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Abstract

Objective:

Methods:

Results:

Conclusions:

Key Words:

INTRODUCTION

The importance of palliative care for pediatric patients is increasingly being recognized in both general and subspecialty fields. In 2013, the American Academy of Pediatrics (AAP) issued a list of twelve comprehensive recommendations regarding the care of patients with life-limiting or life-threatening conditions. The recommendations for health care systems and medical staff include ensuring the presence of a dedicated interdisciplinary pediatric palliative care (PPC) team, providing education on palliative care to trainees, improving care through research and quality improvement projects, and supporting the well-being of the health care professionals who care for these patients [1]. These recommendations require institutional commitments to advancing palliative care, and is particularly important as the breadth of palliative care services expands to include children with complex medical needs and non-terminal, chronic diagnoses [2].

Despite evidence demonstrating the benefits of having a dedicated PPC team on residents' experiences and comfort with palliative care [3], no data exists on the prevalence of these teams at training institutions nationally, and there is limited knowledge about their involvement in the education of pediatric residents. Past studies of residents' education in palliative care have been primarily limited to single inpatient institutions, focused mostly on the provision of end-of-life care [4, 5, 6, 7, 8]. A 2006 study by Kolarik found that residents wanted more training in other aspects of PPC, including pain management and communication skills for discussing prognosis, bad news, and code status of seriously ill children [9]. Without an updated national assessment, it is difficult to determine if the feelings from Kolarik's institution are generalizable to pediatric residency programs across the country.

In a nationwide study by Baker et al from the early 2000s, program directors and pediatric residents were queried about their experiences with PPC, with both groups agreeing that active learning at the bedside of a patient during rounds was best [10]. This finding underscores the importance of role modeling by attendings in providing PPC, but also highlights the likely variability in exposure among residents, even within the same program, if no program-wide curriculum or formal PPC training experiences exist. Other factors associated with residents' satisfaction with the PPC training they receive, as well as residents' comfort level implementing PPC skills in their clinical practice, are currently unknown.

Chief residents, who have both recently completed their residency and are likely aware of all of the system and program resources at their institution than first to third year residents, have not been asked about their experiences with PPC. Their perspectives on preferred education modalities and perceived barriers can provide valuable insight. Thus, the objective of our study was to describe the current state of PPC training for pediatric residents nationwide, contrasting education modalities to preferred techniques, and identifying factors that affect resident satisfaction with training and comfort implementing PPC in their clinical practice.

METHODS

Between January and March of 2019, we conducted a web-based, national survey of current chief residents of pediatric residency programs.

Survey Content and Development

The survey consisted of six domains: 1) program information, 2) personal demographic information, 3) hospital resources for pediatric palliative care, 4) education in pediatric palliative care, 5) comfort statements, and 6) barriers to pediatric palliative care.

Domains one, two, and three totaled 15 multiple choice questions, with the option for open-ended responses to be provided for four of the questions. Program information included the number of residents and chief residents at their program, description of program setting (community-based, university-affiliated, free-standing children's hospital, military, or other, as designated by FREIDA), and geographic region (Northeast, Midwest, South, and West, with states included in each designation). Personal demographic information elicited included gender and plans to pursue a fellowship; if the respondent answered affirmatively, he or she was asked to select the chosen subspecialty. The hospital resources domain asked about the presence of a PPC team at the respondent's primary hospital, the setting (inpatient, outpatient, or both) in which the PPC team provides services, and the types of services provided by the PPC team.

Domain four, education, asked about the presence of a formal PPC curriculum, the respondent's satisfaction (yes or no) with PPC education provided, and how many hours per residency year were dedicated to PPC education. If the respondent stated that he or she was not satisfied with the PPC education received, an open-ended response box was provided for further details contributing to dissatisfaction. To ascertain what is currently being used for PPC education, respondents were asked to select any of 5 modalities (conferences, simulations, online modules, training days, and rounds with PPC team) utilized at their institution. The respondents were then asked to rank which education modalities they perceived as most effective to PPC education, using a similar scale (1 as least beneficial, 5 as most beneficial). Each educational modality received an individual rank for this question.

