

## Article

# The effects of citizenship status on service utilization and general satisfaction with healthcare: a cross-cultural study

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## Abstract

**Objective:** To explore the role of citizenship status as a predictor of general satisfaction with healthcare services in Qatar, including potential interaction with utilization and health insurance coverage type.

**Design:** A cross-sectional survey conducted in 2012.

**Setting:** A household survey in the State of Qatar in the Arab Gulf.

**Participants:** A nationally representative sample of 2750 citizens and noncitizens aged 18 years and older.

**Main Outcome:** General satisfaction status with Qatar's healthcare system.

**Measures:** Citizenship status, healthcare utilization, health insurance type.

**Results:** Citizens were significantly less likely to be satisfied with Qatar's healthcare system than noncitizens (odds ratio (OR) = 0.30,  $P < 0.001$ ). The association between private health insurance and overall satisfaction was not significantly different between citizens and noncitizens ( $P = 0.19$ ). However, the association between utilization of healthcare services and overall satisfaction was moderated by citizenship ( $P < 0.001$ ). Among citizens, non-users were less likely to be satisfied than recent users (OR = 1.88,  $P < 0.05$ ), while the opposite pattern was observed among noncitizens (OR = 0.51,  $P < 0.05$ ). These patterns persisted even after controlling for potential confounders.

**Conclusions:** The study revealed significant population differences in satisfaction between recent users and non-users within citizenship groups. These differences may stem from different expectations with respect to healthcare services. Understanding these expectations may have important policy implications for cross-cultural contexts.

**Key words:** general satisfaction, healthcare utilization, inpatient, outpatient, Qatari citizens, White-Collar migrants, health insurance, expectation-based satisfaction, experience-based satisfaction, normative expectations.

## Introduction

General satisfaction with healthcare services is an important measure of a health system's success in meeting the population's expectations with respect to quality of care [1]. As a global measure, satisfaction has been widely used to compare the performance of

health systems across different countries and over time for the purpose of informing improvements and reform [2].

Expectations about healthcare services can influence perceptions of the quality of care and satisfaction with care [3]. The theory of expectancy disconfirmation proposes that satisfaction with healthcare

services is the result of a comparison between prior expectations and perceptions of the actual experience [4]. Lower expectations and favorable encounters lead to higher satisfaction, while higher expectations and unfavorable encounters may result in lower satisfaction [5].

Based on this theoretical framework, satisfaction types can be broadly divided into experience-based and expectations-based. The former refers to satisfaction as a product of the correspondence between recent experience (actual use) and expectations [6]. The latter relates to satisfaction arising from idealized or normative expectations among non-users and can be used to flag baseline satisfaction among potential future users [6].

### Citizenship, expectations and satisfaction

Citizenship confers rights and privileges that shape expectations (referred to as citizenship-based expectations hereafter) about the quality of care and impact overall satisfaction with healthcare services among citizens [7]. Despite its importance, the relationship between citizenship and general satisfaction with healthcare in developing countries has not been studied adequately. Most research draws international comparisons between healthcare systems among developed countries. Such studies show that what satisfies citizens of one country may not satisfy citizens of another and that expectations may contribute to these differences [7–10].

The role of expectations in contributing to differences in satisfaction between different citizenship groups within a single country has been largely overlooked. Studies from the United States, Europe and South Africa have focused predominantly on ethnicity or race. With the exception of one study [11], most report differences in healthcare satisfaction between ethnic groups and attribute those differences to lack of racial concordance with providers [12], language difficulties [13, 14], difficulties navigating the healthcare system [15], vulnerability to discrimination in general [16] or a combination thereof [17, 18].

### The context of Qatar

Qatar is located in Arabian Gulf and has one of the world's fastest growing populations [19]. The majority of the Qatar's population (86%) is composed of noncitizens on temporary work contracts [20]. Most of the noncitizens are single male laborers (SMLs) primarily from south-east Asia, and the remainder are white-collar migrants (WCMs) from many parts of the world [21].

