

Recruitment and retention of healthcare professionals in rural Canada: A systematic review

Savanna Heidi
Koebisch, MChiro¹,
Jacqueline Rix,
MChiro, DC¹, Michelle
M. Holmes, MRes¹

¹School of Chiropractic,
AECC University
College (Formerly
Anglo-European College of
Chiropractic), Bournemouth,
England

Correspondence to:
Savanna Heidi Koebisch,
skoebisch@gmail.com

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Abstract

Introduction: This review explores a pertinent issue for healthcare professionals and recruiters alike: which factors are most important in the recruitment and retention of these professionals in rural practice in Canada. Existing research concentrates on specific factors or focused populations. This review was created to explore multiple factors and a wider population of healthcare professionals, including chiropractors, osteopaths, dentists and physiotherapists.

Methods: A literature search was carried out on four databases. Data from included studies were extracted, and thematic analysis was conducted on relevant findings. The quality of individual studies was assessed, and then themes were evaluated for overall confidence based on four components, using the Confidence in the Evidence for Reviews of Qualitative Research.

Results: One quantitative and four qualitative articles were identified, all of which targeted physicians. Five themes – Personal/family matters, Community factors, Professional practice factors, Professional education factors and Economic factors – were generated in two domains, recruitment and retention. Forty major codes were generated through axial coding of open codes. Codes included attraction to rural lifestyle, recreational activities, Scope of practice, rural training and incentives. Scope of practice was deemed very important as a factor of recruitment, as was attraction to rural lifestyle. Incentives were found to be of little importance in influencing the recruitment of healthcare professionals, and even less important for retention.

Conclusion: Wide scope of practice and attraction to the rural lifestyle were considered the most important for recruitment and to a lesser extent, retention, among the five papers studied. A lack of research was determined in the realm of factors influencing the recruitment and retention in healthcare professionals other than medical doctors in Canada. Therefore, it is recommended that further such studies investigate specific healthcare professionals.

Keywords: Canada, primary care, recruitment, retention, rural health services

Résumé

Introduction: Cette revue de synthèse se penche sur un enjeu pertinent pour les professionnels de la santé et les recruteurs; quels sont les facteurs les plus importants du recrutement et de la rétention de ces professionnels en pratique rurale au

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Canada? La recherche actuelle se concentre sur des populations ou des facteurs précis. La présente revue de synthèse étudie de multiples facteurs ainsi qu'une vaste population de professionnels de la santé, y compris chiropraticiens, ostéopathes, dentistes et physiothérapeutes.

Méthodologie: Une recherche a été effectuée dans 4 banques de données de publications scientifiques. On a extrait les données des études incluses, et on a effectué une analyse thématique des constatations pertinentes. La qualité de chaque étude a été évaluée, puis les thèmes, à l'aide de la méthode CERQual (*Confidence in the Evidence for Reviews of Qualitative Research*) pour leur confiance générale en fonction de 4 éléments.

Résultats: Un article quantitatif et quatre articles qualitatifs ont été relevés, et ils ciblaient tous les médecins. Cinq thèmes, soit affaires personnelles ou familiales, facteurs communautaires, facteurs liés à la pratique professionnelle, facteurs liés à l'éducation professionnelle et facteurs économiques, ont été générés dans les domaines du recrutement et de la rétention. Quarante codes majeurs ont été générés par codage axial des codes ouverts. Ces codes étaient attirance pour le mode de vie rural, activités récréatives, champ de pratique, formation rurale et incitatifs. Le champ de pratique a été jugé être un facteur très important du recrutement, tout comme l'attraction pour le mode de vie rural. Les incitatifs se sont révélés avoir peu d'influence sur le recrutement des professionnels de la santé, et encore moins sur la rétention.

Conclusion: Dans les cinq articles à l'étude, un large champ de pratique et l'attraction pour le mode de vie rural étaient considérés être les facteurs les plus importants du recrutement et, dans une moindre mesure, de la rétention. On a déterminé que la recherche était insuffisante dans le domaine des facteurs qui influent sur le recrutement et la rétention des professionnels de la santé autres que les médecins au Canada. Il est donc recommandé d'effectuer d'autres recherches sur des professions médicales précises.

