

**A History of Patients' Perception and Satisfaction with Physician Assistants in
Primary Care**

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Abstract

Background: There are greater than four million Canadians that are unable to find a family physician or access immediate care for minor health problems. One solution has been the introduction of Physician Assistants (PA). In order to integrate PAs successfully into the health care system they must provide a high quality of medical care and be accepted by patients. Therefore, this project will examine the history of patients' perception and satisfaction towards PAs working in primary care. **Methods:** A review was performed from 1973 to 2015 using the databases of Ovid MEDLINE, Google Scholar, and PubMed. Key search terms included "physician assistants," "primary health care," and "patient satisfaction." Additional information was obtained by manually searching through journals, Internet resources, and bibliographies of retrieved articles. **Results:** A total of 9 papers were analyzed and reviewed. Patients are satisfied with primary care PAs and consider them a valuable member of the healthcare team. Physician Assistants are viewed as competent, intelligent, friendly, and responsible. No significant difference is observed regarding patient satisfaction and type of provider. Patient's demographics have the potential to influence their perception of a PA. In addition, the greater number of visits a patient has with a PA, the greater their acceptance of the PA role. **Conclusion:** It has been demonstrated that patients' are willing to be treated by primary care PAs and are satisfied with the health care they receive. Furthermore, the greater number of interactions an individual has with a PA the more willing they are to get treated for variety of conditions and are more open to PAs performing complex procedures.

Table of Contents

Abstract.....	2
Introduction	4
Background.....	4
History of Physician Assistants	4
Physician Assistants in Primary Care	7
Methodology.....	9
Results	10
Research Before the Year 2000	11
Research After the Year 2000.....	14
Discussion	19
Limitations	21
Conclusion	22
Acknowledgments.....	22
References.....	23
Appendix.....	26
Table 1: Summary of included studies: Peer reviewed articles.....	26
Table 2: Summary of included studies: National survey and poll	29

Introduction

Background

Currently, Canada is facing a shortage of primary care providers. There are greater than four million Canadians that are unable to find a family physician or access immediate care for minor health problems (1). Even though medical graduates view family practice as a rewarding career, the inadequate remuneration, increased work load, and decreased work-life balance are just a few of the reasons graduates choose to specialize. (2,3). One solution to help meet the gap between physician supply and patient demand has been the introduction of Physician Assistants (PA). Physician Assistants are health care clinicians who are trained under the medical model, and are qualified to provide medical services to a variety of patients (4). In order to integrate PAs successfully into the health care system, not only must they provide a high quality of medical care, but also be accepted by patients. Therefore, this project will examine the history of patients' perception and satisfaction towards PAs working in primary care.

History of Physician Assistants

Physician Assistants are licensed medical practitioners who provide care under the supervision of a physician. Physician Assistants are authorized to: 1- obtain medical histories; 2- perform physical examinations; 3- order and interpret diagnostic studies; 4- provide therapeutic procedures; 5- prescribe medications; 6- provide consultations on preventive health care (4,5). The concept of PAs was first created in the United States in

the mid-1960s by doctors in response to medical shortages and misdistribution of generalist physicians (6) . Following the Vietnam War, the first trainees were military medics who were highly skilled first responders (7). As of 2013, there are 173 accredited PA programs and 89,500 PAs with active licenses in the United States of America (6).

In Canada, the Canadian Forces (CF) was the first institution to train and employ physician extenders. Initially named *6B Medical Assistants*, these senior military medics (i.e. medical assistants, medics, and navy corpsman) provided advanced care during and after World War II (8,9). In 1984, the first formally trained PAs graduated from the Canadian Forces Medical Services School in Borden, Ontario (10). Physician Assistants in the CF have many responsibilities, which range from managing uniformed personnel at an urgent care clinic called a “Sick Parade,” to providing medical care to refugees held in Canada waiting for immigration (11). While there were many trained PAs in the CF, even a larger number of PAs were transitioning into the civilian sector, however; there were no employment opportunities for CF-trained PAs in civilian roles (4). In 1999, the Director General of Health Services ordered that all health care professionals in the Canadian Forces be members of their civilian professional body (12). Therefore, Warrant Officer Thomas Ashman formed the Canadian Academy of Physician Assistants, which is now known as the Canadian Association of Physician Assistants (CAPA) (10). The goal of CAPA was to develop a professional organization that accredited training programs and a national certification examination, and would advocate and represent its members across Canada regardless of their jurisdiction in which they practice (10,12) With CAPA established, the CF set its aims to develop a civilian equivalent of its military PAs (4). In order to achieve civilian accreditation, the CF needed the support of the Canadian

