

## Euthanasia and physician-assisted suicide: a systematic review of medical students' attitudes in the last 10 years

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### Abstract

This study aimed at examining the approval rate of the medical students' regarding active euthanasia, passive euthanasia, and physician-assisted-suicide over the last ten years. To do so, the arguments and variables affecting students' choices were examined and a systematic review was conducted, using PubMed and Web of Science databases, including articles from January 2009 to December 2018.

From 135 identified articles, 13 met the inclusion criteria. The highest acceptance rates for euthanasia and physician-assisted suicide were from European countries. The most common arguments supporting euthanasia and physician-assisted suicide were the followings: (i) patient's autonomy (n = 6), (ii) relief of suffering (n = 4), and (iii) the thought that terminally-ill patients are additional burden (n = 2). The most common arguments against euthanasia were as follows: (i) religious and personal beliefs (n = 4), (ii) the "slippery slope" argument and the risk of abuse (n = 4), and (iii) the physician's role in preserving life (n = 2). Religion (n = 7), religiosity (n = 5), and the attributes of the medical school of origin (n = 3) were the most significant variables to influence the students' attitude. However, age, previous academic experience, family income, and place of residence had no significant impact.

Medical students' opinions on euthanasia and physician-assisted suicide should be appropriately addressed and evaluated because their moral compass, under the influence of such opinions, will guide them in solving future ethical and therapeutic dilemmas in the medical field.

**Keywords:** Euthanasia; Medical students; Medical ethics; Physician-assisted Suicide; Religion.

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## Introduction

Death by itself is not part of an ethical dilemma, as all lives are bound to end since the moment of conception, and human beings confront death through their personal beliefs, religion, and cultural context. Regardless of the natural and unavoidable causes of death, debate over death focuses on how to control it as well as on who and how should perform the death-related practices in medical field. The important role of physicians in this debate is that they are often both the judge and the executor of such practices (1). Several physicians believe that the idea of promoting death is against Hippocratic Oath and their primary role as healer, while others may reject the idea based on their moral or religious values (1).

The issues on control over death can be divided into two broad categories: euthanasia and physician-assisted suicide (PAS). Euthanasia is further divided into active euthanasia (AE) or passive euthanasia (PE), according to the role that the physician plays in the process. The term PE is no longer used in some countries, and the term Therapy Withdrawal (TW) is replaced as the physician's role is limited to suspending treatment or stopping additional measures that artificially prolong life. In TW, the physician acts as a mere observer while the disease advances and ends the patient's life. However, in AE, the physician operatively engages in ending patient's life by administering a toxic substance that accelerates death (2). In PAS, the physician intentionally helps the patient to commit

