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Education is as an important factor in palliative care knowledge: results from a survey of physicians' attitudes and knowledge in Palliative Medicine

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The Authors declare that there is no conflict of interest

Abstract

Background: According to the Latin America Association for palliative care, Brazil offers only 0.48 palliative care services per 1 million inhabitants. In 2012, no accredited physicians were working in palliative care, while only 1.1% of medical schools included palliative care education in their undergraduate curricula. As a reflection of the current scenario, little research about end-of-life care has been published so that studies addressing this subject in the Brazilian setting are crucial.

Aim: The aim of the study is to assess medical knowledge in end-of-life care, in order to identify key factors that could be useful in improving palliative care in Brazilian medical schools and residency.

Methods: A cross sectional study where students applying for the medical residency of the Federal University of São Paulo were invited to voluntarily participate in a anonymous and self-administered questionnaire survey. The latter included demographic information, attitudes, prior training in palliative care, prior palliative care experience and the 20-item Palliative Care Knowledge Test (PCKT).

Results: Of the 3086 subjects applying for residency, 2349 (76%) answered the survey, 2225 were eligible for analysis while 124 were excluded due to incomplete data. Although the vast majority (99,2%) thought it was important to have palliative care education in the medical curriculum, less than half (46,2%) reported having received any education on palliative care. The overall performance in the PCKT was poor, with a mean score of 10,79 (\pm 3). While philosophical questions were correctly answered (81,8% of correct answers), most participants lacked knowledge in symptom control (50,7% for pain, 57,3% for dyspnea, 52,2% for psychiatric problems and 43,4% for gastrointestinal problems). Doctors that had already concluded a prior residency program and the ones that had prior experience with terminal patients performed better in the PCKT ($p < 0,001$). The high performance group (more than 50% of correct answers) had received more training in palliative care, showed more interest in learning more about the subject, had a better sense of preparedness,

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as well as a higher percentage of experience in caring for terminal patients ($p < 0,001$).

Conclusions: Our study showed that Brazilian's physicians lack not only knowledge, but also training in palliative medicine. Important factors to better knowledge in end-of-life care were prior training, previous contact with dying patients and prior medical residency. Corroborating the literature, training showed to be a key factor in overall palliative medicine knowledge. Therefore, Brazilian medical schools and residency programs should focus on improving palliative training, especially those involving contact with dying patients.

key words: education, palliative care, knowledge, palliative care knowledge test (PCKT), palliative medicine, medical residency, developing countries.

Key Statements

What is already known about the topic?

Very little research in palliative care has been published from developing countries. In Brazil, there is no data about palliative medicine knowledge and training among physicians. In U.S. medical schools, there are currently no universal, standardized medical curricula and clinical training protocols dedicated to palliative medicine. Studies assessing palliative knowledge among students and physicians in developed countries are not representative of the overall reality due to small samples and local studies.

What this paper adds?

This study demonstrates that Brazilian physicians lack training and knowledge in palliative Medicine. It also shows that training is considered to be a key factor in overall end-of-life care knowledge.

Implications for practice, theory or policy?

The study is an important wake up call for the importance of palliative care training in Brazilian medical schools and residency programs. They should focus on improving palliative training, especially those involving contact with terminal patients. I hope that this study will inspire a change in the Brazilian medical curricula.

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Background

The current status of palliative care in developing countries is alarming. According to the Latin America Association for palliative care, Brazil offers only 0.48 palliative care services per 1 million inhabitants¹. In 2012, no accredited physicians were working in palliative care¹. The education scenario is also of concern. While only 1.1% of medical schools include palliative care education in undergraduate curricula, the demand in palliative care in developing countries is steadily growing^{2,3}.