Medical Association (CMA) (9). The Conjoint Accreditation process provides “a leadership role to ensure national standards for the education of about 40,000 health care practitioners who perform diagnostic and therapeutic services to support physicians in the clinical setting” (9). After three years of work by the CF Health Services and CAPA, the Canadian Medical Association Board of Directors unanimously agreed to include PAs as a designated science profession in Canada (May 2003) (9). In 2005, the Physician Assistants Certification Council administered the first national certification examination, ensuring that a national standard of quality and professionalism existed for PAs trained in Canada (4).

The first two civilian programs began in 2008 at the University of Manitoba and McMaster University. Since then, a third civilian program was launched in January 2010: the Consortium PA Education, that encompasses the University of Toronto, the Michener Institute of Applied Health Sciences, and the Northern Ontario School of Medicine (4). Currently, there are four provinces that allow over 400 PAs to practice medicine: Manitoba; Ontario; New Brunswick; Alberta. The College of Physicians and Surgeons regulate the practice and licenses for PAs working in Manitoba and New Brunswick, whereas Alberta has a voluntary registry. Unlike the other provinces, Ontario uses the delegated authority provision which authorizes PAs to practice (13). Although the evolution of PA movement began with the CF, the future lies in the Canadian civilian sector.

Physician Assistants in Primary Care

According to the CAPA 2015 census, 47% of PAs are practicing family medicine in Canada. Data from the United States National Center for Health Statistics reports that there has been an increase from 10 (2000 and 2001) to 15 percent (2008 and 2009) in the number of outpatient visits seen by PAs. This trend suggests that PAs are being utilized in a greater extent in primary care (14). Several studies have compared the degree of patient care provided by PAs and physicians in primary care (15,16). A study in 2010 concluded that PAs were able to perform between 85% and 90% of services typically provided by general practitioners (GPs)(15). Similarly, Grzybicki et al., reported that PAs had a same-task substitution ratio of 0.86 when compared with their supervising physician (16). The types of patients that PAs and physicians are treating in primary care are shown to be similar. A literature review of PAs in primary care by Hooker in 2012, examined five cross-sectional studies that compared patients visiting primary care doctors to mid-level providers (i.e., PAs and Nurse Practitioners). The data shows that patient characteristics are similar regardless of the type of their medical provider (15). In addition, Everett et al., reported that there is no difference in the complexity or self-rated health of patients being seen by primary care physicians or PAs (17). The data from these studies suggests that PAs can provide medical care to a broad range of patients. Not only is it important that PAs are able to examine similar types of patients as doctors, it is essential that treatment and outcomes parallel that of the supervising physician. A study by Drennan et al., examined re-consultation rates for same or linked problems of patients seen by either a PA or physician. The researchers found that 24.6% of patients re-consulted within 14 days of their initial visit; however, there was no significant difference

in the number of re-consultations between those who initially consulted a PA or GP (18). In addition, the rates at which PAs ordered diagnostic tests, prescribed medications, and referred for secondary care was similar to their physician counterparts (18). Moreover, specialist physicians are willing to accept patients referred by primary care PAs and they are satisfied with the appropriateness and timeliness of the referrals (19). Therefore, because PAs are trained as generalists, they are able to treat variety patients with a broad range of conditions. Individuals seeking medical care from a PA can expect similar outcomes compared to care from a primary care doctor.