Mots-clés: Canada, soins de première ligne, recrutement, rétention, service de santé ruraux

INTRODUCTION

The World Health Organization encourages the establishment of sustainable health systems and promotes retention of health workers in underserved areas.¹ Although Canada does not have the shortage of health workers that some developing countries demonstrate, the rural health system may not be sustainable. To transform this shortage into a sustainable structure, recruitment and retention strategies should be evaluated. Multiple factors influence the recruitment and retention of health-workers in rural Canada, including personal, economic, professional, education, family and community.^{2,3} Previous research focused on specific elements.⁴⁻⁷ This review aimed to conduct a broader synthesis by reviewing multiple factors of recruitment and retention.

METHODS

Search strategy

Subject-specific electronic databases including PubMed, Medline Complete, Index of Chiropractic Literature and Cochrane Library were searched. Hand-searching and "snowballing" were performed. Key

terms were combined with Subject Heading Terms, relating to recruitment, retention and healthcare professionals. Study selection was pre-determined by using inclusion and exclusion criteria and was screened for eligibility accordingly. Both qualitative and quantitative papers were eligible [Table 1]. Only English language primary research conducted in Canada was included. Studies were chosen if they investigated multiple factors affecting recruitment and retention. Exclusively Francophone and Indigenous culture-specific studies were dismissed, as they may not be

Table 1: Inclusion/exclusion criteria

Inclusion criteria	Exclusion criteria
Primary research	Exclusively francophone studies
Qualitative papers	Exclusively indigenous culture studies
Quantitative papers	Studies exploring a single factor affecting recruitment and/or retention
English language	
Research conducted in Canada	
Healthcare professionals with diagnostic capabilities practicing in rural Canada	
All age groups, genders, career stages, specialisations	

generalisable. Study participants were healthcare professionals with diagnostic capabilities such as medical doctors, chiropractors, dentists, osteopaths and physiotherapists practising in rural Canada. All age groups, genders and career stages were considered applicable. Specialisation was not an exclusion criterion.

Data extraction, quality appraisal and synthesis

Study and participant characteristics were extracted and tabulated [Table 2]. An inclusive extraction of findings was conducted and analysed using thematic analysis. Concepts were combined, resulting in the axial coding of open codes. Themes, sub-themes, major and minor codes were generated. Major codes represented the factors influencing recruitment and retention. Minor codes were the individual impact of these factors on recruitment and retention, respectively. These were scored high or low, based on frequency, prevalence in text and description of importance.

Overall study quality was judged using a combination of critical appraisal checklists,

assessment of bias and limitations of study and participant characteristics.^{8,9} Themes were assessed for overall confidence using the Confidence in the Evidence for Reviews of Qualitative Research (CERQual) approach.¹⁰ Each theme was assessed based on methodological limitations, relevance, coherence and adequacy of data. A final table was developed summarising the CERQual assessments [Tables 3 and 4].

RESULTS

Study selection

A total of 139 papers underwent a screening process. After 28 duplicates were removed, 111 papers remained. A further 102 studies were excluded based on title/abstract screening and inclusive and exclusive criteria [Table 1]. A full text assessment led to the rejection of four papers. One of these papers focused on a culturally specific cohort, and the remaining three addressed specific factors. Five papers fit the review's pre-determined inclusion and exclusion criteria^{2,3,5-7} [Figure 1].

