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Patient-provider communication patterns among Asian American immigrant subgroups in New York City

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ABSTRACT

Objectives: Patient-provider communication is essential for patient-centered care, yet Asian American immigrant populations face barriers. We aim to describe: 1) patient-reported communication-related characteristics for 16 disaggregated Asian American subgroups; and 2) the association of patient comprehension of provider communication with socio-demographics, language proficiency and concordance, and perceived cultural sensitivity in this population.
Methods: Descriptive statistics are presented for 1269 Asian American immigrants responding to cross-sectional, venue-sampled surveys conducted in New York City. Logistic regression models examine predictors of low comprehension of provider communication.
Results: Approximately 11% of respondents reported low comprehension of provider communication: lowest among South Asians and highest among Southeast Asians. Eighty-four percent were language-concordant with their provider, 90.1% agreed that their provider understood their background and values, and 16.5% felt their provider looked down on them. Low comprehension of provider communication was significantly associated with Southeast Asian subgroup, less education, limited English proficiency, public health insurance, patient-provider language discordance, and perceived low cultural understanding.
Conclusion: Among our sample, language and cultural sensitivity are associated with comprehension of provider communication.
Practice implications: Strategies improving language access and cultural sensitivity may be important for Asian immigrant patients. These could include interpretation services, bilingual community-based providers, and cultural sensitivity training.

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1. Introduction

The Asian American population is the fastest growing racial group in the United States (US) [1]. Roughly 20.4 million people, or 6.3 % of the US population identify as Asian alone or in combination with one or more other races [2]. In New York State, nearly two-thirds of Asian Americans are immigrants, and most (71 %) of Asians live in New York City (NYC) [3]. Nearly 1.3 million Asian American individuals live in NYC, comprising 15.2 % of the total population (U.S. Census Bureau, 2017). Partly due to the model minority myth stereotype, Asian Americans are often believed not to experience health disparities [4]. However, there are differences in various health measures for Asian American subgroups. For example, compared to the overall uninsured population in NYC (9%), Koreans and Chinese are more likely to be uninsured (17 % and 11 %) [5]. South Asian New Yorkers are at a higher risk for obesity, hypertension, and diabetes. Many Asian groups have high prevalence of gastric cancer compared to other racial groups [6]. Asian American immigrants face challenges such as lack of access to health insurance and health care [7]. Foreign-born individuals are more likely than native-born individuals to be limited English-proficient (LEP), and prevalence of LEP is disproportionately high among Asian Americans [8].

Despite the growing need to further understand the health patterns and needs of Asian American communities, gaps in

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knowledge and data remain. Most large health surveys are not being conducted in Asian languages, while Asian Americans, especially immigrants, are more likely to be LEP [8], resulting in systematic exclusion from data collection [9]. Moreover, some surveys only have small Asian sample sizes, yielding low statistical power, or aggregate this socially, linguistically, and culturally diverse racial category, masking the distinct health needs and disparities of specific Asian subgroups [9,10]. In light of these challenges, there is a clear need for more disaggregated data about health and health care experiences of distinct Asian American immigrant communities.

The ability of physicians to effectively and compassionately communicate information is key to a successful patient–physician relationship [11]. The Patient-Centered Culturally Sensitive Health Care Model provides a framework that can help improve health care among low-income minority communities [12–14]. This framework describes the following strategies for improving healthcare quality: promoting cultural and linguistic competence in the delivery of healthcare, and promoting culturally sensitive healthcare by improving the patient-provider relationship [14]. According to Tucker et al., health care that is "based on the views of culturally diverse patients rather than the views of health care professionals," may lead to more positive health behaviors and health outcomes among minority patients [13].

Effective provider-patient communication can establish trust and rapport, transmit health information, empower patients, increase collaborative goal setting, and facilitate agreement on medical decisions [15–18]. Provider-patient communication has been strongly linked to patient satisfaction, and less consistently, with other outcomes including comprehension and recall of medical information and treatment adherence [16]. Patient comprehension during medical interactions is critical to the patient's safety, informed decision-making, and ability to adhere to health-promoting behaviors. Both the provider's communication skills and the patient's health literacy level impact the patient's ability to comprehend health information [19].

Among immigrant populations, language discordance is a potential barrier to effective patient-provider communication [20], and LEP patients are more likely to report lower comprehension of medical situations and poorer quality communication compared to their English-proficient counterparts, especially if they are language-discordant with their providers [21–25]. Studies have also associated LEP, low health literacy, and patient-provider language discordance with more distal negative outcomes such as receipt of less health education, poorer self-rated health, and increased risk of death [23,26,27].

Deficiencies in cultural sensitivity, the ability to communicate and interact across cultures, also contributes to sub-optimal health care interactions and other negative outcomes. The lack of cultural sensitivity includes implicit and explicit physician bias and discrimination [28–33]. In focus groups conducted by Gonzalez and colleagues [34], Black and Latinx patients described negative experiences with race-based assumptions, microaggressions, and inferior treatment by health care staff. There has also been evidence from racially-discordant interactions with Black patients that physician bias is associated with more dominant linguistic patterns, as well as lower patient perceptions of provider respect, friendliness, and patient-centeredness [35,36]. Potentially due to the model minority myth stereotype, providers may under-recommend breast, cervical, and colorectal cancer screenings to Asian Americans, despite cancer being the leading cause of death for this racial group [37]. Misunderstandings can arise related to differences in values and beliefs; cultural conceptions of health and illness; and expectations of provider, patient, and family roles [29]. The importance of perceived provider cultural sensitivity is underscored in the Patient-Centered Culturally Sensitive Health Care Model, which describes causal links to patient satisfaction, trust, and other outcomes [13,38].

