WASHINGTON STATE HEALTH SERVICES RESEARCH PROJECT

The Adult Population's Willingness to See Nurse Practitioners and Physician Assistants

Research Brief No. 68
April 2013

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Introduction

There is a consensus among health care experts that the nation will face a shortage of primary care physicians in the next 10 years.[1] Many causes for the shortage are cited including the growth in population, the aging of the population and the physician workforce, more complex needs to care for the chronically ill, and the forthcoming implementation of the Affordable Care Act (ACA).[2] Nationally and at the state level, policy-making bodies are accelerating their search for strategies to tackle the issue. Many proposals are considered promising, including adoption of medical homes, expansion of telemedicine, and use of electronic records system. Probably the one suggestion that generates the greatest interest is the use of non-physician providers for more primary care, mainly the use of nurse practitioners (NPs) and physician assistants (PAs).[3]

Key Findings

- Current utilization of nurse practitioners (NPs) and physician assistants (PAs) by Washington State's adult population for routine and urgent care is low – from 2 to 7 percent.
- Willingness to see NPs and PAs for routine and urgent care is high from 68 to 78 percent.
- Different factors are associated with acceptance of NPs and PAs for routine and urgent care, suggesting a need for tailored messages in communicating about a possible expanded role for NP and PA in primary care.

NPs and PAs have been already providing primary care alongside physicians. Depending on the state where they practice, NPs' and PAs' scopes of practice are defined with varying degrees of restrictions compared with scopes of practice for primary care physicians. It is not the objective of this study to address whether the scopes of practice for NPs and PAs should be broadened to assume an increased role in primary care. Rather, this study uses recent data from the 2012 Washington State Health Care Consumer Survey to assess whether the public is ready to accept an expanded role in primary care for NPs and PAs and what factors may be associated with the public's acceptance of these types of providers.

The study's findings show that currently in Washington, primary care in the form of routine care and urgent care is provided by NPs and PAs to a relatively small share of the adult population (less than 10 percent), but more than two-thirds of the adult population are willing to see NPs and PAs for such care. Several factors are identified as associated with the public's acceptance for NPs and PAs for routine care and urgent care, including age, gender, race/ethnicity, region of residence, current use of primary care, and prior treatment by NPs and PAs in routine and urgent care. This information can be of value in developing effective communications with the public about an expanded primary care role for NPs and PAs should that become an option.

In the remaining sections, we present a discussion of the current NP and PA primary care workforce size in Washington, followed by a description of the 2012 Washington State Health Consumer Survey, a

[1] LV Green, S Savin, and Y Lu. "Primary Care Physician Shortages Could Be Eliminated Through Use of Teams, Nonphysicians, And Electronic Communication." *Health Affairs*, 32, no.1 (2013): 11-19.
[2] AN Hofer, JM Abraham, and I Moscovice. "Expansion of coverage under the Patient Protection and Affordable Care Act and primary care utilization." *Milbank Quarterly*, 2011: 89(1):69-89.
[3] Green et.al. (see 1) used the term "demand diversion" to describe this strategy.

section on the study methods, an analysis of the Washington State's adult population characteristics, a presentation of the distribution of the public's use and acceptance of primary care for routine care and urgent care provided by NPs and PAs, a section on results from logistic regression analyses identifying factors associated with the public's acceptance of NPs and PAs, and finally a summary and a concluding remark.

NPs and PAs in Primary Care

NPs are a subset of Advanced Registered Nurse Practitioners (ARNPs), which include, in addition to NPs, nurse anesthetists, nurse-midwives, and clinical nurse specialists. NPs are trained in nursing masters programs and are certified by professional or specialty nursing organizations.[4] Nationally, about 70-80 percent of NPs work in primary care.[5] In Washington, though, approximately 44 percent of NPs practicing in the state are estimated to be in primary care.[6] That equals roughly 1,720 primary care NPs.[7]

The PA profession was first created in the 1960s, and PAs were trained as generalist assistants to ease shortfalls in the primary care workforce.[8,9] Currently, 37 percent of the PAs in the U.S. work in primary care with the rest working in non-primary care specialties.[10] In Washington, the share of PAs who work in primary care is slightly higher at 40 percent.[11] The primary care PA workforce in Washington has approximately 850 providers.[12]

2012 Washington State Health Care Consumer Survey

In the summer of 2012, the Office of Financial Management (OFM) conducted a Health Care Consumer Survey.[13] The purpose of the survey was to understand what Washington state's adult residents currently do and what they would do in the future with regard to access and use of health care, especially primary care.

