Barriers to Cancer Screening among Southwest American Indian Men Living on a Reservation

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Introduction

Background

Federal cancer screening programs targeting underserved populations successfully increased screening rates among American Indian (AI) women. Screening rates among AI men remain low without programs specifically designed for men.

Objective of this study

Community surveys were conducted between 2018 and 2019 among AI men to

- Understand colorectal and prostate cancer screening behavior
- Identify barriers to screening
- Develop a cancer program for AI men living on reservation

Materials and Methods

Survey

- Community based participatory research with the Hopi Tribe
  - Community advisory committee
    - All Hopi men and active members of Hopi community including one elder and one cancer survivor.
    - Provided guidance and recommendations related to recruitment strategies and research materials.
  - By a male Hopi Native Patient Navigator (Bilingual in English and Hopi)
- Between summer 2018 and winter 2019
- Using an audience response system (ARS)
- Target population
  - Hopi men
  - 50 years of age or older
  - live on the Hopi Reservation
- Study protocol was approved by Northern Arizona University Institutional Review Board and Hopi Tribal Council

Statistical analysis

- Logistic regression analysis was performed to identify factors associated with having cancer screening.

Results

Table 1 Study participants' characteristics, n (%)

Age	50-64 years	54 (65.1%)
	65-80 years	23 (27.7%)
	81+ years	2 (2.4%)
Primary language at home: Hopi		65 (78.1%)
Cancer experience	Has/had cancer	6 (7.2%)
	Family members diagnosed with cancer	37 (44.5%)
Health Status	Diabetes	36 (43.4%)
	Hypertension	44 (53.0%)
	High cholesterol	25 (30.1%)
	Good, very good or excellent health	59 (71.1%)
Hopi Health Care Center (Indian Health Service) as primary care services		36 (43.4%)
Medicare/Medicaid health insurance		40 (48.2%)
Learn about cancer screening from	Family members	16 (19.5%)
	Friends	5 (6.1%)
	Employers and coworkers	4 (4.9%)
	Health care providers	11 (13.4%)
	Community education events	6 (7.3%)
	HOPI Cancer Support Services staff	28 (34.2%)
	Media	6 (7.3%)
Annual physical exam within a year		43 (51.8%)
Own Cell phone		70 (84.3%)
Use cellular for texting		65 (78.3%)
Looked for medical information in the past year using electronic devices		27 (32.5%)
Made medical appointment using electronic devices in the past years		24 (28.9%)
Sent/received text from health professionals		26 (31.3%)

Results

Study participants' characteristics (Table 1)

- 11 Survey sessions were conducted.
  - Small groups of men at each session
  - There were more study participants in the survey sessions during the community-based or employee-focused health events (n>15) than the survey sessions at village level community centers (number of participants ranged from 1 to 11).
- A total of 91 men were recruited to participate in survey, and 83 eligible men completed the surveys.
- 78.3% of men spoke Hopi as a primary language at home.
- 7.2% of men were cancer survivors.
- Diabetes (43.4%) and hypertension (53.0%) was common, but many answered that they are in good, very good, or excellent health (71.1%).
- 34.2% of men responded that they learned about cancer screening from HOPI Cancer Support Services, while only 13% learned about cancer screening from health care providers.
- Only 33% of men reported that they looked for medical information using electronic devices in the past year.

Figure 1 Cancer screening rates in 2012 and 2018-2019 survey

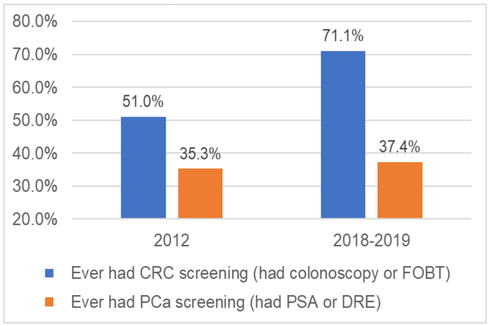

Table 2 Profile of cancer screening by screening methods

Type	FOBT	Colonoscopy	PSA	DRE
Screened	**11 (13.3%)**	**51 (61.5%)**	**14 (16.9%)**	**18 (21.7%)**
Within the last year	8 (19.5%)		8 (28.6%)	
Within the last 3 years	13 (31.7%)		9 (32.1%)	
Within the last 5 years	12 (29.3%)		8 (28.6%)	
Within the last 10 years	5 (12.2%)		2 (7.1%)	
Longer than 10 years ago	3 (7.3%)		1 (3.6%)	
Missing	18		3	

Fecal occult blood test (FOBT), prostate specific antigen (PSA), digital rectal exam (DRE)

Colorectal cancer (CRC) and prostate cancer (PCa) screening rates

- Colorectal cancer screening rate (having had fecal occult blood test or colonoscopy) increased from 51% in 2012 to 71% in 2018 (**Figure 1**).
- Prostate cancer screening rate (having had prostate specific antigen test or digital rectal exam) did not change (35% in 2012 and 37% in 2018).
- Colonoscopy was more common colorectal cancer screening method than FOBT, and 51.2% of men reported having had colorectal cancer screening within past 3 years (**Table 2**).
- 60.7% of men who had prostate cancer screening reported having had prostate cancer screening within past 3 years.

