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ORIGINAL ARTICLE

Outcomes of a mentored research competition for authoring pediatric case reports in chiropractic

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Objective: A chiropractic pediatric specialist often encounters novel clinical findings not reported currently in the literature. This project matched board certified chiropractic pediatric specialists with a mentor experienced in scientific writing to co-author a research paper to add to the literature base available on chiropractic pediatric practice.
Methods: Clinicians who had received their Diplomate in Clinical Chiropractic Pediatrics and mentors in scientific writing were teamed up. Two surveys were conducted to collect quantitative data, and focus groups were held to gather qualitative data about the overall experience of the mentor and mentee (clinicians) participating in the study. The first survey was sent to the clinicians to gather information about their research idea and their experience in research. The second survey was conducted upon project completion by clinicians and mentors. A project wiki was used as a communication strategy.
Results: Ten reports were submitted by authorship teams. Time spent on this project was an average of 58 hours by clinicians and 36 hours by the mentors. Mentors aided by adding content material, editing manuscripts, and educating the clinicians in the art of writing a paper. Improvements for this project included clearer mentoring guidelines and not using the wiki as a communication venue.
Conclusion: The project ultimately fulfilled the goal of using a mentorship model to facilitate scientific writing education and ease the anxiety of authoring a first publication. The overall experience was "good"; however, there are opportunities for improvement.

Key Indexing Terms: Authorship; Case Reports; Chiropractic; Mentors, Education; Pediatrics

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INTRODUCTION

Case reports have two common characteristics: they describe the events of an interesting healthcare case and they provide new information for clinicians.[1] Case reports reside lower on the evidence hierarchy due to their inherent inability to be generalized to larger populations.[2] However, for some research topics, case reports can add value, especially for generating hypotheses and safety data.

Interest in advanced education in the field of pediatrics has increased over the past two decades within the chiropractic profession.[3] Currently, two postgraduate clinical pediatric diplomate programs aim to enhance clinical knowledge for doctors of chiropractic who seek to treat children.[4,5] A chiropractic pediatric specialist often describes encounters with novel clinical findings not found currently in the literature. Additionally, the process of writing about the novel clinical findings in a case report is a hands-on educational experience in scholarly writing and critical evaluation of the literature.

The challenge of authoring a paper, even to an experienced clinician, can be intimidating. Therefore, this project was designed to ease the anxiety of developing and writing a case report for practicing clinicians who were inexperienced authors. For this, we invited experienced chiropractors, board certified in pediatrics (Diplomates in Clinical Chiropractic Pediatrics, or DICCPs) to take part in a pediatric research competition with an opportunity to work with a mentor experienced in scientific writing, if necessary. The DICCP program was chosen because it was endorsed by the International Chiropractors Association (ICA) and the American Chiropractic Association's (ACA) Council on Chiropractic Pediatrics (CCP). All scientific literature submitted was peer reviewed, and considered for oral and/or poster presentation at the first pediatric conference jointly sponsored by the ICA and ACA's CCP in December 2011, and preliminarily accepted for publication in the *Journal of Clinical Chiropractic Pediatrics*.

