

**The Rural Incentive: Why Do Physician Assistants
Choose to Work in Rural Medicine and What Makes
Them Stay?**

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Abstract

Introduction: Access to healthcare in rural and underserved communities has been a longstanding concern in the Manitoba healthcare system. One way to help alleviate this shortage may be the use of physician assistants in rural communities. Currently 24% of University of Manitoba MPAS graduates practice in rural locations.

Objective: The purpose of this review was to identify the benefits and difficulties of physician assistant practice in rural locations in order to understand how rural communities in Manitoba can maximize the recruitment and retention of physician assistants.

Methods: A comprehensive review of online databases Embase, PubMed, Google Scholar and Medline for survey and questionnaire based studies of physician assistants. Five American articles were identified and analyzed.

Results: Rural physician assistants identified increased autonomy, wider scope of practice and good supervising physician relationships as reasons why they choose rural practice. Community factors such as recreational and cultural amenities, desire for rural living and working in an underserved community were also influential. Increased workload, long hours and salary were identified as difficulties.

Conclusion: Rural health employers in Manitoba looking to recruit physician assistants should highlight the benefits of working rurally such as more autonomy and more varied job duties as well as the community specific amenities and attractions. Employers should also address the difficulties such as workload and hours in order to increase retention in the long run.

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Introduction

One of the longstanding concerns of the Canadian medical community has been access to health care in rural and medically underserved communities. Many initiatives have been undertaken in order to increase accessibility to quality medical services in these areas. For example, the Government of Canada provides student loan forgiveness for primary care physicians, nurses and nurse practitioners opting to practice in rural locations for a certain amount of time¹. Another example is the International Medical Graduates (IMG) return of service program in rural and northern Manitoba offered by the University of Manitoba². This program allows IMGs the opportunity to practice medicine in underserved communities in Manitoba². The goal of these initiatives is to encourage more physicians and healthcare providers to choose rural practice but still the discrepancy between health care in urban and rural communities persists. In 2013, Manitoba had 1,364 family physicians throughout the province, for a total of about 108 family physicians per 100,000 residents³. Manitoba is a province with only one large urban centre and only a handful of larger rural communities scattered across a large geographical area, therefore the need is great for improved rural health care services especially in Northern Manitoba. One proposed solution to the primary care shortage in rural communities in Manitoba is the utilization of physician assistants in rural health care to extend the services provided by physicians.

History of Physician Assistants

Physician assistants (PA) are a relatively new addition to the civilian Canadian healthcare system though they have a longstanding history in the American healthcare system and the Canadian military⁴. PAs are medical professionals trained in the medical model to work within a formalized relationship with physicians to provide quality healthcare in a wide variety of specialties⁵. PAs are trained to perform medical histories and physical exams, order diagnostic tests and interpret results, diagnose medical conditions, prescribe medications and educate patients⁵. PAs practice team-based medicine with many different healthcare professionals to provide an inter-professional and holistic approach to patient care⁵.

PAs were first introduced in Canada about 40 years ago by the Canadian Armed Forces but are now found across Canada in all medical specialties from primary care to surgery to emergency medicine⁴. In Manitoba, PAs have been regulated since 1999 and the first licensed PA began working in Manitoba in 2003 (3). Currently, there are about 80 PAs practicing in Manitoba with all hospitals in Winnipeg employing PAs and multiple rural sites employing 1-2 PAs each⁶. About 24% of all University of Manitoba MPAS graduates choose to work in rural locations⁶. As of March 2016, PAs are not eligible for the Canada Student Loan forgiveness program¹, therefore there must be other incentives for PAs to work in rural communities which this review will evaluate.

Rural Physician Assistants in the United States

In 2013, the annual survey of the American Association of Physician Assistants (AAPA) revealed that about 12% of about 93,000 PAs work rurally and 77% of all rural PAs work in a primary care setting which includes specialties such as family medicine, general internal medicine and pediatrics⁷. On the other hand, only 32% of urban PAs work in a primary care setting and among all PAs working in primary care about 22% work in rural areas⁷.

