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Impact of Communication on Preventive Services Among Deaf American Sign Language Users

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Abstract

Background—Deaf American Sign Language (ASL) users face communication and language barriers that limit healthcare communication with their providers. Prior research has not examined preventive services with ASL-skilled clinicians.

Purpose—The goal of this study was to determine whether provider language concordance is associated with improved receipt of preventive services among deaf respondents.

Methods—This cross-sectional study included 89 deaf respondents aged 50–75 years from the Deaf Health Survey (2008), a BRFSS survey adapted for use with deaf ASL users. Association between the respondent's communication method with the provider (i.e., categorized as either concordant–doctor signs or discordant–other) and preventive services use was assessed using logistic regression adjusting for race, gender, income, health status, health insurance, and education. Analyses were conducted in 2010.

Results—Deaf respondents who reported having a concordant provider were more likely to report a greater number of preventive services (OR 3.42; 95% CI:1.31, 8.93; $p=0.0122$) when compared to deaf respondents who reported having a discordant provider even after adjusting for race, gender, income, health status, health insurance, and education. In unadjusted analyses, deaf respondents who reported having a concordant provider were more likely to receive an influenza vaccination in the past year (OR 4.55; $p=0.016$) when compared to respondents who had a discordant provider.

Conclusions—Language-concordant patient–provider communication is associated with higher appropriate use of preventive services by deaf ASL users.

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Introduction

Individuals with limited English proficiency or communication abilities are at high risk for health disparities and adverse health effects.^{1,2} Poor health communication can lead to lower patient satisfaction, adherence, use of health services, and education regarding healthy behaviors.^{2–6} Linguistic concordance between patients and providers is an important determinant of whether patients seek, understand and adhere to providers' preventive services recommendations which has been associated with improved healthcare utilization.^{7,8,9–11}

Deaf linguistic minority refers to deaf American Sign Language (ASL) users, a group of individuals who identify themselves as a minority community, with their own unique language and culture.^{12,13} Deaf ASL users struggle to understand spoken English and may lack proficiency in written English. Historically health-related research and education programs have excluded deaf ASL users. Communication and language barriers isolate this group from mass media and healthcare messages.^{14–16} Documented health disparities experienced by deaf ASL users include sexual health^{17–19}, cancer²⁰, preventive health^{16, 21}, and cardiovascular disease.²² Cultural and linguistic differences pose a challenge for many clinicians who care for deaf ASL users. Results from an ASL-accessible survey were used to test the hypothesis that deaf ASL users who report language-concordant healthcare communication are more likely to receive preventive services.

Methods

The data source is the National Center for Deaf Health Research's (NCDHR) Deaf Health Survey (DHS), adapted from the Behavioral Risk Factor Surveillance System Survey (BRFSS)²³ for deaf individuals. The DHS is self-administered on a touch-screen computer. Deaf respondents chose the survey language—ASL, signed English, and written English. The Rochester NY Metropolitan Statistical Area (MSA) was selected to administer the survey due to its high per capita population of deaf ASL users. The data collection occurred from March, 2008 until September, 2008. The NCDHR DHS is the largest cross-sectional public health survey of deaf individuals ever conducted in the U.S. 339 adults took the DHS. For analyses reported here, deaf people who reported that ASL was not their best language were excluded. Only respondents aged 50–75 years were included in the analyses ($n=89$, Figure 1). The research was approved by the University of Rochester Research Subjects Review Board.

Measures

The analyses examined receipt of the three non-gender-specific preventive services in the DHS (i.e., influenza vaccination in previous 12 months and if ever colonoscopy/sigmoidoscopy and cholesterol screening) recommended for adults aged 50–75 years in 2008²⁴. The authors analyzed each preventive service individually and also created a score (range 0–3) of the number of these preventive services reported. Respondents' healthcare communication was categorized as concordant if they reported that their doctor signs.

Statistical Analyses

SAS 9.2 was used for all analyses. The authors conducted univariate and bivariate analyses, and then used logistic regression to evaluate the dependent variables' (preventive services use) association with the primary independent variable (communication concordance) while adjusting for race, gender, income, health status, health insurance and education.