Demographic transition in developing countries led to a shift in causes of death, with contagious diseases no longer being the main cause in many Latin America countries. As life expectancy increases, the prevalence of multiple chronic conditions among older people rises⁴. Those with advanced chronic disease will face the same palliative care problems as cancer patients, with clear indication of palliative symptoms relief⁵. A Study conducted in Spain in 2010, found out that the prevalence of advanced chronic disease in the elderly can reach 10.9%⁶. In 2050, life expectancy in Brazil is estimated to be 80 years old⁷. Therefore, the number of elderly in need of palliative services will grow exponentially^{8,9}.

Very little research in palliative care has been published from developing countries and applying developed countries perspectives on end-of-life care in developing nations is unrealistic and suited to failure¹⁰. Therefore, research regarding palliative care in developing countries, such as Brazil, is mandatory in order to assess needs and priorities, establish health interventions and increase overall medical knowledge.

The purpose of our survey is to assess medical knowledge in end-of-life care in order to identify key factors that could be useful in improving palliative care in Brazilian medical schools and residency.

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Methods

3086 students that were applying for the medical residency of the Federal University of São Paulo were invited to voluntarily participate in the survey. They were asked to answer a self-administered questionnaire assessing their knowledge, experience, sense of preparedness and training in palliative care. A cover letter explained the purpose of the study and elicited that it was anonymous and confidential. Consent to participate in the study was indicated by the fulfillment and return of the questionnaire. The survey was approved by the research ethics committee of the Federal University of São Paulo and the Residency Program Director, who was responsible for the exam (CAAE 36437614.2.0000.5505).

Questionnaire The questionnaire consisted of three parts. The first part included demographic information: age, gender, religion, year of graduation, medical school of graduation, prior residency program and applying medical specialty.

The second part assessed attitudes and experience in Palliative Care: previous training, interest in learning more about the subject, number of terminal patients cared for and sense of preparedness in caring for this kind of patients.

The third part was a 20 item, true or false knowledge test, adapted from the Palliative Care Knowledge Test (PCKT) (Nakasawa *et al.*)^{11,12} to reflect the Brazilian context.

Statistical Analyses Participants who responded to 90% or more of the 20 item questionnaire were included as valid subjects of the analyses¹¹. Unsure responses were regarded as incorrect.

For the continuous variables the mean and standard deviation were calculated. Frequency and proportion were used for categorical variables.

Comparison of categorical variables among groups was performed using the chi-square test. If necessary, the paired difference test was used. Comparison of continuous variables among groups were performed with analysis of variance (ANOVA). A p value less than 0,05 was considered significant.

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Group analysis. To analyze which factors influenced knowledge, the sample was divided into four groups according to the number of correct answers. Group 1 (excellent) 76-100% of correct answers, group 2 (good) 51-75%, group 3 (poor) 26-50% and group 4 (bad) 0-25%.

Results

Of the 3086 subjects applying for residency, 2349 (76%) answered the survey, 2225 were eligible for analysis while 124 were excluded due to incomplete data.

Demographic Data. Overall, the mean age of the participants was 26.7 years (± 2.8); 56.9% were female; 63.5% were catholic; 52.4% had attended public universities. Less than half of the subjects (38,6%) had already concluded a prior residency program, being mostly in internal medicine or clinical specialties (52.6%). [Table 3](#)

Education and attitudes. Forty six percent of the responders reported having had prior training in palliative care, most of them during graduation (66,9%). The ones that attended private school had a higher percentage of training (57% versus 51% of the students in public). Almost the totality of the subjects (99.1%) agreed that palliative care is the best treatment for terminal patients, that it is important to have palliative care education in the medical curriculum (99.2%) and had interest in learning more about the subject (94.6%). Although 73.7% had prior contact with terminal patients, a vast majority felt unprepared to provide good care for this type of patient (77.2%). [Table 1.](#)

Knowledge The mean score of the PCKT was 10.79 (± 3), a hit rate of 54%. The percentage of correct answers was higher for philosophy (81.8%), followed by pain (50.7%), dyspnea (57.3%), psychiatric problems (52.2%) and gastrointestinal problems was (43.4%). [Table 2](#)

Group analyses. Only 3% scored more than 75% of the test (Group 1- excellent), while more than half of the subjects scored less than 50% of the test. [Figure 1](#) The responders in the four groups did not differ significantly in terms of age, religion, interest and given importance of the subject. Nevertheless, group 3 (poor) had more female than other groups ($p < 0,0001$) and groups 3 and 4 (poor and bad) had more students from private schools ($p < 0,001$). Groups 1 and 2 (excellent and

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good) had more prior training in palliative care, showed more interest in learning more about the subject, had higher percentage of experience, as well felt more prepared to care for terminal patients. [Table 3](#).