There have been several studies conducted in the United States focused on determining the perceived incentives and barriers by rural physicians for the employment of PAs in rural health care. One such study, conducted by Isberner et al (2003), distributed surveys to rural family physicians in Illinois in order to determine the attitudes and experiences of rural physicians towards PAs. This study found that the overall response of the rural family physicians was very positive towards PAs. Interestingly, this study also determined that physicians less receptive to PAs had much less experience working with PAs in the past, 34.5% had no experience whatsoever working with a PA as opposed to only 1.7% receptive physicians⁸. It was also found that 75.9% of all PA receptive physicians had experience with PAs in their current practice while only 25.9% of unreceptive physicians employed a PA in their current practice⁸. Several incentives for hiring a PA were identified such as reducing patient wait times for appointments, increasing patient satisfaction and permitting more patient education and counselling⁸. Unreceptive physicians also identified constraints to the utilization of PAs in their practice such as patient opposition, increased malpractice risk, unclear PA scope of practice and patient continuity of care lost⁸. The most highly cited reason by both receptive and unreceptive physicians for not employing PAs in rural practice is patient opposition yet more than two-

thirds of receptive physicians in this study also cited increased patient satisfaction as an incentive for employing a PA in their practice⁸. These views illustrate the need to better understand the patient perspective of PAs and the role they play in healthcare.

Another question often posed is the quantity and quality of services provided by physician assistants in rural communities as compared to physicians. This is important to consider as the trend of employing more PAs in rural communities increases. A study by Doescher et al (2014) distributed surveys to rural physicians, physician assistants and nurse practitioners in 13 different states in order to address this question. They found that compared to physicians, PAs saw 8% fewer patients per week which became negligible once a multivariate adjustment was applied⁹. Physicians saw an average of 84.6 outpatient visits per week while the PAs saw an average 78.1 visits⁹. It must be noted that physicians spent on average 39.1 hours per week in outpatient care while PAs spent 39.0 hours⁹. While physicians may be seeing more patients per week, physicians and PAs are spending about the same amount of time per week in direct outpatient care. The major difference between physician and PA care were services provided beyond the clinic such as after hour call (81.3% of physicians surveyed but only 32.7% of PAs) and attending deliveries (26.7% of physicians and 1.7% of PAs)⁹. This study demonstrated that while physicians may provide more out of clinic services, PAs are providing very similar numbers of patient clinic visits and patient care hours to physicians in rural communities.

A Canadian Perspective

A study by Doan et al (2012) was conducted in Vancouver, British Columbia to determine the willingness of Canadian patients to receive care provided by physician assistants. They discovered that participants in this study, all of whom had been previously unaware of physician assistants and their role, would be willing to receive care for themselves and their children in cases of minor injuries. When given the option to wait four hours to see the physician or two hours to see the PA, 86% of participants opted to see the PA in hypothetical scenarios of personal injury¹⁰. As the wait times to see the PA were decreased to 30 minutes, 99% of participants choose to see the PA over waiting to see the physician¹⁰. In scenarios involving their children, 67% of participants opted to see the PA with a wait time of 2 hours as opposed to waiting 4 hours to see the physician¹⁰. Once the wait time to see the PA was decreased to 30 minutes, 96% of participants opted to have the PA care for their child¹⁰. This study suggests that Canadians are willing to receive acute but non-urgent care from a PA for themselves and their family. This study does have its limits as the sample size was quite small and limited to one Canadian hospital, therefore it is not representative of the country as a whole. Bohm et al (2010) found that orthopedic surgery patients in Winnipeg, Manitoba also had very positive opinions of PAs. 91.3% of hip surgery patients and 87.7% of knee surgery patients were satisfied or very satisfied with the care provided by PAs¹¹. 96% of patients surveyed agreed with the statement "I think PAs are a good idea" while 92% viewed PAs as important team members on the ward¹¹. These early studies help to answer the question of whether Canadians would be opposed to receiving care from PAs as is often cited in American literature as a barrier to the utilization of PAs.

Objective

The purpose of this project is to determine factors that encourage or deter the employment of PAs in rural and underserved communities as viewed by PAs practicing in rural communities. By understanding the potential incentives and barriers to employing PAs in rural and underserved areas, education regarding the benefits and difficulties of PA employment in rural communities can be targeted to peak interest in students considering rural opportunities. It is important to remember that rural PA employment is a two-way street, there must be interest from the physician and regional health authority as well as interest on the part of physician assistants to work in these areas. This review also aims to determine the incentives that rural physicians and health authorities may wish to highlight about being a PA in rural practice in order to attract more PAs to work there. By identifying these benefits and difficulties, PAs inquiring into rural practice should be able to make more informed decisions. The objective of this review was to establish the factors influencing the recruitment and retention of physician assistants (PA) in rural health care in order to better understand how rural health care in Manitoba can maximize the recruitment of PAs.