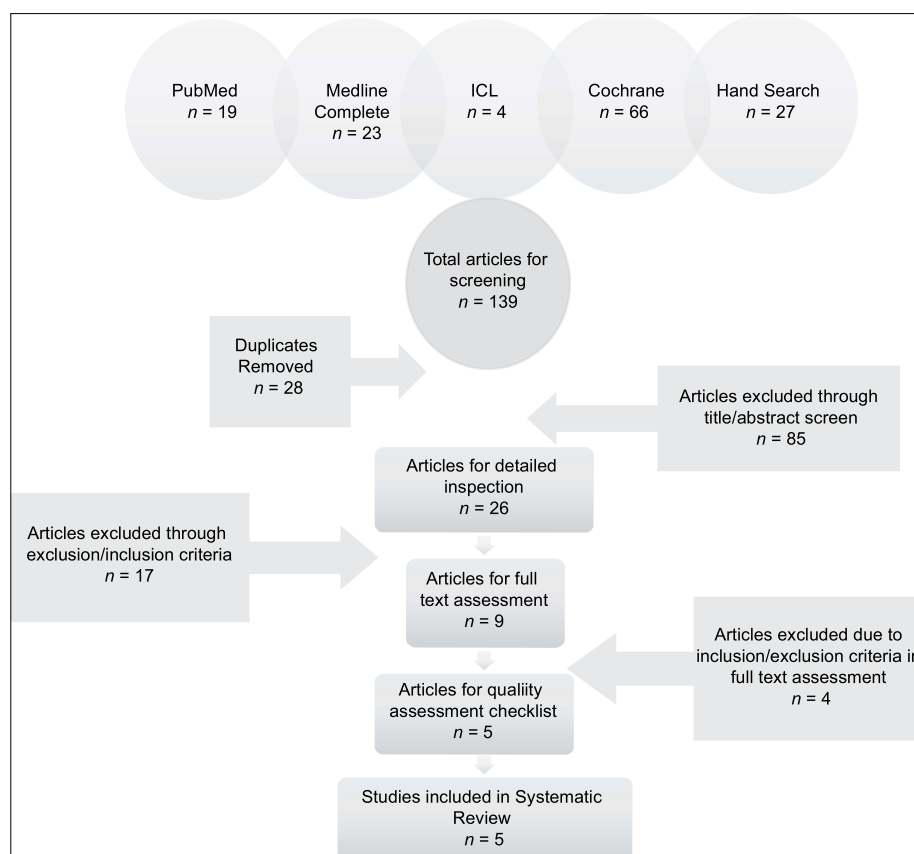


Figure 1: PRISMA diagram.

Table 2: Study characteristics

Study	Aim	Design	Location	Sample size	Analysis	Findings	Participant characteristics
2	Explore reasons, through qualitative analysis, why Canadian family physicians decide to work in rural and remote communities	Qualitative Participatory research approach Semi-structured interview	Canada	17	Thematic analysis	Attractive and deterring factors, strategies for improving recruitment and retention	Rural family physicians in Canada (West, East, North, Quebec) Experience as a family physician in a rural (population <10,000) or remote area (no road access, hospital >6 h away) Early - (<5 years), mid - (5-15 years), and late - (>15 years) career physicians
3	Determine factors which motivate physicians to select rural practice and result in long term retention	Qualitative Standardised, direct interviews	Saskatchewan	62	Inductive analysis	Community, personal, practice, compensation factors	Physicians practicing in rural Saskatchewan
5	Examine the implications of personal, professional, and community factors on physician retention in four rural Albertan communities	Qualitative Collective case study Interviews, documents, observation	Alberta	43	Not stated	Professional, personal, community factors	4 communities, 1-4 h from nearest urban centre Physicians, Staff Members, Spouses, Community members Mean age of physicians: 46.0 Mean age of other participants: 47.5 Duration of practice ranged from 4-30+ years 7/15 physicians Canadian born
6	Find recruitment strategies and improve physician retention, especially in younger physicians	Qualitative Semi-structured interviews	Saskatchewan, Newfoundland and Labrador	48	Thematic analysis	Personal/family, professional practice, education, economic, community factors	Physicians graduating from Memorial University of Newfoundland or University of Saskatchewan Early - (1995-1999), mid - (1985-1989), late - (1975-1979), end - (1965-1969) career physicians
7	Assess national trends of migration from rural to urban areas and how to reduce this flow	Quantitative Cross-sectional survey	Canada	642	Descriptive statistics	Incentive, recruitment factors, current personal and professional satisfaction, rural training	Physicians in rural practice in Canada Physicians grouped into aged ≤45 years, and >45 years