There have been a number of American studies, and a few Canadian reports, that examine the different contributions and benefits of having PAs in the primary care system (15,20,21) In 2013, Taylor et al., interviewed 14 physicians to examine the benefits and barriers to employing PAs in the Ontario health care system (21). These researchers found that the physician-specific benefits to hiring PAs included: decreased waiting times; improved patient care; financial or business incentives; and improved physicians' quality of life (21). Hiring a PA allows family physicians to increase the number of patients on their roster and it enables patients to receive same-day access for acute problems, all of which decreased the time it takes for an individual to see a medical practitioner (21). A United Kingdom study suggests, that if a primary care practice employs a PA, it has the potential to increase the overall practice list size by 2.4 to 5.3% in one year (22). Data has also shown that providing same-day access can reduce the time to the next available appointment from 36 to 4 days (23). Furthermore, Drennan et al., reported that the average PAs consultation time was only five and a half minutes longer than a GPs. In addition, the GPs saw approximately three patients for every two

seen by the PA (18). Thus, because of the high volumes of patients seen in a day, PAs are able to improve patient care by meeting targets for vaccinations, Papanicolaou tests, blood pressure checks, and other preventative measures (21). Employment of a PA into a primary care practice also has financial benefits. It has been suggested, that hiring a PA in a large practice has the potential to be equivalent to having 0.73 to 0.96 of a full-time family practice physician (24). Physicians in Ontario believe, that they have to ability to increase their annual income when hiring a PA because they are able to increase their number of patient visits (21). Similarly, in the United States, Wozniak compared the productivity of solo practice physicians who had mid-level providers on staff with those who did not, and found that those employing mid-level providers had an increase in net income from \$186,900 to \$220,000 (25). However, according to Taylor et al., the primary motivation of physicians hiring a PA was not monetary, but the ability to improve the physicians own work-life balance. One of the physicians interviewed stated, *“There is some financial cost, but there is a better quality of care for patients, more access, and better quality of life for me...as far as I’m concerned, I have one of the best jobs in Ontario now [That I have hired a PA] (21).”*

Methodology

A search of English-speaking literature was undertaken spanning the years 1973 to 2015. A review was performed from the databases of Ovid MEDLINE, Google Scholar, and PubMed. Key search terms included “physician assistants,” “primary health care,” and “patient satisfaction.” To ensure a comprehensive search, additional information was obtained by manually searching through journals, Internet resources, and

bibliographies of retrieved articles. The primary objective of this study was to review the history of patients' perception and satisfaction with PAs in primary care. Criterion for inclusion was, original peer reviewed published data or national surveys and polls, which explored patients perception, satisfaction, and attitudes toward Physician Assistants in primary care. Exclusion criteria included any articles that assessed patients' perception, satisfaction, or attitudes towards Physician Assistants in specialties or subspecialties other than primary care. Each paper was analyzed and then categorized into the following groups: 1- Research before the year 2000 and 2- Research after the year 2000.

Results

A total of 17 papers were identified and reviewed. Of the 17 papers, 9 met the inclusion criteria. Articles that were non English-speaking, lacked original data, focused on Nurse Practitioners more than PAs, and non-specific articles that were outside the objectives of the review were omitted. The span of the literature review was from 1973 to 2015. Two-thirds of the articles were published after the year 2005. Of the nine articles, seven were performed in the United States of America and the remaining two were completed in Canada and the United Kingdom. Overall, the methodologies fell into one of three categories: 1- Questionnaires; 2- Surveys; 3- Polls. The number of participants varied from 125 to 3,770.

