
Self-assessment of an end of life care training program for respiratory care practitioners

DOCUMENT: SAR-2022-015-JL-v01

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2022-04-23

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Self-assessment of an end of life care training program for respiratory care practitioners

Document version

Version	Alterations
01	Initial version

1 ABBREVIATIONS

N/A

2 CONTEXT

2.1 Objectives

Evaluate satisfaction and pre/post perception of knowledge and confidence of respiratory care students after an end of life care training program.

2.2 Data reception and cleaning

Survey data was received in a table, where the survey mechanism segregated each possible answer to the Likert scale questions as separate columns. Each of these columns had two answers for the assessment of the before and after satisfaction with the training program. In order to perform the pre/post comparison of these responses we created two columns per question, one for each time point being assessed. This was achieved by searching for the keywords "before" and "after" in each column and matching those results to the new before/after columns created. This procedure effectively counts each participant answer only once, thus creating one categorical variable for each question at each time (see observations). It was applied to the following four pre/post questions:

- **q5:** "5. I feel that I am knowledgeable in end-of-life care services required for the respiratory care practitioner"
- **q6:** "6. I would be comfortable communicating with dying patients during end-of-life care"
- **q7:** "7. I would be comfortable communicating with grieving family members during end-of-life care"

- **q8:** "8. I feel that I am adequately prepared for how to participate in end-of-life care needs for a dying patient?"

The original data base had 52 variables collected on 79 observations. This includes identifier columns like name, location, time when the survey was responded and agreement to participate in the study, which were excluded from the analytical dataset. The survey also included a couple of open text questions intended for a qualitative analysis, which were also excluded from this analysis.

After the cleaning process 21 variables were included in the analysis. The total number of observations excluded due to incompleteness and exclusion criteria will be reported in the analysis. All variables in the analytical set were labeled according to the raw data provided and values were labeled according to the data dictionary for the preparation of production-quality results tables and figures.

3 METHODS

3.1 Study parameters

3.1.1 Study design

Cross-sectional design, single arm survey to assess efficacy of the training program.

3.1.2 Inclusion and exclusion criteria

Incomplete surveys will be excluded from the analysis. These will be identified by the finished column present in the raw data.

3.1.3 Exposures

All survey respondents were exposed to the training program in this single arm pre/post evaluation.

3.1.4 Outcomes

Proportion of survey respondents that agree with the satisfaction questions on the training program efficacy in their end of life respiratory care practice.

3.1.5 Covariates

N/A

3.2 Statistical analyses

The raw answers for each question will be described as counts and proportions (%). The distributions of participants' answers will be summarized in tables and visualized in exploratory plots. All comparisons between pre and post training agreement with the questions will be performed as univariate analyses. Answers will be treated as continuous variables and the paired comparisons for survey participants between the two time points with the Wilcoxon signed rank test. No missing data imputation will be performed. All evaluations will be performed as complete case analyses. All analyses will be performed using the significance level of 5%. All significance hypothesis tests and confidence intervals computed will be two-tailed. This analysis was performed using statistical software R version 4.1.3.

4 RESULTS

4.1 Overview of survey responses

A total of 79 surveys were contained in the data. After removing 1 survey that was not complete, 78 surveys were included in the analysis.

Most participants (51%) were students enrolled in Fayetteville Tech Community College (Table 1). Overall, few participants declared previous training in end of life care. 33 (43%) participants had previous training in performing routine extubations, 18 (23%) participants had training in terminal extubations, 20 (26%) participants had training in the management of end of life patients.

Perhaps due to the apparent lack of previous training on the topic, the overall perception of value taken from the program was high. 0 (0%) participants ended the training program feeling prepared to participate in end of life care, and 62 (82%) felt the course content was very important to them. The overall opinion seems favorable towards the program, since 76 (100%) of the participants benefited from the training sessions while 76 (100%) of them think other respiratory care students could benefit from those.

Table 1 Responses received from participants to the evaluation of the training program.