Results

Demographics and most healthcare variables were similar for respondents who reported concordant and discordant healthcare communication (Table 1). Ages between the two groups were comparable (mean age was 57.9 for the concordant group and 57.2 for the discordant group). Only one respondent with provider language concordant reported receiving none or only one preventive service (influenza, colonoscopy and cholesterol screening), whereas 17% of the respondents in the provider language discordant group reported only 0–1 preventive service. Respondents who reported having ASL-concordant communication were more likely to report influenza vaccinations than respondents who reported discordant communication (OR 4.55; $p=0.016$). Reported rates for colon and cholesterol screening were similar for the two groups.

In logistic regression analysis (adjusted for sociodemographics, health and health insurance), respondents who reported having concordant communication were more likely to report a greater number of preventive services (OR 3.42; 95% CI:1.31, 8.93; $p=0.012$) compared with respondents with discordant communication (Table 2).

Discussion

The findings support the hypothesis that deaf ASL users with language-concordant healthcare communication are more likely to receive preventive services than deaf ASL users with language-discordant healthcare communication. These findings are consistent with research showing an association between language-concordant healthcare communication and appropriate healthcare services, including preventive services.^{7, 10} With poor communication, preventive services may be relegated to a low priority or delayed for a variety of reasons, including time constraints and inability to communicate complex medical information for shared decision making and informed consent.

Influenza vaccination was the only individual preventive service significantly associated with ASL-concordant communication. Influenza vaccination is a recommended annual preventive service. The authors believe that better adherence here may reflect better communication, trust and patient–clinician continuity relationships associated with concordant communication. Future research should explore the reasons for influenza vaccination adherence.

Cholesterol screening (if ever) and colonoscopy/sigmoidoscopy (if ever) were not significantly associated with language concordance. The DHS did not ask follow-up questions regarding the preventive services. One possible reason the analyses did not find an association with language concordance and cholesterol is that cholesterol screening starts relatively young which leads to a higher number of opportunities for deaf ASL users to be screened, regardless of whether discordant communication occurs. This likely explains the high prevalence of cholesterol screening (if ever) rates seen for both concordant and discordant groups. For colon cancer, there are several approved methods available for screening, including the use of fecal occult blood tests (FOBT). The DHS did not ask about FOBT use. It may be that concordant communication results in higher rates of colon cancer screening via FOBT. Future research should include items on FOBT.

Communication is vital to appropriate, effective and successful healthcare. Many people, including clinicians, believe that deaf ASL users can understand non-sign-based communication. Research shows that note-writing and speech-reading, while commonly used by clinicians to communicate with deaf patients, are likely ineffective. According to one study, only 20% of deaf individuals demonstrated fluency in written English¹¹, and that the average English reading level of deaf high school seniors is at or below a 4th-grade

level.^{25,26} Speech reading is also inadequate, when the majority of English sounds are not clearly visible on the lips.²⁷

The results suggest that ASL-fluent clinicians may be crucial to addressing healthcare communication barriers experienced by deaf ASL users. Research with other language minority groups suggests that bilingual clinicians have better health outcomes, including better patient satisfaction and understanding, lowered healthcare expenditures, avoidance of diagnosis and treatment errors, and improved patient–provider relationships, than healthcare using other modes of communication, including the use of professional interpreter services.^{28,29} ASL-fluent clinicians are uncommon, and it is important to note that the use of sign language interpreter services is still associated with better adherence with recommended preventive services compared with healthcare without sign language accessible communication.¹¹ The use of interpreter services may also protect clinicians from malpractice concerns generated by poor communication.