Table 3 Identification of factors associated with having colorectal cancer and prostate cancer screening for Hopi men

	Ever had CRC Screening				Ever had PCa Screening			
	Unadjusted		Adjusted		Unadjusted		Adjusted	
	OR (95% CI)	p	OR (95% CI)	P	OR (95% CI)	p	OR (95% CI)	P
Age < 65	0.24 (0.06, 0.90)	0.03	0.35 (0.09, 1.40)	0.14	0.42 (0.16, 1.09)	0.07		
Own Cell phone	1.68 (0.49, 5.77)	0.41			9.00 (1.11, 73.07)	0.04	5.42 (0.60, 3..89)	0.13
Screening history								
Ever had CRC or PCa screening	6.32 (1.70, 23.51)	<0.01	5.33 (1.38, 20.59)	0.02	6.32 (1.70, 23.51)	<0.01	5.37 (1.36, 21.17)	0.02
Health Status								
Diabetes	1.10 (0.42, 2.88)	0.84			0.91 (0.37, 2.24)	0.84		
Hypertension	3.13 (1.16, 8.48)	0.02	2.56 (0.88, 7.46)	0.09	1.71 (0.69, 4.23)	0.25		
High cholesterol	2.76 (0.83, 9.16)	0.10			3.07 (1.16, 8.11)	0.02	2.05 (0.70, 6.02)	0.19
Good, very good or excellent	1.76 (0.64, 4.85)	0.27			0.77 (0.29, 2.04)	0.60		
Medicare/Medicaid, or AHCCCs health insurance	0.56 (0.22, 1.47)	0.24			0.35 (0.14, 0.89)	0.03	0.42 (0.15, 1.19)	0.10

Adjusted models include variables associated with having colorectal or prostate cancer screening in unadjusted model. The variables that were not associated with having colorectal or prostate cancer screening are not shown.

Results

Factors associated with undergoing colorectal or prostate cancer screening (Table 3)

- Past prostate cancer screening was significantly associated with having colorectal cancer screening (OR 5.33, 95% CI: 1.38-20.59).
  - In unadjusted model, younger age (<65) was associated with not undergoing colorectal cancer screening (OR 0.24, 95% CI: 0.06-0.90).
  - Having hypertension was associated with undergoing colorectal cancer screening in unadjusted model (OR 3.13, 95% CI: 1.16-8.48)
- Past colorectal cancer screening was significantly associated with having prostate cancer screening (OR 5.37, 95% CI: 1.36-21.17).
  - In unadjusted model, having cellular phone and high cholesterol was associated with undergoing prostate cancer screening (OR 9.00, 95% CI: 1.11-73.07 for cellular phone and OR 3.07, 95% CI: 1.16-8.11 for high cholesterol)
  - Having Medicare or Medicaid was associated with not undergoing prostate cancer screening (OR 0.35, 95% CI: 0.14-0.89) in unadjusted model.

Discussion and Conclusion

Discussion

- The difference in study design may explain the higher colorectal cancer screening rate in 2018-2019 survey compared to 2012 survey.
  - 2012 Hopi community survey
    - random sampling
  - 2018-2019 survey
    - non-random sampling - men came to one of survey sessions
    - slightly more educated with higher income than 2012 survey participants
- Relationship between knowledge on cancer screening and cancer screening experience
  - Some men learnt about cancer screening from HOPI Cancer Support Services staff demonstrating effectiveness of HOPI Cancer Support Services' effort to increase cancer screening awareness, but many men did not learn from any other sources, including their health care providers.
  - While many men has a smart phone, they did not look for medical information using their smart phone or other electronic devices.
  - Having previous cancer screening increased odds of undergoing cancer screening.
  - Exposure to medical system may increase a chance of learning about cancer screening.
    - In unadjusted model, having hypertension increased odds of undergoing colorectal cancer screening, while having high cholesterol increased odds of undergoing prostate cancer screening.

Conclusion

- Improving knowledge on cancer screening among Hopi men will likely increase cancer screening rate.

Impact

- There is a desire by Hopi men to develop a cancer program specifically for men.
  - community education interventions
  - support from a Hopi Native Patient Navigator to help them access cancer screening
- Health care providers should play a bigger role in discussing benefit of cancer screening with Hopi men.

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