Subjects that had already concluded a prior residency program and the ones that had prior experience with terminal patients performed better at the PCKT ($p < 0,001$). Previous medical residency in internal medicine and clinical specialties had higher scores in the PCKT ($p < 0,001$) compared to surgical and pediatric residencies. [Table 4](#)

Discussion

To our knowledge, this is the first study conducted in Brazil that evaluated the newly graduated and medical residents' knowledge and attitudes in palliative care. In contrast to the poor prior knowledge and performance exhibited in the study, the subjects had high interest in learning more and thought palliative medicine should be a compulsory discipline in the medical curriculum. The type of medical residency, prior training in palliative care and previous experience with terminal patients were important factors in overall palliative knowledge.

The mean test score of our study population was inferior to what has been reported in the literature. Schroder et al reported a mean score of 64,6% in a multicenter study that assessed internal medicine residents¹³. In Japan, the mean PCKT score was 72% of correct answers among physicians. Japanese doctors not only performed better in philosophical questions but also had good knowledge in treating pain and gastrointestinal symptoms¹⁴. In Turkey, physicians performed better in philosophical questions but lacked knowledge in symptoms control¹⁵, in accordance with the findings of our research. This poor performance of Brazilian doctors is probably a reflex of the Latin America palliative scenario. According to the 2015 quality of death index¹⁶, a ranking of palliative care worldwide, palliative care in the developing world is a rare or non-existing entity. Brazil figures in the 42th position. Nevertheless, short-term improvement is achievable. Japan

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escalated from the 23th position in 2010 to the 14th position in 2015 by providing better palliative care in cancer patients through a national governmental program¹⁶.

In our survey, the importance of education on palliative care was consonant. Almost all of the interviewed physicians thought it should be a mandatory subject in the medical curriculum. Despite the growing interest about the subject, the importance of training, and raising social demand, medical schools still don't acknowledge palliative care as being essential for medical education¹⁷. In 2003 a national report of the status of medical education in end-of-life care showed that the current educational practices in the United States were not adequate to ensure excellent physician education and patient care at the end of life¹⁸. A systematic review suggested that there was little consistency in medical undergraduate's education in palliative care and that medical students were not prepared for the realities of caring for patients with chronic progressive life threatening illnesses¹⁹. In Netherlands, a country that allows physician-assisted suicide, a survey among students showed poor knowledge about euthanasia and called for more attention to education on end-of-life care²⁰. In Brazil, only one third of the medical schools have palliative care medicine as a compulsory discipline in the medical curriculum. The main reason is the lack of specialized teaching staff²¹.

Our study also found out that end of life care is best presented during residency training. Corroborating the findings of von Gunten *et al.*²². A vast number of different teaching techniques are available but no consensus has been reached regarding the best teaching method. Use of death rounds during the residency is not only well received by trainees, providing an opportunity for reflection, but also can be easily incorporated in the medical curriculum²³. Lester *et al.* showed that a 1-week rotation of house staff is insufficient²⁴ while Yacht *et al.* reported that 1 week was sufficient for medical residents²⁵. The use of clinical rotations, are cited by some, as being paramount to competency in end-of-life care^{26,27}. Even on-line educational materials addressing practical approaches in palliative care turned out to be a useful teaching tool to supplement residency curriculum²⁸. A systematic review, addressing end of life training in US Medical Schools

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found out that regardless of the teaching method, improvement was found in the medical competency in caring for the dying²⁹. Similar findings were reported by a systematic review of postgraduate palliative care education. Either clinical rotations or multi-faceted interventions produced improvements in knowledge³⁰.