Study characteristics

Four qualitative studies and one quantitative study were identified.^{2,3,5-7} All studies examined

physicians who were in rural practice. There were no studies involving other healthcare professionals that fit our criteria. The physicians in these studies either practised family medicine

Table 3: Confidence in the Evidence for Reviews of Qualitative Research Qualitative Evidence Profile - Recruitment

Objective: To identify, appraise and synthesise qualitative research evidence on the factors which influence the recruitment of healthcare professionals in rural Canada							
RF	Studies contributing to the RF	Assessment of methodological limitations	Assessment of relevance	Assessment of coherence	Assessment of adequacy	Overall CERQual assessment of confidence	Explanation of judgment
Personal and family factors	Studies 2, 3, 6	Minor methodological limitations (two studies with minor and one study with moderate methodological limitations)	Minor concerns about relevance (one study was from two provinces, one study was from one province, one study was Canada wide)	Moderate concerns about coherence (one factor had 3/3 studies, three factors had 2/3 studies, five factors had 1/3 studies)	Minor concerns about adequacy (three studies that together offered moderately rich data overall)	Moderate confidence	This finding was graded as moderate confidence because of minor concerns regarding methodological limitations and adequacy, and moderate concerns regarding relevance and coherence
Community factors	Studies 2, 3, 6	Minor methodological limitations (two studies with minor and one study with moderate methodological limitations)	Minor concerns about relevance (one study was from two provinces, one study was from one province, one study was Canada wide)	Moderate concerns about coherence (two factors had 2/3 studies, six factors had 1/3 studies)	Minor concerns about adequacy (three studies that together offered moderately rich data overall)	Moderate confidence	This finding was graded as moderate confidence because of minor concerns regarding methodological limitations and adequacy, and moderate concerns regarding relevance and coherence
Professional practice factors	Studies 2, 3, 6	Minor methodological limitations (two studies with minor and one study with moderate methodological limitations)	Minor concerns about relevance (one study was from two provinces, one study was from one province, one study was Canada wide)	Moderate concerns about coherence (one factor had 3/3 studies, five factors had 1/3 studies)	Minor concerns about adequacy (three studies that together offered moderately rich data overall)	Moderate confidence	This finding was graded as moderate confidence because of minor concerns regarding methodological limitations and adequacy, and moderate concerns regarding relevance and coherence
Professional education factors	Studies 2, 6	Minor-moderate methodological limitations (one study with moderate and one study with minor methodological limitations)	Minor concerns about relevance (one study was from two provinces, one study was Canada wide)	Minor concerns about coherence (one factor had 2/2 studies, one factor had 1/2 studies)	Minor concerns about adequacy (two studies that together offered rich data overall)	High confidence	This finding was graded as high confidence because of minor concerns regarding relevance, coherence and adequacy of data, and minor-moderate methodological limitations
Economic factors	Studies 2, 3, 6	Minor methodological limitations (two studies with minor and one study with moderate methodological limitations)	Minor concerns about relevance (one study was from two provinces, one study was from one province, one study was Canada wide)	Minor concerns about coherence (one factor had 3/3 studies, one factor had 1/3 studies)	Minor concerns about adequacy (three studies that together offered moderately rich data overall)	High confidence	This finding was graded as high confidence because of minor concerns regarding methodological limitations, coherence and adequacy, and minor concerns regarding relevance

RF: Review finding, CERQual: Confidence in the Evidence for Reviews of Qualitative Research.

