Impact of a Formal Research Committee on Respiratory Therapists' Publications

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BACKGROUND: Presenting research at national and international meetings is an important aspect of the practice of respiratory care. Our department regularly presented abstracts but few projects were written up as manuscripts. We also noted that we did not have a centralized strategy to evaluate individual projects and provide mentorship. To address these challenges, we formed a Research Committee that meets monthly. We hypothesized that the formation of this committee would be associated with an increase in published manuscripts. METHODS: We evaluated all original research abstracts authored or co-authored by Duke respiratory therapists presented at the AARC Open Forum between 2009 and 2019. Abstracts were grouped into two time periods; 1) 2009–2013 (before the formation of the research committee) and 2) 2014–2019 (after the formation of the research committee). Abstracts were evaluated based on authors, type of study, patient population, and whether the abstract resulted in a manuscript. Primary outcome was the percentage of abstracts published as manuscripts. RESULTS: A total of 56 abstracts were presented by 23 different lead authors, with 16 (29%) published as manuscripts. After formation of the committee, fewer abstracts per year were presented, but these abstracts were more likely to be published as manuscripts (53% vs 18%, $P = .02$). For abstracts published as manuscripts, there was a significant difference in the type of study before and after committee formation ($P = .042$), but there were no differences in lead author credentials, senior author credentials, author gender, or patient population. CONCLUSIONS: The formation of a research committee was associated with an increase in the percentage of abstracts published as manuscripts. *Key words: respiratory therapist; respiratory care; research; committee; research quality*. [Respir Care 2021;66(8):1229–1233. © 2021 Daedalus Enterprises]

Introduction

Research is integral to the delivery of high-quality, evidence-based respiratory care.[1] The practice of respiratory care needs to be rigorously evaluated to ensure that patients receive the most appropriate therapy possible. Although some larger centers have respiratory therapists (RTs) dedicated full- or part-time to research activities, most research in respiratory care is done by enthusiastic staff RTs who lack formal research training.[2,3] Presenting research at national and international meetings (eg, the American Association for Respiratory Care [AARC] Open Forum) is a great honor and a career highlight for many RTs; however, only 5–6% of abstracts presented at the Open Forum are submitted as full manuscripts (personal communication with Editor-in Chief and Managing Editor of Respiratory Care). Nevertheless, the Open Forum is

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where most RT researchers present their work, and this has grown into one of the highlights of the annual AARC Congress.[4]

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At our institution, RT involvement in research involves 2 broad areas. First, RTs are often part of the research team of large funded projects directed by faculty members at Duke University Medical Center. The second area includes projects initiated by RTs and involve quality improvement projects, surveys, and bench studies that are usually funded internally (if at all). The results of these projects are usually presented at either the state symposium or the AARC OPEN FORUM. It is this latter area that we are addressing in this report.

In a review of RT research in 2013, we noticed that our department regularly presented abstracts, but few of these presentations resulted in manuscripts. Departmental leadership also expressed concern about the lack of consistent oversight and mentorship. Of particular concern was inconsistent performance of statistical analyses, which presented an area for improvement. To address these challenges, we formed a Respiratory Care Services (RCS) Research Committee that meets monthly. The committee's focus was to be on RT-initiated projects and was designed to provide a more formal process for RT-initiated research, including a project review/approval process, statistical support, and overall mentorship. All staff are welcome to attend the meetings to learn more about research and to participate in projects. We hypothesized that the formation of this committee would be associated with an increase in research quality, as defined by the percentage of abstracts presented at the AARC OPEN FORUM that resulted in published manuscripts.

QUICK LOOK

Current knowledge

Presenting research at national and international meetings is an important aspect of the practice of respiratory care. Research by respiratory therapists is often underfunded and infrequently has the methodological and statistical mentorship to result in full manuscripts. Research in respiratory care is essential for the future of the profession and requires investment of resources.

What this paper contributes to our knowledge

The formation of a research committee at our institution was associated with an increase in abstracts accepted as manuscripts. A formal committee appeared to increase the quality of research in a respiratory care department.

Methods

The RCS Research Committee was formed in December 2013, and the first meeting was in January 2014. The committee meets monthly and includes 2 co-chairs (one representing pediatric and neonatal projects, one representing adult projects), the department director, the adult medical director, the pediatric medical advisor, the clinical research coordinator, clinical educators, and any staff RTs who want to participate. The initial chair was appointed by the department director; following the formation of the committee, a co-chair was selected by the committee. There are no formal qualifications to be chair or co-chair; however, the person must have demonstrated a dedication to departmental research and quality improvement efforts.