Qatari citizenship confers socioeconomic privileges and political rights that are only available to nationals. Migrants have almost no pathways to Qatari citizenship. As such, the citizenship plays a crucial role in maintaining the distinct Qatari cultural and social identity and is concomitant with high expectations [22]. In this context, expectations are most likely shaped by citizenship status and are based on normative beliefs of what 'should be', which serve as the standard for their evaluation of Qatar's healthcare [23]. In contrast, noncitizens have no idea what to expect (unformed expectations) and their evaluations are likely based on less specific criteria [23]. Thus, the Qatari context allows us to assess the effect of citizenship-based expectations on satisfaction with healthcare relative to noncitizens—an area of study lacking in population-based research [24].

### Background on Qatar's Healthcare System

Over the past 30 years, Qatar has invested heavily in developing its healthcare system and achieved parity with developed countries on

many health indicators [25]. During recent years Qatar has relied on a centralized government agency to oversee the administration and regulation of the healthcare system, including all private healthcare institutions [26].

Like citizens, WCMs enjoy largely free access to public healthcare services. Unlike citizens who do not have subsidized access to private providers, most WCMs have employer-subsidized access to private healthcare services. At the time of the study, citizens had fewer provider options compared to noncitizens under this scheme, possibly resulting in lower satisfaction with healthcare services among citizens. In response, Qatar National Health Insurance Scheme was launched in July of 2013, allowing citizens access to both public and a selection of private healthcare providers [27]. However, this program was suspended in December 2015 amid cost concerns [27].

Based on the theoretical and contextual frameworks presented earlier, it is hypothesized that citizenship will not only have a direct effect on satisfaction with healthcare services, but also be a moderator of the utilization–satisfaction relationship. In particular, the expectations of citizens will lead to stronger negative association between utilization and satisfaction relative to noncitizens. It is also hypothesized that citizenship will moderate the relationship between satisfaction and health coverage type. Specifically, it is expected that the positive association between satisfaction and private health coverage will be stronger among citizens due to their largely unsubsidized access to private healthcare services compared to noncitizens.

## Methods

### Survey and sampling design

This analysis was based on a national survey conducted during the fall of 2012. The target population was household residents, who were 18 years or older at the time of the survey. A probability-based sampling approach was adopted to select a representative sample from the three main population groups in Qatar (citizens, SMLs and WCMs). Due to different housing arrangements among these groups, systematic stratified sampling was carried out separately for Qatari citizens and noncitizens. The former were sampled disproportionately as they constitute a small proportion of the target population compared to noncitizens. Weights were constructed to account for sampling disproportionality and nonresponse.

The sampling frame was developed between March and April 2011 using Qatar's electricity and water company service records. The survey team successfully completed interviews at 4083 housing units—1528 Qatari citizens, 1552 WCMs and 1003 SMLs (Fig. 1). SML's employers largely control access to medical care and healthcare services [28]. This makes them incomparable to other groups and affects their ability to accurately report their opinions on the healthcare system. Hence, they were excluded from the analysis. Of the 3080 Qatari citizens and WCMs who completed the roster interviews, 2751 reported an opinion about Qatar's healthcare system. This sample included respondents who had used Qatar's healthcare system within the last year as well as those that had not.

### Data collection

The Computer Assisted Personal Interview system with BLAISE survey management software was used to program and administer the questionnaires [29]. Prior to the start of the survey, ethics compliance application was obtained from the Ethical Review Committee.

