Asian Journal of Medicine and Health Sciences Vol 2 Issue 2 November 2019

ORIGINAL ARTICLE

ABDUCTIVE REASONING ON ETHICS BY MEDICAL STUDENTS USING AN AUDIENCE RESPONSE SYSTEM.

Mah KK, Candlish K

Faculty of Medicine, University Kuala Lumpur Royal College of Medicine Perak
30450 Ipoh, Perak, Malaysia.

Corresponding Author
Dr. K.K. MAH
Faculty of Medicine
UniKL RCMP, No. 3, Jalan Greentown, 30450 Ipoh, Malaysia.
Email: kkmah@unikl.edu.my

Abstract

Second year medical students were presented with six scenarios, each representing a dilemma in ethics. All of these scenarios were linked to five options, each of which could represent a possible response to the dilemma, and the students were required to choose which one of these they most favoured. A computerized audience response system was used to individualize the procedure and to ensure participation of all students. Subsequently more information was given about the circumstances of each dilemma, and the same set of options was displayed, allowing another round of voting, whereby the students could change their minds if they wished. Then more information was given, and the voting repeated. The aim was to ascertain if providing information in three stages can aid the students in selecting the (undisclosed) responses favoured by the authors. The results indicated that, on the whole, provision of further information within an ethical dilemma does not enhance the students' ability to discern what is right and proper and that in this group at least more effort must be put into the ethics instruction.

Keywords: *medical ethics; dilemmas; abduction, audience response system*

Introduction

The importance of a sound grasp of ethics by all medical personnel is universally acknowledged (General Medical Council 1993; Steinbock 2007)[1,2]. The question is: when to introduce the concepts in the undergraduate programme? If introduced too early, memories may lapse; if throughout the course, too much curriculum time may be taken. Many take the view that since students are now coming into contact with patients much earlier in the programme, correct ethical attitudes should be inculcated as soon as possible. With this in mind, we selected a group of second year students and tried to assess how well they respond to ethical dilemmas, especially if the 'raw' dilemmas are supplemented with further information, thereby filling them out and allowing retrospective consideration of the issues. Formally, the null hypothesis was that if students are exposed to an ethical dilemma in medicine, they fail to appreciate the best or correct solution to the dilemma at first, but with more information, they will arrive at their best or correct solution. The hypothesis could not be substantiated by the results obtained.

Methods

A second-year class of 95 members were selected for the experiment. They follow an integrated five-year curriculum in which exposure to a degree of clinical medicine is effected from the first month. They had been given lectures on medical ethics in the first year without any assessment. The entire course is conducted in English. Ethnically, the class is largely Malay, with Indian and Chinese students in single numbers. Females outnumber males in a ratio of 3:1. The class was already familiar with the audience response system (Vyaz IVS) since it had been used to conduct Biochemistry revision sessions. However, advice on the use of this technology was garnered from an expert (Robertson, 2000)[3]. An audience response system is particularly useful in this exercise to ensure students participated fully and are not inhibited by shyness.

A questionnaire was designed with six scenarios illustrating ethical dilemmas, fully set out in the (Appendix A) hereto. Any overt religious nuances were avoided. Previously the authors, by discussion between themselves and with colleagues, had decided on the best or correct response to each of the dilemmas, these in consonance with medical ethics as understood worldwide (World Medical Association 2008; Beauchamp and Childress, 2008; Campbell et al, 2005; Morrison, 2009)[4,5,6,7] .

The students were asked to choose their preferred option in response to the dilemma by pressing the appropriate button on the response apparatus. Further information was then given for each case, and the same five options for each case were again displayed. This was repeated once more, so that the students were required to vote on the original options three times. The students were instructed to express their personal views, and to be prepared to change their minds as the exercise progressed. In terms of the null hypothesis, the expanding information might have allowed the students to arrive at the ethically appropriate conclusion for each of the six scenarios. Six scenarios were deemed sufficient in terms of attention span, since a rehearsal by the authors indicated that the experiment would last about one hour.

The question arises as to the mode of reasoning demanded from the students in this exercise. If one regards the introductory vignette and the first response to it, together, as the first collection of data to be logically processed , then if the second and third vignettes, together with their responses , reinforce or explain the first, this would appear to be example of abductive reasoning as normally conceptualised (Santaella 1997 ; Patel et al 2004)[8,9.] (This being in contrast to both deductive and inductive reasoning.) In the present instance we were plainly trying to persuade our subjects to proceed abductively,

that is to retrospectively modify the first dualism consisting of question and response. This process is considered by many to be normative in medical reasoning and indeed also in legal reasoning and scientific investigation (Blois 1990; Patel et al 2004; Popper, 1979)[9,10,11.]