Research Before the Year 2000

Three studies between 1973 and 1986 examined the acceptance and attitudes of patients towards PAs in primary care (26–28). In 1973, Strunk questioned 300 patients waiting for treatment at the UCLA Hospital Outpatient Clinic (26). After reading a sheet that explained the concept of a PA, the patients were asked to complete a 30-item attitude questionnaire. The questions were randomly distributed and the responses followed a Likert-type scale that ranged from “strongly agree” to “strongly disagree.” The goal of the experiment was to assess the acceptance and use of PAs and to determine any differences between various socioeconomic stratifications. Acceptance was highest among non-married middle class respondents who had some exposure to college. Although there was no statistically significant difference ($p < 0.05$) in attitudes of acceptance between males and female, females were consistently more accepting with specific questions such as, “*A physician assistant can do most of the things a doctor can do,*” and “*The physician assistant should be able to write and sign prescriptions for me.*” In regards to ethnicity, there was no significant difference in acceptance of PAs amongst Caucasians, Blacks, or Mexican/Americans (26).

A year later from Dartmouth Medical School, Nelson et al., performed an attitudinal survey of patients who received care from PAs (27). Patients were recruited from 18 different primary care practices in upper New England. Questionnaires were mailed, and data was collected from 372 patients who were seen by a PA one or more times. Questions were grouped into 4 categories: 1- PA impact; 2- Task Latitude; 3- Interpersonal Manner; 4- Technical Competence. In addition, patient characteristics such as age, sex, and social class were obtained as independent variables for analytic purposes.

The category of PA impact contained five items, which measured patients perceived changes in quality of care, wait times for appointments, and wait times in an office setting since the staffing of a PA. Over 70% of patients indicated that since a PA has joined the practice the quality of medical care has improved, wait times to get an appointment have decreased, and wait times in the doctors office are shorter. The task latitude section was comprised of 11 items that examined the patients' opinions regarding appropriateness of delegating such tasks as suturing lacerations, making house calls, and performing physical examinations. Ninety-eight percent of respondents agreed that a PA should be allowed to take patients' vital signs. Similarly, 93% are in favor of PAs giving inoculations or shots. Seventy-five percent think PAs should be able to do minor surgery, such as putting in stiches or dressing a burn, and 69% believe that a PA can take care of patient's while the doctor is out of town. However, only 36% of those questioned would allow a PA to perform a normal delivery. The third set of questions was grouped as interpersonal manner and measured the courteousness and respectfulness of the PA. Every patient thought the PA was respectful and 96% felt the PA was courteous. Lastly, the technical competence reported the professionalism, confidence and competence of the PA. Over 80% of the respondents expressed that the PA was "very competent," "very sure of himself," and "very professional" in his manner. Furthermore, the effects of patients' attitudes were measured dependent on the number of visits to the PA. The data suggests, that as the number of interactions with a PA increases, the perception of impact and the willingness to expand the PA role also increases. Patient satisfaction was also measured by examining two specific task areas: history taking and physical examinations. Ninety-one percent of individuals were "very satisfied" with the history taken and 87%

for the physical examination. Overall, 99% of patients suggested that they would want care again from a PA. Moreover, the researchers measured the effects of age, sex, and social class on patients' attitudes towards PAs. The results showed that younger patients perceived PAs to be less technically competent, women were more likely to be in favor of PAs running a prenatal and well baby clinic, and patients from lower socioeconomic classes reported more favorable changes in the quality of care and access to services (27).

In July of 1986, Oliver et al., published a study in the journal, *Physician Assistant*, that measured patients' satisfaction with PAs in rural primary care (28). A questionnaire was administered to 308 patients who were examined by a PA. These PAs were working at family practice clinics in Midwestern rural or semirural communities in the United States (i.e. mean population 6,902 individuals). The questionnaire was comprised of four different sections. The first section gathered personal and background information about the patients'. Seventy-six percent were under 44 years old and few patients were either younger than 18 or older than 65. Six-seven percent of individuals that responded were female. Seventy-five percent graduated from high school and nearly 50% attended college. Eighteen percent of patients were seeing the PA for the first time, 80.8% saw a PA at least twice, and 22.4% saw a PA more than eight times. The second section measured the overall satisfaction with the PA. This was accomplished by examining competency, interpersonal skills, and time. Patients' responses were rated on a five-point scale, where "5" was "completely satisfied" and "1" was "completely dissatisfied." The greatest satisfaction occurred regarding the PAs interpersonal skills, specifically their politeness and courteousness at a mean of 4.81. Ninety-six percent of patients' were either "satisfied" or "completely satisfied" with the length of time the PA spent with