Domains five (comfort statements) and six (barriers) included statements that were modeled on the survey on pediatric palliative care by Brock et al. for the University of California at Los Angeles [11]. Respondents were asked to complete 10 comfort statements using a Likert-based scale, with scores ranging from 1 (very uncomfortable) to 5 (very comfortable). Topics covered included discussing both palliative and end-of-life care with attendings and families, do not resuscitate/do not intubate orders, controlling symptoms of dying, and communicating the death of a child to parents. They were then asked about perceived barriers to consulting the PPC team or implementing PPC services, with possible responses of not a barrier, minor barrier, or major barrier.

The survey was pilot tested on 5 former chief residents from a single institution, who were instructed to time themselves while answering questions and provide feedback about question clarity. The range of time for completing the survey was between 5 and 10 minutes. The

survey was then submitted for national peer review by the Association of Pediatric Program Directors (APPD).

Survey Administration

The survey was distributed between January, 2019 and March, 2019, via email. All chief residents' individualized email were included in the distribution, with a unique link for each respondent. The link was sent out three times. Only one response was allowed per respondent.

All responses were from chief residents (PGY4+) who worked at the same ACGME-accredited program where they completed their pediatric residency. The survey would end automatically if the respondent indicated that he/she was a chief at a different institution from where he/she graduated.

Analysis

RESULTS

Demographics and Program Information

95 chief residents of 546 total completed the survey, a response rate of 17%. Chief residents who identified as female were the majority of respondents (69%), with 26% identifying as male and 6% preferring not to answer. 71% of chief residents were pursuing fellowship, with 40% of those pursuing fellowship entering the same subspecialties surveyed by Brock et al. (cardiology, critical care, hematology-oncology, and neonatal-perinatal medicine). 6 respondents were pursuing fellowship in palliative care/hospice medicine.

Characteristics of respondents' and nonrespondents' program size and geographic region were similar, but did not reach statistical significance ($p=0.49$ and 0.56 , respectively). Only the type of program was significantly different between respondents and nonrespondents ($p<0.001$), with 33 of 95 respondents (37%) indicating that they trained at a free-standing children's hospital and 11 respondents (12%) indicating that they trained at a community-based hospital. When including nonrespondents, free-standing children's hospitals comprise 6% of pediatric training programs nationwide, and community-based hospitals 39%; as such, our data may be skewed towards the experiences of the respondents.

PPC Resources and Education

67 respondents (71%) indicated that their primary institution had a PPC team, with most of those answering affirmatively stating that their program operated in both inpatient and outpatient settings ($n=51$, 54%).

However, only 39% of respondents ($n=37$) affirmed the presence of a formal curriculum in PPC, and 22% ($n=21$) replied that they received no formal PPC education annually. Most received between 1-5 hours ($n=42$, 44%) or 6-10 hours ($n=23$, 24%) of PPC education per residency year. Conferences were the most popular educational modality utilized, with 81% of respondents ($n=77$) indicating that they were used at their institution. Active learning through simulation or rounding with the PPC team only occurred at 33% ($n=31$) and 20% ($n=19$) of

respondents' institutions, respectively. When asked which modalities were perceived as most effective to learning, 83% (n=79) ranked rounding with PPC teams and 76% (n=72) ranked simulations as a 4 or 5 (most effective). Conferences received a 4 or 5 ranking from 66% (n=63).

Barriers to PPC Utilization

Regarding barriers to PPC utilization, the largest perceived barrier, noted by 87% of respondents (n=83), was that families viewed it as "giving up." 67% (n=64) endorsed that a lack of time to discuss PPC was a barrier, with 50% (n=48) also stating that they were uncomfortable bringing up PPC to a family.