Following the initial committee meetings, new processes were put into place: all projects were discussed and approved by the committee, a written proposal was required, project leaders were paired with an appropriate mentor, and project leaders were required to provide updates on their projects to the committee. The written proposal included type of study, summary of the available literature, team members (including the planned principal investigator), data collection plan, statistical analysis, timeframe, and target journal. A blank proposal template is included in the supplemental materials (available at: http://www.rcjournal.com). Each proposal included a detailed statistical plan including what statistical tests were planned and who was to perform statistical analysis. In cases in which more complex analyses were planned or required, we reached out to faculty with expertise to perform these analyses. An example proposal for a project[5] that resulted in a manuscript is included in the supplemental material (available at: http://www.rcjournal.com). We established that the goal of each project was to produce a manuscript. There was no formal evaluation rubric or method to evaluate each proposal, and approval of each project was determined on the basis of general consensus during each meeting. In addition, all projects required approval from either the adult or pediatric medical director.

To assess the impact of the committee, we evaluated all original research abstracts authored or co-authored by Duke RTs presented at the AARC OPEN FORUM between 2009 and 2019. Abstracts were grouped into 2 time periods: 2009–2013 (before the formation of the research committee) and 2014–2019 (after the formation of the research committee). We identified abstracts by manually searching abstracts published in the supplemental issue of RESPIRATORY CARE for 2009–2018 and searching the RESPIRATORY CARE web site for 2019. Each published abstract was reviewed for Duke authorship, and text

Table 1. Comparison of Abstracts Pre- and Post- Committee Formation

	Abstracts Published as Manuscripts			Abstracts Not Published as Manuscripts		
	Pre-Committee	Post-Committee	*P*	Pre-Committee	Post-Committee	*P*
Abstracts	7/39 (18)	9/17 (53)	.02	32/39 (82)	8/17 (47)	.02
Lead author						
RRT	7 (100)	9 (100)	> .99	31 (97)	7 (88)	.12
Female	0 (0)	1 (11)	.36	23 (72)	3 (38)	.16
Senior author						
RRT	0 (0)	3 (33)	.09	9 (28)	4 (50)	.24
Female	0 (0)	1 (11)	.36	3 (9)	8 (100)	.88
Middle authors						
RRT	19/31 (61)	13/25 (52)	.67	54/93 (58)*	19/22 (86)	.03
Female	14/31 (45)	12/25 (48)	.83	22/93 (24)	6/22 (27)	.94
Type of study						
Clinical, QI	7 (100)	5 (56)	.042	18 (56)	4 (50)	.75
Bench	0 (0)	0 (0)		8 (25)	2 (25)	
Survey	0 (0)	4 (44)		4 (13)	2 (25)	
Animal	0 (0)	0 (0)		2 (6)	0 (0)	
Subject populations						
All	0 (0)	0 (0)	.12	5 (16)	2 (25)	.42
Adult	2 (29)	3 (33)		14 (44)	5 (63)	
Pediatric/neonatal	5 (71)	6 (67)		8 (25)	1 (13)	
Unclear/missing	0 (0)	0 (0)		5 (16)	0 (0)	

Data are presented as no. (%). Total abstracts = 56.
* 18 authors' professions were unable to be determined in the pre-committee group.
RRT = registered respiratory therapist
QI = quality improvement project

searches were performed for Durham, Duke, and our most frequent authors by surname.

Data were extracted and entered into a secure REDCap database (Research Electronic Data Capture tools, hosted at Duke University Medical Center). We included all authors, authors' credentials, type of study, patient population, and whether the abstract resulted in a manuscript. If part of an abstract was included in a manuscript, it was counted as a manuscript. The primary outcome was the percentage of abstracts published as manuscripts. Manuscripts were identified by searching PubMed and by contacting individual authors. Chi-squared and Mann-Whitney testing were performed for categorical and continuous data, respectively. Statistical significance was set at $\leq .05$, and data were analyzed using SPSS 25 (IBM, Armonk, New York).

Results

A total of 56 abstracts, 39 (70%) pre-committee and 17 (30%) post-committee, were presented by 23 unique lead authors and 90 unique authors (Table 1). Abstracts in general were largely the results of quality improvement projects both pre- and post- committee (Table 1).

Of the 90 unique authors, 31 (34%) were female, and 51 (57%) were RTs. Of the 23 unique lead authors, 22 (93%) were RTs, 5 (23%) were female, and 18 (78%) were Duke RTs. There were 77 different middle authors, of whom 27 (35%) were female and 40 (52%) were RTs. The median (range) number of abstracts each lead author published was 1 (1–17) abstracts. The most common number of abstracts published by each lead author were 1 (44%), 2 (33%), 3 (11%), 4 (6%), and 17 (6%). RTs were senior author for 16 (29%) abstracts. Of the 171 instances of middle authorship, 54 (32%) were female and 105 were RTs (61%). More middle authors were RTs (58% vs 86%, $P = .03$) in abstracts not published as manuscripts in the post-committee group; however, we were unable to determine the profession of 18 middle authors in the pre-committee group. There were no other significant differences for lead, middle, or senior author credentials or for gender pre- and post-committee.