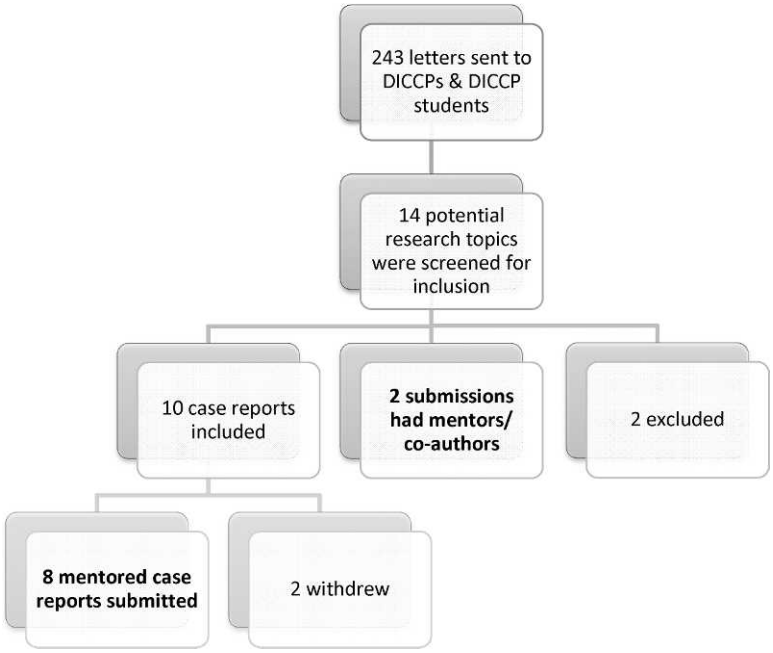

Figure 1 - Flow chart of research topic submission and inclusion.

The main initiatives for this competition were to enhance the existing literature base in chiropractic pediatrics, and to help establish a relationship between mentors knowledgeable in scientific writing and practitioners with clinical data. The purpose of this article is to explain the steps used to conduct this project, and to discuss the quantitative and qualitative outcomes regarding the experience of the mentors and clinicians.

METHODS

As shown in Figure 1, the first step was the identification of DICCP clinicians (or postgraduate DICCP students) with potential cases to write about and experienced scientific writers who were willing to assist with this project. A letter was sent by mail inviting each DICCP graduate and student ($n = 243$) to participate. This then was followed up by two emails. Individual mentors were invited to participate either in person, via telephone conversation, or by email. Potential mentors were sought from the Palmer College of Chiropractic faculty, staff, or fellows in the Masters of Science in clinical research program. These mentors were handpicked because they either had personal experience writing or training on how to write a case report and, for convenience purposes, were at the same institution as two of the project organizers. Once solicited to be a co-author, mentors were given the opportunity to choose cases that interested them, based on topic, and the clinician's research and writing experience ascertained from the clinician's preparticipation survey, which is described below. Paired mentors and clinicians then were introduced to each other through e-mail and encouraged to set up a wiki, a website that allows multiple users to collaborate on a single document, to assist with writing the manuscript.

Guidelines for the one-on-one mentorship model were left fluid so that each relationship could have the flexibility to reflect the individual personalities. Mentors were described in orientation material as guides and references, but they were not expected to take full responsibility for the paper. Authorship guidelines were for the first author to: (1) take primary responsibility for all aspects of the paper; (2) write the paper in consultation with the second author; (3) maintain ownership of the master document; (4) submit the paper and manage manuscript correspondence; and (5) be responsible for archiving and documenting all data and files. The second author's responsibilities included: (1) making early decisions about the design of the paper; (2) keeping the paper on track in terms of the main messages; (3) making intellectual contributions to any data analyses; (4) contributing to the interpretation of the results, discussion, and conclusion; (5) reviewing each draft; and (6) taking public responsibility for the content and results.

All of the submitted case reports were evaluated independently by three reviewers using an evaluation rubric (Table 1). The results of each reviewer were summed and the total score was used as each case report's overall score. The overall scores then were sent to the three independent reviewers to ensure that all reviewers felt that these scores were fair. There were no discrepancies with the overall scores and there was full consensus that all the original overall scores were final. The authors of the 5 top-scoring case reports were invited to give an oral and poster presentation, and all other authors were invited for poster presentation. All submitted publications were to be accepted tentatively into the *Journal of Clinical Chiropractic Pediatrics*. ChiroSecure (Scottsdale, AZ) was the official sponsor for the competition, awarding the mentor and clinician $500 for first place and $250 each for second place.

