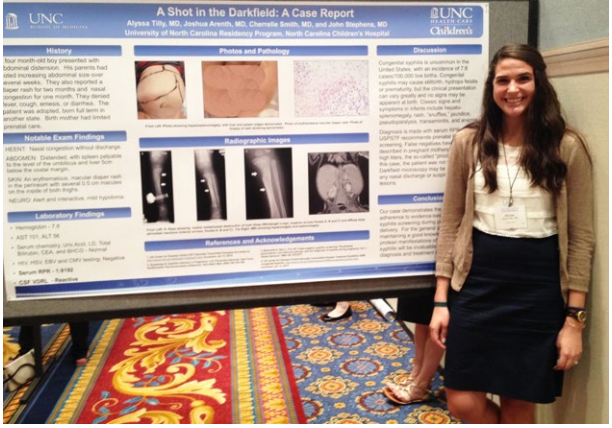
Original Article



Scholarship improved by case report curriculum

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SUMMARY

Background: The Accreditation Council for Graduate Medical Education (ACGME) requires that residents participate in scholarly activity. Case reports are an accessible form of resident scholarship, given the time required relative to other forms of research. Our paediatric residency lacked a curriculum for writing and presenting case reports.

Methods: We created and implemented a brief curriculum for writing case reports and scientific posters. The curriculum consisted of two 1-hour didactic sessions, followed by mentoring during the writing process. The impact of the curriculum was measured via resident surveys about the material presented and by the rate of presentations of case reports made by residents at our departmental research day, before and after implementation.

Results: In the year of curriculum implementation, there were 15 case reports presented at the departmental research day, compared with an average of 4.7 per year in the three prior years. The resident (n = 85) participation rate increased from an average of 0.06 case reports per resident per year before implementation to 0.18 case reports per resident per year after implementation ($p = 0.0023$).

Discussion: Implementation of a case report curriculum with subsequent mentoring was associated with a marked increase in resident case report presentations at the departmental research day. These results suggest that even brief instruction and subsequent faculty mentorship in preparation of case reports can significantly improve resident participation in scholarly activity.

Our paediatric residency lacked a curriculum for writing and presenting case reports

Prior research curricula at our institution had not included formal instruction in writing case reports

INTRODUCTION

The Accreditation Council for Graduate Medical Education (ACGME) stipulates common programme requirements for all accredited residencies. The requirements include a curriculum that advances both the residents' knowledge of the principles of research and resident participation in scholarly activity. The definition of what qualifies as scholarly activity is left up to individual programmes, and can vary widely.

A number of barriers to resident scholarship have been identified. These include a lack of time, lack of formal training, lack of research curricula and lack of mentorship from faculty members.[1–4] Rates of participation in research and scholarly production during the residency are generally low across disciplines.[3,5] Several studies have demonstrated that scholarly output among resident doctors can be improved by the formal implementation of research curricula.[6,7] Additionally, the presence of and doctor-trainee participation in an annual institution-sponsored resident research day have both been shown to correlate with future scholarly publication.[5,8]

Writing and presenting case reports may be a particularly accessible form of resident scholarship. Abstracts of case reports can be presented at scholarly meetings, allowing the participant to gain broad exposure to academics. They also generally require less time commitment than other forms of scholarship. A survey of internal medicine residents who presented work at a national meeting reported a median time spent on case reports of 50 hours, compared with 200 hours for research abstracts.[4]

Prior research curricula at our institution had not included formal instruction in writing case reports or preparing scientific posters. A formal needs-assessment survey of paediatric residents identified both of these topics as priorities among trainees. We considered case reports as meeting the criteria for scholarship given the need for formal literature review and subsequent synthesis using clear, concise scientific writing. Scientific posters are the most common means of presenting work at scholarly meetings, and were thus felt to be integral to resident success in scholarship. In this report, we describe the implementation of a curriculum for writing and presenting case reports.