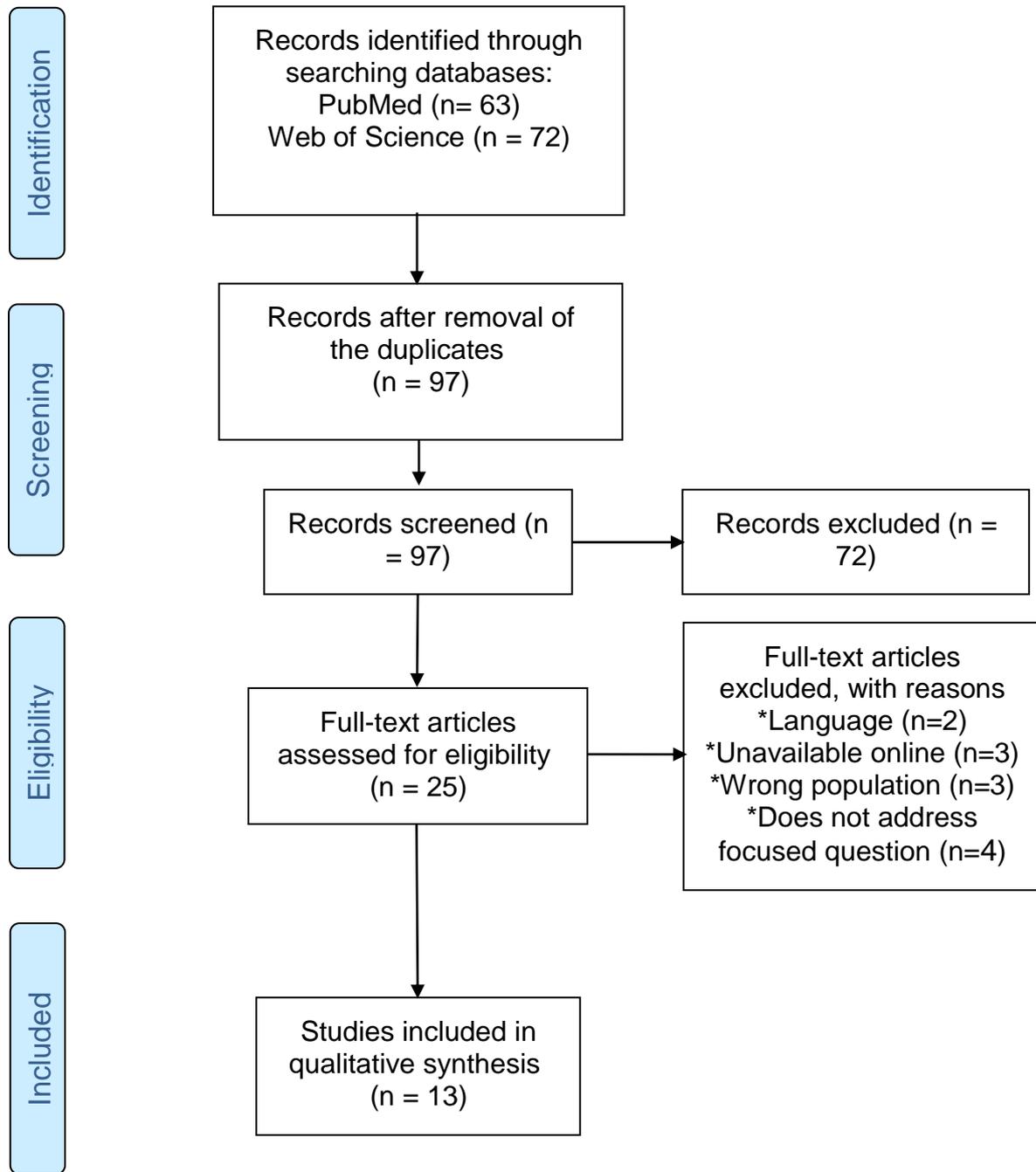
suicide by providing drugs for their self-administration at the patient's competent and voluntary request (3). The differences among aforementioned approaches have implications that surpass their moral approval, as the medical actions involved in these approaches are regulated by law. According to the American Medical Association (AMA), AE and PAS are in conflict with physicians' healing role. Furthermore, their management are quite challenging, if not completely impossible, and they entail grave risks to the society (4). However, PE, described as withdrawal or withholding life-sustaining treatment, is ethically acceptable for a patient capable of decision-making, and if an intervention is not expected to achieve the patients' goals for care or desired quality of life (4).

The contributions of this study are as follows: (i) quantitative assessment of medical students' approval rate for AE, PE and PAS over the last ten years, (ii) analysis of the most common arguments validating such practices, and (iii) evaluation of the variables that can influence a personal position on the topic. This study aimed at answering the following questions: What is the percentage of euthanasia or PAE approval among medical students? What are the most common arguments associated with the approval or rejection of euthanasia or PAE? What are the variables affecting the approval or rejection of euthanasia and PAE?

**Method**

This study was conducted following the

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (5) (Figure 1).