Table 1 - Evaluation Rubric and Mean Scores from 3 Independent Reviews of the 10 Research Papers Submitted

Content	Mean Score	Min	Max
Includes a clear statement of the objective or purpose	12.4	10	15
Inclusion of historical and theoretical perspectives	12.8	9	15
Quality of literature	11.6	7	13
Relevance of literature to "pediatrics"	12.7	7	15
Relevance of the literature to each other	13.4	10	15
Relevance of the literature to the practice of chiropractic	12.4	10	15
Presentation			
Organization	11.1	8	15
Transitions	11.4	8	15
Justification for further research	10.5	8	15
Writing/formatting			
Clarity of writing	11	7	13
Reference format (Vancouver)	11.7	9	14
Total (out of 165)	131	101	154

Two surveys were conducted throughout this project, both of which were designed by the project organizers for the purposes of this study alone. The first was a preparticipation survey given to clinicians who needed a mentor ($n = 10$), which aimed to obtain information about their intended research and prior writing experience. The results of the survey remained anonymous to mentors until after all teams were paired. The second confidential survey was completed by mentors and clinicians upon completion of the project. This survey was intended to ascertain from the participants their thoughts about their experience in the project and anything that could be improved with future projects. Descriptive statistics from both surveys were analyzed using SPSS 15.0 (SPSS Inc, Chicago, IL).

This project also used focus groups to explore the qualitative aspects of the mentor–mentee relationship. Two focus groups were conducted with the same semi-structured interviews given to mentees and mentors separately (Fig. 2). The mentees' focus group occurred at the conference before the oral presentations and competition results, while the mentors' focus group occurred the month following the pediatrics conference. Two independent reviewers read the transcripts and consensus was reached on emerging themes. The surveys and the focus group interviews were deemed exempt by the Palmer College of Chiropractic institutional review board.

RESULTS

A total of 14 potential research topics was submitted initially by DICCP clinicians or DICCP postgraduate students. Ten were case reports that required a mentor (Fig. 1), two potential topics were excluded, and two did not require a mentor (one was a narrative review and one

Introduction

In this interview, I hope to learn about your experience through this project. This interview is a very informal discussion that should take between 30-60 minutes. I would like your honest opinions about these questions. This discussion is confidential. Your name will not be associated with any of the answers you provide. We will record this session on audiotape and transcribe this conversation for our data analysis. The audiotape will be destroyed after the research report is written.

Do you have any questions for me before we begin?

1. What initially made you interested in this project?
2. Can you provide me with any positive experiences from this project?
3. Can you provide me with any negative experiences from this project?
4. What is your overall assessment of this project?
5. How was your experience with your mentor/mentee?
6. Has this experience changed your thoughts on research or scientific writing?
7. What direction would you like to see this project go in the future?

Figure 2 - Semi-structured questions used for clinicians and mentors focus groups.

Table 2 - Responses from Participants Regarding Their Experience with the Project

	Clinician ($n = 5$, missing 5)	Mentor ($n = 6$, missing 2)
Total hours? (mean, range)	58, 20–105	36, 2–70
Hours writing?	16, 7–30	8, 0–20
Hours reviewing literature?	26, 8–72	15, 0–42
Hours editing?	15, 2–40	14, 0–60
Hours communicating?	4, 2–10	4, 0–15
Mode of communication (*n*)		
E-mail	3	4
Wiki	2	2
Mentor assisted with: (*n*)		
Reviewing the literature? (clinician—$n = 4$)	2	4
Finding relevant reference material?	3	5
Adding content?	5	6
Editing the manuscript?	5	5
Designing the correct flow to the manuscript? (clinician—$n = 4$)	3	5
Education about scientific writing?	5	6
Overall experience: (*n*)		
Excellent	2	1
Good	2	2
Fair	1	2
Poor	0	1
Participate again: (*n*)		
Definitely yes	3	3
Probably yes	1	1
Probably no	1	2
Definitely no	0	0

was a case report). A presurvey was completed by the 10 case report authors who required a mentor.

