educators working in the obstetrics and gynaecology and internal medicine departments. Only 35% of the educators indicated that they had formal training in ethics. All of the educators said that there was a need for teaching and assessing undergraduate medical students during their clinical rotations and on ward rounds.

Several issues were identified by the educators that should be included in the teaching of undergraduate medical students: confidentiality; communication skills; respect for patients, colleagues and fellow students; management of terminally ill patients and end-of-life decisions; patients' rights; obtaining of consent; ethical behaviour; decision making based on sound basic ethical principles; and encouraging individual integrity and responsibility on the part of undergraduate medical students. The majority of

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the educators were of the opinion that the basic principles of ethics and professionalism should be taught early in the curriculum, before patient contact, but that the teaching should be maintained throughout the clinical years and that there should be more emphasis on teaching during ward rounds in the middle and late clinical years. Teaching methods that were indicated by the educators for ward rounds and clinical rotations included: small group discussions; role play; situational and practical ethical discussions; multidisciplinary team approach; reinforcing policies for patient and student rights; dress code; and professional behaviour of students and medical personnel.

There were diverse opinions in the responses by the educators on how to assess the students during their clinical rotation in ethics and professionalism. A few of the educators indicated that they were not sure how to do this, whereas some of the other educators suggested assessing the students from a non formal to formal assessment by means of putting ethical and professionalism clinical questions in their final written paper and by adding ethical and professionalism scenarios in their final OSCE (Objective structured clinical examination).

Discussion

The findings in this study demonstrate that there is a perceived need for teaching ethics and professionalism during the clinical rotations and on ward rounds to the undergraduate medical students at SU, among both the students and the educators who participated in the study. The vast majority of students (88%) had experienced ethical dilemmas during their clinical training. The biggest ethical dilemma experienced by the students was that of inadequate consent processes and it occurred mainly in the surgical disciplines. This finding is similar to that reported by Fard et al and Huijger et al [10, 11]. The other issues that were raised by the students were lack of confidentiality and privacy, disrespect for

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patients and the patient's right to autonomy and the lack of communication between patients and medical personnel. Students being asked to perform procedures they were not trained to do was also flagged. The ethical and professionalism dilemmas that the students experienced in this study are almost identical to some of the findings in the paper by Fard et al, where informed consent in the surgical disciplines and confidentiality in the non-surgical disciplines are mentioned as some of the common issues [10].

During the grouping of the dilemmas many of the items overlapped and could have been collected under a main category of professionalism. Similar problems were reported in a paper by Hicks et al [12]. A big challenge experienced by students and medical personnel are the language barriers and the shortages of skilled interpreters in the clinical setup. Many of the issues that are mentioned under the patient's right to autonomy and the lack of communication may be due to language barriers and the frustrations of not understanding each other. In South Africa there are 11 official languages. Additionally there is the problem of the enormous influx of foreigners from the rest of Africa to South Africa, who utilise medical care in the state hospitals, which include the teaching hospitals. Budget constraints, both national and local, have an effect on the filling of vacant posts and obtaining the medical consumables that are important in the treatment of patients. The financial constraints are not only experienced by the students as indicated by the students' survey in this study, but also by the medical personnel who have to care for patients. These issues do lead to unnecessarily prolonged hospitalisation of patients, the postponement of surgical procedures and to the frustrations experienced by the patients, students and medical personnel.

It is important to look at methods for teaching ethics and professionalism to undergraduate medical students during clinical rotations and on ward rounds and how this should be assessed. General educational principles that apply to the teaching of professionalism during under- and postgraduate

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training are discussed in a paper by Cruess and Cruess [5]. The principles that are mentioned in this paper include: “the cognitive base, continuity, role modelling, experiential learning, institutional support, faculty development, evaluation and the environment”.

The cognitive base and formal teaching of ethics and professionalism to undergraduate medical students at SU are in place as discussed earlier in this paper and by Moodley [1]. A variety of educational techniques are used and formal assessment of the students at the end of their formal teaching rotations takes place, with feedback to the students. The educators suggested that the formal teaching should be done earlier, in the preclinical years, with further in-depth formal teaching during the middle and late clinical years.

Continuity in teaching ethics and professionalism is important as pointed out by several authors. Du Preez and Moodley discuss the “Golden Threads” that should be woven into the six-year learning programme [1, 8]. The skills needed should not stand alone as modules. Formal and informal teaching (the “hidden curriculum”) in the different clinical disciplines are emphasised. Goold has suggested that the training in ethics and professionalism should not only be done by one clinical discipline [7]. The responsibility should be spread throughout the clinical disciplines and should apply to both the formal and informal teaching of ethics and professionalism. In this study the educators who participated in the study held similar views.