This study had the following aims: 1) to describe patient-provider communication-related characteristics, measured by an individual's comprehension of provider communication for 16 disaggregated Asian American subgroups in NYC; and 2) to describe the association of patient comprehension of provider communication with socio-demographics, patient-provider language concordance, language proficiency, and perceived cultural sensitivity in this population. We hypothesize that report of low comprehension of provider communication will be associated with LEP, patient-provider language discordance, and report of poor provider cultural sensitivity.

2. Methods

2.1. Design and procedure

Data for this study originate from a cross-sectional, large-scale Community Health Resources and Needs Assessment (CHRNA) survey conducted in NYC by the NYU Center for the Study of Asian American Health between 2013 and 2016, with data collection occurring primarily in 2014 and 2015. The survey was administered to Asian American adults aged 18–85. Participants were recruited at community events (e.g. faith-based gatherings, health screenings, and cultural events). Venue-based sampling was used, leveraging partnerships with community-based organizations serving Asian American communities in the NYC metropolitan area to enable survey administration in respondents' preferred languages. While English surveys were offered, the majority of surveys were completed in Asian languages. Fifteen total Asian American groups were targeted: Asian Indian, Bangladeshi, Pakistani, Himalayan, Sri Lankan, Indo-Caribbean, Chinese, Korean, Japanese, Filipino, Vietnamese, Cambodian, Indonesian, Burmese, and Thai. Outreach occurred separately for each group. In order to account for ethnic subgroup differences, the Himalayan group was further divided into Tibetan and Nepali for analyses. Respondents were asked questions about their socio-demographics, health care experiences, and other health behaviors.

Out of an initial sample of 1684 survey respondents, individuals born outside of the US, without a regular health care provider, and not answering the main study outcome (comprehension of provider communication) were excluded, resulting in a final sample of 1269 individuals. Those without a health care provider (answering "I have no regular health care provider" to the question "Do you have a health care provider who speaks a language in which you can comfortably communicate?") were excluded because additional questions related to comprehension of provider communication were asked only of individuals who had a provider.

2.2. Measures

The dependent variable for analysis is the patient's level of comprehension of provider communication. Survey participants were first asked: "Do you have a health care provider who speaks a language in which you can comfortably communicate?") Answers included "yes," "no," and "I have no regular health provider." Among those answering "yes" or "no," the following question was asked: "During your visit, how much of what the doctor said did you understand?" Those who responded "some" or "only a little" were classified as having low comprehension of provider communication, and those who answered "everything" or "most" were classified as having high comprehension of provider communication. This question was modified from the Commonwealth Fund 2001 Health Care Quality Survey [39,40], but unlike on the Commonwealth Fund survey, our question does not ask

what type of provider/doctor was seen, nor the provider/doctor's visit referenced.

Asian American subgroups were defined using the community sampling venue and self-reported Asian ethnicity by standard Census classifications [41]. The 16 detailed Asian subgroups were categorized into three broader ethnic subgroups, defined as follows: South Asians (Asian Indian, Bangladeshi, Pakistani, Nepali, Sri Lankan, Indo-Caribbean), East Asians (Chinese, Korean, Japanese, Tibetan), and Southeast Asians (Filipino, Vietnamese, Cambodian, Indonesian, Burmese, Thai). Indo-Caribbeans were classified with South Asians based on Asian Indian ethnicity and ancestor country of origin.

Main independent variables included the respondent's English fluency, language concordance with his or her health care provider, and perception of the provider's cultural sensitivity. In keeping with a commonly used operationalization of "limited English proficiency," English fluency categories were collapsed into a three-level variable: speaking English "very well," (fluent), "well," and "not well or "not at all" [42]. Those answering "yes" to the question, "Do you have a health care provider who speaks a language in which you can comfortably communicate?" were considered language-concordant with their provider, while those who answered "no" were not. Our question was adapted from previous survey questions on the Behavioral Risk Factor Surveillance System (BRFSS) [43].

Cultural sensitivity was assessed using two questions. The first was: "I feel that my doctor understands my background and values." Those answering "strongly agree" or "somewhat agree" had high cultural understanding and those answering "strongly disagree" or "somewhat disagree" had low cultural understanding. The second question was: "I often feel as if my doctor looks down on me and the way I live my life." Those answering "strongly agree" or "somewhat agree" had high perceived bias and those answering "strongly disagree" or "somewhat disagree" had low perceived bias. These questions were adapted from the Commonwealth Fund 2001 Health Care Quality Survey [39,40].

Socio-demographic variables included age, gender, years in the US, and education (less than high school, high school/some college, and college graduate). Health insurance was grouped into private, public, and uninsured.

2.3. Statistical analyses

All statistical analyses were conducted using SPSS version 25. Descriptive statistics were tabulated to characterize the overall sample and were presented for each Asian American subgroup (South Asian, East Asian, and Southeast Asian). A multivariable logistic regression model predicting low comprehension of provider communication was constructed for the overall sample while adjusting for Asian American subgroup. This was followed by two subsequent models: Model 1 included Asian American subgroup, age, gender, time in the US, and education; and Model 2 included all variables from Model 1 as well as English fluency, health insurance, patient-provider language concordance, and cultural sensitivity (cultural understanding and perceived bias).

3. Results

3.1. Respondent characteristics

Table 1 presents descriptive sample characteristics overall and by Asian American subgroup. Respondents (n = 1269) reported a mean age of 48.9 years old and averaged 16.8 years of residency in the US. A larger number of respondents were female (58.7%), college graduates (41.3%), and had public insurance (56.0%), with annual household income <$25,000 (30.3%). Distributions for these characteristics varied widely across groups, and one-quarter of participants did not disclose income. Twenty-six percent of the sample spoke English "very well," while 36.0% spoke English "not well" or "not at all."

