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Attitudes toward euthanasia among medical students from different countries

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ABSTRACT

Introduction. This study conducted among medical students from different countries aimed to compare their knowledge of palliative care, euthanasia, and assisted suicide, their attitudes toward euthanasia practice, law, and its legalization, as well as motives behind their ethical choices.

Material and methods. The 18-item questionnaire survey was conducted among medical students. Questionnaires were voluntary and anonymous and they were completed within 30 minutes after completion of obligatory 30-hour palliative medicine courses. During theoretical seminars and practical classes, students were provided with basic knowledge on symptom management, and psychological, social, and spiritual support. An ethical approach was presented, in which both euthanasia and assisted suicide were not acceptable.

Results. A total of 659 students participated. There were 486 (73.75%) students from Poland and 173 (26.25%) foreign students from Taiwan 54 (8.19%), USA 48 (7.28%), Norway 32 (4.86%), Canada 27 (4.10%), Germany 5 (0.76%), Great Britain 4 (0.61%), and Sweden 3 (0.45%). Students from Poland and other countries did not differ in terms of knowledge of palliative care, but differences emerged regarding knowledge of euthanasia and assisted suicide. Respondents from different countries differed in their responses to all questions regarding legal aspects and euthanasia. The only exception was assisted suicide where no difference was found.

Conclusions. A significant percentage of students were unable to provide definitions of palliative care, euthanasia, or assisted suicide. The results suggest differences in the attitudes toward euthanasia between students originating from different continents. Culture, religious affiliation, and gender might be factors influencing these results.

Key words: assisted suicide, ethics, euthanasia, medical students, palliative medicine

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Introduction

Euthanasia and assisted suicide, their practice, and legalization are widely discussed among medical professionals and in society [1, 2]. Palliative care is defined as active holistic care for patients with incurable diseases and poor prognosis including the management of pain and other symptoms, with psychosocial and spiritual support offered to patients and their families, aimed at improving the quality of life [3]. Euthanasia is defined as an act in which a physician ends a patient's life on his/her request by an administration of a lethal dose of a drug. In the Polish Penal Code, it is also stated that this act may be motivated by compassion [4]. Assisted suicide is defined as a prescription of a drug by a physician to be administered by a patient to end his/her life.

Medical students' attitudes toward the practice of euthanasia and the law were explored in several studies [5–8].

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In a study conducted in Poland among fifth- and sixth-year medical students, 33.3% of respondents supported the legalization of euthanasia and over 20% did not answer; 19.2% of students approved euthanasia in the case of incurable illness, provided it was legal [9]. In another study conducted among Polish, Swedish, and German first-year medical students 48%, 61% ($p < 0.007$), and 82% ($p < 0.001$), respectively, accepted euthanasia; 29%, 12% ($p < 0.02$), and 3% ($p < 0.001$), respectively, did not [10]. In a study conducted among medical students of the 5th and 6th year of Poznan and Lodz University, 69 (11.73%) respondents declared they would practice euthanasia, 303 (51.53%) would not, and 216 (36.73%) were not sure. The idea of legalization of euthanasia was supported by 174 (29.59%) students, opposed by 277 (47.11%), with 137 (23.30%) undecided. In this study, a significant impact of gender and religious affiliation on students' attitudes toward euthanasia was demonstrated [11].

Limited data exist on medical students' attitudes toward euthanasia and factors that may influence students' choices in the care of incurable patients. To our knowledge, no study explored attitudes toward euthanasia among medical students from Poland and other countries in Europe, North America, and Asia. Therefore, this study aimed to explore the knowledge of palliative care, euthanasia and assisted suicide, attitudes toward euthanasia practice, law, and legalization held by medical students from the regions listed above, all of whom completed obligatory palliative medicine courses.