Role models, whether positive or negative, are important in the teaching of ethics and professionalism to both undergraduate and postgraduate medical students. This concept is supported by many authors, including some of the latest work by Kenny et al and Huddle [13, 14]. More than 90% of the students in the present paper indicated the positive effect of role modelling, especially by senior personnel and, to a lesser extent, by junior personnel. Role modelling alone is unfortunately not enough to teach ethics and professionalism on the clinical platform. The problem regarding role modelling, as mentioned earlier, is

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when senior and committed staff leaves the service. Due to the high work load and time constraints, students are very often left with junior staff.

Experiential learning as discussed by Cruses and Cruses is of utmost importance [5]. The undergraduate medical students at SU should have structured opportunities where they are able to discuss ethical and professional issues. This should be in a safe environment and should be available to the students throughout the course of education and training. These opportunities should not be linked to any specific discipline or department and a mechanism should be in place to give anonymous feedback to the disciplines / departments and to the students. Very often students are afraid of being victimised and this may be one of the reasons not to have the opportunities linked to a specific discipline / department. This will help the students to develop their professional identity over a period of time. Situational learning could also encourage self-reflection.

Institutional support and faculty development by means of active participation of the deans, department chairs and programme chairs will be needed to support the development of a revised curriculum to include the teaching of ethics and professionalism to undergraduate medical students during the clinical rotations and on ward rounds. Support in the form of teaching time, financial resources, research and the buying in of retired senior personnel to help with the teaching of the students will be necessary. At SU, staff development is supported by the Centre for Teaching and Learning, as well as by the Centre for Health Sciences Education, both of which promote the scholarship of teaching and learning. Continuing professional development (CPD) will benefit both professional learning and growth of the educators. Incentives such as performance assessment and the institution's award system may be of value in encouraging educator involvement in teaching of ethics and professionalism.

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Students need to know if they are meeting professional expectations and for this reason evaluation and assessment need to take place. The formal assessment and feedback to the students in the cognitive base and formal lectures in ethics and professionalism in this study is not under discussion, as mechanisms to deal with this are in place. The main concern is the assessment of the student's professional and ethical conduct during the clinical rotations and on ward rounds. The assessment of the ethical and professional behaviour of the students during the clinical rotations remains a challenge. One of the solutions may be the assessment tool discussed by Du Preez [8]. Educational logbooks may be another way to address the problem of assessment and the students will then have to record their clinical interactions and encounters and will receive feedback on the written material. Peer assessment may be a useful tool and could be used simultaneously with some of the above mentioned options. The uncertainty as to how to assess the students during their clinical rotations is also reflected in this study by the educators. Further research needs to be done in this field of education.

The institutional culture and environment can have a positive or negative effect on the teaching of undergraduate and postgraduate medical students in the clinical setting through a set of influences which is largely hidden. Hafferty has stated that the informal and hidden curricula are partly responsible for the "difference between what students are taught and what they actually learn" [15]. The cultural differences between the patients and staff may contribute to the lack of trust in the medical personnel, whereas the design of the teaching hospital described in this study may play a role in the absence of privacy and confidentiality due to the shortage of private and breakaway rooms. Factors such as economics, hospital policies, structural policies, patients' rights and students' rights need to be revised and established at institutional level. Strong institutional support and commitment are necessary to make the teaching of ethics and professionalism during clinical rotations and on ward rounds sustainable and successful.

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The areas of concern as mentioned in this study need to be addressed when the undergraduate medical curriculum of at SU is revised. Ethics and professionalism in medical education at SU should be taught and respected so that student sensitivity to medical ethics and professionalism is maintained and even increased.

Limitations

Response rates from the 4th and 6th year medical students were poor. In these two groups a web-based survey tool was used. A better response was obtained when the questionnaires were handed directly to the 5th year medical students. Similarly a poor response rate was obtained from the educators where the questionnaire was sent via a web-based survey tool. A better student and educator response rate would have increased the value and reliability of the study. The poor response rate of the educators may also be a reflection of the seriousness of the problem and an indication that the needs of the students are not being met during their clinical rotations.

Conclusions and Recommendations

Undergraduate teaching and assessment needs in clinical ethics and professionalism on clinical ward rounds for medical students at the Faculty of Health Sciences, Stellenbosch University, have been highlighted by this study. Several issues have been raised during the discussion of this paper and need to be taken into consideration for future planning of a revised curriculum for the undergraduate medical students at SU.