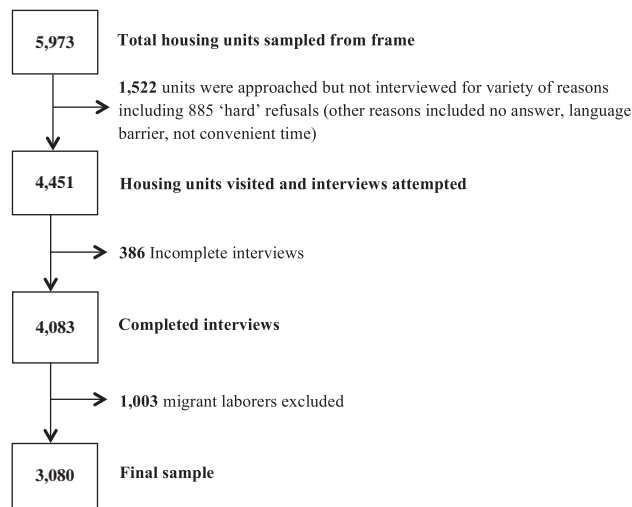


Figure 1 Sample flow

### Measure of general satisfaction with healthcare services

The dependent variable of interest, general satisfaction, was measured by the question, ‘In general, how satisfied are you with the level of healthcare services provided in the State of Qatar?’ Response categories ranged from 1 (very dissatisfied) to 5 (very satisfied). Due to its highly skewed distribution [30–32] along with other theoretical [33], and methodological reasons [34, 35], the dependent variable was dichotomized into satisfied (combining very satisfied and satisfied) and dissatisfied (combining very dissatisfied and dissatisfied) respondents. Those who responded ‘neither satisfied nor dissatisfied’ (the middle category) were coded as missing (9.5% of respondents).

### Other measures of interest

The survey asked respondents to confirm their citizenship status and included additional questions about utilization history of health services (inpatient and outpatient) and health insurance coverage type

Table 1 Sample characteristics.

Variables	<i>n</i>	% or Mean (SE)	95% Confidence interval
General satisfaction—healthcare	<i>N</i> = 2751	–	–
Satisfied	2170	76.4	74.6–78.1
Dissatisfied	581	14.1	12.8–15.5
Citizenship status	<i>N</i> = 3080	–	–
Qatari	1528	20.1	19.0–21.3
Expatriates	1552	79.9	78.7–81.0
Health insurance type	<i>N</i> = 2932	–	–
Government-sponsored insurance	2224	64.0	61.9–66.1
Any private insurance	708	29.5	27.5–31.5
Age	<i>N</i> = 3080	39.3 (0.23)	38.9–39.8
Gender	<i>N</i> = 3080	–	–
Male	1156	42.2	40.1–44.3
Female	1924	57.8	55.7–59.9
Marital status	<i>N</i> = 3071	–	–
Never married	370	9.6	8.5–10.8
Currently married	<i>N</i> = 2517	86.6	85.2–87.9
Previously married	184	3.6	3.0–4.2
Education	<i>N</i> = 2922	–	–
Secondary education or lower	1358	34.0	32.1–35.9
Postsecondary education or higher	1564	60.5	58.5–62.5
Mean total monthly income <sup>a</sup>	<i>N</i> = 1534	15 011 (340.8)	14 342–15 679
Lowest income category, 0–10k	616	25.6	23.8–27.6
Middle income category, 10–20k	475	16.6	15.0–18.2
Highest income category, 20k+	443	10.8	9.6–12.0
Health condition	<i>N</i> = 3069	–	–
Acute or chronic health condition	1103	31.2	29.3–33.2
No health condition	1966	68.5	66.5–70.4
Health profile	<i>N</i> = 1103	–	–
Acute only	345	10.9	9.7–12.3
Chronic only	563	15.7	14.2–17.2
Both chronic and acute	195	4.7	3.9–5.6
Healthcare services utilization status	<i>N</i> = 3080	–	–
Non-user	2276	75.5	73.7–77.3
User	804	24.45	22.7–26.3
Type of utilized healthcare services	<i>N</i> = 804	–	–
Inpatient only	234	6.8	5.8–7.9
Outpatient only	474	14.9	13.4–16.4
Both inpatient and outpatient	96	2.8	2.2–3.6

The percentages are based on weighted proportions and do not add up to 100% for most variables due to missing values.

<sup>a</sup>Total monthly income is in Qatari Riyals with categories based on tertiles of the income distribution.

(private versus government). Healthcare use was defined as any use of healthcare services including inpatient services (staying overnight or being admitted to a hospital for one or more nights night in the past 12 months) and outpatient services (visiting a clinic, doctor's office or health center or health professional in the past 30 days). Health status was determined by inquiring about the respondent's current health condition(s). A health condition was defined as having an acute (non-chronic) or chronic condition in the last 30 days.

For expatriates, length of stay in the country was ascertained using the following categories: less than a year, 1–5 years, 6–10 years, more than 10 years and born in Qatar. However, only four categories of length of stay were retained for the purpose of this analysis. Those who were in the country for less than a year were excluded from the

analysis ( $n = 85$ ). While this group is unique conceptually, the small sample size did not allow it to be treated separately. Age, gender, education and income were used as predictors of satisfaction as per previous studies [36–39].