The survey sample included a traditional sample of households with landline phone numbers. To ensure the representativeness of the survey, the survey sample also included a sample of households with cell-phone numbers only. The sample selection protocol followed that used by the national Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS).[14]
The survey questionnaire was developed by the health care research group (HCRG) within OFM's Forecasting and Research Division. The HCRG staff consulted a number of similar surveys used by federal and state governments as well as surveys used by non-government organizations. The final questionnaire included the following major subject areas:

[4] Mary D. Nalor and Ellen T. Kurtzman. The Role of Nurse Practitioners in Reinventing Primary Care. *Health Affairs*, 29, no. 5 (2010):893-899.
[5] See Nalor and Kurtzman in 4.
[6] Internal staff analysis of OFM's 2011 Washington State Primary Care Nurse Practitioner Survey.
[7] SM Skillman, MA Fordyce, W Yen, and T Mounts. Washington State Primary Care Provider Survey, 2011-2012: Summary of Findings. Seattle, WA: University of Washington, August 2012. Also, http://www.ofm.wa.gov/healthcare/deliverysystem/2012_NP_survey_frequency_report.pdf.
[8] RS Hooker, JF Caley, and DP Asprey. *Physician Assistants: Policy and Practice*. Philadelphia (PA): FA Davis, 2010.
[9] Perri A. Morgan and RS Hooker. Choice of Specialties among Physician Assistants in the United States. *Health Affairs*, 29, no.5 (2010): 887-892.
[10] See Morgan and Hooker in 9.
[11] Internal staff analysis of OFM's 2011 Washington State Primary Care Physician Assistant Survey.
[12] See Skillman et. al. in 7. Also, http://www.ofm.wa.gov/healthcare/deliverysystem/2012_PA_survey_frequency_report.pdf
[13] http://www.ofm.wa.gov/healthcare/health_care_data_report.pdf
[14] http://www.cdc.gov/brfss/technical_infodata/surveydata/2011/overview_11.rtf.

- Access and Utilization of Routine Care
- Access and Utilization of Urgent Care
- Access and Utilization of Emergency Care
- Respondent Demographics and Health Status

Each of the first three subject areas included questions of the respondent's current access and intentions for future access.

The primary data collection mode for the survey was telephone interview using the Computer-Assisted Telephone Interviewing system in English and Spanish. A web-based survey was also made available to the respondents. The landline sample contained mailing addresses for some phone numbers. If an address was available, a notification letter (or advance letter) in both English and Spanish was sent to the potential respondents prior to the phone call. The letter explained the purpose of the survey and encouraged recipient's participation.

OFM contracted with a local survey company, the Gilmore Research Group, for the data collection. The data collection yielded 4,272 completed interviews from the landline sample and 833 from the cell-phone sample. The respective response rates are 40.0 percent and 28.7 percent.[15]

A final analysis file was created that combined the landline sample and the cell-phone sample respondents with a total of 5,105 respondents. The BRFSS dual-sample weighting and raking algorithms were adapted to create the weights for this survey. Data from the OFM County Population Estimation Model (CPEM)[16] was used to construct the population estimates as control totals in the weighting. An additional weight adjustment was made to align the survey's health insurance distribution to that of the CPEM.

Method

The analyses in this study used data from the 2012 Washington State Health Care Consumer Survey. The analyses consisted of three parts: (1) adult population's social and demographic characteristics, (2) visits with and acceptance of NPs and PAs for routine care and urgent care, and (3) factors associated with acceptance of NPs and PAs for routine care and urgent care. Descriptive analyses were used in (1) and (2). Multiple logistic regression analyses were employed in (3) to identify factors associated with acceptance of NPs and PAs.

Routine care is defined in the survey as:

> "…preventive care or routine follow-up care for medical management of diagnosed health conditions. Appointments for routine care are usually scheduled in advance and include immunizations and routine screenings."

Urgent care is defined in the survey as:

> "…[care] for conditions that require evaluation and treatment within 24 hours. Urgent conditions are not life threatening."

Population characteristics reviewed for this study are age, gender, race/ethnicity, region of residence, general health status, health conditions, health insurance coverage, use of routine care (past 12 months), use of urgent care (past 12 months), education attainment, marital status, and income (as a percent of the

[15] Based on Gilmore Research's calculation using CASRO response rate methodology.

[16] The CPEM is a synthetic data system that contains projected population estimates by various characteristics (e.g., poverty, type of insurance coverage, age, sex, and race/ethnicity) using internal data from OFM as well as the American Community Survey.

federal poverty line). Health conditions refer to the four chronic conditions asked in the survey: diabetes, high blood pressure, asthma, and heart disease. A compound data element based on the four conditions was also included that shows whether a person has any of the four conditions.

In the second analysis, the adult population's use of routine care and urgent care provided by NPs and PAs was compared and contrasted with their willingness to see NPs and PAs for routine and urgent care.