The most significant finding of our research is that Medical residency plays an important role in overall knowledge in palliative medicine. Even without formal training in palliative medicine, the ones who have done residency performed better than the ones who haven't. The logical explanation to this fact is that as the population ages and the prevalence of chronic diseases escalate, medical residents have to face terminal patients on a daily basis, independent of the medical specialty. In England, 65% of general practitioners reported that they were currently providing palliative care to patients, demonstrating that the care of this kind of patients is no longer exclusive of the palliative care specialist³¹. Another contribution of medical residency to the overall knowledge of palliative medicine is explained by the fact that field experience with dying patients plays a critical role in resident's knowledge and attitudes³²⁻³⁴. Substantial changes in attitudes regarding end of life practices occur during residency³⁵. In a multi center survey, the majority of internal medicine residents agreed that learning from dying patients was meaningful¹³. The number of times that residents engage in palliative care situations, and the years of clinical experience have a positive influence on perceived competence. In our sample, corroborating findings by Mulder *et al.*, caring for dying patients was a positive factor in overall knowledge³⁶.

Our study has many limitations. It was conducted in São Paulo, not only the most developed city in Brazil but also where the most renowned medical schools are located. Also in Brazil, the medical curriculum can differ between different states. So the average knowledge was probably overestimated. Secondly, palliative medicine has been only recently introduced in Brazil, so that older physicians know little or nothing about the subject. Most of the responders were newly graduated or had recently concluded a medical residency program. A possible selection bias may have overestimated the overall performance at the PCKT.

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Conclusions:

In Summary, our study showed not only that Brazilian's physicians lack knowledge and training in palliative medicine, but also that training is considered to be a key factor in overall knowledge. Therefore, Brazilian medical schools and residency programs should focus on improving palliative training, especially those involving contact with terminal patients.

Declarations:

Abbreviations:

ANOVA: analysis of variance

CAAE: Presentation Certificate for Ethical Appreciation

HIAE: Hospital Israelita Albert Einstein

PCKT: Palliative Care Knowledge Test

UNIFESP: Universidade Federal de São Paulo

Ethics approval and consent to participate:

The survey was approved by the research ethics committee of the Federal University of São Paulo and the Residency Program Director, who was responsible for the exam (CAAE 36437614.2.0000.5505). All participants were informed about the purpose of the study and answered the questionnaire willingly.

Availability of data and material:

The statistical analysis and questionnaire can be find as table and figures. If any other information is needed, please contact the corresponding author to obtain the complete analysis report.

Competing Interests:

There is no competing interests o four authors

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Authors' contributions:

All authors contributed equally to the writing of this article.

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Table 1. Response rates regarding training and attitudes in palliative care

	Total
Prior training in Palliative Care?	
Yes	1194 (53.8%)
When?	
During Graduation	779 (66.9%)
During Medical Residency	314 (27%)
Both	71 (6.1%)
Do you find it is an important subject?	
Yes	2198 (99.2%)
Do you have interest in learning more?	
Yes	2097 (94.6%)
Do you fell prepared to care for dying patients?	
Yes	504 (22.8%)
Did you have prior experience with dying patients?	
Yes	1639 (73.7%)

Table 2. The Palliative Care Knowledge Test (PCKT).