Table 2 presents descriptive statistics of comprehension of provider communication, patient-provider language concordance, and cultural sensitivity (cultural understanding and perceived bias). The vast majority (83.6%) of the sample reported language concordance with their provider; concordance was highest among East Asians (88.2%), followed by South Asians (85.6%) and

Table 1
Respondent characteristics from the Community Health Resources and Needs Assessments by Asian American immigrant subgroup, n (%).

	Total (n = 1269)	South Asian (n = 562)	East Asian (n = 400)	Southeast Asian (n = 307)	p-value
Age, mean ± SD	48.9 ± 15.9	45.7 ± 14.5	55.5 ± 16.2	46.3 ± 15.3	<0.001
Gender					0.001
Female	744 (58.7)	305 (54.3)	265 (66.4)	174 (56.7)	
Male	524 (41.3)	257 (45.7)	134 (33.6)	133 (43.3)	
Education completed					<0.001
Less than high school	345 (27.6)	151 (26.9)	133 (34.0)	61 (20.5)	
High school/some college	389 (31.1)	199 (35.5)	99 (25.3)	91 (30.5)	
College graduate	516 (41.3)	211 (37.6)	159 (40.7)	146 (49.0)	<0.001
Number of years in the US, mean (SD)	16.8 ± 10.9	14.1 ± 9.7	20.3 ± 11.6	17.2 ± 11.0	<0.001
Number of years in the US, categories					
≤5 years	191 (16.0)	105 (19.6)	35 (9.6)	51 (17.3)	
6–10 years	257 (21.5)	140 (26.2)	59 (16.1)	58 (19.7)	
11–20 years	353 (29.5)	167 (31.2)	117 (32.0)	69 (23.5)	
>20 years	394 (33.0)	123 (23.0)	155 (42.3)	116 (39.5)	
Annual Household Income					0.002
<$25,000	385 (30.3)	184 (32.7)	110 (27.5)	91 (29.6)	
$25,000-$55,000	292 (23.0)	148 (26.3)	71 (17.8)	73 (23.8)	
>$55,000	284 (22.4)	112 (19.9)	99 (24.8)	73 (23.8)	
Don't know/ Refused/ Skipped	308 (24.3)	118 (21.0)	120 (30.0)	70 (22.8)	
English proficiency					<0.001
Very well	328 (26.0)	203 (36.2)	43 (10.9)	82 (27.1)	
Well	478 (38.0)	226 (40.3)	130 (32.9)	122 (40.3)	
Not well /Not at all	453 (36.0)	132 (23.5)	222 (56.2)	99 (32.7)	
Insurance					<0.001
Public	698 (56.0)	353 (63.3)	207 (53.6)	138 (45.7)	
Private	382 (30.7)	140 (25.1)	124 (32.1)	118 (39.1)	
No insurance	166 (13.3)	65 (11.6)	55 (14.2)	46 (15.2)	

Table 2
Patient-provider communication and cultural competence measures by Asian American immigrant subgroup, n (%).

	Total (n = 1269)	**South Asian (n = 562)**	**East Asian (n = 400)**	**Southeast Asian (n = 307)**	**p-value**
Do you have a health care provider who speaks a language in which you can comfortably communicate? (**Patient-provider** language concordance)					<0.001
Yes	1061 (83.6)	481 (85.6)	353 (88.2)	227 (73.9)	
No	208 (16.4)	81 (14.4)	47 (11.8)	80 (26.1)	
I feel that my doctor understands my background and values (**Cultural understanding**)					<0.001
Strongly Agree	660 (56.7)	367 (67.6)	166 (49.1)	127 (45.0)	
Somewhat agree	388 (33.4)	139 (25.6)	139 (41.1)	110 (39.0)	
Somewhat disagree	83 (7.1)	21 (3.9)	23 (6.8)	39 (13.8)	
Strongly disagree	32 (2.8)	16 (3.0)	10 (3.0)	6 (2.1)	
I often feel as if my doctor looks down on me and the way I live my life (**Perceived bias**)					<0.001
Strongly Agree	87 (8.0)	51 (10.0)	26 (8.3)	10 (3.8)	
Somewhat agree	93 (8.5)	40 (7.8)	24 (7.7)	29 (10.9)	
Somewhat disagree	183 (16.8)	71 (13.9)	47 (15.0)	65 (24.4)	
Strongly disagree	728 (66.7)	350 (68.4)	216 (69.0)	162 (60.9)	
During your visit, how much of what the doctor said did you understand? (**Comprehension of provider communication**)					<0.001
Everything	774 (61.0)	381 (67.8)	245 (61.3)	148 (48.2)	
Most	360 (28.4)	150 (26.7)	117 (29.3)	93 (30.3)	
Some	73 (5.8)	23 (4.1)	22 (5.5)	28 (9.1)	
Only a little	62 (4.9)	8 (1.4)	16 (4.0)	38 (12.4)	

Southeast Asians (73.9%). A total of 90.1% of individuals agreed that their provider (doctor) understands their background and values; this was highest among South Asians (93.2%), followed by East Asians (90.2%) and Southeast Asians (84.0%). Additionally, 16.5 % agreed that they often feel as if their provider (doctor) looks down on them and the way they live their life; this was highest among South Asians (17.8%), followed by East Asian (16.0%) and Southeast Asians (14.7%). Out of the entire sample, 10.7 % reported some or only a little understanding of what the doctor said; this was highest among Southeast Asians (21.5%), followed by East Asians (9.5 %) and South Asians (5.5 %).