### Statistical analyses

Statistical tests of bivariate associations were carried out using the Pearson Chi Square test of proportions at the 5% significance level. To correct for survey design effects on the sampling variances of these proportions, the  $F$ -transformed version of the Pearson Chi Square statistic was used [40].

**Table 2** Distribution of variables across citizenship status

Variables	Citizenship Status ( $N = 3080$ )					
	Citizen ( $N = 1528$ )			Noncitizen ( $N = 1552$ )		
	% ( $n$ ) Mean [SE]	95% CI	% ( $n$ ) Mean [SE]	95% CI	$F$ -stat (DF)	Prob.
Satisfied with healthcare	70.6 (401)	68.0–73.0	87.8 (180)	86.0–89.4	121.6 (2750)	0.000
Any private health insurance	13.1 (192)	11.4–15.0	36.5 (516)	33.9–39.0	206.1 (2931)	0.000
Age in years	40.6 [0.4] (1528)	39.9–41.3	39.0 [0.3] (1552)	38.4–39.5	–	–
18–24	11.8 (180)	10.2–13.5	6.0 (96)	4.9–7.4		
25–44	50.5 (789)	47.9–53.1	66.7 (1035)	64.3–69.1	40.4 (6125)	0.000
45+	37.7 (559)	35.2–40.3	27.2 (421)	25.0–29.6		
Female	69.3(1066)	66.8–71.6	54.9 (858)	52.3–57.4	63.8 (3079)	0.000
Never married	17.1 (253)	15.2–19.1	7.7 (117)	6.5–9.2		
Currently married	72.7 (1119)	70.3–75.0	90.4 (1398)	88.7–91.8	72.0 (6089)	0.000
Previously married	10.2 (151)	8.7–11.9	1.9 (33)	1.3–2.7		
Postsecondary edu. or higher	38.7(548)	36.1–41.3	70.6 (1016)	68.1–72.9	292.8 (2921)	0.000
Total monthly income	23 886 [748] (694)	22419–25352	13 134 [748] (840)	12 412–13856		
0–10k	22.1 (156)	19.1–25.5	53.9 (460)	50.4–57.4	115.5 (2977)	0.000
10–20k	31.7 (218)	28.2–35.4	31.2 (257)	28.0–34.5		
20k+	46.2 (320)	42.4–50.0	14.8 (123)	12.5–17.5		
Health condition	44.1 (662)	41.6–46.7	28.1 (441)	25.9–30.5	81.0 (3068)	0.000
Acute only	11.2 (172)	9.7–13.0	10.8 (173)	9.4–12.5		
Chronic only	23.5 (349)	21.3–25.8	13.7 (214)	12.1–15.6	35.5 (9039)	0.000
Chronic and acute	9.4 (141)	8.0–11.0	3.5 (54)	2.7–4.6		
User	28.6 (434)	26.3–31.0	23.4 (370)	21.3–25.6	10.0 (3079)	0.002
Inpatient only	8.5 (132)	7.1–10.0	6.3 (102)	5.2–7.8		
Outpatient only	16.7 (249)	14.8–18.7	14.4 (225)	12.7–16.3	3.6 (9236)	0.013
Inpatient and outpatient	3.4 (53)	2.6–4.5	2.7 (43)	2.0–3.6		

Reported  $P$ -values are from the design-adjusted Rao-Scott  $F$ -test statistics for the independence of the proportions tested at  $\alpha = 0.05$ . A significant  $P$ -value supports the conclusion that there is evidence of bivariate association between the corresponding study variable proportions and citizenship status.

