

Medicine Facing Death: Attitudes Toward Physician-Assisted End of Life – A Cross-Sectional Study

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Abstract

Background: The demand for medical assistance in dying remains high and controversial. The "Dying Patient Act" (2005) legalized requiring Israeli patients to receive medical guidance regarding the care (or non-treatment) they seek at the end of life. Many doctors have made it clear that helping a patient die is opposed by their values and professional goals.

Objective: To explore the attitudes of physicians regarding euthanasia and examine the factors that related to these attitudes.

Methods: We conducted a cross sectional prospective study in Israel, during January-February 2019. We used logistic regression analyses to describe the association of demographic and professional factors with attitudes toward physician-assisted end of life.

Results: We surveyed 135 physicians working at a tertiary-care-hospital about their attitudes regarding euthanasia. About 61% agreed that a person has the right to decide whether to expedite their own death, 54% agreed that euthanasia should be allowed, while 29% thought that physicians should preserve a patient's life even if they expressed the wish to die.

Conclusion: The data shows a conflict of values: the sacredness of human life versus the desire to alleviate patient's suffering. Coronavirus outbreak reinforces the urgency of our findings and raises the importance of supporting physicians' efforts to provide ethical, and empathic communication for terminally ill patients. Future studies should aim to improve our understanding and treatment of the specific types of suffering that lead to end-of-life requests.

Background

Euthanasia- derived from a Greek term meaning "good death" refers to the intentional hastening of death of a patient by a physician with the intent of alleviating pain and suffering (1). Its proponents focus on the respect of patient autonomy, self-determination and forestalling suffering. Yet, many clinicians remain untrained in end-of-life processes, fearful of violating ethical and social norms pointing to slippery slope danger (2, 3).

Euthanasia can be classified according to the role of the physician in the process. In passive euthanasia, the role of the physician is limited to suspending treatment or stopping extraordinary measures in order to prevent the prolongation of life. However, in active euthanasia, the physician takes deliberate steps to end the life of a person who has requested to end their suffering by administering a toxic substance that accelerates their death (4). Active euthanasia is actively debated and rejected by ethical, religious, legal and medical reasons. Physician-assisted suicide connotes the involvement of the physician in providing a lethal substance to a patient to self-administer in a painless manner (5). It was criticized by some while endorsed by a variety of countries.

In some countries (e.g. Netherlands, Belgium, Luxembourg, Switzerland, Colombia), it is legally possible for a physician to assist in ending a person's life under certain conditions. In other countries (e.g. Germany, France, England, USA, India, Israel), medical treatments may be withheld under certain conditions, but active euthanasia is strictly forbidden under all circumstances. The "Dying Patient Act" (2005) provides Israeli patients medical guidance regarding the care (or non-treatment) they seek at the end of life. Many doctors have made it clear that helping a patient die is opposed by their values and professional goals (6).

Doctors avoid talking to patients about death and even avoid contact with terminally ill patients (7). However, the public discourse has shifted in supporting a patient's wishes in recent years from Do Not Resuscitate (DNR) to Allow Natural Death (AND) instruction (8). Concerns have been raised regarding the interpretation of the constitutional right to life and the premise of 'first do no harm' (3). Bentor et al. (9) found that more than 70% of Israeli physicians believe that the patients have the right to decide whether to receive life-prolonging treatment, and that physicians should have a candid conversation with their patients and ascertain their end-of-life wishes. Existing attitudinal and social norm gaps between doctors and the public indicate social embarrassment related to end-of-life discussions (10).

The results of these surveys suggest that physicians are deeply polarized, with 43% of physicians maintaining they would recommend patients receive treatment or an experimental drug that may extend their life, and 65% believe that their patients' lives should be saved in spite of their explicit wishes. Yet, about one-third (30%) of doctors believe that terminally ill patients receive unnecessary interventions. Karni et al. (11) examined the attitudes of 2,969 physicians toward euthanasia and found that 55% of physicians were willing to assist a terminally ill patient who wanted to end their life where the medical condition justified it, while 31% of physicians were unwilling to support patients' request to die. However, in a US study, a high percentage of physicians indicated they would not prevent treatment, even if the patient requested assistance due to a lack of knowledge about the ethical and legal rights regarding end-of-life treatment decisions (12).