them, and 87% expressed high satisfaction with the length of time it required to see a PA. Furthermore, women were more satisfied with PA services at a mean of 4.73 (SD 0.45) compared to men (mean 4.66 [SD 0.41]). The third section questioned how comfortable patients were having PAs perform 21 medical procedures. The procedures ranged from routine and simple (i.e. obtaining vital signs) to procedures requiring higher responsibility and judgment (i.e. prescribing medication, delivering a baby, performing a heart exam). The basic tasks rated higher than the complex tasks; however, the overall comfort level across all three-complexity levels was 4.25. Female patients and more educated individuals reported higher levels of comfort. Moreover, the greater number of patient interactions with a PA, the more comfortable the patient became with the PA performing complex procedures. The last section examined patients' insight into changes of the family medicine practices based on the employment of a PA. Sixty percent of patients believed the time it took to get an appointment and the time spent in the doctor's office waiting to be seen decreased (28).

Research After the Year 2000

Since 2006, four journal articles and two National surveys reported on patients' impressions and satisfaction of primary care PAs. In 2006, Ciper et al., sought out to determine if older patients were satisfied with PAs and Nurse Practitioners (NP) (29). Data was gathered from the 2000 and 2001 Medicare Satisfaction Survey, Consumer Assessment of Health Plans Survey section on Fee-for-Service, which provided information on the health care experiences of beneficiaries who were enrolled in the

Medicare program for six months or more. Greater than 140,000 individuals met the inclusion criteria of being 65 years old or older and identified a generalist physician, a PA, or an NP as their primary personal health care provider. Of this number, 3,770 patients identified a PA or an NP as their personal provider and thus represented the main subjects studied. In addition to measuring satisfaction, patient demographics (i.e. age, gender, race, size of population, presence of chronic illness) were also collected. At 57.6%, the majority of the respondents were female and nearly one quarter (23.7%) of the individuals were 80 years or older. When patients were sorted by type of provider, the percentage of individuals who reported being in fair or poor health was similar across all three-provider types. Furthermore, the researchers found no statistically significant difference in patients' satisfaction with the care received according to the type of provider. Therefore, it was concluded that patients' satisfaction with PAs and NPs were just as favorable as physicians (29).

Similar to Cipher et al., Dill and associates examined provider preferences from a patients perspective (30). Information for this study was collected from the Association of American Medical Colleges Consumer Survey from December 2011 to January 2012. The respondents were presented with three different theoretical scenarios. In the first scenario, the respondents needed to find a new primary care provider and were asked: "The practice you found has physicians, PAs, and NPs that are all accepting new patients. Which type of provider would you prefer to see?" Approximately half chose their primary care provider to be a physician, 22.8% preferred a PA or NP, and 25.9% had no preference. The second scenario gave the individuals a choice between having a same day appointment and seeing a PA or NP for a worsening cough or wait a day and see a doctor

tomorrow. Almost 60% of respondents chose to see the PA or NP on the same day. Moreover, those who have recently seen a PA or NP were more likely to want to see them again than to wait a day for the physician. The third scenario also offered the respondents a choice between a visit with a PA or NP in one day or a physician in 3 days; however, this time the symptom was frequent severe headaches. Resembling the previous scenario, 66.6% of individuals preferred to be seen in one day. Furthermore, even if there were no previous exposures to a PA or NP, respondents (48%) wanted to be seen sooner by one of these providers rather than later by a physician (38.4%). This study also described the variation in exposures to PAs and NPs by the characteristics of the respondents. It was found that women were more likely to have ever seen a PA or NP and adults under the age of 35 were significantly more likely to have seen a PA or NP for their most recent care and the least likely to have never seen one of these providers. Regarding ethnicity, Caucasians were less likely than other racial groups to have reported seeing a PA or NP for their most recent medical care, and most likely to have never seen either providers. Lastly, respondents with annual household incomes of less than \$50,000 were most likely to have seen a PA or NP for their most recent medical care (30).