**Table 3** Health-related characteristics and satisfaction by citizenship and healthcare services utilization

Variables	Citizenship status ( $N = 3080$ )							
	Citizen ( $N = 1528$ )				Noncitizen ( $N = 1552$ )			
	Non-user ( $n = 1094$ )		User ( $n = 434$ )		Non-user ( $n = 1182$ )		User ( $n = 370$ )	
	% ( $n$ /total) <sup>a</sup>	95% CI	% ( $n$ /total)	95% CI	% ( $n$ /total)	95% CI	% ( $n$ /total)	95% CI
Any health condition	33.1 (360/1087)	30.3–36.0	71.5 (302/434)	67.1–75.6	19.2 (230/1178)	17.0–21.7	57.1 (211/370)	51.8–62.2
Any private health insurance	13.1 (134/1063)	11.2–15.4	13.0 (58/430)	10.1–16.6	37.7 (406/1087)	34.8–40.7	32.3 (110/352)	27.5–37.6
Any inpatient use	–	–	41.6 <sup>b</sup> (185/434)	36.9–46.4	–	–	38.5 (145/370)	33.5–43.7
Any outpatient use	–	–	70.4 <sup>b</sup> (302/434)	65.8–74.6	–	–	72.9 (268/370)	68.1–77.3
Satisfied with healthcare	70.2 (660/947)	67.1–73.1	71.6 (271/385)	66.8–75.9	89.2 (953/1075)	87.2–90.9	83.4 (286/344)	78.9–87.0

<sup>a</sup>The percentages reported were produced using survey weights, while the  $n$ /total ratio provides the unweighted frequencies.

<sup>b</sup>The inpatient and outpatient categories are not mutually exclusive. Some respondents reported using both types of health services, causing the combined percentages for these two variables to exceed 100.

**Table 4** Multivariate models for general satisfaction with interaction terms

Variables	Fully adjusted model (N = 1247)				Selectively adjusted model <sup>a</sup> (N = 1386)			
	Coef. (SE)	OR (SE)	95% CI	Prob.	Coef. (SE)	OR (SE)	95% CI	Prob.
Citizenship	-1.38 (0.26)	0.25 (0.07)	0.15–0.42	0.00	-1.22 (0.20)	0.30 (0.06)	0.20–0.43	0.00
Age: (years)	0.03 (0.01)	1.03 (0.01)	1.01–1.05	0.00	0.03 (0.01)	1.03 (0.01)	1.01–1.04	0.00
Gender: (female)	0.13 (0.22)	1.13 (0.25)	0.74–1.74	0.57	–	–	–	–
Education: (less than high school ref.)	-0.24 (0.20)	0.79 (0.16)	0.53–1.17	0.23	–	–	–	–
Married: (never married ref.)	-0.04 (0.30)	0.96 (0.29)	0.53–1.75	0.91	–	–	–	–
Previously married: (never married ref.)	-0.98 (0.51)	0.38 (0.19)	0.14–1.01	0.05	-1.05 (0.39)	0.35 (0.14)	0.16–0.75	0.01
Middle income: (lowest category ref.)	-0.57 (0.23)	0.56 (0.13)	0.36–0.88	0.01	-0.49 (0.21)	0.61 (0.13)	0.41–0.93	0.02
High income: (lowest category ref.)	-0.83 (0.26)	0.43 (0.11)	0.26–0.73	0.00	-0.83 (0.23)	0.44 (0.10)	0.28–0.69	0.00
Health condition: (chronic or acute)	-0.46 (0.21)	0.63 (0.13)	0.42–0.95	0.03	-0.46 (0.20)	0.63 (0.12)	0.43–0.92	0.02
Health system usage: (no usage ref.)	-0.67 (0.27)	0.51 (0.14)	0.30–0.88	0.02	-0.65 (0.26)	0.52 (0.13)	0.31–0.86	0.01
Private health coverage: (public only ref.)	0.05 (0.25)	1.06 (0.27)	0.64–1.73	0.83	–	–	–	–
Usage*citizenship <sup>b</sup>	1.31 (0.33)	3.72 (1.24)	1.93–7.16	0.00	1.31 (0.32)	3.69 (1.17)	1.98–6.88	0.00
Coverage*citizenship <sup>c</sup>	0.47 (0.37)	1.60 (0.59)	0.77–3.31	0.20	–	–	–	–
Constant	1.48 (0.47)	4.37 (2.06)	1.74–11.02	0.00	1.46 (0.34)	4.32 (1.49)	2.20–8.50	0.00

<sup>a</sup>Variables for the selectively adjusted model were selected based on a *P*-value criterion of <0.2 or if their removal resulted in a change of 10% or more in the estimate of the main effect of citizenship status on general satisfaction.

<sup>b</sup>The adjusted Wald test for the interaction between usage and citizenship status indicates that it should remain in the selectively adjusted model: *F* = 15.90 (degrees of freedom = 1246), *P* = 0.000.