Table 4: Confidence in the Evidence for Reviews of Qualitative Research Qualitative Evidence Profile - Retention

Objective: To identify, appraise and synthesise qualitative research evidence on the factors which influence the retention of healthcare professionals in rural Canada

RF	Studies contributing to the RF	Assessment of methodological limitations	Assessment of relevance	Assessment of coherence	Assessment of adequacy	Overall CERQual assessment of confidence	Explanation of judgment
Personal and family factors	Studies 2, 3, 5	Minor methodological limitations (two studies with minor and one study with no methodological limitations)	Minor concerns about relevance (two studies were from individual provinces in Canada, one study was Canada wide)	Moderate concerns about coherence (one factor had 2/3 studies, eight factors had 1/3 studies)	Minor concerns about adequacy (three studies that together offered moderately rich data overall)	Moderate confidence	This finding was graded as moderate confidence because of minor concerns regarding methodological limitations, relevance, and adequacy of data, and moderate concerns regarding coherence
Community factors	Studies 3, 5	Minor methodological limitations (one study with minor and one study with no methodological limitations)	Moderate concerns about relevance (two studies were from individual provinces in Canada)	Minor concerns about coherence (four factors had 2/2 studies, two factors had 1/2 studies)	Moderate concerns about adequacy (two studies that together offered relatively thin data overall)	Moderate confidence	This finding was graded as moderate confidence because of minor concerns regarding methodological limitations and coherence, and moderate concerns regarding relevance and adequacy of data
Professional practice factors	Studies 2, 3, 5	Minor methodological limitations (two studies with minor and one study with no methodological limitations)	Minor concerns about relevance (two studies were from individual provinces in Canada, one study was Canada wide)	Moderate concerns about coherence (three factors had 2/3 studies, seven factors had 1/3 studies)	Moderate concerns about adequacy (three studies that together offered thin data overall)	Moderate confidence	This finding was graded as moderate confidence because of minor concerns regarding methodological limitations and relevance, and moderate concerns regarding coherence and adequacy of data

Contd...

Table 4: Contd...

Objective: To identify, appraise and synthesise qualitative research evidence on the factors which influence the retention of healthcare professionals in rural Canada							
RF	Studies contributing to the RF	Assessment of methodological limitations	Assessment of relevance	Assessment of coherence	Assessment of adequacy	Overall CERQual assessment of confidence	Explanation of judgment
Professional education factors	Study 2	Minor methodological limitations (one study with minor methodological limitations)	No concerns about relevance (study performed was the first Canada wide qualitative study)	Substantial concern about coherence (RF only present in one study)	Substantial concerns about adequacy (only one study offering thin data)	Low confidence	This finding was graded as low confidence because of minor concerns regarding methodological limitations, no concerns about relevance, and substantial concerns about coherence and adequacy of data
Economic factors	Studies 2, 3	Minor methodological limitations (two studies with minor methodological limitations)	Minor concerns about relevance (one study was from an individual province in Canada, one study was Canada wide)	No concerns about coherence (one factor had 2/2 studies)	Moderate concerns about adequacy (two studies that together offered moderately rich data overall)	High confidence	This finding was graded as high confidence because of minor concerns regarding methodological limitations, relevance, and no concerns regarding coherence, and moderate concerns regarding adequacy of data

RF: Review finding, CERQual: Confidence in the Evidence for Reviews of Qualitative Research.

or had specialised. The qualitative studies used varied, with three studies using pre-determined questions to interview their subjects^{2,5,6} and one basing their method on the grounded theory.³ Two qualitative studies assessed both recruitment and retention,^{2,3} one explored factors of recruitment,⁶ with one focused on retention.⁵ Cameron *et al.* also interviewed, observed and retrieved information from staff members, spouses and community members.⁵ The quantitative study by Chauban *et al.* included both recruitment and retention in their survey.⁷ The quantitative study contained the largest sample size, surveying 642 participants.⁷ The analysis varied among papers. Descriptive text, numerical ranking and percentages and the number of communities out of four were used.

Synthesis of results

A total of 40 factors influencing recruitment and retention were allocated to 5 common themes, across 2 domains. There were 13 professional practice factors, 12 personal and family factors, 10 community factors, 3 professional education factors and 2 economic factors. The factors either had an impact on recruitment, retention or both. Tables 5-9 illustrate examples of the overlap of common factors among papers and list the weighting of importance of each paper in their respective outcome measurements.