70% of respondents (n=67) replied that a lack of training in PPC was either a major or minor barrier to utilization, with 57% (n=54) also indicating that lack of role modeling by an attending was also a barrier. However, those who responded that a lack of role modeling by an attending was not a barrier were nearly 3.5 times more likely to report being comfortable practicing PPC (OR=3.42, 95% CI 3.17-3.66, p<0.00).

Satisfaction with PPC Education

44 of 95 (46%) respondents indicated that they were not satisfied with the PPC training that they received during their residency. 38 (86%) of those who were dissatisfied completed the free text prompt to provide additional details about why they were not satisfied. Most commonly cited reasons for dissatisfaction included a lack of formal curriculum and/or limited exposure to PPC (n=32, 84%), or that the respondents' primary hospital did not have an established PPC team (n=10, 26%).

On the contrary, residents with a formal curriculum in PPC were nearly 6 times as likely to report satisfaction with their training (OR=5.91, 95% CI 2.32-15.06, p=0.009). If respondents indicated that a lack of role modeling by an attending did not create a barrier to PPC provision, they were also 3 times as likely to report satisfaction with their training (OR=3.12, 95% CI 1.41-6.93, p=0.005). We were unable to calculate the effect of a PPC team on respondents' satisfaction with their training due to the lack of responses endorsing dissatisfaction with training at a program with a dedicated PPC team.

Chief Residents' Comfort with PPC

Comfort statements from the respondents showed variable comfort levels with implementing components of PPC into clinical practice, with respondents being most comfortable suggesting end-of-life care to an attending (n=76, 80%) and least comfortable leading discussions surrounding end-of-life care themselves (n=15, 16%). While 48% of respondents (n=46) indicated that they were somewhat or very comfortable suggesting palliative care to a family, only 36% (n=34) responded similarly to discussing hospice, and only 16% (n=15) felt similarly about recommending against cure-directed therapy.

Respondents were 3 times as likely to report comfort in practicing PPC if their primary hospital had a dedicated PPC team (OR=3.00, 95% CI 2.70-3.29, p<0.001) or had a formal PPC curriculum (OR=3.08, 95% CI 2.89-3.26, p<0.001). Respondents who did not feel that a lack of

role modeling by an attending was a barrier to practicing PPC were 3.4 times more likely to report comfort with practicing PPC themselves (OR=3.42, 95% CI 3.17-3.66, p<0.00).

DISCUSSION

During the three years of training, residents are frequently exposed to difficult clinical situations, including caring for patients with incurable complex disease processes and experiencing patient deaths. Our results are in line with prior studies that demonstrated that many residents want additional education and support from their program to enhance their ability to navigate these situations [3, 12]. A study of general and subspecialty pediatric attendings showed that most lack confidence in their ability to provide PPC to their patients and their families [13]; it should not be a surprise that residents who feel underprepared to utilize PPC skills in their practice become attendings who feel the same, perpetuating a cycle of underserved patients and families who misunderstand PPC to “giving up” on a patient’s care. The role of interdisciplinary PPC teams benefits both patient care and the education of trainees, and all hospitals should be investing more in the creation and maintenance of these teams to decrease the number of families who would benefit from, but do not receive, PPC services. Further work is needed to determine the factors affecting consultation of PPC teams, their impact on medical resource utilization, their effect on physician wellness and burnout, and how they improve patient and family satisfaction with the provision of medical care.

This study showed a divergence in most commonly used versus most preferred educational approaches in PPC, with simulation being the most popular methodology selected by the respondents of our survey. The use of active learning techniques like simulation and role play on resident PPC education have been shown to improve resident’s confidence in their communication skills for end-of-life care [15, 16, 17]. Simulation can be potentially used to teach pediatric trainees about discussing prognosis, creating advanced directives and goals of care, and implementing adequate and varied pain management plans. These active learning techniques, combined with more traditional learning models like conferences, may allow for trainees of all levels and all career paths to enhance their comfort with implementing PPC and improving patient care.