<sup>c</sup>The adjusted Wald test for the interaction between health coverage and citizenship status indicates that it should not remain in the selectively adjusted model: *F* = 1.71 (degrees of freedom = 1246), *P* = 0.19.

Stratified analyses divided the sample by citizenship status and recent utilization. Multivariable logistic regression (MLR) models were fit to test if the associations between citizenship status and overall satisfaction were different among users and non-users and those with and without any private health insurance. For this purpose, two interaction terms were included in a model of satisfaction along with the main effects for citizenship, utilization, and type of health insurance coverage. The first interaction term is a product term of citizenship status and utilization. The second interaction is a product term of citizenship status and health insurance type. The design-adjusted Wald test was used to assess the goodness of fit by comparing models with and without these interaction terms.

Two modeling approaches were used: full-adjustment and selected-adjustment. In the former, a linear term for age and dummy-coded variables for gender, education, marital status, income, health condition, utilization and health insurance coverage type were included. In the latter approach, selection was based on backward elimination carried out on the fully adjusted model [41]. Variables were included if their *P*-value was <0.2 or if their removal resulted in a change of 10% or more in the estimate of the main effect of citizenship status on satisfaction [42, 43]. For models restricted to noncitizens, categories for length of stay were relative to those born in Qatar. All statistical analyses were weighted and carried out in STATA version 13 [44].

A sensitivity analysis was conducted to test our final models against the assumption that those with no opinion about Qatar's healthcare were dissatisfied respondents. This was done by reassigning all of the respondents in the neutral category to the dissatisfied category. The analysis was repeated with this alternative coding of the main outcome. Results from the two approaches were compared for consistency.

## Results

Sample characteristics are presented in Table 1. The weighted proportions of citizens and noncitizens were 20 and 80%, respectively,

and the majority of all sample respondents reported satisfaction with healthcare services (76.4%). However, citizens were significantly less likely to be satisfied than noncitizens (70.6 and 87.8%, respectively; Table 2). Differences between citizens and noncitizens were significant in terms of education, private health coverage, and income. Citizens were also more likely to have a preexisting health condition at the time survey, especially one or more chronic health condition (23.5 versus 13.7%) and to have used outpatient or inpatient services in the past year (28.6 versus 23.4%). The confidence intervals for these proportions did not overlap suggesting that these differences were not due to sampling variability (Table 2).

The raw (unadjusted) distribution of variables within citizenship status groups and between recent utilization categories is shown in Table 3. For noncitizens, more users were less likely to be satisfied (83.4% than non-users (89.2%). Meanwhile, for citizens the proportions were very similar: 71.6 and 70.2%, respectively. Additionally, outpatient services were among the most commonly used healthcare services for both citizens and noncitizens.

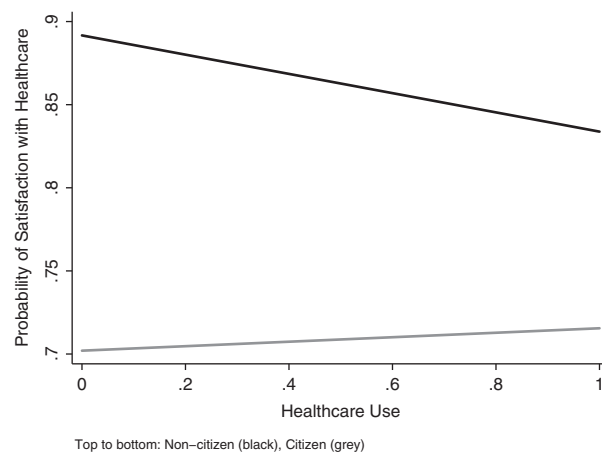
## Overall drivers of general satisfaction with healthcare services

Results from MLR models based on the full- and the selected-adjustment approaches for the entire sample are presented in Table 4. In the final fully adjusted combined model (citizens and noncitizens) with no interaction terms (not shown), a statistically significant negative association was found between citizenship status and overall satisfaction (odds ratio (OR) = 0.47, *P* = 0.000). Although not statistically significant, a negative association was also observed between utilization and satisfaction (OR = 0.73, *P* = 0.15).