Results

There was no consistency in the results as shown in (Table 1) below.

Discussion

For Scenario 1, involving consent for a serious operation, Some students (12%) initially thought that a hospital director is competent to sign a consent form on the patient's behalf but many were weaned on to the correct response (discharge if the patient flatly refuses consent) when the patient was clearly persisting in her refusal. A fairly large minority (32%) were initially of the opinion that a husband can sign a consent form on the wife's behalf (this perhaps being a reflection of the societal norms) but this view dwindled as the exercise proceeded. Some (11%) persisted in the view that the patient could be forced to undergo surgery, but the most favoured (and the correct) view (by 42%) was that she should be discharged.

With respect to Scenario 2, involving revealing reports to persons other than the patient, only a tiny minority thought throughout that a medical report could be issued to the husband merely because he is the husband, and another small minority appeared to favour the idea that the problem could be solved by asking the husband to collect it some other time. At the finish there was a large minority (27%) favouring the husband and wife being given the report together. However, the largest fraction (45%) took the reductionist view that, simply, the report could not be released to a husband.

Scenario 3 concerned the communication of risk. Many (69%) immediately arrived at the correct conclusion, namely the patient should decide for himself after full disclosure. Opinion did not deviate from this despite further information on the emotional state of the patient. This then could be regarded as commendable. Although at the second stage (the doctor being harassed by the family), there was swing to the view that , if it was pointed out to the patient that eminent figures like President Clinton had safely undergone the same surgery , the patient might agree to undergo it. The final piece of information (that the patient lapsed into a state of complete terror) led the majority back to the correct conclusion.

Scenario 4 was about amending medical reports for the convenience of an applicant for a student placement. At the first stage 56% achieved the preferred answer and this dropped only slightly at the end. Worryingly however, a small number of students (varying from 5-6%) persisted in the view that the reports could be altered to help the applicant.

In Scenario 5, concerning scarce resources (a ventilator) the students reporting correctly (that another ventilator should be urgently sought) rose progressively, 38% to 44% to 52%, which is gratifying - they were unmoved by the emotional state of the mother. A large minority (37%) stuck to the view that the ventilator should be allocated to the child, on the assumption that the elderly patient could be ventilated manually, a less optimal treatment.

The response to Scenario 6, relating to the wish of a patient to die, was disappointing in that it caused much hilarity. We are at a loss to explain this, except that the students

may have sensed an incongruity - the contrast between their own youthful well-being and the parlous state of a human being in extremis. (This aspect of medical ethics found by students to be amusing suggests a topic for further research.) In any case a large majority (84 %) strenuously favoured the concept that a doctor can in no circumstances do harm but some (30%) thought that the matter should be put into the hands of the patient, either by allowing him to starve himself to death or by arranging for him, in some manner to disconnect his ventilator. By the end of the three stages, fortunately no student believed that the matter should be put in the hands of relatives. There was persistently a very small minority of students yielding totally perverse responses but whether these were the same individuals throughout, or not, could not be ascertained with the technology available, and in any case the

students were told that the responses would be anonymized.

The results are summarized in Table 1 and are obviously not susceptible to statistical analysis. A more discriminatory format might have been achieved by offering a group of vignettes related to, say confidentiality , and another related, perhaps, to autonomy, and then making comparisons – this is planned for future work.

Conclusion

Although there were some encouraging features, it seems that providing a penumbra of further information to a puzzling ethical scenario does not, on the whole, help these particular students to more readily identify appropriate responses. It had been hoped that by the second year that some of the ethical principles would have rubbed off on to the students since they had been taught by both biomedical staff and clinicians from the time of their entry into the school.

Vignettes similar to our own have of course been used and recommended by many others (Goldie et al 2004; Boenik et al 2005; O'Sullivan and Toohey, 2008)[12, 13, 14]. The inconsistency in the responses by our students, as also noted in the study by Hebert et al. (1990)[15], might indicate that different vignettes measure ethical domains in different ways. However, the students gave the impression that they enjoyed the approach, especially with the use of the 'clickers. It will also be instructive to repeat the experiment with the same class in their fourth or fifth year, whether or not more extensive formal education in ethics is introduced. It has been found by others who were enabled to conduct longitudinal studies, in countries as widespread as the Czech republic, Scotland and Canada (and no doubt elsewhere) that ethical awareness in medical students decreases with seniority. (Slovackova 2007; Goldie et al 2004; Hebert et al 1992)[16, 17, 18]. If this turns out to be the case in our school, a revision of the ethical curriculum is indicated.