Personal/family factors

Attraction to the rural lifestyle was one of the main factors deemed important for recruitment. It was

Table 5: Professional practice factors in recruitment

Factors	Study	Additional Information
Scope of practice	3	First most prevalent theme for recruitment. The frequency of this response as an important factor of recruitment was notable; 21 of 62 respondents answered “scope of practice”
	7	Young: #1, 86%
		Older: #1, 83%
	6	Not specified
	2	Not specified
Work schedule/hours of work	3	Fifteenth most prevalent theme for recruitment. Seven of 62 respondents answered, “work schedule/hours of work”
Positive work environment/physician dynamics	3	Tenth most prevalent theme for recruitment; 16% of respondents answered “positive work environment/physician dynamics”
Group practice	3	Ninth most prevalent factor (16% respondent choice)
Independence	3	Sixteen most prevalent factor. 11% frequency of answer
Practice opportunity was available	7	Young: #4, 73%
		Older: #4, 77%
Preference for rural practice	7	Young: #3, 79%
		Older: #3, 79%
Feeling appreciated by patients	3	Eleven most prevalent answer. 16% frequency of answer

Table 6: Personal/family factors recruitment

Factors	Study	Additional information
Rural background (physician)	3	Third most important factor for recruitment. 21% of respondents answered this
	2	Not specified
Rural background (spouse)	3	Thirteenth most important factor, 13% of respondents selected this factor
Attracted to rural lifestyle	7	Young: #2, 83%
		Older: #2, 81%
	3	Second most important factor of recruitment in the personal/family realm. 27% frequency of answer
	2	Not specified
Friends and family living in the area	3	Sixth most prevalent factor. 18% frequency of answer
	7	Young: #8, 49%
		Older: #8, 40%
	6	Most important factor of recruitment for this study
Spouse/family enjoy the community	3	Fourteenth most important factor for this study. 13% of respondents found this factor to be key in recruitment
Grew up/previously lived in specific community (physician or spouse)	3	Fourth most important. Near one-fifth of the study's respondents voiced the importance of this factor
Work/life balance	6	Important for younger generation primarily
Spouse found employment	3	Fourteenth most important factor for this study. 13% frequency of answer
	2	Not specified
	6	Important for younger generation primarily
Adventure/seeing new places	6	Important for older generation primarily

the second most influential recruitment factor for both the study by Chauban *et al.* and Wasko *et al.*^{3,7} Eighty-three per cent of the younger physicians, compared to 81% of older physicians, considered liking the rural lifestyle as an important factor

for recruitment.⁷ This factor was also important for retention, with Wasko *et al.* ranking it fifth of twenty factors investigated.³ However, in comparison to recruitment, it was less influential, which was a common pattern among papers.

Table 7: Community factors' recruitment

Factors	Study	Additional information
Feeling appreciated by the community	3	Twelfth most important factor. 13% of respondents marked this factor as important
Recreational/leisure activities	3	Fifth most important community factors affecting recruitment. Near 1/5 of the respondents marked this factor as important
	7	Young: #6, 71%
		Older: #6, 60%
	6	Not specified
Integration and enjoyment of the community	3	Eighth most important factor. 16% of respondents selected this answer
Medical need of the community	6	Important for older generation primarily
Regional support	3	5% of study participants found regional support to be an important community factor for recruitment. It placed 20 th in the ranking of importance
Education system	3	Nineteenth most important factor. 6% of respondents marked this factor as important
community needs are a good match with my career interests	7	Young: #5, 73%
		Older: #5, 70%
Proximity to larger centre	3	Seventh most important. 16% frequency of answer
	2	Distance from large centres seen as a negative factor
Recruitment strategies	6	Not specified

Table 8: Professional education factors recruitment

Factors	Study	Additional information
Rural training site	6	Not specified
	2	Not specified
Rural experience in training/rotations	7	Young: #7, 71%
		Older: #7, 40%
	2	Mentioned multiple times

Community factors

Recreational and leisure activities were nearly equal in importance for recruitment and retention. According to Asghari *et al.*, "those who enjoyed nature and being outdoors found rural practice to be attractive."² Wasko *et al.* ranked its importance as #5.³ By frequency, 71% of younger physicians and 60% of older physicians in the study by Chauban *et al.* mentioned this.⁷ Four of 4 communities in Cameron *et al.*'s study found this important as a factor of retention.⁵

Professional practice factors

The most frequently mentioned factor was scope of practice, appearing in each paper either under recruitment, retention or both. In terms of recruitment, this factor overlapped in four studies.