The analysis of factors associated with acceptance of NPs and PAs for routine care and urgent care consisted of four multiple logistic regression models on the population's willingness to see NPs for routine care and urgent care and to see PAs also for routine care and urgent care. The population characteristics in the first analysis and their prior care by NPs and PAs served as the association factor candidates (i.e. covariates) in all four models.

As the analyses in this study are based on the Health Care Consumer Survey, the limitations of the survey are expected to have an effect on the results in this study. The survey's limitations, for example, include exclusion of the small segment of the population with no access to a phone, exclusion of the institutionalized population, and use of self-reported health status and health conditions.[17] In addition, the analyses excluded the survey records in which the respondent failed to provide a response to the question of interest. This exclusion affected the multiple logistic regression analyses more than the other analyses in this study, because multiple logistic regression analyses require that no values are missing in any data elements used. Due to the large number of records with missing values in the income variable, the missing value in the income variable was assigned a valid category ("Income Unknown") to prevent loss of too many records. In the logistic regression analyses, the income variable contained two categories: "Above 300 percent of the FPL" and "At or below 300 percent of the FPL or income unknown." This change might result in imprecise estimates of the independent effect of income.

Washington State's Adult Population Characteristics

The population in this study refers to adults ages 18 and older. The estimated size of Washington's adult population in 2012 is 5.2 million. Table 1 shows that young adults ages 18 to 24 accounted for 12.4 percent of the total adult population. Each 10-year age bracket from age 25 to 64 contained about 17 to 18 percent of the adult population.

The 65 and older age group accounted for 17.4 percent. The gender balance tipped slightly towards women (50.6 percent). Approximately 8.4 percent of the population was Hispanic. Non-Hispanic whites made up 78.9 percent and non-Hispanic persons of other races 12.8 percent.

About 30 percent of the adult population had a bachelor's or a more advanced degree, 36.3 percent had some college education or an associate's degree, a quarter (24.5 percent) had a high school diploma or GED only, and 9.8 percent had less than high school or no education at all. While 55.8 percent of the adult population was married, a quarter of adults (24.4 percent) were never married, and the remaining 19.8 percent were divorced, separated, or widowed.

Approximately 42 percent of the adult population had a household income above 300 percent of the federal poverty line (FPL), 14.1 percent between 201 and 300 percent of the FPL, 13.8 percent between 101 and 200 percent of the FPL, and 13.1 percent at or below 100 percent of the FPL. However, for about 17 percent of the adults, the survey had no information on their household income and therefore their poverty level could not be determined.

[17] A more detailed discussion of the survey's limitations can be found in the report cited in 13.

This study groups the Washington state's counties into 10 regions based on the grouping method used by the Washington State Population Survey[18]. According to this method, the urban counties of Clark, King, Pierce, Snohomish, and Spokane each form a region of their own. Kitsap and Thurston form the Other Puget Sound Metro region. Benton, Franklin, and Yakima form the Yakima-TriCities region. Island, San Juan, Skagit, and Whatcom form the North Sound region. The remaining counties form the East Balance and West Balance regions with the Cascades as the dividing line. Under this county grouping, in 2012, the King County region had the largest share of the adult population at 28.9 percent, Pierce County had 11.9 percent, Snohomish County had 10.7 percent, and the remaining 7 regions each accounted for about 6 to 8 percent of the population.

The self-reported general health status showed that 74.3 percent of the population was in the categories of "good," "very good," and "excellent" health. The remaining 25.7 percent had either "fair" or "poor" health. Of the four health conditions asked in the survey, diabetes had a prevalence rate of 11.5 percent, high blood pressure 27 percent, asthma 10.5 percent, and heart disease 6.2 percent. A fairly large percentage, 38.1 percent, of the adult population had at least one of the four conditions.

Approximately 17 percent of the adult population had no health insurance coverage of any kind. The majority of the adult population (70.5 percent) sought routine care in the past 12 months prior to the survey and more than a third (37.4 percent) sought urgent care during the same time period.

[18] http://www.ofm.wa.gov/sps/default.asp

Table 1: Population Characteristics
(Total Adult Population = 5,243,820)

