The influence of the media on COPD patients' knowledge regarding cardiopulmonary resuscitation

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Background: The decision whether or not to undertake cardiopulmonary resuscitation (CPR) is a major ethical challenge. Patient preferences may be influenced by multiple factors, including information given by the media.

Objectives: We wanted to assess whether patients' knowledge about CPR survival and outcomes was related to presentation by the media.

Methods: 100 consecutive patients with COPD and chronic respiratory failure (CRF) and 100 patients at their first hospital admission for respiratory problems were enrolled. A questionnaire was administered to the patients seeking to ascertain their exposure to health information from the media, and to obtain their opinions on 1) the probability of survival after CPR, 2) the maximal length of time from collapse to CPR that allows a reasonable chance of survival, and 3) long-term outcomes of CPR survivors.

Results: The patients overestimated the success rate of CPR (63% of them estimated a hospital survival >40%), while the estimate of long-term outcome and timing of the procedure were more realistic. Bivariate correlations analysis showed significant correlation between the rate of correct responses and the viewing of educational television programs (p = 0.039), but not medical stories, reading of health-oriented newspapers, use of the internet, age, educational level, and the presence of CRF.

Conclusions: In conclusion, we have shown that both COPD and "newly admitted" patients' estimate of survival after CPR is much higher than reported by the current literature. A correct knowledge of CPR procedures and outcomes is significantly correlated with the exposure to "educational" medical TV programs, but not medical stories, newspapers, or internet sources.

Keywords: cardiopulmonary resuscitation, chronic respiratory failure, chronic obstructive pulmonary disease, media, television

Introduction

The decision whether or not to undertake cardiopulmonary resuscitation (CPR) is one of the main ethical challenges in the intensive care unit (ICU). The recent International Consensus Conference on end-of-life care in the ICU (Carlet et al 2004) clearly advocated a shared approach to end-of-life decisions involving the patient, if competent, family and the caregiver team, with the aims of respecting the patient's autonomy and avoiding unwanted treatment.

Patient preferences may be influenced by multiple factors, including previous personal beliefs and experiences, discussions with clergy, friends, and healthcare professionals (Jones et al 2000) and last but not least, information derived from the media (Schowetter et al 1991, 1993). The increasing use of internet resources and television programs specifically dedicated to healthcare problems may have improved general knowledge about life-saving procedures. On the other hand, some media representations are not accurate, with some popular television programs showing much higher

survival rates after CPR than the most optimistic reports in the medical literature (Diem et al 1996). Therefore, when physicians are discussing the use of CPR, both patients and their families may overestimate the success rate and therefore make biased decisions. As of yet, the question of how "old" (ie, TV, journals, and magazines) and "new" (ie, internet) media influence patients' perceptions about the success rate of CPR has not been examined. We prospectively assessed patient knowledge about CPR survival and outcomes in two groups of patients; one composed of chronically ill patients (ie, affected by COPD and chronic respiratory failure) and the other by a group of patients during their first hospital admission for an acute respiratory problem. We sought correlations with their perceived sources of media-derived health information.

Material and methods

The protocol was approved by the Institutional Ethical Committee and all enrolled subjects gave informed consent. We first developed a pilot questionnaire on 50 patients admitted to our Respiratory Unit. After reviewing and revising the questionnaire, we interviewed consecutive inpatients affected by COPD and on long-term oxygen therapy and patients admitted for the first time to our Unit for an acute respiratory problem. The aim was to collect complete data from 100 patients in each group. All the patients did not specifically address the problem of CPR in a previous hospital admission or with their GPs. Indeed none of them expressed formal "advance directives" since in Italy the legal context of end-of-life decision is very confused because of the lack of specific laws. The sample size was determined solving the formula of Withehead (1993) considering presence/absence of chronic respiratory failure with a study power of 0.90 and a significant level of 0.05. The patients had a preliminary talk with the attending physician and head nurse about the nature of the questionnaire. At this stage, we clarified unclear concepts and responded to the patients' questions, but were very careful not to provide any information on the probability of CPR survival and outcomes.

