



Patient Choice Under Mandatory Health Insurance in Azerbaijan: A Cross-Sectional Study of Healthcare Facility and Physician Choice

Musa Mamedali Alekberov^{*1}, Nargiz Majid Hajiyeveva², Kamran Alovzat Babayev¹, Aytakin Avdil Tağıyeva², Mahira Hatam Sariyeva³

Abstract

Background Patient choice reflects whether formal health-insurance entitlements can be exercised in practice. This study assessed patients' reported ability to choose healthcare facilities and physicians under mandatory health insurance in Azerbaijan and examined associated factors.

Methods A cross-sectional electronic survey was conducted among 497 adult healthcare users during February–June 2026. Facility and physician choice were analysed as separate binary outcomes. Associations were assessed using Pearson's chi-square test and multivariable binary logistic regression. Adjusted odds ratios (aORs) with 95% confidence intervals (CIs) were estimated.

Results Facility choice was reported by 226 of 318 respondents providing definitive answers (71.1%), while physician choice was reported by 196 of 286 respondents (68.5%). In the facility-choice model (n=258), partially satisfied (aOR=0.24; 95% CI: 0.09–0.63) and dissatisfied respondents (aOR=0.10; 95% CI: 0.03–0.30), those reporting informal payment (aOR=0.29; 95% CI: 0.14–0.61), and those with master's-level education (aOR=0.34; 95% CI: 0.12–0.92) had lower adjusted odds of choice. In the physician-choice model (n=225), lower odds were observed among dissatisfied respondents (aOR=0.27; 95% CI: 0.09–0.78), those reporting informal payment (aOR=0.32; 95% CI: 0.15–0.69), and respondents with higher (aOR=0.31; 95% CI: 0.12–0.78) or master's-level education (aOR=0.16; 95% CI: 0.06–0.49). The principal barriers were referral difficulties (60.2%), long waiting time (39.0%), and additional-payment requirements (17.9%).

Conclusion Although most respondents reported provider choice, approximately three in ten experienced restrictions. Transparent referral procedures, improved appointment access, clear information about insurance entitlements, and safeguards against informal payments may strengthen effective patient choice.

Keywords: Patient choice; healthcare facility; Physician choice; Mandatory health insurance; Patient satisfaction; Informal payment; Azerbaijan.

Introduction

Patient choice is an important component of people-centred healthcare and reflects the extent to which individuals can participate actively in decisions concerning where and from whom they receive care [1,2]. Contemporary approaches to healthcare quality increasingly recognize patients not only as recipients of services but also as participants whose preferences, experiences and interactions with healthcare organizations provide relevant information about health-system performance [3–5]. Patient experience is consequently related to broader dimensions of healthcare quality, including responsiveness, communication, accessibility, continuity and the organization of service delivery [6–8]. Patient choice may also function as

Affiliation:

¹Department of Public Health and Healthcare Organization, Azerbaijan Medical University, Baku, Azerbaijan

²State Medical Insurance and Expertise Agency, Baku, Azerbaijan

³Ministry of Health of the Republic of Azerbaijan, Baku, Azerbaijan

*Corresponding author:

Musa Mamedali Alekberov, Azerbaijan Medical University, Baku, Azerbaijan.

