

Barriers and Attitudes to Research Among Residents in Plastic and Reconstructive Surgery: A National Multicenter Cross-Sectional Study

*The Canadian Plastic Surgery Research Collaborative (CPSRC)*¹

OBJECTIVE: Research sets the foundation for developing plastic surgeons who think critically and approach clinical practice with an inquisitive mind. The objective of this study was to characterize current attitudes and perceived barriers towards conducting research during residency.

DESIGN: A validated 36-item questionnaire was developed by a national task-force of Canadian plastic surgery trainees. The survey was distributed to all 13 plastic surgery programs in Canada. Data was collected for a period of 2 months in the form of multiple choice, Likert scales and short answers.

RESULTS: The response rate was 64% (95/149) with representation from all 13 plastic surgery programs across Canada. The top three perceived barriers to conducting research were lack of time (83%), insufficient access to research supervisors and mentors (42%) and the research ethics process (38%). More than 70% of residents were interested in conducting research during residency and 74% of programs have a research requirement integrated into their curriculum. Despite this, less than half of residents (47%) believed that their program fosters a culture that promotes research. This was attributed to multiple factors, including a lack of internal research funding (78%), limited access to a research methods or clinical trials unit (78%), and insufficient research training (68%). University research ranking had no correlation with residents' scholarly output or their perceptions towards research barriers.

CONCLUSION: Canadian Plastic Surgery residents identified several important factors considered to be barriers to research. Programs can use these findings to address barriers and improve the integration of research throughout residency training. (*J Surg Ed* ■■■■-■■■. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: education, clinical research, resident training, plastic surgery

COMPTETENCIES: Practice-Based Learning and Improvement, Systems Based Practice

INTRODUCTION

Advancement in the field of plastic and reconstructive surgery is highly dependent on innovation and discovery facilitated by research.¹ To provide patients with the most up-to-date and effective surgical treatments, high-quality evidence-based medicine is required.^{2,3} Unfortunately, it has been reported that there is a paucity

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of high-quality level I evidence in the plastic surgery literature.^{4,5} At present, many plastic surgeons tend to complete research in silos, producing mostly level 4 and 5 evidence consisting of case series, case reports, and expert opinion.⁴

To provide high-quality evidence in this specialty, residents in plastic surgery programs are trained and, in many cases, required to conduct research during residency.⁶ Furthermore, scholarly output is considered a core component of residency training by both the Royal College of Physicians and Surgeons of Canada and the Accreditation Council for Graduate Medical Education (ACGME) in the United States.^{7,8} Equally, plastic surgery applicants prefer programs that offer good research facilities and curriculum.⁹ However, while most residents wish to conduct research, it can be a challenging to undertake in the current surgical curriculum.^{10,11}

We sought to explore the factors that limit or prevent residents from achieving their full research potential. This information would then be useful in optimizing the research curriculum in plastic surgery programs. By improving the environment in which our residents' complete scholarly activities, we intend to facilitate the increased output of high-quality research in the long-term. Ultimately, the patient is the benefactor, as we continue to innovate, improve, and expand our plastic surgery procedures and practices.

METHODS

This study was conducted by the Canadian Plastic Surgery Research Collaborative (CPSRC); a national trainee-led network and organization dedicated to conducting high-quality multicenter research in plastic and reconstructive surgery.

Survey Development

A national task-force of plastic surgery residents and medical students formulated a detailed questionnaire based on a literature review to explore current residents' attitudes and perceived barriers to research.

The questionnaire was validated using 3 iterations of review and testing by the task force. The final survey consisted of 36 items including 21 multiple-choice, 7 Likert-scale, and 8 short-answer questions. They spanned the following domains: demographics, resident program expectations and supports, and resident attitudes to and perceived barriers to research.

Data Collection

Members of the CPSRC then distributed the questionnaire to each of the 13 academic centers across Canada. All plastic surgery residents in any year of study were eligible to

participate. Responses were collected electronically for a period of approximately 2 months using the Opinio software (ObjectPlant Inc, Oslo, Norway). Before administering the survey, a quality improvement ethics application (A pRoject Ethics Community Consensus Initiative [ARE-CCI]) was obtained.

Statistical Analysis

Analysis of quantitative data was completed using SPSS v.22 (Armonk, NY: IBM Corporation). Qualitative data were itemized and thematically analyzed by 2 independent reviewers, blinded to each other's results, to identify common themes in responses to open-ended questions. Inter-rater reliability was calculated to estimate level of agreement between the reviewers.

RESULTS

Residents from all 13 major academic centers across Canada responded to the questionnaire. The response rate was 64% (95/149) (Table 1).

Participant and Resident Demographics

Respondents were 44% women, and 56% men with the average age being 28.6 (± 2.5) years. All years of residency were represented with the most being from the postgraduate year-3 cohort (24%) (Table 1).

Before residency, the highest degree earned by respondents was a Bachelor's degree (82%), followed by a Master's degree (15%) and a PhD (3%). During residency, 26% of residents were planning on taking time off to do research, with the most planning on or already having received a Master's degree (72%). Regarding future prospects, most residents reported wanting to pursue a mostly clinical plastic surgery career (67%).

Current Resident Research Output

Although diverse project types have been or are currently being conducted by respondents (Fig. 1), most residents are undertaking cohort studies (63%), followed by case reports/case series (54%), systematic reviews (36%), randomized control trials (22%), and cross-sectional surveys (21%).

Over half of residents have presented at their local program research day (63%) and a local conference (52%). Approximately, 20% of residents have not presented at any conference or event during their residency (Fig. 2).

The median number of peer-reviewed abstracts produced during residency was 1 (interquartile range = 4), and the median number of peer-reviewed publications was also 1 (interquartile range = 3). The university research ranking had no correlation with the total scholarly output by residents¹² (Table 1).

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