Question	N = 78
1. Prior to these 4 education sessions, had you received any TRAINING in your respiratory curriculum here about performing routine extubations?	33 (43%)
Missing	1
2. Prior to these 4 education sessions, had you received any TRAINING in your respiratory curriculum here about specifically performing terminal extubations?	18 (23%)

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Missing	1
3. Prior to these 4 education sessions, had you received any TRAINING in your respiratory curriculum here about managing patients during end-of-life care?	20 (26%)
Missing	2
4. Do you recall seeing any information about removing life-sustaining therapies or terminal extubations in the TEXTBOOKS of your current respiratory curriculum?	23 (30%)
Missing	2
5. I feel that I am knowledgeable in end-of-life care services required for the respiratory care practitioner. (Please choose only one answer in EACH column for BEFORE and AFTER training perspectives) - Before training	
Strongly Disagree	3 (5.2%)
Disagree	21 (36%)
Neither Agree nor Disagree	21 (36%)
Agree	10 (17%)
Strongly Agree	3 (5.2%)
Missing	20
5. I feel that I am knowledgeable in end-of-life care services required for the respiratory care practitioner. (Please choose only one answer in EACH column for BEFORE and AFTER training perspectives) - After training	
Strongly Disagree	0 (0%)
Disagree	0 (0%)
Neither Agree nor Disagree	2 (2.7%)
Agree	40 (53%)
Strongly Agree	33 (44%)
Missing	3
6. I would be comfortable communicating with dying patients during end-of-life care. (Please choose only one answer in EACH column for BEFORE and AFTER training perspectives) - Before training	
Strongly Disagree	3 (5.2%)
Disagree	17 (29%)
Neither Agree nor Disagree	17 (29%)
Agree	14 (24%)
Strongly Agree	7 (12%)
Missing	20
6. I would be comfortable communicating with dying patients during end-of-life care. (Please choose only one answer in EACH column for BEFORE and AFTER training perspectives) - After training	

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Strongly Disagree	0 (0%)
Disagree	2 (2.7%)
Neither Agree nor Disagree	12 (16%)
Agree	29 (39%)
Strongly Agree	32 (43%)
Missing	3
7. I would be comfortable communicating with grieving family members during end-of-life care. (Please choose only one answer in EACH column for BEFORE and AFTER training perspectives) - Before training	
Strongly Disagree	3 (5.3%)
Disagree	15 (26%)
Neither Agree nor Disagree	22 (39%)
Agree	9 (16%)
Strongly Agree	8 (14%)
Missing	21
7. I would be comfortable communicating with grieving family members during end-of-life care. (Please choose only one answer in EACH column for BEFORE and AFTER training perspectives) - After training	
Strongly Disagree	0 (0%)
Disagree	3 (4.1%)
Neither Agree nor Disagree	11 (15%)
Agree	33 (45%)
Strongly Agree	27 (36%)
Missing	4
8. I feel that I am adequately prepared for how to participate in end-of-life care needs for a dying patient? (Please choose only one answer in EACH column for BEFORE and AFTER training perspectives) - Before training	
Strongly Disagree	4 (7.1%)
Disagree	24 (43%)
Neither Agree nor Disagree	14 (25%)
Agree	11 (20%)
Strongly Agree	3 (5.4%)
Missing	22
8. I feel that I am adequately prepared for how to participate in end-of-life care needs for a dying patient? (Please choose only one answer in EACH column for BEFORE and AFTER training perspectives) - After training	

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Strongly Disagree	0 (0%)
Disagree	2 (2.7%)
Neither Agree nor Disagree	9 (12%)
Agree	37 (51%)
Strongly Agree	25 (34%)
Missing	5
9. The training sessions' course content increased my understanding of how to participate in end-of-life care needs for a dying patient?	
Strongly Disagree	0 (0%)
Disagree	0 (0%)
Neither Agree nor Disagree	3 (3.9%)
Agree	33 (43%)
Strongly Agree	40 (53%)
Missing	2
10. The training sessions better prepared me for how to participate in end-of-life care needs for a dying patient?	
Strongly Disagree	0 (0%)
Disagree	0 (0%)
Neither Agree nor Disagree	3 (3.9%)
Agree	32 (42%)
Strongly Agree	41 (54%)
Missing	2
11. How important was this course content to you?	
Neutral or Not sure	3 (3.9%)
Somewhat important	11 (14%)
Very important	62 (82%)
Missing	2
12. How difficult was this course content for you to understand?	
About right	23 (30%)
Somewhat difficult	3 (3.9%)
Somewhat easy	20 (26%)
Very easy	30 (39%)
Missing	2
13. How engaging did you find this course?	