Whereas patients and their families can decide about end-of-life issues, physicians have a crucial role in the process. The physician's attitudes and values are central in their guidance and supporting a humane and ethical decision-making approach. The aim of this study was to explore the attitudes of physicians regarding euthanasia and examine the factors that related to these attitudes.

Methods

The aim of this study was to examine attitudes of physicians regarding euthanasia.

Study design

We conducted a cross-sectional prospective survey methodology in this study. The study was conducted by distributing questionnaires to physicians working at Barzilai University Medical Center, Israel, during

January-February 2019. The study received approval from the Ashkelon Academic College Ethics Committee and the hospital leadership.

Participants and procedure

A sample of 135 physicians (of which 59 (43%) were in training, and 76 (57%) were in practice) of a total of 230 questionnaires distributed (59% response rate) in the hospital. The sampling method was a convenience sample based on the physicians' consent to answer the questionnaire. They were given a hard copy with an envelope addressed to their respective departments' secretaries and were asked to return the completed questionnaire the next day that were put in an envelope to maintain anonymity). The questionnaire included a cover letter describing the study and a consent form. The questionnaire took an average about 10 minutes to complete. The reasons for refusing to complete the questionnaire were given as time constraints and/or, heavy workload.

The survey questionnaire (see supplemental file)

A self-completion survey was provided for anonymous completion. The questionnaire was piloted and validated with two bio-ethicists experts, and their comments were integrated into the questionnaire. It was comprised of 29 closed-ended questions as follows:

1. *Demographic and background information* - gender, age, marital status, religion, intrinsic religiosity (13), country of birth, country where studied medicine, seniority since graduation from medical school, field of specialization;
2. *DNR Procedure* - Does a DNR (Do Not Resuscitate) procedure exist in your department, to what extent does the dilemma of whether to order DNR exist, the extent to which medical teams have to decide whether to order a DNR;
3. *Encounters with terminally ill patients* – Have you encountered terminally ill patients during work or personal life on a scale ranging from 1 (“1=not at all”) to 5 (“5=to a great extent”);
4. *Familiarity with the law regarding end of life questions* - on a scale ranging from 1 (“to a very small extent”) to 5 (“to a very large extent”); and
5. *Attitudes Toward Euthanasia* - 12 questions adapted from Bentor et al.⁹ The participants were asked to mark their agreement on each statement on a scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”), with an option to mark 99 (“irrelevant”). The survey was designed specifically for this study and is included in appendix A for reference.

Data analysis

The exploratory data analysis demonstrated that the data was normally distributed and parametric statistical tests were examined by calculating Pearson correlations. The alpha coefficients of each of the scales were computed to measure the questionnaire's internal reliability.

The differences between groups were examined by using independent t-tests, χ^2 tests, and one-way Analysis of Variance (ANOVA). The results of the post-hoc evaluation were calculated by using the Scheffe's method (14). A (multiple) linear regression model was used to test multivariate prediction of attitudes toward euthanasia.

All reported *P* values are based on two-sided tests and were considered significant when below 0.05. All statistical analyses were performed using SPSS v.26 (IBM, Armonk, NY, USA).

Results

Respondent demographics

A total of 135 physicians were included in the study, and worked at the Barzilai University Medical Center, Israel. Table 1 shows that among the respondents there were no statistically significant differences in age, gender and specialization between the groups. The mean range age of the respondents was 42 ± 12.54 years. In terms of religion, differences were found between the groups, with 83% of specialists being Jewish, and 59% of residents (and 53% of interns). There are also significant differences in the level of religiosity, with 89% of specialists defining themselves as secular, compared to 65% of residents and 50% of interns. Forty one percent of the specialists were born in Israel and 20% studied in Israel, 74% of the residents were born in Israel but only 29% studied in Israel, and all the interns were born in Israel, but less than half studied in Israel (47%). The data reflect physicians working in peripheral hospitals, with more non-Jewish residents and interns in peripheral hospitals, and who generally did their medical training not in Israel, as described by Ashkenazi et al.¹⁵