There was no evidence that the association between overall satisfaction and citizenship status differed between those with and without private insurance (*P* = 0.20). Additionally, the corresponding adjusted Wald test for this interaction term was not significant (*P* = 0.19). However, a significant interaction between citizenship

**Table 5** Multivariate models for general satisfaction for citizens and noncitizens

Variables	Fully adjusted citizen model, N = 574			Selectively adjusted citizen model, N = 598			Fully adjusted noncitizen model, N = 647			Selectively adjusted noncitizen model, N = 740		
	OR (SE)	95% CI	Prob.	OR (SE)	95% CI	Prob.	OR (SE)	95% CI	Prob.	OR (SE)	95% CI	Prob.
Age: (years)	1.04 (0.01)	1.02–1.06	0.00	1.04 (0.01)	1.02–1.06	0.00	1.02 (0.02)	0.99–1.05	0.17	1.02 (0.01)	0.99–1.05	0.16
Gender: (female)	1.81 (0.40)	1.18–2.79	0.01	1.67 (0.34)	1.12–2.49	0.01	0.87 (0.27)	0.47–1.59	0.65	0.73 (0.21)	0.42–1.27	0.27
Education: (less than HS ref)	0.92 (0.20)	0.61–1.40	0.70	-	-	-	0.64 (0.23)	0.32–1.28	0.20	-	-	-
Currently married: (never married ref.)	0.90 (0.25)	0.52–1.55	0.70	-	-	-	1.21 (0.62)	0.44–3.32	0.71	0.19 (0.13)	0.05–0.75	0.02
Previously married: (never married ref.)	0.43 (0.18)	0.18–0.99	0.05	0.50 (0.16)	0.26–0.95	0.03	0.30 (0.27)	0.05–1.77	0.18	-	-	-
Middle income: (low income ref)	0.70 (0.20)	0.40–1.22	0.21	-	-	-	0.53 (0.16)	0.29–0.96	0.04	0.58 (0.16)	0.33–1.00	0.05
High income: (low income ref)	0.60 (0.17)	0.34–1.04	0.07	0.70 (0.14)	0.48–1.02	0.07	0.38 (0.15)	0.18–0.81	0.01	0.37 (0.13)	0.18–0.76	0.01
Health condition: (chronic or acute)	0.51 (0.12)	0.32–0.81	0.01	0.48 (0.11)	0.31–0.77	0.00	0.61 (0.17)	0.35–1.07	0.08	0.65 (0.18)	0.39–1.11	0.11
Health system usage: (no usage ref.)	1.87 (0.45)	1.16–2.99	0.01	1.88 (0.44)	1.19–2.97	0.01	0.49 (0.14)	0.28–0.87	0.01	0.51 (0.14)	0.30–0.88	0.02
Private coverage: (public only ref.)	1.65 (0.45)	0.97–2.82	0.07	1.65 (0.44)	0.98–2.79	0.06	1.14 (0.30)	0.68–1.91	0.62	-	-	-
1–5 Years in Qatar: (born in Qatar ref.)	-	-	-	-	-	-	1.59 (0.68)	0.69–3.68	0.28	1.64 (0.67)	0.74–3.64	0.22
6–10 Years in Qatar: (born in Qatar ref.)	-	-	-	-	-	-	2.51 (1.24)	0.96–6.60	0.06	2.03 (0.91)	0.84–4.88	0.12
10+ Years in Qatar: (born in Qatar ref.)	-	-	-	-	-	-	2.87 (1.31)	1.17–7.03	0.02	2.56 (1.10)	1.10–5.96	0.03
Constant	0.60 (0.32)	0.21–1.72	-	0.46 (0.20)	0.19–1.10	-	3.81 (2.68)	0.96–15.15	-	3.71 (2.20)	1.16–11.90	-

**Figure 2** General satisfaction with healthcare by recent use and citizenship status.

status and utilization was found ( $P = 0.000$ ). The design-adjusted Wald test comparing models with and without this interaction was significant ( $P = 0.000$ ), suggesting that citizens and noncitizens should be analyzed in separate models (Table 5). A visual of this interaction appears in Fig. 2.

### Drivers of satisfaction within citizenship groups

In the final citizen model adjusting for selected variables (Table 5), users were more likely to be satisfied than non-users (OR = 1.88,  $P = 0.01$ ). Females were also generally more satisfied than males (OR = 1.67,  $P = 0.01$ ). Having any private insurance compared to government-sponsored coverage only was not significantly associated with satisfaction (OR = 1.65,  $P = 0.06$ ). Similar results were obtained using the full-adjustment approach (shown in Table 5).