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Attended asynchronous sessions only	5 (6.7%)
Mostly not engaging	1 (1.3%)
Neutral or Not sure	15 (20%)
Not engaging at all	1 (1.3%)
Somewhat engaging	23 (31%)
Very engaging	30 (40%)
Missing	3
14. Do you think that you benefited from these training sessions?	76 (100%)
Missing	2
15. Do you think that other respiratory care students could benefit from these training sessions?	76 (100%)
Missing	2
17. I am a respiratory student at the following school:	
Durham Technical Community College	1 (1.3%)
Fayetteville Tech Community College	39 (51%)
Pitt Community College	10 (13%)
Stanly Community College	18 (24%)
Wilkes Community College	8 (11%)
Missing	2

The general perception of the course's contribution to participants' expertise was also high. Questions 5 through 10 measured how participants perceived their improvement throughout the training program. Considering the answers to the questions relevant to their perception after the course, most participants agree or strongly agree with the questions.

Most participants surveyed agree that they are knowledgeable in end of life care services (53%), strongly agree that they are comfortable communicating with dying patients during end of life care (43%), agree that they are comfortable communicating with the patient's grieving family (45%), agree that they are prepared to participate in end of life care needs of a dying patient (51%), strongly agree that they have increased their understanding on how to participate in such care (53%) and strongly agree that they are better prepared for how to participate in end of life care needs of a dying patient (54%).

The median values of the pre/post evaluations of questions q5 to q8 will be compared in the next section. The distribution of frequencies of these responses can be viewed in Figure A1.

4.2 Pre/post self-assessment after training completion

Questions 5 through 8 measured how participants perceived their improvement throughout the training program, both before and after the course. Figure 1 shows the rate of change of the distribution of answers between time points for each question. For all four questions, there is an apparent drift from the proportions of lower agreement (lighter colors) towards higher agreement (darker colors).

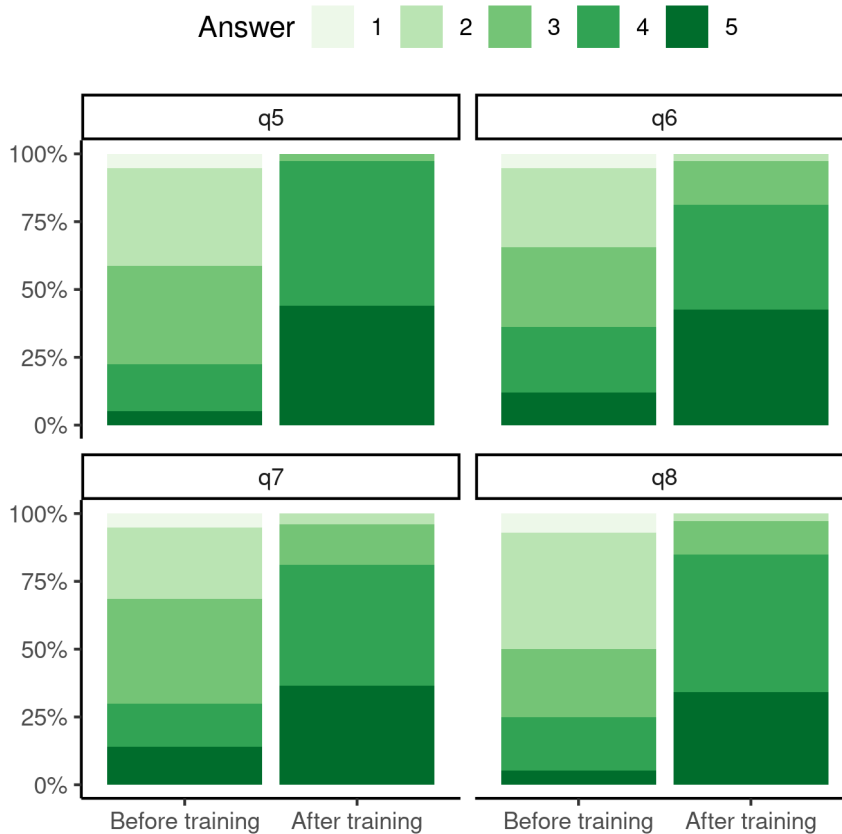


Figure 1 Changes in response rates to questions q5 – q8, before and after the training program.