Material and methods

The questionnaire survey was conducted among medical students at the Department of Palliative Medicine, Poznan University of Medical Sciences. The questionnaires were voluntary and anonymous, and they were provided within 30 minutes of the completion of obligatory 30-hour palliative medicine courses for the fourth-, fifth-, and sixth-year Polish and foreign medical students in Poznan. During lectures, seminars, and practical classes, students were provided with basic knowledge on symptom management and psychological, social, and spiritual support. During palliative medicine courses, an ethical approach was presented in which both euthanasia and assisted suicide were rejected.

The 18-question questionnaire (please see the appendix) was based on a study on euthanasia performed among medical students [12]. The pilot of the questionnaire on 20 sixth–year medical students demonstrated that the questionnaire was well received and understood. The questions in the questionnaire were formulated in a way understandable for respondents (students) and were available in two languages: English and Polish. There were closed and open questions, the former with a request to justify answers.

The data were analyzed with the licensed statistical package Statistica PL, version 8.0®, and Stats Direct statistical software, version 2,6,5®. The statistical evaluation of the demographic data, answers to questions, and differences between respondents from different countries were based on a Chi-square test; with a p-value of 0.05 considered significant. The Bioethics Committee at Poznan University of Medical Sciences formally waived the need for approval of the study protocol as the survey was not a medical experiment.

Results

A total of 659 out of 700 invited students agreed to participate in the study. There were 486 (73.75%) students from Poland: 246 (37.33%) in the fifth, 240 (36.42%) in the sixth year, and 173 (26.25%) foreign students: 60 (9.05%) in the fourth, 57 (8.65%) in the fifth, and 56 (8.55%) in the sixth year. Foreign students originated from Taiwan 54 (8.19%), the USA 48 (7.28%), Norway 32 (4.86%), Canada 27 (4.10%), Germany 5 (0.76%), Great Britain 4 (0.61%), and Sweden 3 (0.45%). The mean age of all surveyed was 24 years. The mean age for particular groups was as follows: Polish students 24.39, North America 25.16, Europe 25.21, and Asia 26.79. The youngest participant was 21, and the oldest was 41.

Among study participants, women formed the majority (59.26%) and men (40.79%) the minority. The majority (78.84%) of those surveyed declared Roman Catholic faith, including 79.38% of respondents from Poland, 33.33% from North America, 16.28% from Europe, and 0% from Asia. Some respondents (12.66%) declared themselves atheists (13.33% from Poland, 22.67% from North America, 41.86% from Europe, and 52.83% from Asia). A total of 3.57 % of participants declared other religious affiliations not mentioned in the questionnaire; 1.65% belonged to 3 faiths: Protestant 0.41%, Orthodox 0.41%, and Buddhist 0.83% (Tab. 1). The results are presented according to five groups of questions:

1. Definitions of palliative care, euthanasia, and assisted suicide (questions 2, 7, and 13).
2. Attitudes toward legal aspects of euthanasia (4, 10, and 16).
3. Ethical context (questions 3, 6, 8, 11, and 14).
4. Motives for answers to question 8: euthanasia on patients (question 9) and for question 14: self-euthanasia in the case of an incurable disease (question 15).
5. Euthanasia and palliative care (questions 1, 5, 12, 17, and 18)