Research Question

What are the factors that influence the recruitment and retention of physician assistants in rural practice locations in the United States and Canada?

Methods

A comprehensive review of the literature was performed to identify English-language articles published between the years 1995 to 2016. Multiple online databases were searched

including Embase, PubMed, Google Scholar and Medline. The mesh terms used were “physician assistant”, “rural”, “recruitment”, “retention” and “satisfaction” and they were entered in several different combinations which allowed for the identification of 40 articles. Inclusion criteria included articles containing original research material on the recruitment and retention of PAs in rural health care as viewed by rural PAs. Study types included were surveys, questionnaires and/or focus groups consisting of rural PAs. Any articles that grouped nurse practitioners and physician assistants in the same category as “midlevel providers” were excluded due to the inherent differences in the two roles and the impact that may have on views of the category as a whole.

A total of 5 of 40 articles were identified as fulfilling all the inclusion criteria for this literature review. These articles contained original research focused on the employment of PAs in rural health care as viewed by physician assistants, all within the context of the United States. The articles were all published between the years 1998-2016 with 4 of the 5 articles published after 2011. All five articles focused on why PAs choose to work in rural medicine and what brings them satisfaction in their work.

Results

One of the difficulties many rural locations experience is the recruitment and retention of healthcare providers in their communities. Whether it be physicians, nurses or physician assistants, many factors come into play when choosing to work in a rural location. Physician assistants are in a unique position when it comes to choosing rural practice due to the inherent differences between rural and urban healthcare and the influence this has on a PA’s scope of

practice and level of autonomy. Many factors come into play when discussing recruitment and retention of PAs in rural and underserved communities.

One of the earliest studies of the recruitment and retention of PAs in rural communities was published by Muus et al, in 1998. This study utilized a nation-wide survey distributed in two waves to both rural and urban PAs. Once the surveys were returned, PAs who self-identified as working in an urban environment were excluded leaving a total sample size of 1,263 PAs from across the United States¹². Both community satisfaction and job satisfaction were measured using separate scales. Factor analysis and multiple linear regression analyses were applied in order to determine significant relationships between the factors. There were many identified factors of job satisfaction determined to be statistically significant, namely the level of autonomy in rural work, varied duties and primary care practice¹². PAs working in a primary care practice, with higher levels of autonomy and more job variety were found to have higher job satisfaction than other rural PAs¹². This study also identified that rural PAs with no previous healthcare experience were more likely to have higher job satisfaction than those who had previously worked in healthcare¹². PAs who felt that they were respected by the local community were also more likely to be satisfied with their work¹². PAs placed less importance on their proximity to family and presence of other physician assistants¹². Previous research by Muus et al (1996) demonstrated that rural PAs were more likely to have higher levels of autonomy than their urban counterparts¹³. PAs looking for more autonomy in their practice may be more likely to choose rural practice than urban given the inherent differences between the two types of practice¹³. Other factors positively influencing PA job satisfaction in rural practice were a good relationship with their supervising physician and having a large

percentage of individual cases that did not need to be discussed with their supervising physician¹². This study was one of the first of its kind and helped to lay a solid foundation for future research in rural PA job satisfaction and retention.

A study by Coombs et al (2011) identified personal factors associated with PAs that choose to work in primary care in rural Utah. This study becomes increasingly relevant when it is revealed that Utah ranks last in the United States for the ratio of primary care physicians to population, an issue which makes the employment of PAs even more important¹⁴. The majority of respondents to the survey were between the ages of 31-40 (36.6%), male (60.6%) and had been in practice for less than 5 years (47.4%)¹⁴. The study found that while 45% of PAs in Utah practice in primary care only 14.7% of PAs practice in a rural location¹⁴. This study found that male PAs ($P=0.005$) and those with rural upbringings ($P=0.001$) were much more likely to practice rurally than their female and urban or suburban-raised counterparts¹⁴. Other factors that were suspected to influence the likelihood of rural practice such as age or years of practice were not significantly associated with the choice of rural practice. It was also found that female PAs were much less likely to practice in primary care than male PAs and those with urban upbringings were much more likely to practice primary care than those raised in rural and suburban communities ($P=0.008$)¹⁴.