**Figure 1- PRISMA flowchart**

The literature searches in April 2019, included articles published between January 2009 and December 2018, and focused on

PubMed and Web of Science as the primary electronic databases. The databases were searched using the following search strings:

(medical students) AND (euthanasia OR Physician-assisted suicide).

Our review focused on original cross-sectional descriptive studies in English whose main population, or part of it, was composed of medical students and quantified their personal views regarding the legalization or practice of PAS or euthanasia.

Only original descriptive articles that quantitatively addressed the first focused question in the last ten years were included. The excluded cases were the followings: (i) Review articles, book chapters, conference papers, and letters to the editor; (ii) Non-neutral reports, where the authors expressed their views or stated an opinion on the topic; (iii) Articles whose main population consisted of physicians, nurses, or any group other than undergraduate medical students; (iv) Articles for which the complete text could not be found online; and, (v) Articles written in languages other than English.

Records were initially screened according to the titles and abstracts. Relevant abstracts and articles without an abstract were selected for full-text review. Articles selected in the first screening were carefully read and analyzed to determine whether they addressed the first focused question and whether they fulfilled the inclusion criteria. Further analyses were made to determine if they described any argument or variable that could persuade medical students to take a positive or negative side.

## Results

A total of 135 articles were identified after the database search (63 in PubMed and 72 in Web of Science); 97 non-duplicate documents were screened by the title and abstract. From the 25 articles eligible for full-text review, 13 fulfilled the inclusion criteria and were selected for further analysis (6-18). Reasons for exclusion of 12 remaining articles were as follows: (i) use of a language other than English (n = 2); (ii) absence of a full-text version online (n = 3); (iii) inclusion of a study population different than undergraduate medical students (n = 3); and, (iv) failure to address the first focused question (n = 4).

From the 13 selected articles, seven (6-12) were published between 2014 and 2018 and six (13-18) were published between 2009 and 2013. Two studies were from Africa (7, 9), four were from America (6, 8, 12, 14), one was from Asia (15), and six were from Europe (10, 11, 13, 16-18). The countries involved included Austria (n = 1) (18), Belgium (n = 1) (11), Brazil (n = 1) (12), Canada (n = 1) (14), Germany (n = 1) (10), Greece (n = 1) (18), Mexico (n = 2) (6, 14), Pakistan (n = 1) (15), Poland (n = 2) (13, 16), and South Africa (n = 2) (7, 9).

Eight articles addressed the approval rate of medical students regarding legalization of AE, PE or PAS (7-9, 11, 13, 15-17); ten stated a positive attitude toward AE exclusively (6-12, 15, 17,18); six addressed acceptance of PE (6, 9,10, 12, 14, 18); and, six addressed acceptance of PAS (7, 8, 10,

14, 15, 18). Two articles addressed the students' personal views on AE, PE or PAS,

whether exclusively or conjunctively (13, 16). The results are summarized in Table 1.

**Table 1- Percentage of approval for AE, PE, and PAS, as well as the legalization of euthanasia or PAS.**

Article	Country	N	Percentage of approval			
			Legalization of euthanasia or PAS	Active Euthanasia (AE)	Passive Euthanasia (PE)	Physician-assisted suicide (PAS)
Gutierrez and Gutierrez, 2018 (6)	Mexico	1319	-	44.4% (n=586)	52.1% (n=687)	-
Jacobs and Hendricks, 2018 (7)	South Africa	277	52.7% (n=146)	41.9% (n=116)	-	35% (n=97)
Bator et al, 2017 (8)	Canada	405	88% (n=354)	38% (n=153)	-	61% (n=246)
Marais et al, 2017 (9)	South Africa	481	44.6% (n=300)	36.2% (n=243)	67.3% (n=452)	-
Anneser et al, 2016 (10)	Germany	241	-	19.2% (n=46)	83.3% (n=200)	51.2% (n=123)
Roelands et al, 2015 (11)	Belgium	151	97.4% (n=147)	31.8% (n=48)	-	-
Lucchetti et al, 2014 (12)	Brazil	3630	-	41.4% (n=1503)	45.7% (n=1659)	-
Leppert et al, 2013 (13)	Poland	401	26% (n=104)	-	12%* (n=48)	-
Loria et al, 2013 (14)	Mexico	99	-	-	61% (n=60)	52% (n=51)
Hassan et al, 2013 (15)	Pakistan	493	27.2% (n=134)	14.2% (n=70)	-	32.8% (n=162)
Leppert et al, 2013 (16)	Poland	588	29.59% (n=174)	-	11.73%* (n=69)	-
Stronegger et al, 2011 (17)	Austria	694	30.8% (n=214)	25.5% <sup>†</sup> (n=122)	-	-
Kontaxakis et al, 2009 (18)	Greece	251	-	52% (n=130)	79.2% (n=199)	69.7% (n=175)