Table 1
Physician Respondents Characteristics

Character	Sample (n = 135)		Specialist (n = 76, 57%)		Residents (n = 27, 19%)		Interns (n = 32, 24%)		χ^2/F
	N	%	n	%	N	%	N	%	
Men	97	72	52	68	19	70	26	81	NS
In relationship	103	76	57	75	26	96	20	63	$\chi^2 9.41=$, $p = .009$
Jewish	96	71	63	83	16	59	17	53	$\chi^2 12.02=$, $p = .002$
Religiosity:	101	75	68	89	17	65	16	50	$\chi^2 25.91=$, $p < .001$
I. Secular	24	18	6	8	5	18	13	41	
II. Traditional	10	7	2	3	5	18	3	9	
III. Religious									
Born in Israel	83	62	31	41	20	74	32	100	$\chi^2 4.86=$, $p < .001$
Studied in Israel	36	28	15	20	7	29	14	47	$\chi^2 7.60=$, $p = .02$
Specialization:	35	35	29	38	6	24	-	-	NS
(without interns)	36	36	23	30	13	52			
I. Surgical	11	11	9	12	2	8			
II. Internal	19	18	15	20	4	16			
III. Diagnostic									
IV. Pediatrics									
Age (M \pm SD) Range: 24–73	42 \pm 12.54		50 \pm 10.17		34 \pm 6.10		29 \pm 3.81		F85.51=, $p < .001$
Seniority (M \pm SD) Range: 0.5–50	16 \pm 13.08		23 \pm 10.66		6 \pm 3.66		1 \pm 0.44		F95.56=, $p < .001$

Attitudes toward euthanasia (Table 2)

The distribution of responses in regards to the attitudes toward euthanasia, after grouping categories, were as follows: answers 1 + 2 "agree slightly", answer 3 remains "Agree moderately", answers 4 + 5 "Strongly agree". Using a factor analysis, the questionnaire was divided into two groups: attitudes in favor of passive active euthanasia and attitudes in favor of patient/family autonomy. The questionnaire's internal reliability was $\alpha = .84$ (Cronbach).

Table 2
Attitudes Toward Euthanasia and Patient Autonomy

Statement	Weakly (%)	Moderately (%)	Strongly (%)	Irrelevant (%)	Mean \pm SD**
Attitudes toward assisted passive/active euthanasia					
Doctors must consent to the patient's request to prevent or terminate life-preserving treatment	15	27	56	2	3.63 \pm 1.15
*In any situation, the doctor should preserve the patient's life, even if he wishes for an expedited death	53	14	29	4	1.60 \pm 1.46
If a terminally ill patient suffers unbearably and is unable to make decisions, giving the patient a lethal dose of treatment should be allowed	46	15	28	11	2.54 \pm 1.45
* Disconnecting CPR machines from a patient suffering from a coma is immoral	40	24	31	5	1.84 \pm 1.39
If a patient is terminally ill, then he will be interested in euthanasia	14	25	53	8	3.69 \pm 1.31
If a patient receives a DNR order, does the medical staff believe that the patient's treatment is fruitless?	32	18	49	11	3.10 \pm 1.50
To what extent is this true: "At the end of one's life, it is better to end suffering than to preserve life?"	12	18	67	3	3.95 \pm 1.15
Attitudes toward autonomy for patient/family members					
If a patient is unable to make decisions, his relatives should be allowed to decide whether to maintain life-preserving therapy	34	29	33	4	2.95 \pm 1.24
An individual has the right to decide whether to expedite his death	15	19	61	5	3.80 \pm 1.31
Euthanasia should be allowed for any individual who requests it	18	23	54	5	3.56 \pm 1.30
An individual must fill a preliminary instruction regarding his wishes in a terminal situation	11	13	73	2	4.02 \pm 1.13

* Opposite items; the data are presented before inversion of scales.

** The average is calculated excluding the option "irrelevant"

Statement	Weakly (%)	Moderately (%)	Strongly (%)	Irrelevant (%)	Mean \pm SD**
Doctors must include the patient and his family in making an end-of-life decision	3	10	87	0	4.51 \pm 0.82
* Opposite items; the data are presented before inversion of scales.					
** The average is calculated excluding the option "irrelevant"					

After reversing the scales in the opposing questions, the mean of the relevant questions was calculated for each participant. The average of attitudes toward assisted passive/active euthanasia was 3.35 ± 0.79 , the mean for attitudes toward autonomy for patient/family members was 3.76 ± 0.83 , and the overall average for attitudes was 3.53 ± 0.72 .