Diemer et al. (2012) conducted an electronic survey of the membership of the Texas Association of Physician Assistants (TAPA) in order to examine the factors that influence PA graduates to choose a rural practice location for their first job. It was hypothesized that students from rural backgrounds and participating in rural clinic clerkships would have a positive relationship with choosing a rural practice. In this study, 29.1% of respondents began

their PA careers in communities with populations of less than 50,000 residents¹⁵. The majority of the respondents had participated in a rural clerkship (59.2%), were female (56.8%), graduated from PA school between the ages of 20-29 (52.9%) and had lived in a community of less than 50,000 for zero to five years prior to starting PA school¹⁵. Following statistical analysis, it was revealed that the relationship between participating in a rural clerkship and rural first practice was statistically significant¹⁵. Students who had participated in a rural clinical rotation were much more likely to begin their careers as PAs in rural practice versus their classmates who had no rural exposure (22.3% versus 6.8% respectively by a 3:1 ratio chose first practice as rural)¹⁵. It was also determined that PA students with a rural background defined as greater than 5 years of living in a rural community were more likely to choose rural as their first practice ($P=0.003$)¹⁵. The students most likely to choose rural practice were those who had spent the most amount of time living in rural communities (greater than 20 years) and those least likely to choose rural practice were the students who had lived the least amount of time in rural communities (less than 5 years)¹⁵. This study also aimed to identify factors that PAs identify as being influential towards choosing a rural location for their first practice. These factors were evaluated on a five-point Likert scale and respondents were asked to rate them with 5 being “strongly influential” and 1 being “not influential”. The mean was then calculated and the factors were ranked based on influential they were perceived to be by the respondents. The most highly ranked influential factor was serving the health needs of the community (mean=3.79) followed by supervising physician characteristics (mean=3.69), type of practice (mean=3.68) and desire to work in a small community (mean=3.27)¹⁵. It was also revealed that

educational facilities in the community (mean=2.00) and proximity to friends or family (mean=2.00) were chosen as having no influence on practice location choice¹⁵.

The 2012 study by Smith et al. also questioned what factors influence where PAs choose their first practice location. This study was conducted on the national level, with 2,000 surveys emailed to urban and rural PAs across the United States. 312 usable surveys were returned for a response rate of 16%. Significant demographic information identified included that PAs in specialty practices and were unmarried were much more likely to choose urban locations for their first practice¹⁶. Also, PAs who self-identified as graduating from rural high schools were more likely to choose rural first practice locations (66.7%) as opposed to those who graduated from urban high schools choosing rural practice (38.5%)¹⁶. After applying factor analysis, six significant factors were identified as influencing first practice location choice. The most influential major factor identified by this survey was “Support for significant other” which included items such as employment opportunities for significant others and quality of surrounding schools¹⁶. This factor was deemed most influential by older and married PAs. Rural communities may have fewer opportunities for spouses to work but may offer a more desirable environment for raising a family thus there is an important decision to make when choosing practice location. Another factor identified was hours worked and compensation which was deemed to be important by female PAs and those with graduate degrees¹⁶. As weekly work hours and required on call hours increased, female PAs were less likely to choose that practice. Next, it was found that male PAs placed more importance on community amenities such as recreational and cultural activities than their female counterparts¹⁶. Access to continuing medical education resources were deemed more important by males than females and had a

positive predictive value for job satisfaction¹⁶. Contrary to previous studies, participants in this study did not deem practice opportunities such as a wider scope of practice and level of responsibility to be important in practice location choice, regardless of gender¹⁶. Finally, this study found that proximity to family was a positive predictor of practice location choice for female participants but not males. Overall, this study helped to identify gender, age and upbringing differences in factors that influence first practice location choice which may provide valuable insight as to what job and community characteristics employers may choose to highlight depending on the applicant's individual characteristics.