\* The authors grouped the approval for either AE and PE, or PAS. <sup>†</sup> This question was addressed in a population of 478 students.

Out of eight articles that addressed the positive views on legalization of the procedures, the lowest acceptance rate was 26% (13) and the highest 97% (11). The

lowest and highest acceptance rates were as follows: (i) 14.2% (15) and 52% (18) for AE, (ii) 45.7% (12) and 83.3% (10) for PE, and (iii) 32.8% (15) and 69.7% (18) for

PAS. The highest acceptance rates in the four scenarios were observed among students in European countries (10-12, 15), while the lowest acceptance rates were related to Pakistan (15) and Brazil (12).

Eight articles (6-8, 11, 15-18) were related to second main question addressing students' arguments for or against the practice of AE, PE or PAS. The most common arguments supporting AE, PE or PAS practice were as follows: (i) patients' autonomy (n = 6) (6 - 8, 11, 16, 17); (ii) relief of suffering or beneficence (n = 4) (7, 11, 16, 17); and, (iii) the thought that

terminally-ill patients are additional burden (n = 2) (11, 18). Less relevant arguments included the followings: (i) legality of the procedure (6); (ii) educational or clinical experience (8); and, (iii) quality of life or life expectancy (18). The most common arguments against AE, PE or PAS were the followings: (i) religious or personal beliefs (n = 4) (7, 8, 15, 18); and, (ii) "slippery slope" argument or risk of abuse (n = 4) (7, 8, 16, 18); and, (iii) physicians' responsibility to preserve life (7, 18). The results are summarized in Table 2.

**Table 2- Students' arguments in favor or against the practice of euthanasia or PAS**

Article	Country	Students' arguments in favor of euthanasia or PAS	Students' arguments against euthanasia or PAS
Gutierrez and Gutierrez, 2018 (6)	Mexico	Legality of the procedure Patient's autonomy	-
Jacobs and Hendricks, 2018 (7)	South Africa	Patient's autonomy Relief of suffering	Religion or personal beliefs Physicians' role in preserving life "Slippery slope"/Lead to abuse
Bator et al., 2017 (8)	Canada	Educational/clinical experience Patient's autonomy	Religion or personal beliefs Teachings "Slippery slope"/Lead to abuse
Roelands et al., 2015 (11)	Belgium	Patient's autonomy Relief of suffering The patient is a burden	-
Leppert et al., 2013 (13)	Poland	Patient's autonomy Relief of suffering	"Slippery slope"/Lead to abuse
Hassan et al., 2013 (15)	Pakistan	-	Religion or personal beliefs
Stronegger et al., 2011 (17)	Austria	Patient's autonomy Beneficence	-
Kontaxakis et al., 2009 (18)	Greece	Quality of life Length of expected life Financial burden	Physician's role of preserving life "Slippery slope"/Lead to abuse Religion or personal beliefs