This research would be difficult to do outside of Rochester NY, a city with a high per capita population of deaf ASL users. One third (31 of 89) of the respondents reported seeing a clinician who signs (language-concordant healthcare communication); this broad access to ASL-skilled clinicians is likely unique to Rochester and few other areas around the country. The participants were also predominately white (95.5%), similar to demographics in other published studies.^{30–32} Future research should explore the epidemiologic, genetic and/or biobehavioral reasons for the strong association between white race and deafness. The educational attainment of the DHS participants was higher than reported for deaf adults in published research using national data sets.^{30,31} The high educational attainment may mean that concordant communication is more important for preventive services adherence in deaf communities outside of Rochester NY.

The DHS data are all self-reported – the authors did not confirm the use of preventive services. The DHS question on healthcare communication asks about the most recent healthcare visit. It is possible that some respondents were misclassified as discordant who usually see an ASL-skilled clinician (but not at the most recent healthcare visit). This misclassification would likely result in the analyses underestimating the magnitude of the benefit of language concordant healthcare communication. Future studies could include chart audits (or other measures of preventive services use) and more detailed questions regarding healthcare communication and continuity relationships with a physician.

Conclusion

This study demonstrated for the first time with deaf ASL users the relationship between preventive services use and having a language-concordant clinician. Increasing the number of ASL-fluent clinicians (hearing or deaf themselves), and expanding their geographic reach through the use of tele-health technology, would likely improve healthcare services use and health in this underserved language minority population.

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Figure 1. Determination of Study Population

Note: ASL, American Sign Language; MSA, Rochester NY metropolitan statistical area

Table 1
Respondent Demographics by Mode of Communication with Provider

Characteristics	Provider Signs (%)	Other Modes (%)	p-value (χ^2)
Gender			0.748
Female	16 (51.6)	32 (55.2)	
Male	15 (48.4)	26 (44.8)	
Race			0.174*
White	31 (100)	54 (93.1)	
Other	0 (0)	4 (6.9)	
Household Income (\$)			0.381
<25,000	7 (22.6)	19 (32.8)	
25,000–50,000	10 (32.2)	21 (36.2)	
>50,000	14 (45.2)	18 (31.0)	
Education			0.129
High school or less	11 (35.5)	12 (20.7)	
Some college or higher	20 (64.5)	46 (79.3)	
Medical Insurance			0.085*
Public	12 (38.7)	17 (29.3)	
Private	19 (61.3)	40 (69.0)	
None	0 (0)	1 (1.7)	
Health Status			0.224
Excellent–Good	28 (90.3)	56 (96.6)	
Fair–Poor	3 (9.7)	2 (3.4)	
Sum of Preventive Services			0.055*
0–1**	1 (3.2)	10 (17.2)	
2	10 (32.3)	24 (41.4)	
3	20 (64.5)	24 (41.4)	
Preventive Services			
Flu Shot (in previous 12 months)			0.016
Yes	28 (90.3)	39 (67.2)	
No	3 (9.7)	19 (32.8)	
Colonoscopy/sigmoidoscopy (if ever)			0.141
Yes	24 (77.4)	36 (62.1)	
No	7 (22.6)	22 (37.9)	
Cholesterol Screening (if ever)			0.340*
Yes	29 (93.5)	54 (93.1)	
No	2 (6.5)	4 (6.9)	

*=Fisher's Exact

** only 1 (Other Modes) reported 0 preventive services

Table 2
AOR for Sum of Received Preventive Services by American Sign Language Concordant Provider

Factor	Adjusted Rate Ratio (95% CI)	p-value
Gender		
Female	1.96 (0.81, 4.27)	0.136
Male	1	
Race		
White	1	
Other	1.49 (0.21, 10.76)	0.696
Income (\$)		
<25,000	3.62 (1.08, 12.19)	0.038
25,000–50,000	2.51 (0.85, 7.43)	0.096
>50,000	1	
Education		
High school or less	1.13 (0.41, 3.13)	0.817
Some college or higher	1	
Health Status		
Excellent–Good	1	
Fair–Poor	1.26 (0.18, 8.75)	0.814
Insurance		
Public	1.52 (0.56, 4.15)	0.409
Private	1	
None	0.760 (0.02, 34.62)	0.888
Communication with Provider		
Provider Signs	3.42 (1.31, 8.93)	0.012
Other Modes	1	