	Percent		Percent
Age		**Asthma**	
18-24	12.4	Yes	10.5
25-34	18.1	No	89.5
35-44	17.3	**Heart Disease**	
45-54	18.1	Yes	6.2
55-64	16.7	No	93.8
65 and older	17.4	**DHAH (any of the four conditions)**	
Gender		Yes	38.1
Male	49.4	No	61.9
Female	50.6	**Health Insurance Status**	
Race		Insured	82.7
Non-Hispanic White	78.9	Uninsured	17.3
Non-Hispanic Other	12.8	**Sought Routine Care in Past 12 Months**	
Hispanic	8.4	Yes	70.5
Region		No	29.5
North Sound	6.5	**Sought Urgent Care in Past 12 Months**	
West Balance	6.7	Yes	37.4
King County	28.9	No	62.6
Other Puget Sound Metro	7.8	**Educational Attainment**	
Clark County	6.1	Less than high school diploma	9.8
East Balance	7.3	High school graduate (diploma) or GED	24.5
Spokane County	7.3	Some college or associate's degree	36.3
Yakima-TriCities	6.7	Bachelor's degree	17.8
Snohomish County	10.7	Master's, doctorate, or professional degree	11.6
Pierce County	11.9	**Marital Status**	
General Health Status		Never married	24.4
Excellent	21.4	Married	55.8
Very Good	33.5	Divorced	11.9
Good	29.4	Separated	2.2
Fair	11.2	Widowed	5.7
Poor	4.5	**Income as Percent of Federal Poverty Level**	
Diabetes		100% FPL or lower	13.1
Yes	11.5	101-200% FPL	13.8
No	88.5	201-300% FPL	14.1
High Blood Pressure		301% FPL or higher	41.5
Yes	27.0	Income unknown	17.4
No	73.0		

(Survey sample size = 5,105)

Visits with and Willingness to See NPs and PAs for Routine and Urgent Care

As discussed above, 70.5 percent of the adult population sought routine care and 37.4 percent sought urgent care in a 12-month period. For the most part, the adults saw physicians for their routine care and urgent care – as Table 2 shows, only 7.1 percent of the adults saw NPs and 4.3 percent saw PAs for their routine care (during the most recent visit if there was more than one visit in the past 12 months); only 2.8 percent saw NPs and 1.7 percent saw PAs for their urgent care (also during the most recent visit). However, most adults were willing to see NPs and PAs in future visits for both routine and urgent care. Nearly eight in ten (79.2 percent) of the adults were willing to see NPs and 71 percent to see PAs for routine care. Similarly, 77 percent were willing to see NPs and 68 percent to see PAs for urgent care.

Table 2: Percent of Adults Seeing and Willing to See Nurse Practitioners and Physician Assistants for Routine Care and Urgent Care

	Routine Care		Urgent Care	
	Saw Last Visit	Willing to See	Saw Last Visit	Willing to See
Nurse Practitioner	7.1	79.2	2.8	77.1
Physician Assistant	4.3	71.2	1.7	68.4

Factors Associated with the Public's Willingness to See NPs and PAs for Routine and Urgent Care

An advanced statistical procedure was conducted to identify factors that are associated with the public's willingness to see NPs and PAs for routine care and urgent care. The population characteristics in Table 1 plus prior treatment by NPs and PAs were used as candidate factors (i.e., covariates) with some of their response values recoded as shown in Table 3.

Table 3: Recoded Values Used in Analyses

Covariates	Recodes
Gender	• Male • Female
Age	(Continuous variable)
Race/ethnicity	• Non-Hispanic white • Non-Hispanic other • Hispanic
Education Attainment	• At least some college education • No college education
Marital Status	• Married • Not married
Income	• At or below 300 percent of FPL or income unknown • Above 300 percent of FPL
Region	(same ten regions as in Table 1)
General Health Status	• Good health (original "Excellent," "Very good," and "Good" categories) • Poor health (original "Fair" and "Poor" categories)

Table 3: Recoded Values Used in Analyses

Covariates	Recodes
Diagnosis of diabetes, high blood pressure, asthma, or heart disease (D.H.A.H)	• DHAH • No DHADHAHH
Insurance Coverage	• Insured • Uninsured
Use of Routine/Urgent Care	• Sought or used routine/urgent care • Did not seek routine/urgent care
Prior Care by NPs/PAs	• Seen by an NP or PA during last routine care or urgent care visit, if any • Not seen by an NP and PA during last routine and urgent care visits, if any

These factors were examined using multiple logistic regression. Logistic regression models were developed for the following four types of acceptance:

1. Acceptance of NPs for routine care
2. Acceptance of NPs for urgent care
3. Acceptance of PAs for routine care
4. Acceptance of PAs for urgent care

The odds ratio (OR) estimates from these models are included in Table 4. The OR statistic expresses the likelihood of a group's acceptance in comparison to a reference group, e.g. the OR for women in comparison to men. The significance of an OR is determined by 95 percent confidence interval (CI) around the OR. If the range of the CI includes the value of 1.0, the OR estimate is not statistically significant. Below is a discussion of results from the four models.[19]

Model 1 – Acceptance of NPs for Routine Care

The results from the first model show that age, gender, race/ethnicity, use of routine care, and last routine or urgent care visit with an NP are associated with acceptance of NPs for routine care. Controlling for all other factors, each additional year in age is associated with a 2.4 percent reduction in likelihood to accept NPs for routine care (Odds Ratio [OR] = 0.976). Women are about 36 percent more likely than men to be willing to see NPs for routine care (OR=1.364). Persons of Hispanic origin and non-Hispanic racial minority have a likelihood to accept NPs for routine care that is less than half of that for non-Hispanic white persons(OR=0.463, 0.407, respectively). Those who sought and used routine care in the past 12 months are about 30 percent less likely to accept NPs for routine care (OR=0.706). However, those who received care, whether routine or urgent, from NPs in the past 12 months are about five times more likely to accept NPs for routine care than those who did not (OR=6.026). Factors not associated with the willingness to see NPs for routine include region, health status, DHAH, health insurance status, education level, marital status, and income.