Table 1. The characteristics of medical students

		Total	Place of residence			
			Poland	North America	Europe	Asia
Number of students*		659 (100%)	486 (73.75%)	75 (11.38%)	44 (6.68%)	54 (8.19%)
Age (mean ± SD, range)		24.71 ± 1.8121–41	24.39 ± 1.3722–41	25.16 ± 2.6321–33	25.21 ± 1.7322–29	26.79 ± 2.6422–33
Gender*	Men	266 (40.74%)	162 (33.47%)	41 (57.75%)	30 (68.18%)	33 (61.11%)
	Women	387 (59.26%)	322 (66.53%)	30 (42.25%)	14 (31.82%)	21 (38.89%)
Religion*	Roman--catholic	380 (78.84%)	381 (79.38%)	25 (33.33%)	7 (16.28%)	0 (0.00%)
	Protestant	2 (0.41%)	2 (0.42%)	2 (2.67%)	3 (6.98%)	0 (0.00%)
	Orthodox	2 (0.41%)	2 (0.42%)	2 (2.67%)	0 (0.00%)	0 (0.00%)
	Jew	0	0 (0.00%)	2 (2.67%)	0 (0.00%)	0 (0.00%)
	Muslim	0	0 (0.00%)	6 (8.00%)	3 (6.98%)	0 (0.00%)
	Buddhist	4 (0.83%)	4 (0.83%)	4 (5.33%)	1 (2.33%)	11 (20.75%)
	Atheist	61 (12.66%)	64 (13.33%)	17 (22.67%)	18 (41.86%)	28 (52.83%)
	Other	17 (3.53%)	27 (5.63%)	17 (22.67%)	11 (25.58%)	14 (26.42%)

*A total of 6 (0.9%) students did not provide their nationality or gender, and 8 (1.20%) students did not provide their religious affiliation; SD — standard deviation

Table 2. Results concerning knowledge of definitions: palliative care (question 2), euthanasia (7), and assisted suicide (13)

Item(number)	Poland	North America	Europe	Asia	Total	p-value
Know palliative care definition (2)	338 (69.55%)	56 (74.67%)	29 (65.91%)	35 (64.81%)	458 (69.50%)	0.621
Do not now palliative care definition (2)	148 (30.45%)	19 (25.33%)	15 (34.09%)	19 (35.19%)	201 (30.50%)	
Know euthanasia definition (7)	332 (68.31%)	34 (45.33%)	24 (54.55%)	23 (42.59%)	413 (62.67%)	0.000006
Do not know euthanasia definition (7)	154 (31.69%)	41 (54.67%)	20 (45.45%)	31(57.41%)	246 (37.33%)	
Know assisted suicide definition (13)	215 (44.24%)	21 (28.00%)	15 (34.09%)	11 (20.37%)	262 (39.76%)	0.00057
Do not know assisted suicide definition (13)	271 (55.76%)	54 (72.00%)	29 (65.91%)	43 (79.63%)	397 (60.24%)	

Definitions of palliative care, euthanasia, and assisted suicide

This refers to questions 2, 7, and 13 (Tab. 2). Among all students, the definition of palliative care was known to 458 (69.50%) students. There was no relationship between the place of residence and the knowledge of the definition of palliative care ($p = 0.621$). However, a connection was found between the place of residence and the knowledge of euthanasia definition ($p = 0.000006$) and between the place of residence and the knowledge of assisted suicide definition ($p = 0.00057$).

Attitudes toward legal aspects of euthanasia

This refers to questions 4, 10, and 16 (Tab. 3). A connection was found between the place of residence and the responses to question 4 regarding current legal regulations on euthanasia in Poland ($p = 0.0001$). A total of 47.39% of respondents stated that the current law is appropriate although a majority expressed a view that it is too liberal (22.66%) or too restrictive (29.92%). A majority of respondents from North America and Asia stated that current law insufficiently protects against euthanasia and assisted suicide (North America 38.36%, Asia 54.90%). Respondents from these continents also stated that the current law is too restrictive and should be ameliorated (North America 28.77%, Asia 23.53%). A total of 21.57% of respondents from z Asia and 32.88% from North America stated that the current law is appropriate.