Next, the patient responded to 3 sets of written questions. The first set (q1–q4) consisted of 4 ordinal questions rated from 1 to 5 points, designed to determine the patients' estimates of the probability of survival after CPR, the maximal length of time from collapse to CPR that allows a reasonable chance of survival and the potential for "normalization" of quality of life 12 months after CPR. The fourth question was a "control" question about the patients' understanding of CPR. In this set of questions, we used a pie chart showing different percentage ranges to determine the patients' estimates about CPR outcome.

The second set (q5–q8) consisted of 4 multiple choice questions about the type and frequency/month of exposure to media dealing with health-care. In particular, we investigated the role of fictional TV shows (ie, ER, and similar ones produced in Europe), TV educational programs, specialized publications and web-sites. The third set of questions queried patients on their education, their feelings about the reliability of the fictional medical shows and how they learned about the practice of CPR via the media. The questionnaire is presented in the appendix.

Threshold values for determining the rate of CPR survival (AHA et al 2000; Peberdy et al 2003), timing of intervention (ERC Guidelines 2000) and long-term outcomes (Gottschalk et al 2002; Van Alem et al 2004), were based on recent recommendations and meta-analyses.

Results are presented as frequencies and mean ± standard deviation (±SD) of number of right answers for the first set of questions.

Bivariate Pearson's correlations were performed to assess the association between the number of right answers to the first 3 questions and the frequency of media exposition. A multivariate regression analysis was also employed to correlate the correct answers with age, education, use of internet and the presence of chronic respiratory disease.

The SPSS v13.0 software was used for data analysis.

Results

A total of 236 patients were eligible and 200 completed the questionnaire. Thirty-six patients were unable to participate for the following reasons: lack of consent (18), psychiatric problems (7), incomplete questionnaire (6), and acute medical problems (5). Table 1 illustrates the characteristics of the 200 patients who completed the questionnaire, divided by the presence or absence of chronic respiratory disease.

Table 2 displays the distribution of answers for the questionnaire.

The respondents demonstrated a good understanding of CPR (q.4), overestimated the success rate of CPR, while the estimate of long-term outcome and timing of the procedure were more realistic. The statistical analysis showed significant correlations ($p = 0.039$) between the rate of correct responses and the viewing of educational television programs (Table 3A), but none of the other variables, including education, age and type of disease (Table 3B).

Table 1 Characteristics of the patients enrolled

Variables	COPD patients (n. 100)	First H admission patients (n. 100)	p value
Age (yrs)	58 ± 12	53 ± 9	0.23
Sex (M/F)	53/47	64/36	0.15
Education (n. or %)			0.21
Grades 1–5	43	47	
6–8	26	32	
College	16	30	
Graduate school	5	1	
Religion (n. or %)			0.53
Catholic	76	84	
Agnostic	10	8	
Other	14	8	
Medical fictions on TV: (n or %)			0.63
>2 times/month	29	37	
≤2 times/month	44	30	
Never	27	33	
Educational program on TV: (n. or %)			0.66
>2 times/month	30	36	
≤2 times/month	32	33	
Never	38	31	
Use of internet (n. or %)			0.065
Yes	17	27	
No	83	73	
General medical journals (n. or %)			0.96
>2 times/month	14	11	
<2 times/month	30	29	
Never	56	60	

Abbreviation: COPD, chronic obstructive pulmonary disease.

Seventy-four percent of the patients thought that fictional TV series were not representative of medical reality, and 76% reported obtaining information about CPR from the media.

Discussion

In his 1993 television interview with the BBC, Karl Popper stated that "The distinction between education and information is not only invalid, but also dishonest. There can be no information without a tendency … we therefore need an institute for people who work in television like the institutes for doctors" (Popper 1993).

In order for patients to make sound medical decisions, medical information must be understandable and accurate. Patients' sources of information are multiple, however, including various forms of popular media. Schonwetter and colleagues (1993) found that >90% of patients obtained information from television and >70% from newspapers. But these sources are not always accurate; survival rates of CPR on the most popular fictional medical series on television have been shown to be significantly higher than the most optimistic survival rates in the medical literature (Diem et al 1996).