[19] The confidence intervals for the odds ratios reported in this section can be found in the last four tables in the appendix.

Model 2 – Acceptance of NPs for Urgent Care

The second model yielded only three factors that are associated with acceptance of NPs for urgent care. Controlling for all other factors, age is negatively associated with acceptance of NPs for urgent care with each additional year in age linked to 2% reduction in likelihood to accept NPs for urgent care (OR=0.980). Non-Hispanic minority persons are about 40 percent less likely to accept NPs for urgent care when compared with non-Hispanic white persons (OR=0.571) while there is no statistical difference between Hispanic persons and non-Hispanic white persons. Those who received care from NPs in the past 12 months are about four times as likely to accept NPs for urgent care than those who did not (OR=4.123). Gender, region, general health status, DHAH, health insurance status, use of urgent care in past 12 months, marital status, education level, and income are not found to be associated with acceptance of NPs for urgent care.

Model 3 – Acceptance of PAs for Routine Care

Half of the twelve factors in the third model were found to be significantly associated with acceptance of PAs for routine care. The other six factors not associated are age, health status, DHAH, health insurance status, marital status, and income. When holding all other factors constant:

- Women are more than 30 percent more likely than men to accept PAs for routine care (OR=1.298);
- The likelihood of residents in Other Puget Sound Metro, Clark, and East Balance regions to accept PAs for routine care exceeds that of residents in the King region by 135 percent, 66 percent, and 58 percent, respectively (ORs = 2.349, 1.660, 1.584);
- Non-Hispanic minority members are about 40 percent less likely than non-Hispanic white persons to accept PAs for routine care (OR=0.623) while no statistical difference is found between non-Hispanic whites and persons of Hispanic origins;
- Those who never attended college are about 30 percent less likely to accept PAs for routine care than those with any college education (OR=0.734);
- Persons who sought and used routine care in the past 12 months are about 30 percent less likely than those who did not to accept PAs for routine care (OR=0.707);
- However, persons who received care from a PA (for either routine or urgent care) are about three times more likely to accept PAs for routine care (OR=4.131).

Table 4: Odds Ratios of Accepting Nurse Practitioners and Physician Assistants for Routine Care and Urgent Care

	Model 1: Nurse Practitioners for Routine Care	Model 2: Nurse Practitioners for Urgent Care	Model 3: Physician Assistants for Routine Care	Model 4: Physician Assistants for Urgent Care
Age	0.976*	0.980*	0.993	1.000
Female (Ref. = Male)	1.364*	1.038	1.298*	1.192*
Region (Ref. = King County)				
North Sound	0.869	0.897	1.227	1.476
West Balance	0.961	0.808	1.270	0.917
Other Puget Sound Metro	1.470	1.095	2.349*	2.021*
Clark County	1.102	1.276	1.660*	2.209*
East Balance	1.055	0.911	1.584*	1.598*
Spokane County	1.354	0.973	1.426	1.694
Yakima-TriCities	1.105	0.717	0.952	1.006
Snohomish County	1.129	1.015	1.175	0.895
Pierce County	0.907	1.099	1.097	1.175
Race and Hispanic Origin (Ref. = Non-Hispanic White)				
Non-Hispanic Other Races	0.463*	0.571*	0.623*	0.729*
Hispanic	0.407*	0.999	1.131	1.200
Good Health (Ref. = Poor Health)	1.349	1.194	1.317	1.229
No DHAH (Ref. = DHAH)	1.022	1.033	1.000	1.008
Uninsured (Ref. = Insured)	0.928	1.147	1.163	1.179
Sought Routine/Urgent Care in Past 12 Months (Ref. = No such care)	0.706*	1.014	0.707*	1.014*
Received Care from NP (Ref. = No such care)	6.026*	4.123*	4.131*	3.300*
No College Education (Ref. = College Education)	1.034	0.889	0.734*	0.814*
Not Married (Ref. = Married)	0.926	1.074	1.114	0.953
Income <=300% FPL or Unknown (Ref. = 301% FPL or Higher)	0.813	0.996	0.813	0.910

*Significant at the 95% confidence level.
Note: "Ref." refers to the reference group