Regarding question 10, most participants stated that legalizing euthanasia could lead to possible abuse (70.22%); there were no differences in this regard between respondents from different continents. A significant number of respondents were against legalizing euthanasia (40.65%); there were 34.42% of respondents supporting legalizing euthanasia, and 24.92% of those undecided. There was a significant connection between

Table 3. Results: students' responses to questions 4, 10, and 16

Item (number)	Response	Poland	North America	Europe	Asia	Total	p-value
Attitudes toward euthanasia-alaw (4)	Current law appropriate	247 (53.00%)	24 (32.88%)	17 (41.46%)	11 (21.57%)	299 (47.39%)	0.000001
	Current law insufficiently protects against euthanasia	73 (15.67%)	28 (38.36%)	14 (34.15%)	28 (54.90%)	143 (22.66%)	
	Current law too restrictive, should be ameliorated	146 (31.33%)	21 (28.77%)	10 (24.39%)	12 (23.53%)	189 (29.95%)	
Possible abuse in case euthanasia is legal (10)	Abuse possible	344 (71.52%)	54 (75.00%)	26 (60.47%)	31 (59.62%)	455 (70.22%)	0.019
	Abuse not possible	93 (19.33%)	8 (11.11%)	12 (27.91%)	9 (17.31%)	122 (18.83%)	
	Do not know	44 (9.15%)	10 (13.89%)	5 (11.63%)	12 (23.08%)	71 (10.96%)	
Euthanasia legalization (16)	For euthanasia legalization	150 (31.71%)	35 (47.95%)	16 (37.21%)	20 (37.74%)	221 (34.42%)	0.00011
	Against euthanasia legalization	215 (45.45%)	21 (28.77%)	16 (37.21%)	9 (16.98%)	261 (40.65%)	
	Do not know	108 (22.83%)	17 (23.29%)	11 (25.58%)	24 (45.28%)	160 (24.92%)	

Table 4. Results: students' responses to questions 3, 6, 8, 11, and 14

Item (number)	Response	Poland	North America	Europe	Asia	Total	p–value
Euthanasia if legal (3)	Yes	96 (19.88%)	35 (46.67%)	15 (34.09%)	24 (45.28%)	170 (25.95%)	0.000001
	No	204 (42.24%)	24 (32.00%)	11 (25.00%)	18 (33.96%)	257 (39.24%)	
	Do not know	183 (37.89%)	16 (21.33%)	18 (40.91%)	11 (20.75%)	228 (34.81%)	
Values in contact with patients (6)	Ethics with respect for life	320 (67.51%)	38 (52.05%)	33 (76.74%)	30 (56.60%)	421 (65.47%)	0.000006
	Total freedom of choice including life termination	93 (19.62%)	33 (45.21%)	9 (20.93%)	19 (35.85%)	154 (23.95%)	
	Other	61 (12.87%)	2 (2.74%)	1 (2.33%)	4 (7.55%)	68 (10.58%)	
Euthanasia (8)	Yes	62 (12.84%)	27 (36.49%)	12 (27.27%)	16 (30.77%)	117 (17.92%)	0.000005
	No	240 (49.69%)	25 (33.78%)	17 (38.64%)	19 (36.54%)	301 (46.09%)	
	Do not know	181 (37.47%)	22 (29.73%)	15 (34.09%)	17 (32.69%)	235 (35.99%)	
Euthanasia when patients suffer (11)	Yes	74 (15.45%)	30 (41.10%)	7 (15.91%)	21 (39.62%)	132 (20.34%)	0.000001
	No	223 (46.56%)	24 (32.88%)	25 (56.82%)	15 (28.30%)	287 (44.22%)	
	Do not know	182 (38.00%)	19 (26.03%)	12 (27.27%)	17 (32.08%)	230 (35.44%)	
Self– euthanasia (14)	Natural death	270 (70.68%)	40 (61.54%)	26 (65.00%)	35 (70.00%)	371 (69.09%)	0.471
	Euthanasia or assisted suicide	112 (29.32%)	25 (38.46%)	14 (35.00%)	15 (30.00%)	166 (30.91%)	

the continent of origin and response to the question about legalizing euthanasia. A total of 47.95% of participants from North America and 37.74% from Asia were for legalizing euthanasia, among these groups a higher percentage of those undecided was present: 23.29% from North America and 45.28% from Asia; with 16.98% from North America and 28.77% from Asia against legalizing euthanasia.