Within the United States of America, Community health centers (CHC) are organizations that provide access to health and social services in poor and medically underserved communities. One of the goals of the Affordable Care Act is to provide funding to CHCs, so that they could provide access to over 40 million patients (31). The *Journal of the American Academy of Physician Assistants* published an article in 2014, which examined patients' perspectives of the contributions that PAs made to CHCs (31). The researchers visited 5 rural (population <10,000) and 5 urban (population >10,000)

CHC sites in Texas. A total of 125 patients participated in the study and were given a questionnaire, which was then followed by open-ended questions to determine how the PA was perceived to contribute to the patients' treatment and clinical experience. The questionnaire consisted of 10 items, which asked such questions as: "How courteous and respectful was the PA?" to "How likely are you to recommend the PA to others?" With the highest possible score of five, the mean ratings were either 4.8 or 4.9 for each of the 10 questions. Furthermore, a mean score of 4.8 was given by patients' regarding the overall satisfaction with the services received from the PA. In answer to the open-ended queries, most individuals indicated that the PA was highly effective, efficient, knowledgeable, and seemed to genuinely care about the patient. In fact, many respondents said they "loved" their PA (31).

In 2014, the American Academy of Physician Assistants (AAPA) commissioned Harris Poll to conduct a survey in order to understand patients' attitudes toward, and perceptions of PAs and the healthcare they deliver (32). Just over 1,500 respondents completed a 26-minute survey and of those individuals, data was collected from adults who were 18 years or older and had seen a PA within the past 12 months (n=680). On average the respondents have seen a PA nearly four times in the past year and have had at least one positive experience with the healthcare they received when compared to those who had not seen a PA. Ninety-three percent of patients' claim that PAs add value to the healthcare team and 51% say PAs are their first choice of healthcare provider. Not only are adults willing to see PAs themselves, 63% are "extremely willing" or "very willing" to recommend seeing a PA to others. Individuals who have interacted with a PA in the past 12 months describe them as intelligent (85%), easy to communicate with (85%),

friendly (84%), and responsible (83%). Even though 93% of respondents say PAs provide “excellent” patient service, the two most common reasons patients’ would not see a PA were: 1-Preference for a doctor (30%) and 2- PA qualifications (29%). However, those who have had some interactions with a PA were more likely to see them for a variety of reasons (32).

Similar to the AAPA, CAPA commissioned Nanos Research to determine the awareness and impressions individuals have of PAs in Canada (33). With the use of Random Digital Dialing (RDD), 1000 Canadians were surveyed between October 18th and 21st, 2014. The data showed that only 10% of Canadians have ever received care from a PA; however, 93% of those individuals were “satisfied” or “somewhat satisfied” with the experience. Sixty-five percent of Canadians have a “favourable” or “somewhat favourable” impression of PAs. Although, if the respondents are informed about the training and scope of health care a PA can provide, this percentage increases to 84%. Furthermore, greater than 80% of Canadians “support” or “somewhat support” a greater role of a PA and are “comfortable” or “somewhat comfortable” receiving primary care from a PA under a physician’s supervision (33).

The most recent study to examine patient satisfaction with PAs in a primary care setting comes from the United Kingdom (18). Drennan et al., conducted 600 patient satisfaction surveys to all individuals attending same-day or urgent appointments in a general practice setting over 4 weeks. Compared to the GP, the patients being examined by PAs were younger, lived in more deprived neighborhoods, and had more “minor problems” and less “chronic issues.” Results from the survey displayed high rates of

patient satisfaction with no significant difference between types of provider. Moreover, almost 90% of respondents would be willing to consult with a PA in the future (18).