Model 4 – Acceptance of PAs for Urgent Care

In the final model, three factors are found to be associated with acceptance of PAs for urgent care. The three factors are region, race/ethnicity, and prior care from a PA. None of the other factors are found to be associated with acceptance of PAs for urgent care. Controlling for all other factors, residents of Other Puget Sound Metro, Clark, East Balance, and Spokane regions have likelihoods of accepting PAs for urgent care that exceed the likelihood of residents in King by about 100 percent, 120 percent, 60 percent, and 69 percent, respectively. In the race/ethnicity factor, non-Hispanic minority members are about 30 percent less likely than non-Hispanic white persons to accept PAs for urgent care (OR=0.729), but no difference is found between Hispanic persons and non-Hispanic white persons. Finally, those who received routine or urgent care from a PA are about 2.3 times more likely than those who did not receive PA care (OR=3.300).

Summary

The adult population in Washington is an aging population with about 17 percent at or over the age of 65. An aging population will require increasingly more health care services. Many other characteristics of the state's adult population also point to an increasing need for health care services. A quarter of the population reported their health status as fair or poor and nearly 40 percent had at least one of the chronic health conditions of diabetes, high blood pressure, asthma, and heart disease. Also, nearly 40 percent reported that they sought urgent care in the past 12 months. On top of that, 17 percent of the adult population reported no health insurance of any sort. Come 2014, hundreds of thousands of the currently uninsured adults are expected to gain health coverage under the ACA.[20] It is also expected that those who gain coverage under ACA will add to the demand for health care services, especially primary care services. Primary care nurse practitioners and physician assistants are considered to be part of the primary care workforce to shoulder the increased demand for services.

There are approximately 1,720 NPs and 850 PAs currently providing primary care in Washington. The main group of primary care providers in Washington is physicians, with an estimated size of approximately 5,500.[21] Of the total 8,070 primary care providers, NPs and PAs account for 21.3 percent and 10.6 percent, respectively (or a combined total of 32 percent). Both percentages are slightly higher than the corresponding national figures of 19 percent and 7 percent, respectively.[22] Although NPs and PAs have been providing primary care services in Washington, our analysis of the Health Care Consumer Survey shows that it is still a relatively small percentage of the adult population that received routine care from NPs and PAs -7.1 percent and 4.3 percent, respectively, in their most recent routine care visit, compared to 70.5 percent overall receiving routine care in the past 12 months. The percentages of adults receiving urgent care from NPs and PAs are also low at 2.8 percent and 1.7 percent, respectively, compared to 37.4 percent of adults receiving urgent care from any provider in the past 12 months. The bulk of primary care in Washington is provided by physicians. Given that NPs and PAs are about one third of the primary care provider workforce in Washington, the percentage of adults receiving routine care and urgent care from NPs and PAs seems low. There may be many possible explanations for this seemingly large discrepancy between the size of the NP and PA primary care workforce and the share of the population receiving its primary care services. For example, it may not be a patient's choice to decide

[20] Estimates of the ACA impact on insurance coverage can vary a great deal depending on details in the calculation, such as implementation of ACA's Medicaid expansion and exclusion of unauthorized immigrants. The Urban Institute provides one estimate that places the expected reduction of Washington State's non-elderly uninsured at about 340,000 through Medicaid expansion and the exchange (http://www.urban.org/uploadedpdf/412310-Health-Reform-Across-the-States.pdf).

[21] http://www.ofm.wa.gov/healthcare/deliverysystem/2011_PCP_survey_frequency_report.pdf

[22] Ower C, O'Neil E. Primary care health workforce in the United States. Princeton (NJ): Robert Wood Johnson Foundation; 2011.

which provider to see, particularly in the case of urgent care. Also, many NPs and PAs may fill the role of substitutes for physicians, i.e., working with the same panel of patients of a physician instead of having their own patient panels. It is, however, beyond the limitation of the data available to us and the scope of this study to explore those explanations.

With the expected increase in demand for primary care services in the near term and the expectation for NPs and PAs to shoulder part of the demand, it is important to know whether the public would embrace more primary care provided by NPs and PAs. The data suggest that they would, overwhelmingly:

- 79.2 percent and 71.2 percent would be willing to see NPs and PAs, respectively, for routine care
- 77.1 percent and 68.4 percent would be willing to see NPs and PAs, respectively, for urgent care.

This presents a favorable condition for NPs and PAs to help meet, at least in part, the rise in demand for primary care services.

While the public's acceptance of NPs and PAs for primary care is high, there is still about 20 to 30 percent of the adult population not ready for NPs and PAs yet. Understanding factors associated with the public's acceptance of NPs and PAs can help formulate effective communication strategies if the roles of NPs and PAs are expanded in primary care delivery.