Ethical context

This refers to questions 3, 6, 8, 11, and 14 (Tab. 4). Concerning question 3, a connection was found between the place of residence and the will to commit an act of euthanasia provided it is legal ($p = 0.0001$). Significantly, more respondents from North America (46.67%) and Asia (45.28%) would practice euthanasia provided it was legal. Fewer participants committed to euthanasia in these circumstances were found among students from Poland (19.88%).

Regarding question 6, a connection was found between the place of residence and responses to the most important values in contact with patients ($p = 0.00006$). For the decisive majority of surveyed students (65.47%), the highest value in contact with a patient is ethics with respect for the patient's life, even in those diagnosed

with a far advanced incurable disease. An answer that absolute freedom of choice for the patient, including a possibility of shortening the patient's life by a physician was provided by 23.95% of respondents. However, less discrepancy between these two attitudes was observed in North American (52.05% and 45.21%) and Asian students (56.60% and 35.85%) in comparison to Polish (67.51% and 19.62%) and European students (33% and 9%) for answers A and B in question 6, respectively.

With respect to question 8 concerning the possibility of performing an act of euthanasia or assisted suicide, the responses were significantly dependent on the place of residence ($p = 0.00005$). A total of 36.49% of respondents from North America would perform euthanasia, and 33.78% would not. Opposite results were observed among Polish students, with 12.84% declaring a possibility of performing euthanasia and 49.69% declaring not performing euthanasia. In the remaining groups there were similar proportions of proponents and opponents of euthanasia.

Referring to question 11 on the acceptability of euthanasia when patients were suffering a significant dependence, subjects choices differed significantly, depending on the place of permanent residence ($p = 0.00001$). Among students from North America and Asia, 41.10% and 39.62%, respectively, responded positively to this question, while only 15.45% of respondents from Poland and 15.91% of respondents from Europe would perform euthanasia or assisted suicide fulfilling a patient's wish.

Regarding their own incurable disease and the choice of natural death or euthanasia and assisted suicide (question 14) the percentage of respondents' answers did not correlate with the place of permanent residence ($p = 0.47$). In the case of their own incurable disease, 69.09% of respondents would choose natural death. The highest percentage of participants with this choice was found among Polish (70.68%) and Asian students (70%).

Motives for students' answers

Motives of students' answers were examined in question 9 (descriptively explaining their choices in question 8 — concerning euthanasia on patients) and question 15 (descriptively explaining their choices in question 14 — concerning self-euthanasia in the case of an incurable disease).

Regarding motives behind answers to question 8 (euthanasia practice) from all 117 students who supported euthanasia practice, 26 (22.22%) students did not give a reason for their decision, 52 (44.44%) respondents indicated freedom of choice, 19 (16.24%) indicated terminating suffering and pain, 6 (5.13%) suggested that they made their choice as a hypothetical situation (i.e. in real life it might be different), also 6 (5.13%) indicated fear of pain and suffering, 5 (4.27%) cited their own beliefs. Other reasons were provided by 3 (2.56%) students.

Of all 301 students who opposed euthanasia practice, 82 (27.24%) students did not provide an answer; 43 (14.28%) indicated ethics and morality, 37 (12.29%) claimed that euthanasia is murdering patients, 30 (9.97%) indicated freedom of choice of a person, 20 (6.64%) maintained that nobody has the right to kill a patient, 19 (6.31%) indicated their own beliefs, 17 (5.65%) stated that euthanasia is forbidden by law, 16 (5.32%) cited medical ethics — a physician should treat a patient, 16 (5.32%) mentioned conscience. Other reasons were provided by 21 (6.98%) persons.

Regarding question 14 on reasons behind the natural death choice in case of their incurable disease, from 371 students, 145 (39.08%) did not provide an answer; 47 (12.67%) students indicated that death is a natural process (nobody has the right to shorten person's life), 41 (11.05%) indicated religion, 26 (7.01%) suggested that they made their choice as a hypothetical situation (i.e. in real life it might be different), 21 (5.66%) pointed possibility of palliative care and sedation, 19 (5.12%) indicated fear of dying, 15 (4.04%) ethics/morality, 11 (2.96%) philosophy of life (own opinions). Other reasons were provided by 46 (12.40%) students.