METHODS

Setting and participants

The curriculum was implemented in the paediatric residency programme of a tertiary academic centre. Materials were targeted to resident doctors in paediatrics and in internal medicine–paediatrics. During implementation, there were 85 residents.

Curriculum materials

We created two 1-hour didactic sessions, delivered during regular educational conferences. Session 1 described the rationale for and process of writing case reports, including benefits to the participant and step-wise instructions for the writing process. Session 2 provided practical instruction in the creation of scientific posters, including suggestions for layout, font size and choice, colour selection, and appropriate use of software resources.

Implementation

Session 1 was presented in December 2013 and session 2 was presented in March 2014. Slides of both sessions were also made available to all residents via the departmental website and were provided to the chief residents for further distribution. Both sessions concluded with a list of faculty mentors available to provide support during the writing process. The process of mentorship was left up to individual faculty members, but generally consisted of an agreement to provide guidance on suggested references and read through and provide edits to all drafts of case reports and posters. The curriculum was continued in the subsequent academic year, with sessions given in January 2015. An institutional review board waiver was granted for this project.

Outcome measures

The impact of the curriculum was measured in several ways. First, participants in the didactic sessions were administered anonymous surveys to assess any prior exposure to the curricular materials and perceived barriers to participation (Appendices S1 and S2). The surveys also asked participants to evaluate the usefulness of the curricular material and the likelihood that the respondent would write a case report or scientific poster in the subsequent 12 months. The survey questions were created using a Likert scale, with the exception of questions related to barriers to participation, where multiple answers were allowed.

Second, we quantified the number of case reports and the rate of resident case report presentations (number of case reports per resident) at our institutional paediatric resident research day. The rate of participation was used in order to adjust for the number of paediatric residents, which increased by 12 in total through the addition of four primary care track paediatric residents each year, starting in 2011/12. The presented case reports were identified by a review of the published programmes for the departmental research day for each academic year. Comparisons were then made between the three academic years before and the two academic years after curriculum implementation.

Analysis

The participation rate in case reports after implementation of the

Table 1. Reasons cited by residents surveyed (n = 17) who had never written a case report*

Reason	n (%)
Don't know how	10 (41.7%)
No time	7 (29.2%)
No mentor	4 (16.7%)
Never thought about it	2 (8.3%)
No interest	1 (4.2%)

*More than one answer allowed per respondent.

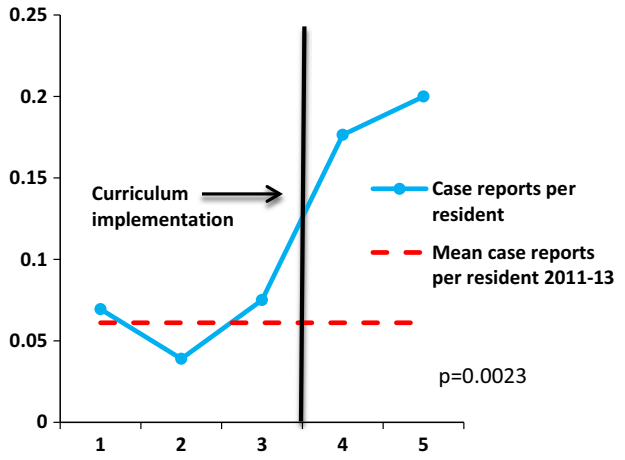

Figure 1. Rate of resident participation in case reports at the departmental research day before and after curriculum implementation. The *y*-axis plots the number of case reports per resident per year; the *x*-axis represents the three academic years before implementation and the two academic years after implementation of the curriculum

curriculum was compared with the average of the participation rate before curriculum implementation via logistic regression analysis. This analysis was performed using SAS 9.2. Annual participation rates were also plotted on a run chart in Microsoft EXCEL™.