Filipova (2014) conducted a cross-sectional study to determine the reasons why PAs are attracted to rural practice and why they choose to remain there. The study was conducted in a single American Midwestern state by distributing mail and online surveys to PAs in communities of less than 50,000 inhabitants. A total of 1,072 surveys were distributed and 440 were returned to the researchers. Twenty-six surveys were excluded due to being incomplete, empty or from PAs in practice communities of larger than 50,000. This produced a total sample of 414 surveys with a response rate of 39%. The main dependent variable for this study was job satisfaction which was measured using a 15-item survey measured on a 5-point scale from 1 (not satisfied) to 5 (very satisfied). The study postulated that job satisfaction for PAs in rural communities would be influenced by four main factors: job responsibilities, practice attributes, community factors and job importance. Study demographics found that the PAs in this study were mostly female (69.1%) and Caucasian (96.1%) with the majority of PAs being between the ages of 25 and 44 (55.1%)¹⁷. The largest specialty was found to be family medicine (38.4%) followed by surgery (14.9%) and internal medicine (7.5%). Through analysis of job satisfaction

factors, it was found that PAs in rural communities were most satisfied with the community satisfaction (mean= 4.23), satisfaction with supervising physician(s) (4.37) and finally, the level of autonomy and authority (4.48)¹⁷. It was also found that rural PAs were less satisfied with their workload and salary (3.64) as well as discovering that rural PAs considered the presence of other PAs and their closeness to family to be less important when choosing a practice location (3.68)¹⁷. All results were then analyzed using a multiple linear robust regression analysis which allowed for the normalization of data to account for outlier influence. Using this method, it was found that community satisfaction was the strongest predictor of PA job satisfaction in rural communities. The attributes of the communities such as community size, environment for children and safety of community all demonstrated positive relationships with PA job satisfaction¹⁷.

Discussion

Historically, the PA profession was developed in the United States in order to meet the growing primary care needs of rural and underserved communities. As the profession developed, more and more specialties began to employ PAs, particularly in urban centers. This dichotomy between the initial intent and current reality of the PA profession requires rural and underserved communities to identify factors which may draw PAs to practice in that location.

In Canada, the initial intent of the PA profession was very similar to that of the United States and has taken a very similar path towards more PAs in urban and specialty practices. Currently in Manitoba, the majority of U of M graduates (75%) practice in Winnipeg, Mb, the province's main urban center⁶. By identifying the reasons PAs choose rural practice, employers

may be able to highlight the job characteristics and community amenities that will appeal to PAs looking for employment. In Manitoba, this is especially important since there is a huge demand for physician assistants in both urban and rural areas in a variety of different specialties and only 12 graduates from the program each year and sporadic numbers of PAs coming to work in Manitoba from Ontario, the Canadian Armed Forces and the United States. Since the demand for PAs in this province greatly outweighs the supply available, rural employers must look to highlight the reasons why rural practice may be preferable to urban practice. Also, PA programs could use this information to educate their students on the benefits and difficulties of working rurally so that students can make informed decisions about choosing rural practice. PA students may be more apt to choose rural practice if they understand the benefits and more likely to remain there if they know the difficulties.

Several of the studies suggest that one possible method for increasing the number of PAs in rural health care is to encourage students to participate in a rural clerkship during their education. Graduating PAs who had participated in a rural clerkship were much more likely to choose a rural practice as their first practice location¹⁵. Therefore, by increasing the number of students participating in rural clinical placements, more graduating PAs may choose to work rurally as they are more familiar with the benefits and difficulties with rural practice through their own personal experience. Results also revealed that students with significant rural backgrounds were much more likely to return to rural locations to practice than their urban counterparts^{14,15,16}. By increasing the number of students with rural backgrounds in Canadian PA programs, the proportion of graduating PAs choosing to work in rural locations may increase. Another interesting finding related to the selection of students for PA programs was

that PAs with no previous healthcare experience prior to becoming a PA had higher levels of satisfaction with rural practice and their level of autonomy than those with prior healthcare experience¹².

This review also revealed that in order to recruit more PAs to rural healthcare, more emphasis should be placed on the benefits of a rural position in comparison to an urban position. Rural PAs are more likely to have higher levels of autonomy than those in urban practice¹³. The PAs in the literature reviewed consistently identified high levels of satisfaction with their level of autonomy and scope of practice^{12,17}. A PA's level of autonomy is dependent upon the relationship of trust between the PA and their supervising physician but due to the unique demands of rural healthcare, rural PAs generally have more autonomy and wider scope of practice¹³. It was also found that having a good relationship with their supervising physicians positively influenced PAs job satisfaction and retention in rural communities^{12,15,17}. Finding physicians who understand and appreciate the role of the PA in healthcare is essential to a good relationship. Since the PA profession is still quite new in Manitoba, finding supervising physicians in rural locations familiar with the PA role may be difficult. It may be necessary to educate unfamiliar physicians about the role and abilities of PAs in order to help to set a solid foundation for a good working relationship. As more PAs begin to work in rural areas throughout Manitoba, more physicians will become familiar with PAs, their role and the benefits for physicians, a domino effect should occur and increase demand. Highlighting the reasons for high job satisfaction in rural communities that differ from urban practice may help attract more PAs to rural locations.