The Appendix A includes disaggregated descriptive statistics for the 16 Asian American groups surveyed, categorized by broader ethnic subgroup: South Asian (Table A), East Asian (Table B), and Southeast Asian (Table C).

Fig. 1 presents comprehension of provider communication by detailed Asian American subgroup. With disaggregation, South Asian groups were shown to have differing rates of low comprehension of provider communication (Sri Lankan – 9.9 %, Nepali – 8.3 %, Indo-Caribbean – 7.7 %, Bangladeshi – 5.8 %, Asian Indian – 1.0 %, and Pakistani – 1.2 %). Among East Asians, Tibetan (47.4 %) had higher rates compared to the other groups (Chinese – 7.8 %, Japanese – 7.6 %, and Korean – 7.4 %). Finally, while rates were high among overall Southeast Asians, Burmese (4.8 %) and Filipino (8.9 %) groups had much lower rates of low comprehension of provider communication compared to other Southeast Asian groups (Cambodian – 56.3 %, Thai – 27.6 %, Indonesian – 21.7 %, and Vietnamese – 19.0 %)

3.2. Multivariable analyses

In the unadjusted model (n = 1269), Southeast Asians had 4.69 times the odds and East Asians had 1.80 times the odds of low comprehension of provider communication, when compared to South Asians ($p < 0.001$ and $p = 0.020$, respectively) (Table 3). In Model 1, Southeast Asian ethnicity remained statistically significant (aOR = 5.80, $p < 0.001$), but East Asian ethnicity did not. In addition, females had 1.59 times the odds compared to males of

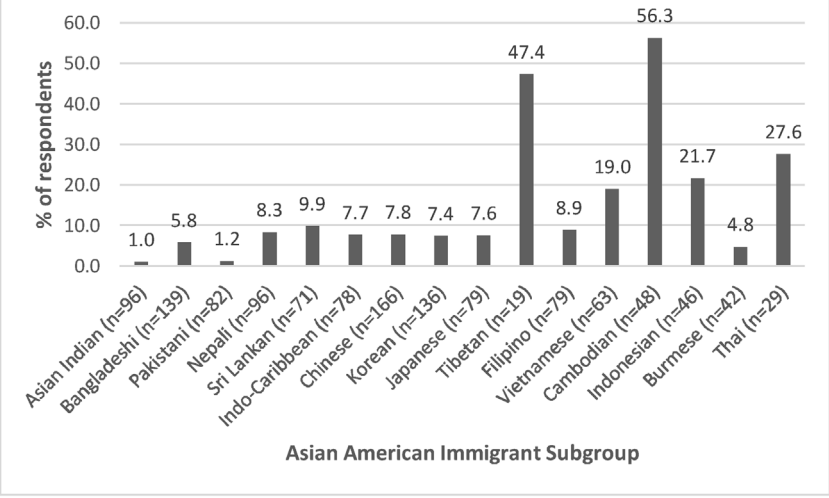

Fig. 1. Low comprehension of provider communication by detailed Asian American immigrant subgroup.

Table 3
Relationship of Asian American immigrant subgroup with low comprehension of provider communication.

	Unadjusted (n = 1269) OR (95 % CI)	p-value	Model 1 (n = 1158) OR (95 % CI)	p-value	Model 2 (n=**984**) OR (95 % CI)	p-value
Asian American subgroup						
South Asian	Reference		Reference		Reference	
East Asian	1.80 (1.10, 2.94)	0.020	1.48 (0.85, 2.56)	0.167	0.7**5** (0.3**6**, 1.**54**)	**0.431**
Southeast Asian	4.69 (2.98, 7.38)	<0.001	5.80 (3.47, 9.67)	<0.001	3.**39** (1.**80**, 6.**41**)	<0.001
Age, years			1.00 (0.99, 1.02)	0.918	0.9**9** (0.9**7**, 1.01)	**0.343**
Gender						
Female			1.59 (1.04, 2.45)	0.033	1.**47** (0.8**5**, 2.**55**)	0.1**64**
Male			Reference		Reference	
Time in US, years			1.00 (0.98, 1.02)	0.697	1.02 (0.99, 1.05)	0.2**93**
Education						
Less than high school			9.30 (5.07, 17.05)	<0.001	**4.04** (1.**73**, **9.41**)	**0.006**
High school/Some college			3.32 (1.80, 6.13)	<0.001	1.**97** (0.**88**, **4.41**)	0.1**00**
College graduate			Reference		Reference	
English spoken fluency						
Very well					Reference	
Well					2.**25** (0.7**9**, **6.43**)	0.1**32**
Not well/Not at all					**4.24 (1.38, 13.02)**	**0.012**
Health insurance						
Private					Reference	
Public					2.7**7** (1.1**9**, 6.4**4**)	**0.018**
Uninsured					1.**38** (0.4**8**, 3.**93**)	0.**548**
Patient-provider language concordance						
Yes					Reference	
No					5.3**0** (3.0**5**, 9.**18**)	<0.001
Cultural understanding						
Agree (Strongly or somewhat)					Reference	
Disagree (Strongly or somewhat)					6.**31** (3.**17**, 12.**54**)	<0.001
Physician bias						
Agree (Strongly or somewhat)					1.**54** (0.**81**, 2.**93**)	**0.192**
Disagree (Strongly or somewhat)					Reference	

low comprehension of provider communication (p = 0.033). Compared to college graduates, individuals with less than a college education had higher odds of reporting low comprehension of provider communication (less than high school: aOR = 9.30, p < 0.001, high school/some college: aOR = 3.32, p < 0.001). In Model 2, Southeast Asian subgroup (aOR = 3.39, p < 0.001) and less than high school education (aOR = 4.04, p = 0.006) remained significant, but gender did not. Additional significant factors included: LEP (aOR: 4.24, p=0.012), public health insurance (aOR=2.77, p=0.018), patient-provider language discordance (aOR=5.30, p < 0.001), and perceived lower cultural understanding (aOR 6.31, p < 0.001). Perceived bias was not a significant predictor of low comprehension of provider communication.