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Most of the informal professional teaching occurs by means of role modelling which is usually done by junior staff with minimal clinical experience. Opportunities need to be created for explicit teaching of ethics and professionalism on clinical ward rounds beyond the use of role modelling alone. For this to happen faculty buy-in and faculty development are important. This should not be the sole responsibility of only one speciality, but a joint responsibility between the different clinical departments. Continuous input in ethics and professionalism through out the undergraduate medical years needs to happen as proposed by means of the concept of the "Golden Threads".

The work load and time constraints of the lecturers during the clinical rotations have been identified by the students as one of the reasons why ethical and professional dilemmas experienced by them during the clinical rotations were not discussed. This, as well as the lack of interpreters and financial constraints need to be addressed and taken into consideration during future planning of a revised curriculum.

Structured opportunities as mentioned in the discussion of this paper needed to be developed where students could discuss ethical and professional issues in a safe environment. The opportunities should not be linked to any specific discipline or department and mechanisms should be in place to give feedback to the different disciplines / departments and the students.

Assessment of students in ethics and professionalism in the clinical situation remains a challenge and although some solutions have been mentioned in the discussion of this paper, further research is needed in this field.

Competing interest

The author declares that he has no competing interest.

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Tables

Table 1 The document that is used in the training of the medical students at Stellenbosch University

PROFILE OF THE STELLENBOSCH DOCTOR		
Knowledge	**Skills**	**Attitudes/Views**
The recent graduate will have relevant knowledge of: 1. necessary medically applicable scientific and mathematical concepts 2. the normal function and morphology of the human body and psyche 3. the abnormal function and morphology of the human body and psyche 4. the maintenance of health and prevention of disease (physical, mental and social) 5. recognition and diagnosis of common disease and abnormalities of the human body and psyche 6. treatment and rehabilitation options 7. the appropriate use and limitations of special investigations and diagnostic methods 8. factors in the community that can influence health 9. finances, management and structures of health care 10. ethics and legal aspects that are applicable to health care 11. the interaction between biological, psychological and sociological factors that play a role in health 12. alternative and complementary medicine 13. the principles of research 14. an interdisciplinary approach in health care and the roles and skills of applied health professionals	1. The ability to integrate, interpret and apply knowledge 2. The ability to think and act in problem solving fashion 3. The ability to communicate effectively with patients from different cultural groups in the process of diagnosis and management 4. Sufficient skills in diagnostic and therapeutic procedures to be able to function as intern 5. The ability to function holistically within the context of family and community 6. The ability to establish and manage a primary health infrastructure 7. The ability to interpret and apply relevant literature 8. The ability to manage and organise one's activities responsible and effectively 9. The ability to function appropriately in stressful circumstances 10. The ability to function optimally within the interdisciplinary health care team 11. The ability to take part in and guide continuous and inservice training as well as community education 12. The ability to effectively utilise relevant technology resources(e.g. computers) in the health environment	1. Respects for life, self as well as humankind and its diversity 2. A loyal and ethically accountable disposition towards the profession, patients and community 3. An acknowledgement of the limitations of own knowledge and skills 4. A positive disposition towards continuing professional development 5. A willingness for involvement and service within the broad community 6. An empathetic disposition towards patients, their family as well as the community and a willingness for accessibility 7. The acceptance of his/her full responsibility within the patient/doctor relationship 8. The willingness to set a positive example regarding social responsibilities and obligations 9. Acknowledgement of the importance of the interdisciplinary team approach in patient care and respect for other members of the interdisciplinary health team as well as acknowledgement of the contribution of the applied health professions to comprehensive health care

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Table 2 Ethical and professional dilemmas were grouped into several main categories

Grouping dilemmas into main categories	
Patient interactions with students	**Teaching and learning environment**
Culture / Language / Religion	Student groups
Respect	Consent prior to using patient
Confidentiality	for education
Privacy	Time constraints
Communication	
Needs	**External Factors**
	Hospital policy
Autonomy and informed consent	Lack of finance
Informed consent	Shortage of equipment
Information and knowledge transfer	Resource allocation
Participation in decision making	
Freedom of choice	**Professionalism**
	Respect for students and colleagues
Resuscitation / End-of-Life Issues	Responsibility
Part of team / involvement	Honesty
Part of decision making	Work ethic
	Unprofessional conduct
Personnel	
Medical personnel / morale of personnel	**Students expected to conduct**
Over worked	**procedures without training**
	Obtaining Consent
Infrastructure	Breaking bad news
Building / setting / space constrains	Testing Blood and doing lumbar punctures