Regarding question 14 on reasons behind self-euthanasia in the case of an incurable disease, from 166 students, 47 (28.31%) did not provide an answer; 50 (30.12%) students indicated ending suffering and pain, 13 (7.83%) indicated fear of pain and suffering, 11 (6.63%) claimed that patient diagnosed with advanced disease is troublesome for family and care providers, 10 (6.02%) suggested that they made their choice as a hypothetical situation (i.e. in real life it might be different). Other reasons were provided by 35 (21.08%) students.

Euthanasia and palliative care

This refers to questions 1, 5, 12, 17, and 18 (Tab. 5). With respect to question 1, the statistical analysis of students' answers showed significant association with the place of permanent residence ($p = 0.00001$). The majority of Polish and European students think that widespread access to palliative care can reduce euthanasia requests among patients (Polish students — 79.17% and European students — 74.42%). The most undecisive students were from Asia (32.08%) and from North America (25%). A total of 86.89% of respondents feel well or moderately prepared to care for patients with incurable diseases after completion of palliative medicine classes. However, palliative medicine classes did not significantly change students' views on euthanasia – 95.94% of respondents held their former

Table 5. Results: students' responses to questions 1, 5, 12, and 18

Item (number)	Response	Poland	North America	Europe	Asia	Total	p-value
Impact of access to palliative care decreases euthanasia requests (1)	Yes	380 (79.17%)	44 (61.11%)	32 (74.42%)	29 (54.72%)	485 (74.85%)	0.000001
	No	59 (12.29%)	10 (13.89%)	6 (13.95%)	7 (13.21%)	82 (12.65%)	
	Do not know	41 (8.54%)	18 (25.00%)	5 (11.63%)	17 (32.08%)	81 (12.50%)	
Palliative care classes prepare for future care (5)	Significant	164 (33.88%)	30 (40.00%)	22 (51.16%)	22 (40.74%)	238 (36.28%)	0.00335
	Average	244 (50.41%)	38 (50.67%)	21 (48.84%)	29 (53.70%)	332 (50.61%)	
	Little	72 (14.88%)	4 (5.33%)	0 (0.00%)	2 (3.70%)	78 (11.89%)	
	Not at all	4 (0.83%)	3 (4.00%)	0 (0.00%)	1 (1.85%)	8 (1.22%)	
Palliative care classes impact attitudes toward euthanasia (12)	Formerly for euthanasia currently against euthanasia	15 (3.14%)	0 (0.00%)	0 (0.00%)	2 (4.08%)	17 (2.65%)	0.000001
	Formerly against euthanasia currently for euthanasia	3 (0.63%)	2 (2.74%)	0 (0.00%)	4 (8.16%)	9 (1.40%)	
	Confirm against euthanasia	105 (22.01%)	8 (10.96%)	6 (13.95%)	3 (6.12%)	122 (19.00%)	
	Confirm for euthanasia	23 (4.82%)	14 (19.18%)	9 (20.93%)	3 (6.12%)	49 (7.63%)	
	Did not change attitude	331 (69.39%)	49 (67.12%)	28 (65.12%)	37 (75.51%)	445 (69.31%)	
Positive impact of palliative care on patients' dignity (18)	Yes	417 (87.61%)	62 (84.93%)	36 (85.71%)	36 (70.59%)	551 (85.83%)	0.019
	No	32 (6.72%)	6 (8.22%)	3 (7.14%)	5 (9.80%)	46 (7.17%)	
	Do not know	27 (5.67%)	5 (6.85%)	3 (7.14%)	10 (19.61%)	45 (7.01%)	

views. A decisive majority of respondents (85.83%) declared that appropriate palliative care enables the patient's dignified life till death.