Acknowledgements

We thank the University Kuala Lumpur for the supporting grant, and our students for their cooperation.

RESULTS

Table 1. Percentages of students achieving the 'correct' response to each of the six ethical dilemmas, when given further information in two later stages.

	First Stage	Second Stage	Third Stage
Scenario 1	**22**	**16**	**42**
Scenario 2	**30**	**36**	**45**
Scenario 3	**69**	**39**	**66**
Scenario 4	**56**	**53**	**48**
Scenario 5	**39**	**44**	**50**
Scenario 6	**84**	**74**	**12**
Mean ± sd	**50 ± 24**	**44 ± 18**	**44 ± 16**

References

1. General Medical Council. Tomorrow's Doctors: Recommendations on Undergraduate Medical Education. London, GMC 1993
2. Steinbock, B. (ed) 2007. The Oxford handbook of bioethics. Oxford: Oxford University Press.
3. Robertson, L. J. 2000. Twelve tips for using a computerized interactive audience response system. Medical Teacher 22: 237-239.
4. World Medical Association: Declaration of Helsinki 2008. http://www.wma.net/e/policy/b3.htm (accessed 4/9/11)
5. Beauchamp, T. L., and J. F. Childress 2008. The principles of biomedical ethics, 6th ed. New York, Oxford University Press.
6. Campbell A., G. Gillett and G. Jones 2005. Medical Ethics, 4th edn. Oxford: Oxford University Press.
7. Morrison, E. E. (ed) Health care ethics: critical issues for the 21st century, 2nd edn. 2009. Sudbury, MA: Jones and Bartlett Publishers.
8. Santanella, L. 1997. The development of Peirce's three types of reasoning: abduction, deduction and induction. http://www.pucsp.br/~Ibraga/epap_peir1.htm (accessed 8/9/11)
9. Patel, V. L., J.F. Arocha and J. Zhang. 2004 Thinking and reasoning in medicine. In Holyoak, K. (ed). Cambridge handbook of thinking and reasoning. Cambridge: Cambridge University Press.
10. Blois, M.S. Medicine and the nature of medical reasoning. New England Journal of Medicine 1990; 308: 847 -849.

11. Popper, K. R. 1979. Objective knowledge: an evolutionary approach. Oxford: Clarendon Press.
12. Goldie J., L. Schwartz, A. McConachie and J. Morrison. The impact of a modern medical curriculum on students' proposed behaviour on meeting ethical dilemmas. Medical Education 2004; 38: 942-9.
13. Boenink, A.D., P. de Jonge, K. Samal, A. Oderwald, and W. van Tilberg .. The effects of teaching medical professionalism by means of vignettes: an exploratory study. Medical Teacher 2005; 27: 429-432.
14. O'Sullivan, A. J. and S.M. Toohey. Assessment of professionalism in undergraduate medical students. Medical Teacher 2008; 30: 280-286.
15. Hebert, P. C., E.M. Meslin, E.V. Dunn, N. Byrne and S.R. Reid . Evaluating ethical sensitivity in medical students: using vignettes as an instrument. Journal of Medical Ethics 1990; 16, 141-145.
16. Slovackova, L. Moral judgment competence and moral attitudes of medical students. Nursing Ethics 2007; 14: 320-328.
17. Goldie J., L. Schwartz, A. McConachie, B. Jolly and J. Morrison. Can students' reasons for choosing set answers to clinical vignettes be reliably rated? Development and testing of a method. Medical Teacher 2004; 26: 713 -718.
18. Hebert, P.C., E.M. Meslin and E.V. Dunn. Measuring the ethical sensitivity of medical students: a study at the University of Toronto. Journal of Medical Ethics 1992; 18:142-147.

APPENDIX A

Preferred responses are asterisked.

SCENARIO 1

A). A 60 year old woman with poorly controlled diabetes needs an amputation of the foot to prevent septicaemia. She is otherwise alert and coherent. She however refuses to give consent for operation and demands to be discharged. As the attending physician, what would be your response?

a) Get the hospital director to sign the consent form on her behalf.
b) Get the husband to sign he consent for amputation of his wife's foot.
c) Ignore her request and proceed with the surgery.
d) Discharge her *
e) Put the decision on hold for a better time.

B). The husband arrived and informed the doctor that his wife is illiterate and not aware of the implication of her decision. She told her husband that she would rather die than lose her foot. The husband advised the doctor to ignore his wife's decision. What is your next line of action?

C). The patient again refuses amputation and wants to go home. What do you do now?