	Incorrect	Correct
<u>Philosophy</u>		
1. Palliative care should be provided for patients who have no curative treatments available.	549 (24.7%)	1676 (75.3%)
2. Palliative care should not be provided along with other anti-cancer treatments.	262 (11.8%)	1963 (88.2%)
TOTAL for philosophy	18.2%	81.8%
<u>Pain</u>		
3. One of the goals of pain management is to get a good night's sleep.	265 (11.9%)	1960 (88.1%)
4. When cancer pain is mild, pentazocine should be used more often than an opioid.	1217 (54.7%)	1008 (45.3%)
5. When opioids are taken on a regular basis, non-steroidal anti-inflammatory drugs should not be used.	766 (34.4%)	1459 (65.6%)
6. The effect of opioids should decrease when pentazocine or buprenorphine hydrochloride is used together after opioids are used.	1733 (77.9%)	492 (22.1%)
7. Long-term use of opioids can often induce addiction.	1657 (74.5%)	568 (25.5%)
8. Use of opioids does not influence survival time.	942 (42.3%)	1283 (57.7%)
TOTAL for pain	49.3%	50.7%
<u>Dyspnea</u>		
9. Morphine should be used to relieve dyspnea in cancer patients	1177 (52.9%)	1048 (47.1%)
10. When opioids are used on a regular basis, respiratory depression will be common.	1120 (50.3%)	1105 (49.7%)
11. Oxygen saturation levels are correlated with dyspnea	744 (33.4%)	1481 (66.6%)
12. Anticholinergic drugs or scopolamine hydrobromide are effective for alleviating bronchial secretions of dying patients.	766 (34.4%)	1459 (65.6%)
TOTAL for dyspnea	42.7%	57.3%
<u>Psychiatric problems</u>		
13. During the last days of life, drowsiness associated with electrolyte imbalance should decrease patient discomfort.	1352 (60.8%)	873 (39.2%)
14. Benzodiazepines should be effective for controlling delirium.	1039 (46.7%)	1186 (53.3%)
15. Some dying patients will require continuous sedation to alleviate suffering.	289 (13%)	1936 (87%)
16. Morphine is often a cause of delirium in terminally ill cancer patients	1573 (70.7%)	652 (29.3%)
TOTAL for psychiatric problems	47.8%	52.2%
<u>Gastrointestinal Problems</u>		
17. At terminal stages of cancer, higher calorie intake is needed compared to early stages.	1280 (57.5%)	945 (42.5%)
18. There is no route except central venous for patients unable to maintain a peripheral intravenous route	1442 (64.8%)	783 (35.2%)
19. Steroids should improve appetite among patients with advanced cancer	1282 (57.6%)	943 (42.4%)
20. Intravenous infusion will not be effective for alleviating dry mouth in dying patients.	1035 (46.5%)	1190 (53.5%)
TOTAL for Gastrointestinal Problems	56.6%	43.4%

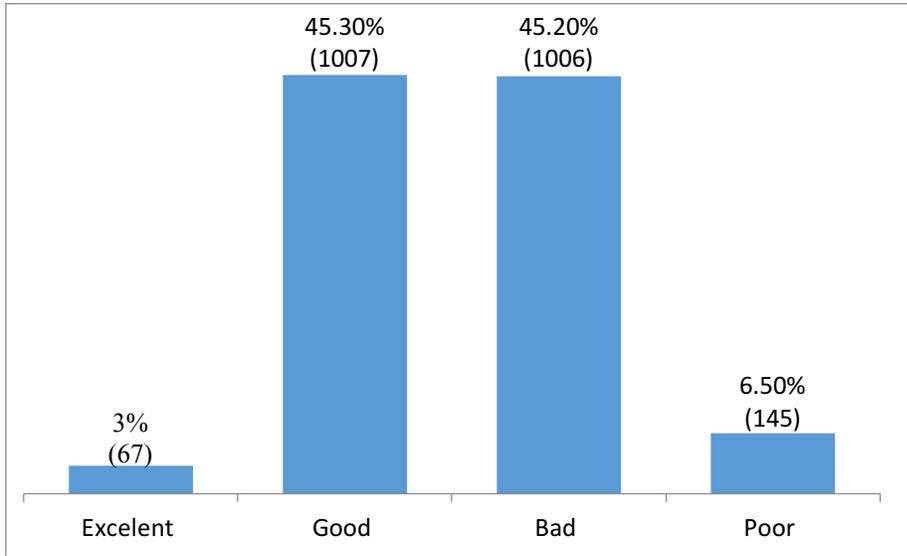


Figure 1. Distribution of Groups according to Percentage of correct answers: Group excellent 76-100%, Good 51-75%, Poor 26-50%, Bad 0-25%.