In addition, new sources of medical information have become available over the past decade, including medical websites for "nonspecialists" on the internet, and more and more television

Table 2 Distribution of answers to the questionnaire (see Appendix). **Bold** characters highlight correct answers

Question					
#1	0%	<10%	**10%–40%**	40%–70%	>70%
Answers (%)	0%	14%	23%	34%	29%
#2	<3 min	**3–6 min**	7–15 min	15–30 min	>30 min
Answers (%)	26%	38%	22%	8%	6%
#3	<5%	6%–20%	20%–40%	40%–60%	>**60%**
Answers (%)	3%	11%	19%	16%	51%
#4	**1**	2	3	4	5
Answers (%)	71%	3%	14%	7%	5%
#5	Not at all	1 or twice a month	>twice a month		
Answers (%)	38%	32%	30%		
#6	Not at all	1 or twice a month	>twice a month		
Answers (%)	27%	44%	29%		
#7	Not at all	1 or twice a month	>twice a month		
Answers (%)	56%	30%	14%		
# 8	Yes	No			
Answers (%)	22%	78%			
#9	1–5	6–8	College	Graduate school	
Answers (%)	44%	29%	23%	4%	
#10	Yes	No	Somehow		
Answers (%)	11%	74%	15%		
#11	Personal	Friends	Clergy	Healthcare professional	Media
Answers (%)	2%	2%	1%	19%	76%

Table 3A Pairwise Pearson's correlations coefficients, means and ± SD of number of correct answers to the first 3 questions, and the exposure to media (number of educational TV programs, number of medical TV fictions and number of newpapers related to healthcare). r values > 0.15 are statistically significant (p < 0.05). The variable of internet use is not represented since it is not a numeric variable

	Correct answers	Educational TV programs	Medical TV fictions	Health newspapers
Correct answers	1.00			
Educational TV programs	0.19	1.00		
Medical TV fictions	−0.02	0.44	1.00	
Health newspapers	0.05	0.23	0.33	1.00
Mean	1.89	1.56	1.35	0.57
SD	0.96	1.34	1.41	0.81

programs are specifically dedicated to healthcare. Whether all this increasing exposure to media sources of medical information could influence patients' perceptions of survival and outcomes of medical procedures like CPR remains unknown.

Our study demonstrates that patients are overly optimistic about survival rates after CPR. The large majority of the patients were exposed at least once a week to sources of medical information. Interestingly, they seem to be quite well aware (question #10) about the distinction between fact and fiction, so that their knowledge about CPR was statistically correlated only to the viewing of "educational" programs that are presumably more accurate than fictional programs.

The internet, at least in Italy, is not actually a major source of information, since only a quarter or fewer of our patients were using it regularly, but this may be mainly dependent on the rather elevated age of the participants and on their low level of education. These two latter parameters were not, however, correlated with rate of correct answers.

Table 3B Regression coefficient of response variable

Response variable	Explanatory variable	R coeff.	SE	p-value
Correct answers	Sex	0.14	0.15	0.359
	Age	−0.02	0.07	0.792
	Education	0.00	0.08	0.994
	Internet	−0.23	0.18	0.212
	Respiratory failure	−0.08	0.15	0.570
Educational TV programs	Sex	−0.14	0.22	0.538
	Age	−0.06	0.10	0.555
	Education	−0.12	0.11	0.269
	Internet	0.05	0.26	0.849
	Respiratory failure	0.06	0.22	0.765
Medical TV fictions	Sex	−0.28	0.22	0.202
	Age	0.14	0.10	0.052
	Education	−0.04	0.11	0.749
	Internet	0.07	0.27	0.796
	Respiratory failure	0.25	0.22	0.261
Health newspapers	Sex	−0.05	0.13	0.672
	Age	0.01	0.06	0.871
	Education	0.02	0.07	0.813
	Internet	0.01	0.16	0.928
	Respiratory failure	−0.08	0.13	0.547