Similarly to the preference of simulation, our study showed that respondents would like to be educated on rounds by trained PPC providers. This should not entirely supplant a formalized curriculum, as a study by Yazdani et al found that conferences facilitated more informal learning in nontraditional locations, such as during rounds at a patient’s bedside [14]. Other studies agree with the use of informal, “just in time” learning for PPC, though acknowledge that variations in the teaching physician’s own PPC skills may limit a resident’s understanding and comfort with these sensitive clinical scenarios [5, 7]. Future studies could investigate the factors that affect an attending physician’s involvement of residents in family meetings regarding prognosis, and attendings’ ability to incorporate PPC principles into the care of the medically complex and chronic patients (rather than focusing exclusively on end-of-life care and dying children).

Limitations

The response rate of our survey was lower than desired, which in turn could affect our findings due to differences in perceptions from responders and nonresponders. Additionally, the use of chief residents as the study population means we were surveying highly motivated individuals who had previously shown interest in advancing the education and experience of

their fellow residents. This may cause a response bias and limit the generalizability to residents as a whole. Finally, a significant number who responded are entering fields where PPC would be used regularly, and who may have a vested interest in improving their own skills prior to pursuing fellowship.

CONCLUSION

The findings of our study suggest that chief residents want more opportunities to learn about PPC and to have more experiences with physician-led implementation of PPC in clinical practice. Respondents feel more satisfied with their learning and comfortable utilizing these skills if they have formal PPC teams and curriculum. While traditional classroom models continue to predominate in the teaching of PPC, this study suggests that more active learning techniques through such as bedside teaching during rounds and simulation are preferred by pediatric trainees. This study suggests multiple avenues for further quality improvement and research projects at individual institutions, and should encourage all hospitals who regularly care for children with life-limiting or life-threatening conditions to increase PPC services and education.

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Appendix A: Tables and Figures

Table 1: Demographics of respondents

Gender		n=95 (%)
	Male	23 (26)
	Female	66 (69)
	N/A	6 (6)
Number of Chiefs		n=95 (%)
	1	11 (12)
	2	36 (38)
	3	28 (29)
	4	16 (17)
	5	4 (4)
Pursuing Fellowship		n=95 (%)
	Yes	63 (71)
	No	26 (29)
	N/A or Missing	6 (6)
Fellowship Type (%)		n=31
	Cardiology	2 (3)
	Critical Care	11 (17)
	Hematology-Oncology	7 (11)
	Neonatal-Perinatal Medicine	5 (8)
	Other: Palliative Care/Hospice	6 (6)

Table 2: Characteristics of PPC teams and curriculum

Presence of PPC Team (%)		n=95
	Yes	67 (71)
	No	20 (21)
	Unsure or N/A	8 (8)
Setting of PPC Services		n=95 (%)
	Inpatient	16 (17)
	Outpatient	2 (3)
	Both	51 (54)
	N/A	26 (27)
Formal Curriculum in PPC		n=95 (%)
	Yes	37 (39)
	No	43 (45)
	Unsure or N/A	15 (16)
Hours per Year of PPC Education		n=95 (%)
	None or N/A	21 (22)
	1-5	42 (44)
	6-10	23 (24)
	11-20	7 (7)
	>20	2 (2)

Table 3:

	OR for comfort with practicing PPC	95% CI	p-value	OR for satisfaction with PPC training	95% CI	p-value
Presence of PPC team at primary hospital	3.00	2.70 - 3.29	<0.001	Unable to perform		
Formal PPC curriculum	3.08	2.89 - 3.26	<0.001	5.91	2.32 – 15.06	0.009
Lack of role modeling not a barrier	3.42	3.17 - 3.66	<0.00	3.12	1.41 - 6.93	0.005