Due to observed gender differences in Model 1, additional logistic regression was run stratifying by gender. Southeast Asian ethnicity, patient-provider language concordance, and provider cultural understanding remained significant predictors of low comprehension of provider communication for both males and females. However, lower education was a significant predictor of low comprehension of provider communication among females, while insurance (public or uninsured) was a significant predictor of low comprehension of provider communication among males (data not presented).

4. Discussion and conclusions

4.1. Discussion

Among a large sample of Asian American immigrants living in NYC, we found that Southeast Asian subgroup, lack of patient-provider language concordance, and lower perceived cultural understanding were significant predictors of low comprehension of provider communication. Additionally, speaking English not well or not at all, public insurance, and less than high school education were also significantly associated with low comprehension of the provider in our full model.

LEP and patient-provider language discordance have a demonstrated association with patient-provider communication in past research [22,24,25,44]. However, some detailed Asian American subgroups reported both high rates of LEP and patient-provider language concordance. For example, 88.3% of Chinese American respondents spoke English less than “very well,” yet 94.6% reported language concordance with their doctors; similar findings were seen among Korean respondents (see Appendix A - Table A, Table B). This pattern of high language concordance was true for Chinese-speaking respondents regardless of dialect, although LEP was especially high among those speaking dialects outside of Mandarin and Cantonese (data not shown).

While it is possible that respondents felt that they could comfortably communicate with their doctors despite lacking English language skills, it is also likely that the Chinese American respondents in NYC experience high availability of language-concordant doctors who speak a Chinese language, compared to the other Asian American subgroups. Well-established clinics and provider networks offering Chinese in-language health care services in NYC include the Charles B. Wang Community Health Center (CBWCHC), the Chinese American Medical Society, and the Coalition of Asian American Independent Practice Association (CAIPA). CBWCHC is a federally qualified health center that was founded in 1971 and currently operates three sites located in historic Chinatown neighborhoods in NYC, employing mostly doctors who are bilingual in English and Chinese [45]. It served over 58,000 patients in 2017 [45]. The Chinese American Medical Society, a national professional organization dedicated to promoting Chinese American health and medical professionals, is also headquartered in NYC and has been operating since 1964 [46]. CAIPA includes over 1000 private practice providers in the greater New York area who provide care to almost half-a-million largely

Chinese American patients [47]. More recent Asian American immigrant populations reporting lower rates of language concordance, such as Cambodian, Indonesian, and Vietnamese, by contrast, are likely hampered by the lack of an established language-concordant health care workforce who can provide in-language community-based health care services. Language access may be more difficult for these smaller and more recently emerging populations in the NYC area.

Respondent**s'** report**s** of lower perceived cultural understanding were also significantly associated with lower comprehension of provider communication. This finding underscores the importance of patient-centered interactions in which doctors successfully convey understanding of the patient's worldview and values [29]. While cultural sensitivity and patient-centered care have been most strongly tied to patient satisfaction, we provide evidence suggesting connections to patient comprehension of provider communication as well [13,48].

Our findings also demonstrate that lower socioeconomic status is associated with low comprehension of provider communication, including less than high school education and public health insurance. Past research has found that physicians may have an unconscious bias toward individuals of low socio-economic status, and these biases may affect the health care of these patients [49]. Others have also documented links between patient educational level and both health literacy and communicative style with providers [50,51]. Further research needs to investigate the possible association between lower socioeconomic status and patient-provider communication among Asian American and immigrant communities.

Study limitations should be mentioned. Generalizability of findings is limited due to use of a non-random venue-based sampling strategy; survey respondents may reflect those more inclined to participate in community-based events or those in greater need of services provided by community-based organizations than the population at large. Proportions are descriptive for our specific sample and cannot be interpreted as estimates of population prevalence. Furthermore, missing data excluded part of our sample from the multivariable analysis, creating another source of potential bias. Observed differences across Asian American subgroups may reflect differences in venue client bases, survey administration, or cultural norms around answering questions, rather than differences in phenomena of interest in the underlying community. Social desirability bias could be an issue if respondents wished to avoid being critical of their health care providers or believed that certain response options were more desirable than others and should be investigated in future research. Patient-provider communication-related constructs were measured with single items available in the survey rather than multi-item validated scales, which decreases the stability of findings. Additionally, if a participant did not have a health provider, they were excluded from answering provider-related questions, and the question "During your visit, how much of what the doctor said did you understand?" does not assess specific information about when the last visit with the doctor/provider was, or what type of doctor/provider was visited (primary or specialist). Future research should take care to include individuals without regular providers and assess additional provider characteristics. Finally, data on patient-provider language concordance were collected, but the language of patient-provider communication was not assessed. This detail is especially important because there is mixed evidence, implying contextual nuances, regarding whether English-proficient patients and LEP patients with language-concordant providers in non-English languages differ in health care communication outcomes [21,22,52].