The logistic regression analyses of this study show that tailored communication efforts could be made for men, non-Hispanic minority members, those who have used routine care, and particularly persons who have not experienced care from NPs and PAs, as these population groups were shown to have significantly lower levels of acceptance of NPs and PAs for routine care than their respective reference groups. In addition, with regard to acceptance of NPs for routine care, efforts should also be directed towards older adults and persons of Hispanic origin and, for acceptance of PAs for routine care, to those with no college education.

The logistic regression analyses for acceptance of urgent care provided by NPs and PAs suggest that fewer factors are associated with acceptance of NPs and PAs. This finding may imply that as far as urgent care is concerned, people do not differ much in their preferences over who they wish to see. Still, tailored communication efforts could be made for non-Hispanic minority members and those who have not experienced care by NPs and PAs for acceptance of both NPs and PAs for urgent care. Additional communication efforts on acceptance of NP urgent care could be made for older adults.

The logistic regression models yielded another finding that is also worth noting. Geographic location of where one lives is not associated with willingness to see NPs for either routine care or urgent care, but it is significantly associated with acceptance of PAs for both routine and urgent care. Particularly, when compared with residents in the King region, residents in Other Puget Sound Metro, Clark, and East Balance regions are more likely to accept PAs for both routine and urgent care. Residents in Spokane region are also more likely to accept PAs for urgent care than residents in the King region. It does not appear that this significance is related to more PAs in those regions. It is true that there are more PAs per capita in those regions than in the King region, but a few other regions also have more PAs per capita than the King region[23] and residents in the other regions did not show significantly different levels of acceptance of PAs from the level in the King region. One conjecture for the significantly higher levels of acceptance of PAs in those regions could be that PAs there have a greater visibility.

[23] See Appendix – Regional Distribution of Population, NPs, and PAs – 2011.

Conclusion

Current utilization of primary care provided by NPs and PAs is low among Washington's adult population. However, willingness to see NPs and PAs for primary care overall is high, although varying levels of acceptance exist among different population groups. Policy makers can use findings in this study to develop effective communication strategies about NP and PA's future roles in primary care should they choose expansion of NPs' and PAs' roles as one of the policy tools to address the shortage of primary care physicians.

Appendix

Table A-1: Regional Distribution of Population , Nurse Practitioners, and Physician Assistants – 2011

Region	Population	NPs	PAs	NPs Per 100,000 Population	PAs Per 100,000 Population
STATE	6,768,000	1,717	851	25	13
Clark County	429,000	71	51	17	12
East Balance	510,000	141	113	28	22
King County	1,943,000	520	200	27	10
North Sound	415,000	118	41	28	10
Other Puget Sound Metro	507,000	125	73	25	14
Pierce County	801,000	171	98	21	12
Snohomish County	719,000	137	30	19	4
Spokane County	474,000	178	74	38	16
West Balance	470,000	151	84	32	18
Yakima - TriCities	502,000	104	87	21	17

Source:
2011 Washington State Primary Care ARNP Survey
2011 Washington State Primary Care Physician Assistant Survey
OFM County Population Estimation Model

Table A-2: Odds Ratios for Acceptance of Nurse Practitioners for Routine Care (Model 1)

	Odds Ratio	Lower Confidence Limit[1]	Upper Confidence Limit[1]
Age	0.976	0.968	0.983
Female (Ref. = Male)	1.364	1.089	1.708
Region (Ref. = King County)			
North Sound	0.869	0.495	1.525
West Balance	0.961	0.637	1.449
Other Puget Sound Metro	1.470	0.980	2.204
Clark County	1.102	0.747	1.626
East Balance	1.055	0.646	1.722
Spokane County	1.354	0.928	1.976
Yakima-TriCities	1.105	0.713	1.713
Snohomish County	1.129	0.728	1.751
Pierce County	0.907	0.596	1.379
Race and Hispanic Origin (Ref. = Non-Hispanic White)			
Non-Hispanic Other Races	0.463	0.326	0.658
Hispanic	0.407	0.234	0.706
Good Health (Ref. = Poor Health)	1.349	0.996	1.827
No DHAH (Ref. = DHAH)	1.022	0.811	1.287
Uninsured (Ref. = Insured)	0.928	0.627	1.373
Sought Routine/Urgent Care in Past 12 Months (Ref. = No such care)	0.706	0.522	0.955
Received Care from NP (Ref. = No such care)	6.026	3.153	11.517
No College Education (Ref. = College Education)	1.034	0.803	1.331
Not Married (Ref. = Married)	0.926	0.738	1.162
Income <=300% FPL or Unknown (Ref. = 301% FPL or Higher)	0.813	0.639	1.035

[1] At the 95-percent confidence level

Note: "Ref." refers to reference group

Table A-3: Odds Ratios for Acceptance of Nurse Practitioners for Urgent Care (Model 2)