One of the questions asked on the preparticipation survey was "What is the status of your proposed research topic"? Two authors' case-study subjects still were under care, six case-study subjects' care were complete, and two authors had manuscripts that already were started. The initial questionnaire also asked about the clinician's prior writing experience and time spent reading scientific literature. Professional literature was read often by nine of ten respondents, and scientific literature was read by eight of ten. Half of the survey respondents stated they had written professional and scientific literature. Of these, six professional papers and five scientific manuscripts were noted.

Postparticipation surveys were completed by five clinicians (50% response rate) and six mentors (75% response rate). Table 2 describes the overall experience of the clinicians and mentors. Clinicians spent an average of 58 hours (range 2–105) on this project, with the majority of that time spent reviewing the literature. Mentors spent an average of 36 hours (range 2–70) on this project with the majority of their time reviewing the literature and editing manuscripts. Mentees identified the mentors' strongest contributions as aiding their co-authors with addition of content material, editing the manuscript, and educating their co-authors about the scientific writing process. Overall, this project experience was rated as "excellent" or "good" by 64% of the participants and 73% noted they would participate in this project again.

Table 3 - Self-Reported Ratings of the Quality of Mentee–Mentor Relationships

($n = 11$)	Yes, a Lot	Yes, a Little	Not at All
Friendly?	4	6	0
Supportive?	5	6	0
Sense of belonging?	3	5	2
Available?	5	5	1
Helpful?	5	3	2
Sympathetic?	4	6	1
Considerate?	6	3	1
Flexible?	4	5	2

Additionally, the postparticipation survey contained questions regarding the quality of the clinician–mentor relationship (Table 3). Overall, the relationships were friendly and supportive with a variety of results regarding availability, helpfulness, sympathetic, considerate, and flexible. Written comments about how this project could be improved included having defined guidelines on research topic, not encouraging the use of the wiki, and more structured guidelines of mentor and clinician expectations.

From the ten mentored case reports, eight papers were submitted. Two were withdrawn from the study (1 for lack of time to complete and 1 for an unknown reason). All submissions (Fig. 3) were reviewed by three independent reviewers using an evaluation rubric and were invited to present their work in a poster format at the conference held in December 2011, while the top five submissions were selected for oral presentations. The top two manuscripts

Changing trends in puberty, and what this means to the chiropractor
Chiropractic management of adductor muscle strain
Benefits of chiropractic care on an infant demonstrating congenital myogenic ptosis: a case study
Resolution of conductive hearing loss due to otitis media after chiropractic treatment
Improvement of chronic constipation in a 5 year old female after chiropractic treatment
The management of growing pains in children through chiropractic care: a case series
Resolution of delayed motor milestones and abnormal primitive reflexes in an 8-month old full term infant following chiropractic care
Chiropractic care for postpartum pelvic girdle pain and low back pain: a case report
Management of a 9-year-old male with encopresis and chronic constipation
The effectiveness of chiropractic care with the incorporation of Graston and slump nerve mobilization techniques in a 14 year old athlete with peroneal neurititis

Figure 3 - Titles of submitted articles.

were chosen to receive a monetary award. Table 3 outlines the mean and range results of the independent reviews for each criterion. Overall, the average score was 131 of 165 points (range 101–154).

Four main themes emerged during the focus groups: (1) motivation to participate, (2) communication, (3) mentee–mentor relationship, and (4) future directions. Motivation to participate as a mentee originated from either academic (chiropractic faculty member or DICCP student) or professional responsibility. Mentors' motivation to participate stemmed from the potential for a collaborative learning opportunity from a distance or desire to participant in an important service project. The wiki was the most common communication discussion topic. Those who used the wiki found that it was very useful, although most individuals found that it was more of an issue to learn a new process and preferred other modes of communication, including email and telephone. Some mentees wished they had the opportunity to have at least one face-to-face meeting.