Treating these Likert scale responses as values (1 to 5), the median response indicates the average response given at each time. The Wilcoxon signed rank test was used to detect if there was a shift between typical values between the two time points. Table 2 shows the paired comparison of participant responses between both time points. The median response for q5 before was 3 while after was 4 ($p < 0.001$). The median response for q6 before was 3 while after was 4 ($p < 0.001$). The median response for q7 before was

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3 while after was 4 ($p < 0.001$). The median response for q8 before was 2.5 while after was 4 ($p < 0.001$).

Table 2 Cross tabulation of paired responses to questions q5 – q8, before and after the training program.

Answer	N	Before training, N = 78	After training, N = 78	Overall, N = 156	p-value ¹
5. I feel that I am knowledgeable in end-of-life care services required for the respiratory care practitioner	133				<0.001
1		3 (5.2%)	0 (0%)	3 (2.3%)	
2		21 (36%)	0 (0%)	21 (16%)	
3		21 (36%)	2 (2.7%)	23 (17%)	
4		10 (17%)	40 (53%)	50 (38%)	
5		3 (5.2%)	33 (44%)	36 (27%)	
Missing		20	3	23	
6. I would be comfortable communicating with dying patients during end-of-life care	133				<0.001
1		3 (5.2%)	0 (0%)	3 (2.3%)	
2		17 (29%)	2 (2.7%)	19 (14%)	
3		17 (29%)	12 (16%)	29 (22%)	
4		14 (24%)	29 (39%)	43 (32%)	
5		7 (12%)	32 (43%)	39 (29%)	
Missing		20	3	23	
7. I would be comfortable communicating with grieving family members during end-of-life care	131				<0.001
1		3 (5.3%)	0 (0%)	3 (2.3%)	
2		15 (26%)	3 (4.1%)	18 (14%)	
3		22 (39%)	11 (15%)	33 (25%)	
4		9 (16%)	33 (45%)	42 (32%)	
5		8 (14%)	27 (36%)	35 (27%)	
Missing		21	4	25	
8. I feel that I am adequately prepared for how to participate in end-of-life care needs for a dying patient?	129				<0.001

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1		4 (7.1%)	0 (0%)	4 (3.1%)	
2		24 (43%)	2 (2.7%)	26 (20%)	
3		14 (25%)	9 (12%)	23 (18%)	
4		11 (20%)	37 (51%)	48 (37%)	
5		3 (5.4%)	25 (34%)	28 (22%)	
Missing		22	5	27	
¹ Wilcoxon signed rank test					

Overall, in all of these questions the answers appear to drift from lower to higher agreement in favor of the training program.

5 OBSERVATIONS AND LIMITATIONS

Multiple answers per question

The survey was designed to allow participants to choose multiple answers per question. It would theoretically be possible for a participant to answer both “Yes” and “No” to the same question, in which case the survey mechanism would create additional columns to handle this data structure.

This was indeed what happened to the main questions for the scope of this analysis, that assessed the before and after satisfaction with the training program (questions 5 through 8). In order for this analysis to be performed a categorical variable was created (see section Data) thus effectively selecting only one answer per question, of a theoretical maximum of five. It is not clear how this choice could bias the analysis results, if several participants gave multiple answers to the same question.

Pre and post assessments at a single time point

This survey assessed the satisfaction of how the participant perceive their knowledge and confidence in offer end of life care, measured on a Likert scale. The self-assessment was measured separately for two time points (before the training and after the training took place), but both measurements were made at the end of the program.

This could bias the self-assessment of the pre-training answers towards lower rates, thus increasing the perceived difference participants have of their growth due to the program. This might happen since the participants were not surveyed at two different time points, making it hard to compare their self-assessment of knowledge and confidence. One must interpret these pre/post differences with caution, taking into account the design of the study.

6 CONCLUSIONS

Overall, all answers to survey questions indicate high levels of satisfaction with the training program. In all questions that assess development, participants perceive significant amounts of satisfaction from the course.