It is also important to recognize the areas where rural PAs may not be as satisfied with since these may influence PAs to choose to leave rural locations for urban practice. The most consistently identified factor was low satisfaction with workload and salary^{16,17}. PAs in small communities may have increased workloads and longer hours compared to their urban counterparts due to the lack of other healthcare providers. The same reasons why PAs are highly satisfied with their autonomy and scope of practice may also contribute to the higher workload, leading to PA burnout. As identified in other studies, in small communities PAs often feel that they are always on call to community residents since there may be more contact in social settings¹⁸. This may lead to difficulty in retaining PAs if they are not prepared for this lifestyle. Another issue that was identified in the literature was low satisfaction with salary^{16,17}. In the United States, PAs in specialty practice often have higher compensation than those in primary care positions¹⁵. Since most rural positions tend to be in more primary care or generalist positions such as family, internal or emergency medicine, this may deter PAs with debt from choosing rural practice. With the current funding model in Manitoba, this may be less of an issue since future compensation should be similar no matter the practice location or type but it is still important to recognize the financial burden that moving for work can place on and individual and their family.

There are many reasons PAs may choose rural practice but it is important to recognize that rural living may be one biggest draws. Several studies identified that one of the most influential factors for choosing rural practice was to serve the health needs of the community as well as a desire to work and live in a small community^{15,16}. Employers may highlight the needs of their community in order to attract PAs who may be interested in working in

underserved communities. It was also found that PAs are more satisfied with their work when the communities they serve are more satisfied with their care¹⁷. By educating community members about the PA's role in their healthcare, community members may have accurate expectations which will leave both parties satisfied. PAs are generally quite good at explaining their role and responsibilities but it may be beneficial to educate community members prior to the PAs introduction to help ease the transition. Simple efforts such as posters or pamphlets explaining physician assistants in the office or hospital may help to educate the community and make the PA feel more welcome. As indicated in previous Canadian studies, patients are willing to receive care from PAs and think they are a good addition to healthcare once they understand the role^{10,11}. It was also identified in the literature that PAs were drawn to rural communities for their amenities¹⁶. One strategy for peaking interest in rural opportunities may be to describe the recreational and cultural activities in the community. PAs with families or planning on starting families may be interested in the quality and characteristics of schools as well as the safety of the community^{16,17}.

Limitations

This literature review aimed to apply knowledge gained from American studies to the Canadian and Manitoban healthcare systems in order to help improve the recruitment and retention of PAs in rural Canadian communities. One of the main limitations of this review is the lack of data available specifically pertaining to PAs in a Canadian context. Since the Canadian and American healthcare systems are inherently different, it is difficult to generalize all findings from these studies to Canada but many of the findings are still helpful to help guide future efforts in the recruitment of rural PAs.

On an individual level, each of these studies reviewed had their own limitations. The studies by Coombs et al., Deimer et al. and Filipova were all survey studies distributed to PAs in single US states (Utah, Texas and unidentified, respectively) which limit their ability to generalize to the United States as a whole. Each of these states has very unique characteristics that differ from the rest of the country. Also, each of these studies had a relatively small sample size: 432, 206 and 414 participants respectively and the use of self-report surveys which may allow for a response bias to influence the results^{14,15,17}. The study by Muus et al was one of the first of its kind and really set a foundation for future research into the retention of PAs in rural health care but now it is almost 20 years old and the demographics of the PA profession have changed greatly¹². One of the strengths of this study was that unlike those previously mentioned, the surveys were distributed on a national level and the sample size was much larger at 1,263 participants. The study by Smith et al was also conducted on a national level but had a much smaller sample size with only 312 usable surveys returned¹⁶. Also, the survey used in this study was adapted from a small pilot study of only 55 participants from a single Midwestern University and the variables used in the factor analysis had not been previously validated¹⁶. Overall, one of the main limitations that all these studies had in common was the use of a cross-sectional study design.