Table 3. Group Analysis according to the percentage of correct answers*

	Groups*				Total	p-value
	Group 1 (Bad)	Group 2 (Poor)	Group 3 (Good)	Group 4 (Excelent)		
Age						
Mean (SD)	26.7 (4.67)	26.54 (2,76)	26.78 (2.59)	26.86 (2.71)	26.67 (2.76)	0.2087
Graduation Medical School						
Private	45 (67.2%)	529 (52.7%)	440 (43.9%)	41 (28.5%)	1055 (47.6%)	<0.0001
Public	22 (32.8%)	474 (47.3%)	562 (56.1%)	103 (71.5%)	1161 (52.4%)	
Prior Medical Residency						
Yes	8 (11.9%)	257 (25.5%)	478 (47.6%)	115 (79.3%)	858 (38.6%)	<0.0001
No	59 (88.1%)	749 (74.5%)	527 (52.4%)	30 (20.7%)	1365 (61.4%)	
Medical Specialty						
Internal Medicine	2 (28.6%)	69 (27.4%)	300 (63.3%)	104 (92%)	475 (56.1%)	<0.0001
Surgery	3 (42.9%)	102 (40.5%)	101 (21.3%)	7 (6.2%)	213 (25.2%)	
Pediatrics	2 (28.6%)	81 (32.1%)	71 (15%)	2 (1.8%)	156 (18.4%)	
Others	0 (0%)	0 (0%)	2 (0.4%)	0 (0%)	2 (0.2%)	
Prior training in Palliative Care?						
Yes	24 (35.8%)	479 (47.7%)	577 (57.4%)	114 (79.2%)	1194 (53.8%)	<0.0001
No	43 (64.2%)	525 (52.3%)	428 (42.6%)	30 (20.8%)	1026 (46.2%)	
Do you have interest in learning more?						
Yes	59 (89.4%)	939 (93.5%)	959 (95.6%)	140 (97.2%)	2097 (94.6%)	0.0213
No	7 (10.6%)	65 (6.5%)	44 (4.4%)	4 (2.8%)	120 (5.4%)	
Do you fell prepared to care for dying patients?						
Yes	6 (9.1%)	173 (17.2%)	240 (24%)	85 (59%)	504 (22.8%)	<0.0001
No	60 (90.9%)	830 (82.8%)	759 (76%)	59 (41%)	1708 (77.2%)	
Did you have prior experience with dying patients?						
Yes	39 (58.2%)	708 (70.3%)	761 (75.6%)	131 (90.3%)	1639 (73.7%)	<0.0001
No	28 (41.8%)	299 (29.7%)	245 (24.4%)	14 (9.7%)	586 (26.3%)	

*Percentage of correct answers: Group1 (excellent) 76-100%, Group 2 (Good) 51-75%, Group 3 (Poor) 26-50%, Group 4 (Bad) 0-25%.

Table 4. Palliative Knowledge (% of correct answers) according to prior medical residency, medical specialty and prior experience with dying patients.

	N	Mean (SD)	Median	Min-Maximum	p-value
Prior Medical Residency?					
No	1365	50.12 (13.35)	50	10-90	<0.0001
Yes	858	60.07 (15.47)	60	15-100	
Medical Specialty					
Surgery	629	50.58 (12.93)	50	10-85	<0.0001
Internal Medicine	898	59.1 (15.94)	60	10-100	
Others	696	50.4 (13.55)	50	15-90	
Prior experience with dying patients?					
No	586	50.54 (14.12)	50	15-90	<0.0001
Yes	1639	55.18 (15.13)	55	10-100	