Discussion

Over the past 50 years, there have been a limited number of studies examining patients' attitude toward PAs (18,26–33). The current literature review provides a comprehensive synthesis and evaluation of peer reviewed articles and National surveys examining patient satisfaction with PAs in North America and Great Britain. Of the 17 articles reviewed from 1973 to 2015, 9 met the inclusion criteria; 7 peer reviewed journal articles and 2 National surveys (N=8,208). Many of the studies examined how patients' characteristics (i.e. gender, age, education, socioeconomic status, ethnicity) correlated to their satisfaction and opinion of PAs. Four of the nine articles suggested that females were either more satisfied with the health care services provided by PAs or were more likely to have seen a PA when compared to males (26–28,30). A potential reason for this tendency, may be that women use more health care services than men (34–37). Several studies have offered suggestions for these differences such as differences in health perceptions and women having a greater likelihood to seek help for prevention and illness (34–37). Only two studies commented on how a patient's age may affect their perception of PAs (18,27). The earliest of these two studies (1974) suggested that individuals under the age of 24 perceived PAs to be less technically competent (27). However, 41 years later, Drennan et al., reported that younger patients are consulting more PAs when compared to consultation rates with GPs (18). It appears as if the trend has changed, and younger patients' are more open to seeing an alternative health care provider. Patients'

education level and socioeconomic status also plays a role in how accepting an individual may be to the notion of PAs. It appears that patients' with higher education are more accepting and willing to be treated by PAs (26,28). Similarly, individuals who are in a lower socioeconomic class are more likely to see a PA, and are more satisfied in the changes the PA can make in the quality of care a patient receives (18,27,30). In a recent Canadian study examining the effect of socioeconomic status on access to primary care, the researches showed that individuals presenting themselves to family physicians as having high socioeconomic status received preferential access to primary care over those presenting themselves as having low socioeconomic status (38). Therefore, PAs in primary care play a critical role in providing quality health care access to individuals in a lower socioeconomic class. In respect to ethnicity, Strunk et al., suggested, regardless of a patients' race, there was no difference in acceptance of a PA (26). On the other hand, Dill and colleagues reported that Caucasians were less likely than other racial groups to see a PA (30). However, the literature shows, that as the number of interactions a patient has with a PA, the more comfortable the patient is having a PA perform more complex procedures, the more likely a patient is to see a PA for a variety of reasons, and the patients' perception of how a PA impacts health care increases (18,26,28,31)

Limitations

This study identifies patients' perception and satisfaction toward primary care PAs over the past four decades. While the research conducted on PAs in primary care suggests that patients' are willing to receive care from PAs and are satisfied with the services they provide, the vast majority of research has been conducted in the United States of America. Therefore, this limits our ability to make any definitive global statements regarding PAs in primary care. In addition, a number of the studies in the literature review were performed during the 1970's and 1980's when the idea of PAs were fairly new to patients'. Furthermore, within Canada, only one National Survey examined the awareness and impressions individuals have of PAs. Significant work remains to be completed before we can claim to have a reasonable understanding of patients'' attitude and satisfaction toward PAs in primary care.

Specifically in Canada, four areas of research are critical to gain an understanding of individual's perception of primary care PAs. Since the PA profession is a relatively new concept in the Country, it is important to obtain the demographics (i.e. age, gender, socioeconomic status, illness acuity) of the individuals being treated by PAs. Second, it is essential to determine the efficiency and effectiveness of treatments provided by primary care PAs. Third, data should be gathered, peer reviewed, and then published, regarding patients' perceptions and satisfaction toward PAs working in primary care. Lastly, because the PA profession is constantly adapting to new legislations, longitudinal studies are essential to determine how patients' perceptions change with the ever change roles or PAs.

Conclusion

Over the past 40 years, research has consistently shown that patients' are willing to be treated by primary care PAs and are satisfied with the health care they receive. In addition, the greater number of interactions an individual has with a PA the more willing they are to get treated for variety of conditions and are more open to PAs performing complex procedures. However, the majority of research has come from the United States of America, and with the recent introduction of PAs into Canada, further Canadian research is required.