Two papers listed this as their most influential factor. In the study by Chauban *et al.*, 86% of young physicians and 83% of older physicians found this important.⁷ Of twenty total factors that Wasko *et al.* looked at for retention, the ability to practice full-scope medicine was the second most important.³

Professional education factors

In one study, rural experience in training ranked as the seventh most important for recruitment in both younger and older generation practitioners.⁷ Seventy-one per cent of younger physicians rated this factor positively with regards to recruitment, compared to 40% of older physicians. The higher percentage of rural rotations and experience in training in the younger generation also correlated with a higher satisfaction with their preparedness for rural practice. Physicians who had completed rural rotations were more likely to have received incentives. They also listed preference for rural practice as their most influential factor for choosing rural practice. On the contrary, those physicians who had not completed rural rotations noted the wide scope of practice as their primary reason.² Continuing professional development was mentioned multiple times as a factor for retention.

Table 9: Economic factors recruitment

Factors	Study	Additional information
Incentive/bonuses	3	Eighteenth most important factor. 8% frequency of answer
	7	Financial incentives Young: #9, 49% Older: #9, 32% Other non-financial incentives Young: #10, 36% Older: #10, 22%
	2	Some disagreement regarding effectiveness of incentives
	3	20 th most important economic factor for recruitment. 5% of respondents indicated this factor to be important in recruitment
	2	States that incentive is not important for retention
	7	Young: #4, 73% Older: #4, 77%
Adequate amount/mode of remuneration	6	Not specified

Economic factors

Four of the papers rated incentives (financial and/or non-financial) as not effective in recruiting healthcare professionals. Eight per cent of participants in the study by Wasko *et al.* noted the benefit of bonuses or incentives for recruitment.⁵ While Asghari *et al.* found disagreement on the effectiveness of incentives for recruitment, they stated that incentives were even less influential on retention.² Wasko *et al.*'s economic factor findings were similar to those of the above mentioned study, with incentives being their least important factor for retention.³ Incentives were of greater importance to younger versus older physicians.⁷

DISCUSSION

This review aimed to explore the most important factors in the recruitment and retention of healthcare professionals in rural practice in Canada. Five eligible studies were included, and 40 factors were identified across the 2 domains of recruitment and retention. This systematic

review of the literature determined attraction to the rural lifestyle, recreational activities, scope of practice, rural training and incentives as discussion worthy.

Personal and family

A prominent influencer with regard to personal and family factors is attraction to the rural lifestyle. This can be very difficult to manage from a recruitment point of view since it is personal preference. Advertisement campaigns such as Travel Alberta's "Remember to Breathe," can be crucial in promoting the attractiveness of a certain location.¹¹ Government-endorsed campaigns are another strategy to promote the advantages of rural lifestyle.¹²

Community

The availability and quality of recreational activities in rural areas is an important community-based factor for both recruitment and retention of physicians. Canadians are known to have an affinity for the outdoors.¹³ Three of four households disclosed a family member participating in outdoor activities close to home.¹⁴ Health professionals, who are aware of the benefits of exercise, will be even more likely to engage in outdoor activities, making recruitment and retention an ideal match for this population.

Professional practice

In terms of recruitment, factors of professional practice were considered very important in this review, especially scope of practice. As a general physician in rural areas, additional skills must be enhanced. These areas of medicine include general anaesthesia and surgery.¹⁵ Wasko *et al.* state: "it is in a rural setting that full-scope family medicine is most often practised."³ Specialists, on the other hand, found rural practice patient populations simply too small to support a practice. This is reflected by the Canadian Medical Association (CMA), which states that in 2015, 14% of Canada's family physicians practised in rural locations, compared to only 2% of the specialists.¹⁶ Specialisation and sub-specialisation is a growing trend among medical students.¹⁷ This poses the risk of more new graduates congregating in urban

centres, which could create a surplus in these areas and increase the shortage in rural locations.