Among noncitizens, users were less likely to be satisfied (OR = 0.51,  $P = 0.02$ ). Gender was not a predictor of overall satisfaction (OR = 0.73,  $P = 0.27$ ). Meanwhile, the OR comparing the upper income (OR = 0.37) categories to lowest category was statistically significant ( $P = 0.01$ ). In addition, private health coverage was not an important predictor of overall satisfaction for noncitizens (OR = 1.14,  $P = 0.62$ ).

Results from the sensitivity analysis (shown in Appendix 1) provided confidence in the estimates from the final models (Tables 4 and 5) against the reporting bias assumption that those who provided neutral response to the satisfaction question (9.5%) were in fact dissatisfied respondents.

### Discussion

Qatar is committing substantial resources to the development and expansion of healthcare services to meet the needs of its unprecedented population growth and changing socio-demographics [45]. In this context, it is crucial to understand how expectations influence satisfaction with healthcare in the general population, especially regarding differences between citizens and noncitizens and between recent users and non-users within citizenship groups.

Our results clearly indicate that citizens were significantly less likely to be satisfied with healthcare services than noncitizens, even after adjusting for relevant variables. Additionally, citizenship moderated the association between utilization and general satisfaction in



away that was not expected—users were more likely to be satisfied than non-users among citizens, but the opposite pattern was observed for noncitizens.

It is evident from these patterns that expectation-based satisfaction [6], driven by the evaluations of non-users within citizen and noncitizen groups, was a major contributor to observed differences in satisfaction between the citizenship groups. These differences may be largely due to unmet expectations among citizens [7]. Several unmeasured socioeconomic variables may have contributed to these expectations among citizens relative to noncitizens, including recent increases in national wealth, and by extension the wealth of the national population [22, 46]. The unprecedented growth in the industrial and commercial sectors along with rapid expansion in urban planning and infrastructure may have triggered similar expectations for parallel growth in the health services sector among citizens. Furthermore, our analysis shows that noncitizens born in Qatar reported higher satisfaction levels than Qatari citizens but lower levels than noncitizens born outside Qatar (data not shown), supporting the idea that expectations related to national context shape satisfaction with healthcare.

Our findings also point to the importance of a recent healthcare encounter as a major driver of general satisfaction within citizenship groups. The opposite trend in the effect of recent use on satisfaction among citizenship groups indicates the need for future research to identify what citizens and noncitizens expect from it and the role of cultural factors in influencing perceptions of service quality within these groups.

Contrary to our original hypothesis, no evidence was found to support the moderating effect of citizenship status on the relationship between satisfaction and health insurance type. In addition, a statistically non-significant OR relating private health insurance to satisfaction as opposed to only government-based coverage suggests that health insurance type may not be an important driver of satisfaction for citizens. However, the size of this effect among citizens does prompt further investigation in the future.

The use of citizenship status as a proxy-measure for expectations is a limitation of the current study. Future studies should develop and test culturally sensitive measures of expectations in the context of satisfaction with healthcare services, and focus on the impact of knowledge of how to navigate the healthcare system on satisfaction among noncitizens [17]. Although we accounted for length of stay in Qatar in the noncitizen model, as well as health status in all of our models, future research should account for the respondent's utilization history and recent use.

Taken together, these findings suggest future areas of focus for policy makers and healthcare providers seeking to raise satisfaction in heterogeneous populations. Although most studies have focused on assessing general satisfaction of health system users, findings from this study show that it is equally important to measure general satisfaction among non-users. Specifically, it is important to understand the expectations of non-users with regards to services as these expectations may shape their future help-seeking behaviors. The findings are particularly relevant to contexts with high NCDs prevalence, such as Qatar, where long-term relationships with healthcare professionals are necessary for better health outcomes. Lower expectation-based satisfaction among the majority of citizens (current non-users) may act as a barrier to help-seeking behaviors with grave implications for public healthcare policy and service provision. Our evidence also calls for a more

nanced understanding of expectations as a driver of satisfaction, using qualitative and longitudinal research that aims to unpack those complex concepts among different cultural groups in the general population.

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