The mentee–mentor relationships varied greatly, ranging from a very respectful and grateful situation to one that was not useful and necessitated other collegial resources. For a few mentors, this was their first opportunity to mentor another individual, while others had been involved in scientific mentoring relationships for several years. The new mentors struggled with the responsibilities included in this role. Some were of little help/guidance, while others were too helpful and completed tasks that most likely should have been completed by the mentee (e.g., literature searches and critical appraisal). Well-established mentors also had the best mentee–mentor relationship according to the mentee and mentor themselves.

All of the mentees expressed desire to be involved in research. For some of them, this experience demonstrated to them how research could be done, while others realized how much work it actually required. Ideas, such as a practice-based research network and systematic literature reviews, were expressed as future directions in which the mentees could move toward. The established mentors thought that this was a great service project and that they could take on two to four mentees at one time. Additional comments included the need for clearer mentoring guidelines.

DISCUSSION

Several methods have been used to increase the publication rate of faculty and clinicians, including support groups,[6,7] writing workshops and support groups,[8] writing coaches,[9] and peer mentoring.[10] We chose to use the mentor model, since the DICCP clinicians were geographically distant. A mentor is defined as an influential supporter or a wise and trusted instructor.[10] This project was innovative and, to our knowledge, the first within the pediatric chiropractic specialty designed to establish a mentor–clinician relationship that could facilitate production of a high-quality case report, thus adding value to the pediatric chiropractic body of literature. This project generated nine case reports and one narrative literature review, educated clinicians on the scientific writing process, and gave established scientific writers an opportunity to educate others. Currently, eight of the ten papers have been published in two recent issues of the *Journal of Clinical Chiropractic Pediatrics* (volume 12, number 20 and volume 13, number 1), and the last two are planned for the upcoming edition.[11–18] From the results of the postsurvey, the overall experience was "good," but there are many opportunities for this to be improved upon.

Benefits of a mentor are well documented outside the chiropractic profession and mentors have become increasingly popular within chiropractic student clinics.[19,20] Effective mentoring requires mutual respect, trust, understanding, and empathy, where a mentor can share learned lessons and technical expertise.[21] Additionally, the rela-

tionship requires a significant amount of attention and time from both involved parties. A wide variety of relationships was experienced within this project. From the survey, the mentees found the mentors to be "somewhat" to "very valuable" to the extent that all but one felt confident that they could write another research paper on their own. Data from the focus groups suggested experienced mentors were better suited for a project like this that involved distance communication and instruction of complex skills (e.g., critical appraisal and scientific writing).

Improvements to this project include setting up more structured guidelines, formulating an application process for potential clinicians or mentors, obtaining mentors from other institutions, and defining clearly the expectations of the paper submission and presentations. These additional processes are feasible with the continued support of sponsors, associations, colleges, mentors, and clinicians. Continuation of the improved project will enhance clinician's understanding of the research process and will facilitate the addition of high-quality literature to the body of chiropractic evidence.

Overall, this project had methods that can be replicated for any profession and topic. Communication of expectations is essential to the mentor and mentee (clinician). The methods and results were not designed to be a rigorous research project, but rather a community-based project in which the outcomes (i.e., case reports) were publishable. However, because of its success, the authors believed describing the methods and overall outcome of the project are valuable to others interested in conducting a similar project. The overall limitations include questionnaires that were designed for the needs of the study alone, but did not have established psychometric properties, and that the mentors and mentees were derived from a small group.

CONCLUSION

This project was designed to establish a mentor–clinician relationship that would produce scientific literature to be presented at the first joint pediatric conference in December 2011. A total of ten papers was submitted. Time spent on this project for the clinicians ranged from 20–105 hours and 2–70 hours for mentors. The overall experience was rated as "good" and 73% of the survey respondents stated that they would take part in a project like this again. This project ultimately fulfilled the goal of producing quality case reports using a mentorship model to facilitate scientific writing education in the field of chiropractic pediatrics.

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CONFLICT OF INTEREST

The authors declare that they have no conflict interests.

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