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Appendix

Table 1: Summary of included studies: Peer reviewed articles

First Author (Year)	Journal	Objective	Target Population & Number Studied	Methods	Conclusion
Strunk (1973)	The Western Journal of Medicine	1- Assess acceptance and use of PAs 2- Determine any differences between various socioeconomic stratification	N=300 outpatients at UCLA clinic	Attitude questionnaire	Significant differences in acceptance of PAs due to socioeconomic variables.
Nelson (1974)	The Journal of the American Medical Association	Determine patient characteristics and attitudes regarding, PA impact, task latitude, interpersonal manner, and technical competence	N=372 patients seen by a PA one or more times	Attitudinal survey	-Patients are satisfied with PA services, impressed with their competence and manner, believe quality of care and access has improved, and favor delegating a wide rang of functions to them. -Patient's age, social class, and access are significantly related to their attitudes toward PAs.

Oliver (1986)	Physician Assistant	Measure patient satisfaction with PAs in rural primary care	N = 308 patients at Midwestern rural and semirural communities	Satisfaction questionnaire	<p>-Patients are highly satisfied with PA services</p> <p>-PAs more favorable among women, patients with more education, and among those with greater contact with PAs.</p>
Cipher (2006)	Journal of the American Academy of Physician Assistants	Determine how satisfied older American consumers are with PA and NP care	N = 3770 patients who identified a GP, PA, or NP as their primary provider	Cross-sectional national survey	<p>-Patients are generally satisfied with their medical care.</p> <p>- No preference based on type of provider.</p> <p>-PAs can be the workforce to expand care for needs of elderly</p>

Dill (2013)	Health Affairs	Examine provider preferences from patients' perspective	N = 2053 patients who needed care in the past 12 months	Online consumer survey from Association of American Medical Colleges	When patients were presented with a scenario where they could see a PA/NP sooner than having to wait for a physician, majority elected to see the alternative health care provider.
Henry (2014)	Journal of the American Academy of Physician Assistants	Understand patient perspectives of PA contributions to Community Health Centers	N = 125 patients from rural and urban Community Health Centers who had at least 1 clinical visit with a PA	Questionnaires, semi-structured interviews, observations of general operations of the clinic without entering the examination rooms	Patients report high levels of satisfaction with PAs and tend to seek them out as their primary care provider.
Drennan (2015)	British Journal of General Practice	Compare patient satisfaction between PAs and GPs	N = 600 patients attending same-day or urgent appointments in general practice setting in the United Kingdom	Satisfaction survey	-High rates of patient satisfaction with no significant difference between PA and GP consultation. -Most of those consulting a PA responded that they would be willing to consult a PA again

PA = Physician Assistant; NP = Nurse Practitioner; GP = General Practitioner

Table 2: Summary of included studies: National survey and poll

Research Company (Year)	Association	Objective	Target Population & Number Studied	Methods	Conclusion
Harris Poll (2014)	American Academy of Physician Assistants	Measure Americans' attitudes toward and perceptions of PAs and the health care they deliver	N = 680 patients who have interacted with a PA in the last year	Attitude poll	<p>-Patients had a positive experience with the care they received from PAs and they claim PAs add value to the healthcare team.</p> <p>-Majority of respondents are willing to see a PA and are willing to recommend a PA to others.</p> <p>-Patients describe PAs as intelligent, friendly, and responsible.</p> <p>-Patients who had some interactions with a PA are more likely to see them for a variety of reasons.</p>

Nanos Research (2014)	Canadian Association of Physician Assistants	Determine the awareness and impressions individuals have of PAs in Canada	N = 1000 Canadians by random digital dialing	Omnibus survey	<p>-Only a small amount of Canadians have received care from a PA; however, those who did receive care were quite satisfied.</p> <p>-Majority of Canadians have a favourable impression, support a great role, and are comfortable receiving care from a PA.</p>
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PA = Physician Assistant