7 REFERENCES

- **SAP-2022-015-JL-v01** – Analytical Plan for Self-assessment of an end of life care training program for respiratory care practitioners

8 APPENDIX

8.1 Exploratory data analysis

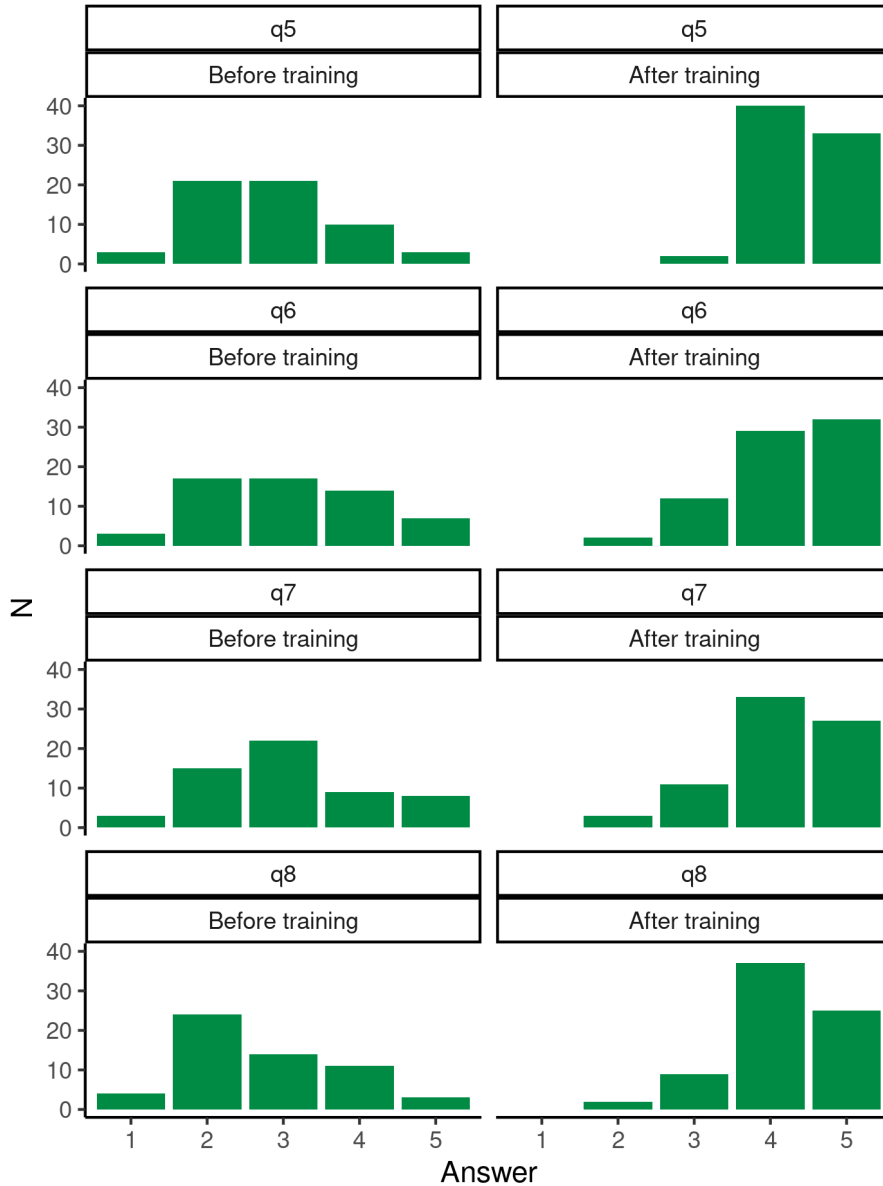


Figure A1 Distribution of raw responses to questions q5 – q8, before and after the training program.

8.2 Availability

All documents from this consultation were included in the consultant's Portfolio.

The portfolio is available at:

<https://philsf-biostat.github.io/SAR-2022-015-JL/>

8.3 Analytical dataset

Table A1 shows the structure of the analytical dataset.

Table A1 Analytical dataset structure after variable selection and cleaning.

id	q1	q2	q3	q4	q5_before	q5_after	q6_before	q6_after	q7_before	q7_after	q8_before	q8_after	q9	q10	q11	q12	q13	q14	q15	q17	
1																					
2																					
3																					
...																					
N																					

Due to confidentiality the data-set used in this analysis cannot be shared online in the public version of this report.