Professional education

Our review also explored the impact of professional education, such as rural training, on recruitment. Based on the pattern identified by Chauban *et al.*, one can devise that many of the participants of papers in this review did not have rural training.⁷ Scope of practice being the number one factor for recruitment in our review may not be entirely accurate, as it depends on the participant characteristics that were not mentioned by some of the examined studies.

Though our review found incentives to have a minimal effect on retention, strategies encouraging this are still in place. For example, Alberta has a Retention Benefit Program which offers payments for each year in practice.¹⁸ Incentives had varying degrees of influence on differing participant ages.

Economic

Economic factors were a largely debated finding. Younger physicians were far more likely to find incentives very, or somewhat, important. This may be due to the higher costs of medical school tuition in recent years, leading to a greater need of financial support during their early careers to alleviate their student debt.⁷ According to the Graduation Questionnaire National Report, the median amount of debt accumulated directly from medical studies was \$94,000.¹⁹ In addition, rural-origin students are more likely to have a higher debt load on entry to medical school, due to the necessary added costs of living away from home.²⁰

“The increasing cost of medical education and student debt may decrease physicians’ interest in rural practice, leading them to choose a more lucrative urban medical specialty.”²¹ Indeed, Canadian family physicians received an average gross of \$253,683. Medical specialists however, averaged \$349,039.²²

Bias, limitations and strengths

The factors discussed within our review were but a small sample of the reasons why practitioners choose rural practice. The raw numerical data

extracted can be used for further interpretation of correlations.

Each study used their own unique pool of questions. Asghari *et al.* minimised question bias using the Delphi method to reach consensus regarding interview questions.² They piloted the interview on two rural physicians. The other studies did not mention whether they had accounted for question bias. Misunderstood or unanswerable question bias could have occurred in any of the studies, especially in studies researching older generation physicians, where recall bias could appear. Biased reporting was mentioned as a limitation in Wasko *et al.*³ The halo effect may have been present in studies that examined financial factors, such as incentives or remuneration.²³ Physicians may have been reluctant to report on the importance of or role of financial factors. Moderation bias may have been present in the study by Wasko *et al.* since students and residents with a lower educational rank and inexperience in questioning were the interviewers.³ External validity may have been affected simply by participant involvement in the survey, when participants realised their role in the study, known as the Hawthorne effect.²⁴

Due to the heterogeneous outcome measures among the studies, a comparison of the importance of individual factors was difficult. Choosing one representative example of each theme, based on their importance or frequency of appearing in the studies, may have created outcome and reporter bias, influencing the validity of the review. Using only four databases, important studies may have been missed. However, the exploratory and explanatory data design, which combined both qualitative and quantitative data, improved study reliability. The mixed methods approach provided a holistic view of the research topic.

The overall level of evidence gathered in our review, taking both the articles’ and review’s strengths and limitations into account, is moderately high. Although the studies had minor flaws individually, the results still demonstrated a commonality. Therefore, recommendations could be derived from the data.

Recommendations

Based on the literature, the following recommendations can be established. The

effectiveness of retention-benefit programs should be questioned. The connection between rural experience in training and the likelihood of choosing rural practice, should be thoroughly explored. Further exploration of the link between the amount of student debt and the preference of financial incentives for recruitment should be conducted.

Although this systematic review sought to explore factors influencing healthcare professions, no published study looking at additional healthcare professions was found. Thus, the papers in this review, as well as the results, were based solely on physicians with medical training. There is need for further research looking at specific healthcare professionals to gain a deeper understanding of this subject area.

CONCLUSION

The ability to practice full-scope medicine was the most important factor in terms of physician recruitment, and to a lesser extent, retention, among the five articles studied. Attraction to the rural lifestyle was also considered important in these realms, but to a slightly lesser extent compared to scope of practice. Our review found a lack of research in terms of factors of recruitment and retention in non-physician healthcare professionals in rural Canada. Further research is recommended in this realm.

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