Conclusions

Physician assistants are a relatively new addition to the Manitoban healthcare workforce. Currently, the majority of PAs in Manitoba are concentrated in Winnipeg and in medical specialties. As the need for qualified healthcare professionals increases in rural and

remote areas of Manitoba increases, the demand for PAs in these areas will as well. In order to meet this demand, PAs must be willing to work in these areas. By understanding why PAs in the United States choose to work in rural areas, these benefits could be identified to Canadian PAs looking for employment to pique their interest in rural healthcare.

This review identified that rural PAs in the United States had various reasons for choosing rural practice as well as for remaining there but many themes were recurrent. Increased autonomy, a wider scope of practice and good relationships with supervising physicians were frequently identified as highly influential for choosing rural practice. Community factors such as being medically underserved, desire for small town living and community amenities were also identified as being influential. Also, PAs and PA students with rural backgrounds and experience with rural clerkships were more likely to choose rural practice which has implications for PA education programs. There are also unique difficulties to working in rural healthcare such as increased workload, longer hours and potentially lower salary. As with choosing any job there are always reasons for and against a certain position but understanding both sides is necessary for making an informed decision. By helping PAs make more informed decisions regarding rural healthcare, more PAs may choose to work rurally.

Based on these findings, in order to increase the recruitment and retention of physician assistants in rural Manitoba, employers should highlight several key points when providing information to prospective PA employees. First, employers should provide an introduction to the community where the PA may prospectively be employed. Community factors such as resources and amenities should be highlighted since community satisfaction has been identified as a significant factor in the recruitment and retention of PAs. Unique characteristics such as

outdoor activities available, local festivals and recreational events could be identified in order to provide a better understanding of life within the community. Other factors such as school availability for children, safety in the community and community development projects may be useful information for PAs with families or looking to start a family. Secondly, it is important to highlight specific job factors that would apply to the positions available such as supervising physician(s), area of medicine with expectations, hours expected and predicted level of autonomy. Lastly, an honest discussion regarding the difficulties of working in small, rural communities should be undertaken. While it may seem counterintuitive to highlight the pitfalls, PAs who make an informed decision including benefits and difficulties about employment in a small community may be more likely to remain in that position since they had a better initial understanding of the difficulties they may encounter and be better prepared. By employing these strategies, rural employers may provide better information to prospective employees therefore increasing the chances of recruiting and retaining physician assistants in rural Manitoba.

Future Research

In order to further the development of the PA profession in Manitoba and Canada, PA research must be performed in a Canadian context. Future research should be aimed at determining the factors that influence Canadian PAs choice of first practice location, whether it be urban or rural. Also, as the profession continues to grow and more PAs choose to work rurally, research could specifically target the recruitment and retention of PAs in rural Canada. It is also important to identify the reasons why PAs choose to leave rural practice so that these issues can be addressed to increase retention. Further research could be done targeting PAs

who had previously worked in rural communities and have left for urban practice. Another possible study could survey rural physicians for their perceived incentives and barriers for employing PAs in rural healthcare so that these issues could be addressed. The opportunities for future research into the role of PAs in rural Canadian healthcare are seemingly endless.

Appendix

Table 1: Comparison of the five studies analyzed and their relevant results

	Location	Population studied and size	Methods	Important factors influencing rural recruitment and retention	Importance
Job satisfaction among rural physician assistants. Muus et al 1998	Entire United States	1,263 Rural Physician assistants	-Mailed survey measuring job and community satisfaction -Quantitative	-More job variety -Level of autonomy -No previous healthcare experience	First study of its kind to investigate PA job satisfaction in rural communities
Factors Associated with Physician Assistant Practice in Rural and Primary Care in Utah Coombs et al 2011.	State of Utah	432 PAs (Rural and urban)	-Mailed survey - Quantitative	-Rural upbringings -Male gender	PA background greatly influences choice of practice location
Factors That Influence Physician Assistant Program Graduates to Choose Rural Medicine Practice. Diemer 2012	Texas	206 members of the Texas Association of Physician Assistants	-Electronic Survey by Email -Quantitative	-Rural clerkship -Rural background -Desire to work in a small community	Identifies factors influencing choice of first practice location as rural
Factors that influence physician assistant choice of practice location. Smith et al 2012	Entire United States	312 PAs (urban and rural)	-Electronic Survey by email -Quantitative	-Rural high school graduation -Employment opportunities for partner	Identifies gender, age and background differences that influence first practice location choice
Factors influencing the satisfaction of rural physician assistants: A cross-sectional study. Filipova 2014	1 Midwestern US State	414 PAs in communities of <50,000 residents	-Mail and online surveys -Quantitative	-Community factors: size, safety and environment for children -Supervising physician satisfaction	Identifies factors that employers could highlight about their community to attract PAs