RESULTS

Surveys

All residents who attended session 1 (n = 17, 20% of all residents) completed the case report survey. The proportion of surveyed residents reporting less than 1 hour of prior instruction in writing case reports was 88 per cent; only 35 per cent reported any experience with writing case reports. Among those not having written a report in the past, the most frequently cited reason was a perceived lack of knowledge (Table 1).

All residents who attended session 2 (n = 11, 13% of all residents) completed the poster survey. The proportion of surveyed residents reporting less than 1 hour of prior instruction in creating scientific posters was 64 per cent. A majority (72.7%) of respondents reported having previously created a scientific poster.

Case report presentations

In the first year after implementation of the curriculum, there were 15 case reports presented at the departmental research day, compared with an average of 4.7 per year before curriculum implementation. The participation rate (Figure 1) increased from an average of 0.06 case reports per resident per year before curriculum implementation to 0.18 case reports per resident per year after curriculum implementation (p = 0.0023). These results were sustained in the second year after implementation, with 17 reports presented, representing a rate of 0.2 reports per resident per year.

The most frequently reported barrier to participation was a perceived lack of knowledge

DISCUSSION

The implementation of a focused educational curriculum for writing case reports and creating scientific posters, coupled with mentoring from faculty members throughout the process, was associated with a marked increase in resident participation in our departmental research day. Based on the programmatic needs assessment, these topics were clearly missing from past curricula. This was borne out in the pre-participation surveys, which indicated that the majority of residents had received very little formal instruction in these topics, and that the most frequently reported barrier to participation was a perceived lack of knowledge. These results suggest that even brief formal instruction in case reports, when paired with mentoring from faculty members, can significantly increase paediatric resident participation in scholarly activity.

There have been a number of strategies employed to improve resident scholarship. These include implementation of research curricula,[6,7] the development of structured mentorship,[9] and a peer-driven research programme.[10] All of these projects are relatively time and resource intensive on the residency programme level. Our project was much narrower in scope, but could represent a relatively simple and efficient method for helping to create a culture of scholarship and to increase resident academic participation, within a broader context of improving scholarship.

A brief formal curriculum in writing case reports and creating scientific posters, was associated with a significant increase in resident scholarly activity

The biggest barrier our residents reported to participation in writing and presenting case reports was a perceived lack of knowledge. This contrasts with results from other studies, which have reported a lack of time as the largest barrier.[2–4] This may reflect resident understanding that case reports are less time-intensive than other forms of scholarship, as noted by Rivera *et al*.[4] Significantly more survey respondents reported having completed a scientific poster in the past than having written case reports. This suggests that those respondents had previously participated in larger research projects, probably during medical school, as also reported by Ullrich *et al*.[3]

Our study does have some significant limitations. It was performed at a single institution and within one discipline, which could potentially limit the generalisability to other settings. There were relatively small numbers of participants in the surveys and didactic sessions, although a broader exposure to the curriculum was made possible by allowing access to materials on the residency website and through the chief residents. Lastly, the lack of a true control group limits our ability to definitively prove causation by our intervention, and thus the improvements we noted could have conceivably been the result of unrelated factors, although the large change is unlikely to have occurred by chance.

In summary, a brief formal curriculum in writing case reports and creating scientific posters, followed by faculty mentoring, was associated with a significant increase in resident scholarly activity as measured by the presentation of case reports at our departmental research day. A similar curriculum could be implemented at other institutions and in other disciplines that use case reports at scholarly meetings, such as internal medicine and family medicine. Given the multiple benefits accrued by learners who participate in scholarly activity, and the accreditation requirements for scholarly education and participation, our findings may thus have important implications for education curricula at other teaching institutions. Areas for further research could include learner interviews to determine which aspects of the curriculum were most beneficial to participants.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article at http://onlinelibrary.wiley.com/doi/10.1111/tct.12460/suppinfo

Appendix S1. Clinical vignette pre-test.

Appendix S2. Scientific poster pre-test.

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