Discussion

The study was conducted among 659 fourth-, fifth-, and sixth-year medical students from Poznan Medical University with a 94% response rate. There were 486 (73.75%) students from Poland, 75 (11.38%) from North America, 44 (6.68%) from Europe, and 54 (8.19%) from Asia. Nearly 78.84% of the participants were Catholics.

The results are presented according to several groups of questions including 1) definitions of palliative care, euthanasia, and assisted suicide, 2) attitudes toward legal aspects of euthanasia, 3) ethical context, 4) motives for answers to the question regarding an act of euthanasia patients, 5) self-euthanasia in the case of an incurable disease, and 6) a possible impact of palliative care classes on future practice and attitudes toward euthanasia. Among all students, the definition of palliative care was known to nearly 69.55% of students. This might be interpreted as insufficient as all surveyed have filled out the questionnaires just after completion of obligatory palliative medicine courses. A similar percentage of students 68.31% knew the definition of euthanasia. A significant gap in students' knowledge was found; the definition of assisted suicide was known by 44.24% of students, which may be associated with no specific discussion during the courses on euthanasia and assisted suicide.

Regarding legal aspects of euthanasia, approximately 47% of respondents accept current regulations that ban euthanasia, whereas 22% think it should be amended. Approximately 34% of students supported the legalization of euthanasia while 70% expressed concerns about possible abuse if euthanasia is legal. This may indirectly confirm that the majority of medical students do not support euthanasia practice and legalization. However, the study results unveiled a significant difference in students' opinions regarding the current law forbidding euthanasia among students originating from Europe including Poland, and students from North America and Asia. Students from North America and Asia (38.36% and 54.90%, respectively) are convinced that the current law should be changed because it insufficiently protects against euthanasia. A significant percentage of students originating from these geographic areas (47.95% and 37.74%, respectively) are proponents of legalizing euthanasia with a concurrent view that it may be connected with possible abuse (75% and 59.62%, respectively).

The most important part of the study refers to the ethical context, especially the attitude of participants toward performing euthanasia on patients. A clear indication of the lack of students' acceptance for euthanasia practice is a small percentage of its proponents (17.92%) which only slightly rose when patients experience suffering (20.34%) and euthanasia has been legalized (25.95%). Further evidence is a high and similar percentage (approximately 69.09%) of students who respect life in all circumstances and who would choose natural death in the case of their incurable disease. However, here also differences were found in relation to respondents' place of origin (residence). Despite similar views in all groups regarding ethical norms as the main form of regulation of contact between physician and patient and clear declaration of choosing natural death in the case of their own incurable disease, respondents from North America and Asia declared more often readiness to perform euthanasia (36.49% and 30.77%, respectively). This tendency increased if patients diagnosed with advanced diseases consciously asked to end their life (41.10% and 39.62%, respectively).

A positive impact of palliative care classes on respondents' attitudes toward euthanasia was expressed by 74.85% of students who think that widespread access to palliative care may decrease euthanasia requests among patients [11, 12]. Nearly 86% of students found that palliative care allows patients to live in dignity until the end of their life. These are important statements that outline positive ethical aspects of palliative care [13–17]. Although a small percentage (2.65%) of students changed their views from euthanasia proponents to euthanasia opponents, this percentage was higher than nearly 1.4% of students who changed their views in an opposite direction. Accordingly, over 19% of students declared themselves as euthanasia opponents, and 7.63% declared themselves to be euthanasia proponents after the course completion. An ethical approach was presented, in which euthanasia and assisted suicide were not accepted. The results confirm a positive impact of palliative medicine courses on students' ethical attitudes. This was demonstrated in another study in which less support for euthanasia among medical students was found after a lecture presenting palliative care as an ethically acceptable approach to managing incurable patients [18].