However, a major study strength is our sample's uncommon ability to offer disaggregated findings for diverse Asian American subgroups, including LEP individuals, who are typically aggregated or excluded from analyses. Data provide the important opportunity to illuminate trends for smaller Asian American immigrant communities for whom little health research exists in the US, such as Himalayan immigrants. The community-based participatory approach to data collection lent language capacity and entre into "hard to reach" populations often overlooked in research. These include individuals who may have limited interaction with governmental or mainstream institutions but may also experience distinct health disparities. We also offer the valuable patient perspective of patient-provider interactions, which is an important compliment to provider-reported data which include possibly unreliable self-report of second language fluency to establish measures like language concordance [24].

Many opportunities exist for further investigation. We demonstrate the feasibility of recruiting sizable samples of diverse LEP populations through community-based partnerships, which is a strategy that others could adopt in future studies to prevent perpetuating the marginalization of these populations in research. Findings should be replicated with validated scales and multi-item measures. As a quantitative analysis of survey data, the present study elucidates trends among Asian American immigrant groups but does not have the ability to explain the patterns observed or describe lived experiences. Interviews, direct observations, and other qualitative methods would provide a richer understanding of the role of patient-provider communication among these communities, and possibly point to other important unexamined factors. These methods would also provide the opportunity to study other important aspects of patient-provider communication beyond our narrow scope of comprehension of information, such as non-verbal communication, rapport-building behaviors, and opportunities to ask questions. Study findings can inform the development of interventions to improve outreach and the quality of health care interactions. Future studies could also examine more distal outcomes beyond understanding of communication, such as health behavior, treatment adherence, and health care service utilization.

4.2. Conclusion

In conclusion, this study demonstrated important differences in our study outcome by Asian American subgroup, with Southeast Asian Americans experiencing lower comprehension of provider communication. Lack of provider cultural understanding, not having a doctor speaking the same language, LEP, and lower socioeconomic status are also significantly associated with low comprehension of provider communication. These findings reinforce that patient-centered culturally sensitive health care may potentially mitigate disparities in comprehension of health care information among Asian American immigrant communities.

4.3. Practice implications

These findings lend support for initiatives addressing LEP and language discordance in health care, such as interpretation services in Asian languages and diversification of the community-based health care workforce to include bilingual practitioners. Diversification of the health care workforce could improve circumstances by introducing bicultural staff able to understand racial/ ethnic minority worldviews in addition to providing in-language services to LEP Asian American immigrant patients. With increasing recognition of the importance of cultural competence, numerous trainings and resources have also been developed to teach health care providers skills in cultural sensitivity, patient-centered communication, and recognition of implicit bias [53–56].

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Data availability statement

Data may be made available with a Data Use Agreement at the organization's discretion.

CRediT authorship contribution statement

Serena Phillips: Conceptualization, Methodology, Writing - original draft. **Laura C. Wyatt:** Data curation, Methodology, Formal analysis, Writing - original draft, Writing - review & editing. **Monique M. Turner:** Writing - review & editing, Supervision. **Chau Trinh-Shevrin:** Writing - review & editing, Supervision, Funding acquisition. **Simona C. Kwon:** Writing - review & editing, Methodology, Supervision, Project administration, Funding acquisition, Project administration.

Declaration of Competing Interest

None.

Appendix A

Table 1A
Descriptive statistics of disaggregated South Asian immigrant subgroups (n = 562).