Regarding the third focused question, 11 articles (6-9, 11, 12, 14-18) highlighted variables that could cause the medical

students to approve or disapprove AE, PE or PAS practices. Religion was the most significant variable that had a negative

impact (n = 7) (6 - 8, 11, 12, 14, 16), followed by religiosity (n = 5) (6, 12, 14,15,18) as the second most significant variable. Moreover, university of origin for the medical students (n = 3) (12, 14, 16) and previous experience with euthanasia or palliative sedation in a relative (n = 1) (11) were other named variables. Non-significant variables included the followings: (i) age (n = 3) (6, 12, 17); (ii) previous academic experience regarding end-of-life decisions (n

= 2) (11, 16); (iii) family income (n = 1) (12); and, (iv) size or place of residence (n = 1) (16). Variable of gender in influencing the students' opinions showed mixed results: significant (6, 16) and non-significant (11, 12, 14, 17, 18). Similarly, for variable of medical students' current academic year, three studies considered it to be significant (9, 15, 17) and one study reported it as irrelevant (6). The summarized results are shown in Table 3.

**Table 3- Significant variables that affect the posture of medical students towards euthanasia or PAS**

Article	Country	Significant variables	Nonsignificant variables
Gutierrez and Gutierrez, 2018 (6)	Mexico	Religion (affiliation), Religiosity, Gender	Age, Level (Preclinical)
Jacobs and Hendricks, 2018 (7)	South Africa	Religion (affiliation)	-
Bator et al., 2017 (8)	Canada	Religion (affiliation)	
Marais et al, 2017(9)	South Africa	Level (Clinical/Preclinical)	
Roelands et al., 2015 (11)	Belgium	Religion (affiliation) Previous experience with euthanasia/ palliative sedation in a relative	Gender, Duration of education and having had a course about end-of-life decisions
Lucchetti et al., 2014 (12)	Brazil	Religion (affiliation), Religiosity, University characteristics	Age, gender, family income
Loria et al., 2013 (14)	Mexico	University characteristics, Religion (affiliation), Religiosity	Gender
Hassan et al., 2013 (15)	Pakistan	Religiosity, Level	-
Leppert et al., 2013 (16)	Poland	Gender, Religion (affiliation), University characteristics	Size/Place of residence, palliative care classes
Stronegger et al., 2011 (17)	Austria	Level	Gender, age
Kontaxakis et al., 2009 (18)	Greece	Religiosity	Gender

## Discussion

Despite the great diversity of opinions regarding AE, PE and PAS, the percentage of approval for AE was lower than those of PE or PAS in all analyzed scenarios (6-18). Regarding AE approval, the study of Kontaxakis et al. was the only one that reported an acceptance percentage higher than 50%, under special circumstances (18). If these results are compared to those of other groups, such as general population (19) or post-graduate students (11), the approval rate is usually higher than 50%. In contrast, physicians tend to show a negative attitude toward the topic (19, 20). The relevance of clinical experience, as a variable that could influence the acceptance of euthanasia or PAS, was discussed by Marais et al. (9) and Hassan et al. (15), who reported different results depending on whether the students were at preclinical level (without active experience with patients) or on clinical rotations. Marais et al. stated that higher clinical-level correlated to medical students' greater empathy towards patients and respect for their autonomy. This correlation was demonstrated by a 20% difference in acceptance rate for AE between preclinical and clinical students, which dropped to 10% when they were asked if they will perform an assisted-dying procedure (9). Hassan et al. found lower acceptance rate for euthanasia or PAS among senior medical students; the attitude toward euthanasia, however, split to 50% against and 50% undecided, highlighting a higher percentage of indecision among seniors than freshmen (15). Seniors stated that through clinical exposure, medical

students become more aware that some diseases are incurable (15). However, a 2018 study by the authors of article (6) did not identify academic rank as a variable that could influence medical students' attitude toward this topic. That study focused only on preclinical students in the first three years of medical school, justifying the uniformity of opinions and highlighting that exposure to patients affected medical students' views regardless of their academic school year.