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Figures

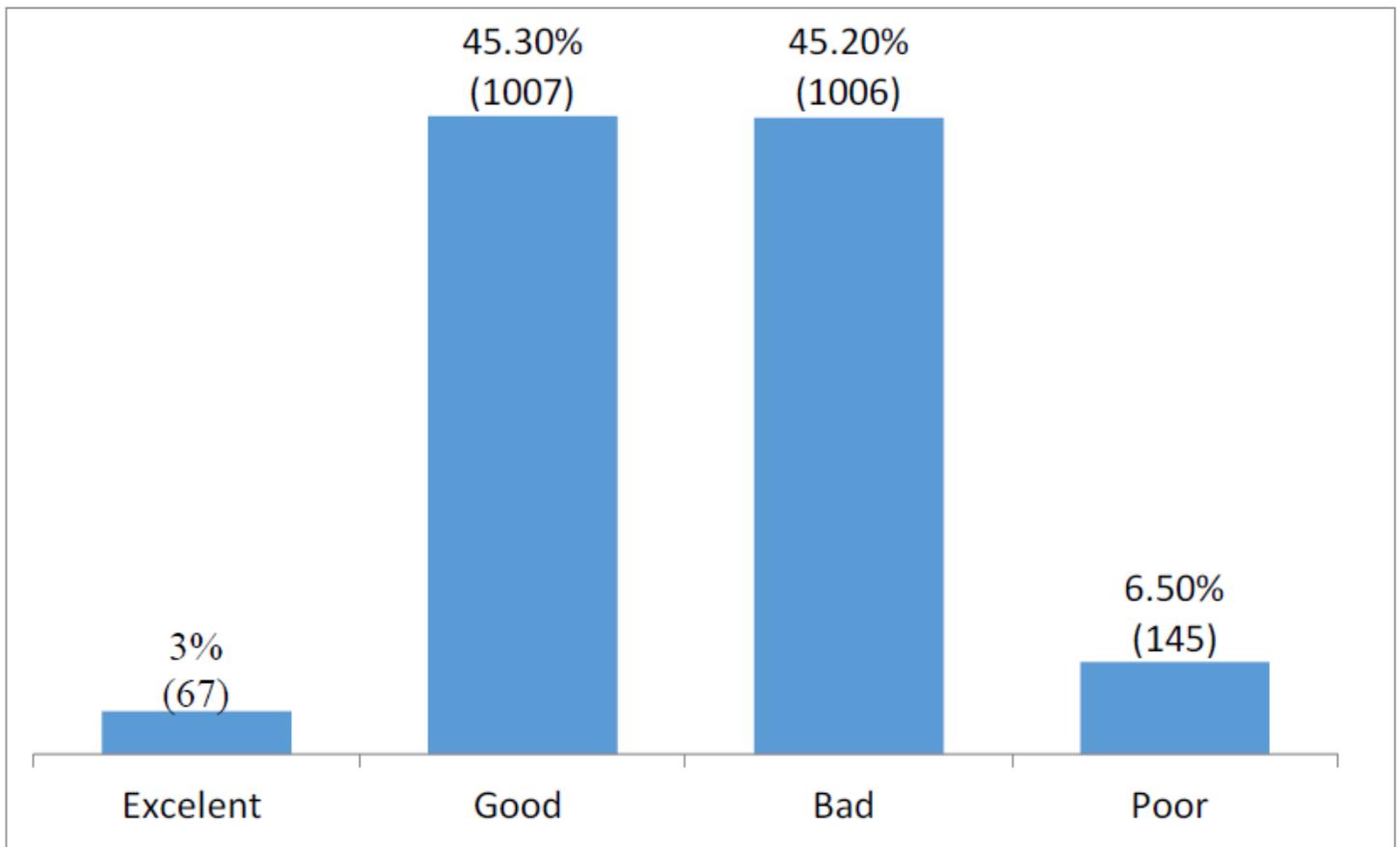


Figure 1

Distribution of Groups according to Percentage of correct answers: Group excellent 76-100%, Good 51-75%, Poor 26-50%, Bad 0-25%.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [STROBEchecklist.docx](#)
- [Palliativecarequestionnaire.docx](#)