	Asian Indian (n = 96)	Bangladeshi (n = 139)	Pakistani (n = 82)	Nepali (n = 96)	Sri Lankan (n = 71)	Indo-Caribbean (n = 78)
Age, mean ± SD	50.6 ± 15.7	40.8 ± 13.0	47.5 ± 15.5	43.6 ± 12.1	45.2 ± 12.6	49.9 ± 15.5
Gender						
Female	51 (53.1)	93 (66.9)	37 (45.1)	48 (50.0)	34 (47.9)	42 (53.8)
Male	45 (46.9)	46 (33.1)	45 (54.9)	48 (50.0)	37 (52.1)	36 (46.2)
Education completed						
Less than high school	25 (26.0)	31 (22.3)	19 (23.2)	44 (45.8)	6 (8.6)	26 (33.3)
High school/some college	16 (16.7)	53 (38.1)	28 (34.1)	34 (35.4)	38 (54.3)	30 (38.5)
College graduate	55 (57.3)	55 (39.6)	35 (42.7)	18 (18.8)	26 (37.1)	22 (28.2)
Years in the U.S., mean ± SD	17.5 ± 11.7	10.8 ± 7.1	15.2 ± 9.7	7.9 ± 5.4	16.3 ± 7.6	20.8 ± 10.4
Insurance						
Public	45 (46.9)	105 (75.5)	56 (69.1)	71 (74.0)	35 (50.7)	41 (53.2)
Private	36 (37.5)	21 (15.1)	19 (23.5)	10 (10.4)	31 (44.9)	23 (29.9)
No insurance	15 (15.6)	13 (9.4)	6 (7.4)	15 (15.6)	3 (4.3)	13 (16.9)
Annual Household Income						
<$25,000	35 (36.5)	53 (38.1)	29 (35.4)	35 (36.5)	7 (9.9)	25 (32.1)
$25,000-$55,000	18 (18.8)	31 (22.3)	20 (24.4)	31 (32.3)	38 (53.5)	10 (12.8)
>$55,000	26 (27.1)	15 (10.8)	18 (22.0)	7 (7.3)	20 (28.2)	26 (33.3)
Don't know/ Refused/ Skipped	17 (17.7)	40 (28.8)	15 (18.3)	23 (24.0)	6 (8.5)	17 (21.8)
English proficiency						
Very well	42 (43.8)	33 (23.9)	30 (36.6)	11 (11.5)	30 (42.3)	57 (73.1)
Less than very well	54 (56.2)	105 (76.1)	52 (63.4)	85 (88.5)	41 (57.7)	21 (26.9)
Do you have a health care provider who speaks a language in which you can comfortably communicate? (Patient-provider language concordance)						
Yes	82 (85.4)	119 (85.6)	78 (95.1)	73 (76.0)	58 (81.7)	71 (91.0)
No	14 (14.6)	20 (14.4)	4 (4.9)	23 (24.0)	13 (18.3)	7 (9.0)
I feel that my doctor understands my background and values (Cultural understanding)						
Strongly Agree	69 (74.2)	105 (76.1)	63 (78.8)	48 (51.6)	41 (60.3)	41 (57.7)
Somewhat agree	16 (17.2)	28 (20.3)	14 (17.5)	33 (35.5)	23 (33.8)	25 (35.2)
Somewhat disagree	2 (2.2)	2 (1.4)	1 (1.3)	9 (9.7)	4 (5.9)	3 (4.2)
Strongly disagree	6 (6.5)	3 (2.2)	2 (2.5)	3 (3.2)	0 (0.0)	2 (2.8)
I often feel as if my doctor looks down on me and the way I live my life (Perceived bias)						
Strongly Agree	15 (18.1)	9 (6.7)	7 (9.1)	5 (5.6)	5 (7.8)	10 (15.6)
Somewhat agree	9 (10.8)	10 (7.5)	4 (5.2)	7 (7.8)	7 (10.9)	3 (4.7)
Somewhat disagree	6 (7.2)	22 (16.4)	7 (9.1)	11 (12.2)	11 (17.2)	14 (21.9)
Strongly disagree	53 (63.9)	93 (69.4)	59 (76.6)	67 (74.4)	41 (64.1)	37 (57.8)
During your visit, how much of what the doctor said did you understand? (Comprehension of provider communication)						
Everything	69 (71.9)	110 (79.1)	68 (82.9)	42 (43.8)	44 (62.0)	48 (61.5)
Most	26 (27.1)	21 (15.1)	13 (15.9)	46 (47.9)	20 (28.2)	24 (30.8)
Some	0 (0.0)	6 (4.3)	1 (1.2)	4 (4.2)	6 (8.5)	6 (7.7)
Only a little	1 (1.0)	2 (1.4)	0 (0.0)	4 (4.2)	1 (1.4)	0 (0.0)

Table 1B
Descriptive statistics of disaggregated East Asian immigrant subgroups (n = 400).

	Chinese (n = 166)	Korean (n = 136)	Japanese (n = 79)	Tibetan (n = 19)
Age, mean ± SD	54.2 ± 15.7	56.5 ± 17.8	56.1 ± 14.4	56.4 ± 16.1
Gender				
Female	114 (69.1)	82 (60.3)	56 (70.9)	13 (68.4)
Male	51 (30.9)	54 (39.7)	23 (29.1)	6 (31.6)
Education completed				
Less than high school	92 (56.8)	22 (16.7)	1 (1.3)	18 (94.7)
High school/some college	33 (20.4)	42 (31.8)	24 (30.8)	0 (0.0)
College graduate	37 (22.8)	68 (51.5)	53 (67.9)	1 (5.3)
Years in the U.S. [mean (SD)]	18.8 ± 9.8	21.2 ± 11.4	26.7 ± 14.2	7.8 ± 5.6
Insurance				
Public	95 (58.6)	69 (53.9)	29 (37.2)	14 (77.8)
Private	49 (30.2)	28 (21.9)	45 (57.7)	2 (11.1)
No insurance	18 (11.1)	31 (24.2)	4 (5.1)	2 (11.1)
Annual Household Income				
<$25,000	58 (34.9)	36 (26.5)	9 (11.4)	7 (36.8)
$25,000-$55,000	27 (16.3)	29 (21.3)	13 (16.5)	2 (10.5)
>$55,000	20 (12.0)	34 (25.0)	41 (51.9)	4 (21.1)
Don't know/ Refused	61 (36.7)	37 (27.2)	16 (20.3)	6 (31.6)
English proficiency				
Very well	19 (11.7)	5 (3.7)	18 (23.4)	1 (5.3)
Less than very well	144 (88.3)	131 (96.3)	59 (76.6)	18 (94.7)
Do you have a health care provider who speaks a language in which you can comfortably communicate? (Patient-provider language concordance)				
Yes	157 (94.6)	123 (90.4)	68 (82.9)	7 (36.8)
No	9 (5.4)	13 (9.6)	14 (17.1)	12 (63.2)
I feel that my doctor understands my background and values (Cultural understanding)				
Strongly Agree	90 (62.9)	45 (36.9)	23 (41.1)	8 (47.1)
Somewhat agree	42 (29.4)	63 (51.6)	28 (50.0)	6 (35.3)
Somewhat disagree	6 (4.2)	13 (10.7)	3 (5.4)	1 (5.9)
Strongly disagree	5 (3.5)	1 (0.8)	2 (3.6)	2 (11.8)
I often feel as if my doctor looks down on me and the way I live my life (Perceived bias)				
Strongly Agree	24 (19.2)	1 (0.8)	0 (0.0)	1 (5.3)
Somewhat agree	12 (9.6)	6 (4.8)	4 (9.3)	2 (10.5)
Somewhat disagree	12 (9.6)	33 (26.2)	2 (4.7)	0 (0.0)
Strongly disagree	77 (61.6)	86 (68.3)	37 (86.0)	16 (84.2)
During your visit, how much of what the doctor said did you understand? (Comprehension of provider communication)				
Everything	116 (69.6)	88 (64.7)	32 (40.5)	9 (47.4)
Most	37 (22.3)	38 (27.9)	41 (51.9)	1 (5.3)
Some	10 (6.0)	6 (4.4)	2 (2.5)	4 (21.1)
Only a little	3 (1.8)	44 (2.9)	4 (5.1)	5 (26.3)

Table 1C
Descriptive statistics of disaggregated Southeast Asian immigrant subgroups (n = 307).