Until now, AE has been legalized in Belgium (11), the Netherlands (19), Luxemburg (19), Colombia (21), Uruguay (21), and Canada (8); Three countries where AE is legal are European (11, 19), which justify that why the majority of the papers that met the present study's inclusion criteria were published in this continent where the debate is open. In Belgium, the only country included in this study where AE is currently legalized, Roelans et al. reported that the approval percentage of the legalization of euthanasia to be 97% (11); a real legal environment, along with personal or professional experience in scenarios of assisted death, can create more favorable attitude among medical students (11). In Canada, another country where these practices are legalized, the study by Bator et al. was performed a year before the Canadian laws' modification to abolish the penalization of euthanasia (8). These political discussions may affect medical students' attitude toward acceptance.

Religion is defined as a moral institution with a unified system of values, beliefs and practices related to what is considered sacred (22-23). Religion is one of the most common

variables mentioned by researchers to influence medical students' views on euthanasia (6-8, 11, 12, 14-16, 18). Moreover, religion affects several other areas of medicine, such as adherence to treatment or the decision-making process in high-risk procedures (22). In seven studies that described religion as a relevant variable, five found Catholicism to be the most frequently self-reported religion (6, 11, 12, 14, 16), and less frequently ones were Christianity (7) and Islam (15). Conversely, the medical students who considered themselves atheists or those who did not actively practice any religion tended to have a more positive view towards AE, PE, and PAS for both patients and themselves (8, 11, 12, 14-16, 18). Different, sometimes conflicting views can be observed among various religions. In 2007, Sprung et al. studied the attitude of physicians towards PE; Catholics, Protestants and those with no religious affiliation compared to Jews, Greek Orthodoxies or Muslims had higher acceptance rate for therapy withdrawal (23). According to the Roman Catholic religion, practitioners are not obligated to ward off death at all costs, but they should not deliberately intervene to accelerate this process (24). The principle of "sanctity of life" categorizes life as a basic value as it establishes a direct relationship with God, and condemns any intervention that seeks to end this relationship (24). This principle could explain a more negative attitude toward AE and a mildly open posture toward PE. Studies that described a majority of the Catholic population and addressed the

attitude of PE had acceptance rate higher than 50%, except one study from Poland (16). Leppert et al. did not separate the opinions in favor of or against AE, PE, or PAS, and considered that the students' view could be influenced by the statements of the last Polish Pope, John Paul II (16). Regarding Islam, negative attitude is generally stated toward the topic (7, 15, 23). The Quran forbids self-harm and consenting to end life, which can be related to terminally-ill patients consenting to euthanasia (25). In Islam, death is not the final destination, and therefore a believer should keep facing difficulties despite suffering to stay alive (25). However, the concept of religion has to be differentiated from religiosity or religiousness, referring to the influence of religion on daily life and intrinsic values. A positive experience with religion, mainly described as a growing spirituality or closeness to God, empowers patients to undertake greater risks in their treatments (22). Regarding euthanasia, the greater the religiosity, the more opposition towards euthanasia (6, 15). This association is in line with our previous study's findings, where the participants who were described as strong believers showed a predominant negative view towards AE and PAS as well as inflexibility to change their original position in different scenarios (6). Similarly, Hassan et al. reported the lowest acceptance rate for AE, in a study involving predominately Muslim participants, which 17% of them identified themselves as very religious (15).