DNR procedure, familiarity with the "Dying Patient Act" and role of previous encounter terminally ill patients

A fifth (20%) of the doctors answered "yes", 39% answered "no", and the rest did not know (41%) if there is a DNR (Do Not Resuscitate) procedure in their hospital. The distribution of responses to the statements dealing with the dilemma of applying the DNR procedure, familiarity with the law, and the degree of encountering terminally ill patients are presented in Table 3.

Table 3

Distribution of Responses about DNR procedure, Familiarity with the "Dying Patient Act" and Previous Encounters with Terminally Ill Patients

Statement	Weakly (%)	Moderately (%)	Strongly (%)	Irrelevant (%)	Mean \pm SD*
To what extent have you dealt with the dilemma of dealing a DNR order	43	18	23	16	2.56 \pm 1.30
To what extent is there a conflicting feeling in medical teams to order DNR	28	27	29	16	3.00 \pm 1.07
How thoroughly informed are you about the "Dying Patient Act"	27	21	50	2	3.30 \pm 1.29
To what extent have you encountered terminally ill patients in the professional setting	42	24	34	-	2.97 \pm 1.27
To what extent have you encountered terminally ill patients in the personal setting	52	30	18	-	2.61 \pm 1.04

* The average is calculated excluding the option "irrelevant"

The relationship between background factors and attitudes toward euthanasia

Table 4 highlights the differences between the groups' attitudes towards euthanasia. The data demonstrate that women expressed more positive attitudes toward patient autonomy, and Jewish physicians have more positive attitudes toward euthanasia and toward patient autonomy in relation to non-Jewish physicians. Internal medicine trained physicians hold the most positive attitudes toward euthanasia and patient autonomy, followed by surgical specialists, pediatric, and finally diagnostic professions. A Scheffe follow-up test showed that diagnostic specialists held significantly more negative positions in relation to positions espoused by internal medicine and surgical specialists.

Testing the relationship between the factors revealed that the more senior the physicians the more their attitudes were statistically significantly ($r_p=.18, p = .04$); similarly, when they encountered more terminally ill patients in their work and/or personal life ($r_p=.17, p = .04$; $r_p=.35, p < .001$ respectively). A negative statistically significant relationship was found between the level of religiosity and attitudes toward euthanasia ($r_p=-.43, p < .001$).

Table 4
Differences Between the Attitudes Towards Euthanasia

	Variables	Categories	N	Mean ± SD	t/F	P
Gender	Advocates euthanasia	men	97	3.35 ± 0.81	0.10	.92
		women	38	3.36 ± 0.75		
	Advocates autonomy	men	97	3.63 ± 0.79	2.71	.008
		women	38	4.06 ± 0.86		
	General attitudes	men	97	3.47 ± 0.72	0.10	.15
		women	38	3.67 ± 0.71		
Religion	Advocates euthanasia	Jewish	96	3.54 ± 0.80	5.19	< .000
		Non-Jewish	39	2.89 ± 0.58		
	Advocates autonomy	Jewish	96	3.97 ± 0.73	5.04	< .000
		Non-Jewish	39	3.23 ± 0.84		
	General attitudes	Jewish	96	3.73 ± 0.68	5.55	< .000
		Non-Jewish	39	3.03 ± 0.57		
Specialty (without interns)	Advocates euthanasia	Internal	36	3.64 ± 0.77	5.07	.003
		Surgical	35	3.41 ± 0.83		
		Pediatrics	19	3.22 ± 0.83		
		Diagnostic	11	2.56 ± 0.51		

Variables	Categories	N	Mean ± SD	t/F	P
Advocates autonomy	Internal	36	3.82 ± 0.76	3.40	.02
	Surgical	35	3.81 ± 0.78		
	Pediatrics	19	3.79 ± 0.95		
	Diagnostic	11	2.98 ± 0.83		
General attitudes	Internal	36	3.71 ± 0.67	5.05	.003
	Surgical	35	3.58 ± 0.72		
	Pediatrics	19	3.49 ± 0.73		
	Diagnostic	11	2.79 ± 0.57		

Linear regression model to predict attitudes toward euthanasia

We used linear regression analyses to assess the comparative importance of variables in determining attitudes. The results of the multiple linear regression model to predict attitudes toward euthanasia are presented in Table 5. The models included variables that were significantly predictive models related to the attitudes in the univariate analyses. Table 5 demonstrates that a significant regression was obtained ($F_{(126)} = 17.45, p < .001$), with an explained variance of 42%. All five predictors were significant contributors, with the level of religiosity the best predictor of attitudes toward euthanasia ($\beta = -.42, p < .001$), with the more religious the doctor, the more negative the attitudes towards end-of-life care. It was followed by religion, with Jewish physicians having a more positive attitude ($\beta = -.22, p = .008$), a familiarity with the law ($\beta = .22, p = .005$), country of birth ($\beta = -.18, p = .02$), and previously encountering terminally ill patients at work ($\beta = .17, p = .02$).