The results indicate that inhabitants of Europe do not support the practice of euthanasia on patients and themselves as much as those living in North America and Asia. The observed discrepancies might be associated with differences in the value system among people living in different geographic areas and specific cultures regarding respect for life and an individual. Inhabitants of Europe including Poland present a more conservative and more traditional outlook compared to inhabitants of North America, which has a more liberal outlook, and Asia where collectivist and corporate comprehension of individual interests predominate.

Our study demonstrates that cultural context plays an important role in the formation of an individual worldview, which may impact human actions. People are under the influence of socio-cultural factors. These variables form social and cultural determinants of behavior and the basis of existential dilemmas [19]. It may be assumed that in the formation of attitudes regarding euthanasia, a key factor is different comprehension of individual values in different cultures. The concept of an individual depends on tradition and history and may explain differences in attitudes toward individual freedom and rights. In Asia, an individual is perceived as a small part of a collective, whereas in American culture more often an emphasis is put on individualism, hedonism, and consumption, which weaken interpersonal links and exclude suffering from the landscape of life [20].

An interesting aspect of our study is the inconsistency of results regarding respondents' death, in which the majority declared a choice of natural death for themselves and euthanasia for a patient. It is the evidence of extreme isolation of students own needs and expectations from the needs and expectations of other persons. Responses to these questions confirm other studies' results, which demonstrated that, in fact, euthanasia requests are rare when palliative care is provided. The cultural anchor of an individual is the base of his/her identity, which is resistant to modification or change. That may explain why a low percentage of students changed their views regarding euthanasia after completion of a palliative care course. In a study conducted in South Africa, 80% of medical students indicated that they would prefer an ethical committee to decide on euthanasia in contrast to only 42% of students who declared readiness to perform euthanasia themselves [21]. However, it was also suggested that respondents in that study may have been not fully aware of the benefits of palliative care due to limitations regarding palliative care provision and education in South Africa [22].

Regarding the current law on euthanasia and possible legalization of euthanasia, the study results show a tendency toward legalization of euthanasia expressed by respondents from North America and Asia. It may be speculated that these statements are associated with respondents' wish for euthanasia to be legally regulated so their responsibility is limited, and moral and ethical dilemmas can be avoided. It is interesting that among our respondents from Europe, where in many countries discussion on euthanasia takes place and in some euthanasia is legal, only 24.39% of respondents were proponents of more liberal law [23–25].

Several limitations of the study should be addressed. The study was conducted in one academic center and the decisive majority among those surveyed were Polish students with a significantly lower number of participants from other European, North American, and Asian countries. The study comprised a single questionnaire administered upon course completion. Many questions referred to hypothetical situations, e.g. performing euthanasia on patients or students themselves in case of their incurable disease. The questionnaire used in this study was not formally validated, and only pilot testing was conducted. Although students could express their motives for ethical choices, several factors might have influenced their responses including personality, value system, and emotional states that were not assessed in this study. Combining the responses from the fourth-, fifth-, and sixth-year students might have potentially influenced the results.

Conclusions

Despite these limitations, to the best of our knowledge, we were able for the first time to compare attitudes toward euthanasia among students from Poland and 3 continents. In conclusion, the majority of medical students express their opposition to or uncertainty about euthanasia practice, change to the law that bans euthanasia, legalization of euthanasia, and they express concerns with possible abuses if euthanasia was legal. The place of permanent residence has a significant association with students' answers regarding euthanasia practice (even if it was legal and when patients suffer), self-euthanasia, and the values in contact with patients. However, the place of permanent residence has no association with students' knowledge of palliative care, euthanasia and assisted suicide definitions, euthanasia legalization, and the current law. The results are most probably associated with differences in cultural and moral values in different geographic areas, which may be further explored in future studies conducted by medical students and physicians from all over the world.

Conflict of interest

All authors declare no conflicts of interest.

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Authors contributions

MF has elaborated the conception and design of the study, analyzed and interpreted the data, and drafted the manuscript; WL collected the data and revised the manuscript; MM analyzed and interpreted the data. All authors approved the submitted manuscript.

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