SCENARIO 2

A). You were playing golf and your clinic nurse called. She informed you that somebody called up and wanted to collect his wife's medical report on her behalf. You are already aware that the patient has genital herpes. What would be your instruction to your nurse?

a) Ask him to prove that he is the husband and then release the medical report.
b) Ask him to come another day as you need to explain the disease to him.
c) Ask him to get a letter from his wife allowing him to collect the report.
d) Ask him to come together with his wife so that you can explain the disease to both of them together.
e) Tell him that you cannot release the medical report to him.*

B). He then called you personally and you realised that he is the city mayor, one of your golf mates and that you have known him for the past 15 years. You and your wife also often go on overseas trips together with them. What would be your response?

C). A few days later, the mayor turned up alone and informed you that his wife has gone overseas and that she has instructed him to collect her medical report. You are aware of this as your wife has also gone on the same trip and that they are very close friends. What would be your response?

SCENARIO 3

A). Mr. XX, age 70, needs open heart surgery for ischemic heart disease. However he is worried that he may not survive the surgery. He refuses to sign the consent form until the doctors can guarantee that he will survive. How would you approach this problem?

a) Give him just enough information but omit all the high risk complications so that he will be "guided" to consent for surgery.
b) Tell him the surgery is very safe and give some examples of patients like President Clinton who have undergone the surgery.
c) Seek out his relative to sign the consent for surgery.
d) Tell him all the risks and let him decide. *
e) Summarily discharge him.

B). His children arrive and plead with you to not to reveal the possible risks, in order to get him to agree to surgery. As the attending doctor, you are also aware that he will die soon if the surgery is delayed. Now that you have the "backing" from the family members, what would be your next action?

C). Unfortunately a patient at the bed next to Mr. XX went for a similar surgery and did not survive. Mr. XX is now terrified and wants to know more about the surgery and its risks. What would you do now?

SCENARIO 4

A). Mr. ZZ, a 19-year old student, came to your clinic for a medical examination necessary for entrance to a prestigious university in England. Unfortunately you found that he has undiagnosed hypertension. Mr. XX pleaded with you not to reveal this as he believed that he will then not be offered a place in the university. What would you do?

a) Record him as normotensive so that he can go to England.
b) Report him as hypertensive on the report.
c) E-mail the university and inform them that Mr XX is trying to persuade you to alter his medical report.

d) Treat his hypertension and then direct him to another clinic to get his medical examination done.*
e) Initiate treatment and at the same time record him as normal.

B). His father, YY turned up and requested that you report his son as normal so that he can be enrolled in this university. He claimed that he would "lose face" if his son is rejected as he has already given a grand party to his friends to celebrate acceptance. His wife also turned up and you realised then that she is your distant cousin. She also pleads with you to help her son. What would you do now?

C). YY, who owns many companies, now proposes to accept your clinic on his companies' panel. He has a few thousand employees. What would be your response now?

SCENARIO 5

A). Mr. RR, a 75-year-old man with pneumonia is on a ventilator. This is the only ventilator of the small district hospital wherein you are working. Suddenly the emergency department informs you that they have intubated a 15-year old boy with severe asthma. They are referring the boy to you for emergency ventilator support. What is your response to this situation?

a) Discuss the dilemma with the family of Mr. RR to obtain their consent to give the ventilator to the boy.
b) Allocate the ventilator to the boy and allow Mr. RR to expire, as he is already 75years old.
c) Allocate the ventilator to the boy and manually ventilate Mr. RR in the ward.
d) Instruct the nurses to manually ventilate the boy in the ward till he recovers.
e) Instruct the casualty doctor to transfer the patient to another hospital.*

B). The boy's father arrives and pleads with you to save his son. He informs you that the boy is a top student in his school and represents the state in many games. How do you respond now?

C). The mother arrives and quickly goes into a hysterical state. She screams about losing her only son due to your incompetence. What would you do now?

SCENARIO 6

A). Mr. FF a 45-year- old male, fell from a tree 5 years ago and broke his neck. He is a tetraplegic and depends on a ventilator to breathe. He has become very distressed recently and pleads with you to disconnect the ventilator so that he can die with dignity. He informs you that he is causing a severe drain on his children's financial situation. What would you do?

a) Have sympathy for him and disconnect the ventilator
b) Set up a system so that he can disconnect the ventilator himself.
c) Do not disconnect the ventilator but allow him to starve to death.
d) Explain to him that as a doctor you cannot in any circumstances do harm.*
e) Provide an opportunity for his relatives to "accidentally" disconnect the ventilator.

B).You later discover that Mr. FF's family has recently abandoned him. His young wife is now living with his best friend. He claims that there is no point in living. What would you do now?

C. Mr. FF now refuses to eat and take his medication. He insists that he has a right to refuse treatment. What would you do now?