Table 5
Linear Regression Model for Attitudes Toward Euthanasia

Variable	β	B	P
Religiosity	-0.42	-0.48	< .000
Religion (0-Jewish)	-0.22	-0.33	.008
Familiarity with the law	0.22	0.12	.005
Country of birth (0-Israel)	-0.18	-0.26	.02
Encountering terminally ill patients at work	0.17	0.20	.02
R^2	0.42		< .000
Adj. R^2	0.40		< .000
N	133		

Discussion

The physicians' attitudes in Israel towards euthanasia are quite positive when compared to other countries, such as U.K. (16), France (17), Italy (18), Finland (19), Greece (20). The statements with the highest degree of consent were those related to supporting decision-making by the patient or by family members. This finding underscores the value of discussing the quality of the terminally ill patient's life with patient and their family, and the role of the family in supporting palliative options for the patient. We note the ethical questions in the face of pain and suffering and whether a physician can refuse a terminally ill patient and/or their family's request suffering and pain.

We found that 53% of physicians disagreed with the statement *"In any situation, the doctor should preserve the patient's life, even if he wishes for an expedited death"*, while Bentor et al. (9) found that 56% of physicians believed that patients' lives should be saved in any situation in spite of the patient's request. Farber et al. (12) also found that a high percentage of physicians would not have prevented treatment *even* if the patient had requested it. Most doctors are of the opinion that treatments of terminally ill patients are not unnecessary, and in a situation where a patient suffers from severe pain, taking a lethal dose should not be allowed. At the same time the majority of physicians agreed that a patient has the right to decide to expedite their death, that the DNR procedure should be considered when the treatment team thinks that resuscitation is unnecessary, and don't agree that disconnecting a patient in a coma from resuscitation/ventilation machines is immoral.

These findings indicate the dilemmas physicians face, when on the one hand, they are committed to protecting the sanctity of life, and yet, on the other hand, they are interested in alleviating the patient's suffering while respecting their autonomy and choice. We found no significant differences between men

and women regarding attitudes toward euthanasia which is in line with other studies (21, 22). As for the positive relationship between seniority and attitudes toward euthanasia, previous studies have found that euthanasia is more favorable among older, veteran physicians who have had previous encounters with terminal patients, and are more likely to provide patients with lethal drugs if asked to by terminal patients seeking to end their lives (21, 23).

The negative relationship between the level of religiosity and attitudes has also been found in many studies (24, 25, 26, 27). We know that physicians with different specializations have different attitudes towards euthanasia, for example that oncologists receive many more euthanasia requests and are more willing to provide end-of-life assistance than other physicians (28). Geriatricians, in another study, had the highest frequency of caring for patients requiring end-of-life supportive care, in contrast to cardiologists where the frequency was less than one percent (29).

The strengths of our study include a good response rate from a broad range of specialties and physicians' status (specialist, residents, interns), as well as both Jewish and Arab physicians. Moreover, we used a validated attitudes questionnaire that demonstrated that the level of religiosity was found to be the most strongly predictive about attitudes toward euthanasia. The regression model produced significant predictive models regarding the following factors including the level of religiosity, religion, familiarity with the Dying Patient Act, country of birth, and past experiences encountering terminally ill patients' attitudes toward euthanasia.

This article has several important limitations to consider. First, focusing on clinician perceptions relies on self-reports of current and past perceptions, which may be a source of richness but also a source of bias. These events could not be independently verified. Second, the sample was quite limited, and unlikely to have equal representation from all departments and specialties at one sampling point in time. Third, the data represent only one major teaching hospital, which limits the generalizability of our findings. Fourth, because of the workload and the sensitive nature of this topic, we had difficulty recruiting physicians to complete the questionnaire, and likely discouraged some participants from responding despite elaborate efforts to protect their anonymity. Fifth, we cannot tell if there are significant differences between the survey responders and the non-responders. Because of the anonymity of the subjects, nonrespondents could not be contacted for follow up.