In our questionnaire we chose threshold values for determining the rate of CPR survival (AHA 2000; Peberdy et al 2003), timing of intervention (ERC Guidelines 2000) and long-term outcomes (Gottschalk et al 2002; Van Alem et al 2004), based on recent recommendations and meta-analyses. In addition, to avoid confusion, we focused our questions only on the acute care environment, which is more familiar to most patients. We also decided to study 2 different populations of patients (ie, COPD with chronic respiratory failure and first time admissions to the hospital), in order to assess the potential bias that frequent hospitalizations and the experience of a severe chronic disease might have had on the response rate. The two subsets of patients, even when the data were normalized for age and education, behaved very similarly. Also, question #4 was added to assess patient comprehension of the CPR procedure. More than 70% demonstrated a good understanding, as evidenced by a correct answer.

There are limitations to our study. First, it was performed in a single country and may not be generalizable. However, in the era of globalization, sources of information are rather homogeneous, since most of the "educational" programs are international formats and the main fictional programs are translated into several languages (ie, the most viewed programs in the questionnaire were ER and General Hospital). Second, we chose a visual representation in our questionnaire illustrating ranges of percentage rather than asking for simple numerical values (Murphy et al 1994). This was to reflect the healthcare literature, which usually provides ranges of survival and outcome after CPR.

In conclusion, we have confirmed that COPD and "newly admitted" patients' estimate of survival after CPR is much higher than reported by the current literature, but that of long-term outcome is more realistic. The most accurate answers were provided by those with the most exposure to educational TV formats, although this may reflect the greater interest and knowledge of the viewers than the educational value of the programs themselves. Nonetheless, our findings suggest that non-fictional educational programs are useful

for dissemination of health care information to the public. Physicians discussing end-of-life decision with their patients should be aware that the media may be the major source of information or misinformation. Efforts should be made therefore to improve the patient/physician communication in order to get a more realistic vision of the end-of-life problems.

Disclosure

The authors have no conflicts of interest to declare.

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Appendix

Question 1: what is your estimated probability of survival after CPR performed inside the hospital by dedicated personnel?

0%   <10%   10%–40%   40%–70%   >70%

Correct: 10%–40% (ERC and AHA Guidelines 2000).

Question 2: what is the MAXIMUM time after a collapse to receive CPR in order to get your estimated probability of survival (see Question 1) and minimal permanent damage?

<3 min   3–6 min   7–15 min   15–30 min   >30 min

Correct: 3–6 min (Perberdy et al 2003).

Question 3: What is your estimated probability of returning to a normal life, without major cognitive or motor handicaps, 1 year after successful CPR?

<5%   6%–20%   20%–40%   40%–60%   >60%

Correct: >60% (Gottschalk et al 2002).

Question 4: What is CPR? (Choose one).

1. Use of artificial ventilation, cardiac massage, and eventually defibrillation after a collapse, an accident or acute medical illness leading to a cardio-respiratory arrest.
2. Use of powerful intravenous drugs after a collapse, an accident or acute medical illness leading to a cardio-respiratory arrest.
3. Use of defibrillator after a respiratory arrest.
4. Use of artificial ventilation in a patient that is short of breath.
5. Use of mouth to mouth ventilation alone after a collapse, an accident or acute medical illness leading to a cardio-respiratory arrest.

Correct: 1 (ERC Guidelines 2000).

Question 5: Do you watch "educational" medical TV programs?

Not at all   Once or twice a month   >twice a month
Specify:

Question 6: Do you watch medical fiction programs on TV?

Not at all   Once or twice a month   >twice a month
Specify:

Question 7: Do you read health-oriented newspapers?

Not at all   Once or twice a month   >twice a month
Specify:

Question 8: Do you use internet for medical information?

Not at all   Once or twice a month   >twice a month
Specify:

Question 9: What is your level of education?

Grades 1–5   6–8   College   Graduate school

Question 10: Do you think that medical fiction program are reliable?

Yes   No   Somehow

Question 11: How did you learn more about CPR?

Personal   Friends   Clergy   Healthcare   Media
experience   professional