References

1. Apply for Canada Student Loan forgiveness for family doctors and nurses - Overview [Internet]. Government of Canada. 2016 [cited 2016Feb26]. Retrieved from: http://www.esdc.gc.ca/en/student_loans/forgiveness.page
2. University of Manitoba - Faculty of Medicine - Education - International Medical Graduate Program - [Internet]. University of Manitoba. 2015 [cited 2016Feb26]. Retrieved from: http://umanitoba.ca/faculties/health_sciences/medicine/education/imgp/overview.htm
3. Canada's Health Care Providers: Provincial Profiles, 2013 | CIHI [Internet]. Canadian Institute for Health Information. 2015 [cited 2016Feb26]. Retrieved from: <https://secure.cihi.ca/estore/productfamily.htm?pf=pfc3045> History | CAPA - ACAM [Internet].
4. History of Physician Assistants [Internet]. Canadian Association of Physician Assistants. [cited 2016Feb26]. Retrieved from: <https://capa-acam.ca/about-pas/history/>
5. About Physician Assistants [Internet]. Canadian Association of Physician Assistants. [cited 2016Feb26]. Retrieved from: <https://capa-acam.ca/about-pas/>
6. MPAS Past Grads Survey by the Faculty of Health Sciences, University of Manitoba. Jones, IW. Office of PA Studies Report to the Minister of Health. Jan 28, 2016
7. Cawley JF, Lane S, Smith N, Bush E. Physician assistants in rural communities. *Journal of the American Academy of Physician Assistants*. 2016Jan;29(1):42–5.
8. Isberner FR, Lloyd L, Simon B, Craven JM. Utilization of Physician Assistants: Incentives and Constraints for Rural Physicians. *The Journal of Physician Assistant Education*. 2003;14(2):69–73.
9. Doescher MP, Andrilla CHA, Skillman SM, Morgan P, Kaplan L. The Contribution of Physicians, Physician Assistants, and Nurse Practitioners Toward Rural Primary Care. *Medical Care*. 2014Jun;52(6):549–56.
10. Doan, Q., Hooker, R. S., Wong, H., Singer, J., Sheps, S., Kissoon, N., & Johnson, D. (2012). Canadians' willingness to receive care from physician assistants. *Canadian Family Physician*, 58(8), 459–464.
11. Bohm, E. R., Dunbar, M., Pitman, D., Rhule, C., & Araneta, J. (2010). Experience with physician assistants in a Canadian arthroplasty program. *Canadian Journal of Surgery*, 53(2), 103–108.
12. Muus, K. J., Geller, J. M., Williams, J. D., Ludtke, R. L., Knowlton, D. D., & Hart, L. G. (1998). Job satisfaction among rural physician assistants. *The Journal of Rural Health*, 14(2), 100–8. <http://doi.org/10.1111/j.1748-0361.1998.tb00611.x>
13. Muus JJ, Geller JM, Ludtke RL, et al. (1996) Comparing urban and rural primary care PAs: Implications for recruitment. *Journal of the American Academy of Physician Assistants*, 9. 49-60.

14. Coombs JM, Morgan P, Pedersen DM, Koduri S, Alder SC. Factors Associated with Physician Assistant Practice in Rural and Primary Care in Utah. *International Journal of Family Medicine*. 2011;2011:1–6.
15. Diemer D. Factors That Influence Physician Assistant Program Graduates to Choose Rural Medicine Practice. *The Journal of Physician Assistant Education*. 2012;23(1):28–32.
16. Smith, B., Muma, R. D., Burks, L., & Lavoie, M. M. (2012). Factors that influence physician assistant choice of practice location. *JAAPA : Official Journal of the American Academy of Physician Assistants*, 25(3), 46–51. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/22514959>
17. Filipova, A. A. (2014). Factors influencing the satisfaction of rural physician assistants: A cross-sectional study. *Journal of Allied Health*, 43(1), 22–31.
18. Henry, L. R., & Hooker, R. S. (2007). Retention of physician assistants in rural health clinics. *The Journal of Rural Health: Official Journal of the American Rural Health Association and the National Rural Health Care Association*, 23(3), 207–214. <http://doi.org/10.1111/j.1748-0361.2007.00092.x>