The implications from our study demonstrate the feasibility and importance of using multi-variable models to understand the complex social attitudes towards end-of-life care decisions. The use of longitudinal study designs tracks variation in attitudes through, and beyond, training, should offer an ideal design to fully understand how and why more positive attitudes develop within healthcare professionals. Further work is required to replicate these findings, and explore qualitatively whether, and how, opinions of more religious or from other ethnicities effect the treatment choices of terminally ill patients in general, and their attitudes towards euthanasia, in particular. Further research is needed that combines in-depth interviews with policy makers, physicians, patients and family members, in order to more deeply understand the experiences and attitudes of all parties.

We would be remiss if we did not position these findings in the context of the unprecedented end-of-life questions that have arisen in the past 10 months due to the Coronavirus (COVID-19) outbreak. As of the end of January, 2,166,000 people have died from COVID-19 across the globe (WHO COVID-19 Dashboard) (30). The unprecedented global situation has forced health care providers across the world to consider end-of-life issues in the face of finite critical care support such as staff, beds and equipment are necessary now more than ever (31). Preparation for an impending death through end-of-life discussions and human presence when a person is dying is important for both patients and families. Pandemic planning must encompass the wider issues of deciding who to treat and who should not be treated and how to prepare physicians for these new emotional burdens. Clear and timely communication with the patient and their cares is essential. Conveying hope that treatments will help needs to be sensitively balanced with explicit acknowledgement that patients are sick enough to die (32). Dying from COVID-19 negatively affects the possibility of holding end-of-life discussions because of social distancing and restrictions on visits (33).

Of related concern, recent reports have suggested that the Do-not-resuscitate orders in the UK were wrongly allocated to some care home residents during the Covid-19 pandemic, causing potentially avoidable deaths (34). Compelling end-of-life decisions in these challenging times reinforces the urgency to act based on our study's findings and raises the importance of supporting physicians in their efforts to provide ethical, and empathic communication for terminally ill patients.

Conclusions

The medical ethics considerations surrounding euthanasia remain a global and controversial concern. It is important to bring the euthanasia discourse onto the public agenda, consider the sentiments of patients, families, doctors, including also religious and legal considerations, both as presented by the various stakeholders and inviting professionals from these fields. Our findings contribute to a deeper understanding of physician opinions and corroborate international opinions on the thorny issues of end-of-life care. Physicians should be provided with the professional and emotional tools to deal with the dilemmas they experience during their work with terminal patients. At the same time, the growing trend toward legalization of assisting patients in end-of-life requests in many parts of the world should prompt the health care and research community to improve our understanding and treatment of terminally ill and suffering patients. It also reminds us of the need to consider new guidelines that support co-design of care with family involvement during the late stages of terminal illnesses.

Physicians should be informed about DNR procedures, both within national and local institutional contexts, and efforts are needed to educate physicians about end-of-life legislation such as the Israeli Dying Patient Act. There is a need for well-designed curricula on palliative care and pain management within medical schools and residency programs to help trainees better reflect on experiences with end-of-life care and how best to support dying and suffering patients. Senior faculty need to appreciate the importance of sharing their experiences with, and reflections about, euthanasia and end-of-life treatment

dilemmas and how they have learned to make the most sense of them. This can instill a more professional and emphatic approach toward terminal care in future physicians.

Abbreviations

COVID-19: coronavirus disease 2019

DNR: do not resuscitate.

Declarations

Ethics approval and consent to participate

All methods were carried out in accordance with relevant guidelines and regulations obtained from the Ethics Committee, at the Ashkelon Academic College. The permission to conduct the research was obtained from the hospital leadership. All participants were informed of the aims of the study and their participation was on a voluntary basis. Full informed consent was obtained from all subjects involved in the study.

Consent for publication

Not applicable.

Availability of data and material

The data that support the findings of this study are available from the first author upon request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

KD, DC, EAK, ND and PB contributed substantially to the conception and the design of the study. DC, EAK and KD carried out data collection and statistical analysis. KD, ND and PB interpreted the data. KD, DC, EAK, ND and PB drafted and revised the manuscript. All authors reviewed and approved the final manuscript.

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