	Southeast Asian (n = 307)					
	Filipino (n = 79)	Vietnamese (n = 63)	Cambodian (n = 48)	Indonesian (n = 46)	Burmese (n = 42)	Thai (n = 29)
Age, mean ± SD	45.3 ± 15.6	49.4 ± 17.1	51.9 ± 12.9	39.7 ± 11.6	40.7 ± 13.9	51.8 ± 15.3
Gender (Female)						
Female	49 (62.0)	34 (54.0)	29 (60.4)	24 (52.2)	16 (38.1)	22 (75.9)
Male	30 (38.0)	29 (46.0)	19 (39.6)	22 (47.8)	26 (61.9)	7 (24.1)
Education completed						
Less than high school	1 (1.3)	26 (43.3)	29 (67.4)	1 (2.2)	2 (4.8)	2 (6.9)
High school/some college	13 (16.7)	26 (43.3)	11 (25.6)	21 (45.7)	8 (19.0)	12 (41.4)
College graduate	64 (82.1)	8 (13.3)	3 (7.0)	24 (52.2)	32 (76.2)	15 (51.7)
Years in the U.S., mean ± SD	9.7 ± 7.1	22.6 ± 8.9	29.3 ± 5.4	11.9 ± 10.2	11.4 ± 6.1	21.7 ± 11.8
Insurance						
Public	23 (29.1)	39 (63.9)	32 (68.1)	20 (43.5)	19 (47.5)	5 (17.2)
Private	42 (53.2)	17 (27.9)	12 (25.5)	15 (32.6)	19 (47.5)	13 (44.8)
No insurance	14 (17.7)	5 (8.2)	3 (6.4)	11 (23.9)	2 (5.0)	11 (37.9)
Annual Household Income						
<$25,000	10 (12.7)	27 (42.9)	21 (43.8)	19 (41.3)	7 (16.7)	7 (24.1)

Table 1C (*Continued*)

	Southeast Asian (n = 307)					
	Filipino (n = 79)	**Vietnamese (n = 63)**	**Cambodian (n = 48)**	**Indonesian (n = 46)**	**Burmese (n = 42)**	**Thai (n = 29)**
$25,000-$55,000	21 (26.6)	14 (22.2)	13 (27.1)	11 (23.9)	5 (11.9)	9 (31.0)
>$55,000	27 (34.2)	12 (19.0)	6 (12.5)	9 (19.6)	11 (26.2)	8 (27.6)
Don't know/ Refused	21 (26.6)	10 (15.9)	8 (16.7)	7 (15.2)	19 (45.2)	5 (17.2)
English proficiency						
Very well	37 (48.1)	10 (16.1)	9 (18.8)	8 (17.4)	15 (36.6)	3 (10.3)
Less than very well	40 (51.9)	52 (83.9)	39 (81.3)	38 (82.6)	26 (63.4)	26 (89.7)
Do you have a health care provider who speaks a language in which you can comfortably communicate? (Patient-provider language concordance)						
Yes	69 (87.3)	46 (73.0)	20 (41.7)	27 (58.7)	42 (100.0)	23 (79.3)
No	10 (12.7)	17 (27.0)	28 (58.3)	19 (41.3)	0 (0.0)	6 (20.7)
I feel that my doctor understands my background and values (Cultural understanding)						
Strongly Agree	48 (63.2)	29 (52.7)	3 (6.8)	16 (39.0)	20 (48.8)	11 (44.0)
Somewhat agree	21 (27.6)	18 (32.7)	21 (47.7)	18 (43.9)	21 (51.2)	11 (44.0)
Somewhat disagree	5 (6.6)	6 (10.9)	19 (43.2)	6 (14.6)	0 (0.0)	3 (12.0)
Strongly disagree	2 (2.6)	2 (3.6)	1 (2.3)	1 (2.4)	0 (0.0)	0 (0.0)
I often feel as if my doctor looks down on me and the way I live my life (Perceived bias)						
Strongly Agree	4 (5.6)	1 (2.1)	0 (0.0)	4 (10.0)	1 (2.5)	0 (0.0)
Somewhat agree	6 (8.3)	3 (6.3)	10 (24.4)	4 (10.0)	3 (7.5)	3 (12.0)
Somewhat disagree	12 (16.7)	12 (25.0)	23 (56.1)	9 (22.5)	2 (5.0)	7 (28.0)
Strongly disagree	50 (69.4)	32 (66.7)	8 (19.5)	23 (57.5)	34 (85.0)	15 (60.0)
During your visit, how much of what the doctor said did you understand? (Comprehension of provider communication)						
Everything	45 (57.0)	38 (60.3)	7 (14.6)	20 (43.5)	29 (69.0)	9 (31.0)
Most	27 (34.2)	13 (20.6)	14 (29.2)	16 (34.8)	11 (26.2)	12 (41.4)
Some	4 (5.1)	5 (7.9)	8 (16.7)	7 (15.2)	2 (4.8)	2 (6.9)
Only a little	3 (3.8)	7 (11.1)	19 (39.6)	3 (6.5)	0 (0.0)	6 (20.7)

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