The main arguments on euthanasia are related to the bioethical principles. Autonomy, the most common argument stated by the medical students to support this practice (6-8, 11, 16, 17), derives from the Greek *auto* (self) and *nomos* (rule) and refers to the individuals' ability to make independent choices about their treatment (7). However, the state of autonomy in relation to euthanasia varies depending on whether autonomy is considered an intrinsic or moral value. In the former, patients would have free will in decision-making about their life or death (26), and in the latter — according to the Kantian perspective—death threatens autonomy by eliminating the individual who would otherwise exercise autonomy (27). Another argument to support euthanasia is relief from suffering, based on the principle of beneficence, as it considers the induction of death as a better alternative to avoid unnecessary suffering (28). The opponents of euthanasia argue that the elimination of suffering by death may not be the best alternative considering the followings: (i) increasing interest and research on palliative care and (ii) management of patients' psychiatric conditions (e.g., depression), which may adequately relieve their suffering (28, 29). The most common arguments against these practices were as follows: (i) personal and religious beliefs (7, 8, 15, 18); (ii) risk of abuse, sometimes referred to as the “slippery slope” argument (7, 8, 16, 18); and, (iii) the physicians' role in preserving life (7, 18). According to the argument of the “slippery slope”, if specific types of actions receive permission, then society will be coerced in

permitting further morally wrong actions (30, 31). As a classic example of this argument, in the Netherlands, where initially euthanasia was only approved for terminally-patients, the criteria were later expanded to allow euthanasia for chronically-ill patients and those suffering from severe psychiatric conditions. Subsequently, euthanasia was legally allowed for incompetent patients, including children (31). Opponents of the “slippery slope” argument state that for euthanasia to be considered as part of the risk of abuse argument, it must initially be condemned as morally wrong, an argument that in their opinion is dependent merely on personal experience (31). The final argument against euthanasia is the Hippocratic Oath's view of the physicians' role as healers. The Hippocratic Oath was first proclaimed in 400 BC and established one of the earliest codes of ethics for the medical profession (32). Because of its tradition and relevance, it is still frequently taken by medical students during their training or upon its completion. One of its lines states that physicians will not give poison to anyone though asked to do so, nor they would suggest such a plan (6), a line that contradicts modern-day views of euthanasia. This presumptive allegiance to the Hippocratic Oath may explain why students from newer, urban, public, and bigger universities usually have a more positive attitude towards euthanasia and PAS than students from older schools with more traditional values (12, 14, 16).

The relevance of understanding the medical students' attitudes towards euthanasia and

PAS lies not only in their values as present-time insights, but also as input data to generate strategies that optimize their education and address future medical dilemmas. Even though medical students usually have sufficient knowledge about euthanasia (15), they lack understanding of end-of-life care. Eyigör stated that most medical students believe that they have not received a complete education on palliative care or training on communication skills regarding palliative-care patients (33). A better understanding of end-of-life care, including euthanasia and PAS, for medical students, is essential, even if these practices are not currently legalized in their countries as related debates on the topic are not expected to end shortly.

A major limitation of this study was the use of non-standardized questionnaires to research the main focused questions, as they provide varied responses that are difficult to categorize and analyze adequately. Even if a students' view on euthanasia or PAS is markedly positive or negative, the format of the questionnaire may not accurately address the real answer. Moreover, questions asked directly may obtain different answers than those asked indirectly; questions with clinical case scenarios or with only binary true or false answers could further alter the results. Another limitation was the use of only two electronic databases, which could narrow results. This limitation could also limit the number of countries included in the study, which may prevent the global perspective from being reflected.

## **Conclusion**

Seeking a global perspective from medical students over a particular course and then describing that perspective is complex. This complexity is not only due to the great diversity of opinions, but also due to the geographical, social, cultural, and temporal context influencing their decisions. This study aimed to objectively describe the medical students' attitude towards AE, PE, and PAS practices as well as to analyze the variables and arguments surrounding these practices. To summarize, PE and PAS are more accepted than AE, and the most critical arguments in favor of these practices are the respect for autonomy and the relief of suffering. Personal beliefs and the social role of the physician as a healer are the most common arguments against these practices. Even though a consensus may not be reached easily or soon, continuing the discussion about end-of-life decisions is essential because the debates over these practices and the necessity for such decisions will unavoidably linger. Medical students must be aware of different perspectives on the topic to make an informed decision in related circumstances.

## **Conflict of Interests**

The authors declare that they have no conflict of interests.

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