	Odds Ratio	Lower Confidence Limit[1]	Upper Confidence Limit[1]
Age	0.980	0.973	0.987
Female (Ref. = Male)	1.038	0.836	1.290
Region (Ref. = King County)			
North Sound	0.897	0.537	1.498
West Balance	0.808	0.547	1.191
Other Puget Sound Metro	1.095	0.737	1.625
Clark County	1.276	0.872	1.866
East Balance	0.911	0.592	1.400
Spokane County	0.973	0.680	1.393
Yakima-TriCities	0.717	0.399	1.290
Snohomish County	1.015	0.693	1.485
Pierce County	1.099	0.740	1.634
Race and Hispanic Origin (Ref. = Non-Hispanic White)			
Non-Hispanic Other Races	0.571	0.408	0.799
Hispanic	0.999	0.533	1.873
Good Health (Ref. = Poor Health)	1.194	0.856	1.665
No DHAH (Ref. = DHAH)	1.033	0.826	1.292
Uninsured (Ref. = Insured)	1.147	0.811	1.621
Sought Routine/Urgent Care in Past 12 Months (Ref. = No such care)	1.014	0.806	1.276
Received Care from NP (Ref. = No such care)	4.123	2.640	6.438
No College Education (Ref. = College Education)	0.889	0.693	1.141
Not Married (Ref. = Married)	1.074	0.857	1.345
Income <=300% FPL or Unknown (Ref. = 301% FPL or Higher)	0.996	0.793	1.252

[1] At the 95-percent confidence level

Note: "Ref." refers to reference group

Table A-4: Odds Ratios for Acceptance of Physician Assistants for Routine Care (Model 3)

	Odds Ratio	Lower Confidence Limit[1]	Upper Confidence Limit[1]
Age	0.993	0.987	1.000
Female (Ref. = Male)	1.298	1.050	1.604
Region (Ref. = King County)			
North Sound	1.227	0.766	1.964
West Balance	1.270	0.862	1.870
Other Puget Sound Metro	2.349	1.594	3.460
Clark County	1.660	1.117	2.467
East Balance	1.584	1.022	2.456
Spokane County	1.426	0.992	2.050
Yakima-TriCities	0.952	0.576	1.574
Snohomish County	1.175	0.802	1.721
Pierce County	1.097	0.732	1.644
Race and Hispanic Origin (Ref. = Non-Hispanic White)			
Non-Hispanic Other Races	0.623	0.451	0.859
Hispanic	1.131	0.635	2.014
Good Health (Ref. = Poor Health)	1.317	0.950	1.825
No DHAH (Ref. = DHAH)	1.000	0.797	1.255
Uninsured (Ref. = Insured)	1.163	0.794	1.702
Sought Routine/Urgent Care in Past 12 Months (Ref. = No such care)	0.707	0.529	0.944
Received Care from NP (Ref. = No such care)	4.131	2.318	7.363
No College Education (Ref. = College Education)	0.734	0.575	0.937
Not Married (Ref. = Married)	1.114	0.899	1.380
Income <=300% FPL or Unknown (Ref. = 301% FPL or Higher)	0.813	0.656	1.008

[1] At the 95-percent confidence level

Note: "Ref." refers to reference group

Table A-5: Odds Ratios for Acceptance of Physician Assistants for Urgent Care (Model 4)

	Odds Ratio	Lower Confidence Limit[1]	Upper Confidence Limit[1]
Age	1.000	0.993	1.006
Female (Ref. = Male)	1.192	0.968	1.466
Region (Ref. = King County)			
North Sound	1.476	0.963	2.263
West Balance	0.917	0.636	1.321
Other Puget Sound Metro	2.021	1.374	2.971
Clark County	2.209	1.467	3.325
East Balance	1.598	1.060	2.409
Spokane County	1.694	1.191	2.409
Yakima-TriCities	1.006	0.640	1.579
Snohomish County	0.895	0.613	1.308
Pierce County	1.175	0.787	1.755
Race and Hispanic Origin (Ref. = Non-Hispanic White)			
Non-Hispanic Other Races	0.729	0.537	0.991
Hispanic	1.200	0.661	2.176
Good Health (Ref. = Poor Health)	1.229	0.902	1.675
No DHAH (Ref. = DHAH)	1.008	0.814	1.248
Uninsured (Ref. = Insured)	1.179	0.837	1.661
Sought Routine/Urgent Care in Past 12 Months (Ref. = No such care)	1.014	0.811	1.268
Received Care from NP (Ref. = No such care)	3.300	1.822	5.976
No College Education (Ref. = College Education)	0.814	0.638	1.039
Not Married (Ref. = Married)	0.953	0.772	1.176
Income <=300% FPL or Unknown (Ref. = 301% FPL or Higher)	0.910	0.735	1.127

[1] At the 95-percent confidence level

Note: "Ref." refers to reference group