Over the 10-y study period, 16 (29%) abstracts (7 pre- and 9 post-committee) or data from the abstract were published in 12 manuscripts (Table 1).[5-16] One manuscript included data from 3 abstracts, and 2 manuscripts included data from 2 abstracts. Since committee formation, no manuscripts have included data from multiple abstracts. Importantly, the median (range) number of abstracts published per year decreased from 8 (5–10) to 3 (1–4) following formation of the committee ($P = .006$). However, the proportion of abstracts accepted for publication rose significantly from 18% to 53% ($P = .02$) (Table 1).

Post-committee published manuscripts had more surveys and fewer quality improvement projects compared to pre-committee publications. In contrast, none of the 10 bench studies were ever published as manuscripts. Published studies involving neonatal or pediatric subjects represented 11 of 16 (69%) abstracts published as manuscripts.

Discussion

In a single respiratory care department with substantial experience conducting research, implementing a research committee decreased the total number of abstracts presented but increased the percentage of abstracts published as manuscripts. We interpret these results to primarily reflect more focused and thoughtful projects and an increase in research quality as a consequence of the formation of the committee. Importantly, publishing an abstract as a manuscript is not the only measure of quality in research; however, we feel it provides a good measure of quality for RT departments given that the percentage of OPEN FORUM abstracts published as manuscripts is approximately 5–6%.

Most RT lead authors only presented a single abstract, and manuscripts were predominantly retrospective chart reviews and surveys of clinical practice. Few respiratory care departments, including ours, have the resources to independently perform more complex studies such as randomized controlled trials or prospective physiologic studies. For these, RTs at Duke (and likely elsewhere) are usually co-investigators in funded research with various Duke faculty as principal investigators. As noted above, these projects were not included in this study as they are separate from our committee.

While presenting at the AARC OPEN FORUM is an important aspect of performing research, quality abstracts are not pursued as manuscripts for a variety of reasons. David J Pierson MD FAARC, when Editor-in-Chief of RESPIRATORY CARE, stated that the top reason that abstracts are not published is due to failure to actually write a manuscript based on the abstract. Other reasons were poor study design, poor writing, and failure to revise the manuscript after peer review.[17] Our committee was able to provide encouragement and feedback to ensure that studies were well-designed with strong enough methodology to be published as manuscripts. Each author was paired with an experienced mentor to provide guidance throughout the process. This mentor could be the committee chair or co-chair, another member of the committee, or a faculty member with expertise in the topic being studied. By providing the expectation that projects were designed to be published as manuscripts, RTs gained valuable experience through the mentorship and collaboration in the research committee.

Most of the research projects underwent multiple revisions prior to submission. Requiring a written proposal helped committee members evaluate RTs' writing skills while giving novice researchers the opportunity to write in a low-pressure environment. The written proposal also allowed for the research plan to be clearly evaluated and provided a strong foundation for the writing of the abstract and manuscript. While this process can be frustrating for novice writers, it is critical to developing science writing skills and the resilience required to deal with the peer-review process. We were able to achieve this with no dedicated nonclinical time for staff therapists to work on research projects and thus minimal cost to the department. The primary cost to the department was travel to conferences to present the abstracts.

The committee evaluated each abstract prior to submission, and abstracts were reviewed as a group for feedback to the authors. Authors were expected to defend their work in person, and the lead author was expected to make changes based on feedback from the committee. This strengthened each individual abstract and allowed presenters the opportunity to defend their work in a format similar to that of the AARC OPEN FORUM. Posters and slide presentations were also evaluated by the committee to ensure the data were clearly presented.

While we were unable to clearly determine the reason for fewer abstract submissions, it is possible the increase in expectations discouraged some novice RTs from pursuing research projects. It is also possible that some RTs were not comfortable defending their ideas to the committee. We also noted, but did not formally track, ideas that were proposed but not followed up with a written proposal or summary of the literature. In particular, we found that requiring a literature review was a barrier as many RTs did not have this skill or did not have time to perform the search.[18] The committee also was able to offer insight into many project proposals and often could provide some historical perspective about similar research efforts in the past. To continue to grow our research program, we need to work toward engaging more RTs in research and quality improvement. We are working on developing a sustainable program in which authors are willing to continue to work on new projects to build on their early efforts, develop their research skills, and work to solve technical and clinical challenges.

Limitations

As a single-center study, our results may not be generalizable to other centers. In particular, other centers may not have the infrastructure to support RT research. We did not objectively evaluate the quality of abstracts and used abstracts published as manuscripts as a surrogate for quality. It is possible that some abstracts in the pre-committee group were of sufficient quality to be submitted as manuscripts and weren't followed up; however, we were unable to determine the reasons why they were not submitted or if they were submitted and rejected. We were also unable to

include years of experience, highest degree obtained, advanced credentials, or race/ethnicity for lead authors as many RTs are no longer with our institution or have retired.

Conclusions

The formation of a research committee at our institution was associated with an increase in abstracts accepted as manuscripts. A formal committee appeared to increase the quality of research in a respiratory care department

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