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a mechanism for strengthening provider accountability and encouraging competition based on service quality. Nevertheless, this mechanism depends on patients having meaningful alternatives, understandable information and a realistic possibility of using their preferred provider [9,10]. Evidence suggests that patients consider professional competence, previous experience, service availability, insurance acceptance, geographical accessibility, waiting time and organizational reputation when selecting healthcare providers [11–14]. The importance attached to these attributes may vary according to age, education, socioeconomic position, health status and prior experience with healthcare services [9,11,15]. The practical exercise of patient choice therefore depends on more than the formal existence of alternative providers. Contracting arrangements, referral requirements, waiting times, geographical distribution of services, provider capacity and patients' knowledge of their rights may determine whether formally established choice can actually be exercised [9,16,17]. Referral systems can support continuity and appropriate use of healthcare resources, but restrictive or poorly coordinated pathways may limit access to preferred facilities and specialists [16,18]. Patient choice should consequently be evaluated as an experienced feature of healthcare access rather than solely as a formal entitlement. Health-insurance arrangements can strongly influence these conditions by defining benefit packages, contracted provider networks, referral pathways and patients' financial obligations. Evidence from national and social health-insurance systems shows that enrolment or legal entitlement does not automatically eliminate practical barriers to accessing appropriate and high-quality services [19–22]. Effective coverage requires not only population enrolment but also the availability, accessibility, acceptability and quality of covered healthcare services [23,24]. Provider choice under health insurance may therefore indicate how insurance design and service-delivery arrangements are experienced by patients in practice. Patient-reported service experience is particularly important in this context. Patient experience and satisfaction are related but conceptually distinct constructs: experience refers primarily to what occurred during healthcare delivery, whereas satisfaction also reflects patients' expectations and subjective evaluations [3,5,25]. Both can be influenced by communication, professional conduct, waiting time, organizational responsiveness, physical conditions and perceived service quality [6,7,25,26]. Positive experiences may reinforce trust and willingness to continue using a provider, whereas dissatisfaction may encourage patients to seek alternatives—provided that meaningful alternatives are accessible [11,27]. Conversely, dissatisfaction combined with restricted provider choice may indicate organizational or institutional barriers rather than a freely exercised preference. Financial interactions represent another potentially important dimension of patient choice. Informal or additional payments

can weaken transparency, financial protection and equity and may alter patients' access to providers or particular services [28–30]. Such payments are especially relevant in health systems undergoing financing and purchasing reforms, because the persistence of direct unofficial payments may create a discrepancy between formal insurance entitlements and patients' actual experience of obtaining care [21,28,31]. From the service-user perspective, informal practices and reliance on personal or social connections may also produce unequal opportunities to navigate healthcare institutions [32]. Azerbaijan has undergone substantial changes in healthcare financing and service organization following the phased introduction and nationwide implementation of mandatory health insurance. The current mandatory health-insurance system formally covers the resident population and includes primary, emergency, outpatient and inpatient services within its benefits package [33]. The reform has also changed purchasing arrangements, institutional responsibilities and the organization of publicly financed healthcare services [34,35]. Within this changing environment, examining whether patients report being able to choose healthcare facilities and physicians provides an important patient-level perspective on how access and insurance entitlements are experienced in practice.

However, empirical evidence concerning patient choice in Azerbaijan remains limited, particularly regarding the relationships between choice, satisfaction, informal-payment experience, awareness of healthcare rights and organizational barriers. Evaluating facility choice and physician choice as separate outcomes is important because the ability to select an institution does not necessarily imply the ability to select an individual healthcare professional within that institution. Therefore, this study aimed to assess patients' reported ability to choose healthcare facilities and physicians under mandatory health insurance in Azerbaijan and to examine sociodemographic, health-related and patient-reported service-experience factors associated with these two dimensions of patient choice.

Materials and Methods

This cross-sectional study was conducted using data collected from adult healthcare users in Azerbaijan February–June 2026. The study reporting was guided by the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations [36]. The analytical dataset comprised 497 respondents aged 18 years or older. Participation was voluntary, the questionnaire was completed electronically and responses were collected anonymously. No directly identifying personal information was included in the analytical dataset.

The present study represents a secondary analysis specifically focused on patient choice within the healthcare

system operating under mandatory health insurance. Two distinct dimensions of choice were examined: respondents' reported ability to choose a healthcare facility and their reported ability to choose a physician. The two outcomes were analysed separately because access to a preferred healthcare institution does not necessarily imply an opportunity to select a particular physician within that institution. Both outcome variables were binary. For each outcome, responses of "Yes" and "No" were included in the analysis, whereas "Don't know" responses and missing observations were excluded because they could not reliably be classified as indicating either the presence or absence of choice. For healthcare facility choice, 318 respondents provided a definitive Yes/No response, of whom 226 (71.1%) reported being able to choose a healthcare facility. For physician choice, 286 respondents provided a definitive response, of whom 196 (68.5%) reported being able to choose a physician. The explanatory variables were selected on the basis of the conceptual literature concerning patient choice, healthcare access, patient experience and health-insurance arrangements [9,11,19,23]. Sociodemographic and health-related variables included sex, age group, educational attainment, self-reported health status and awareness of healthcare rights. Age was categorized as younger than 30 years, 30–39 years, 40–49 years and 50 years or older. Educational attainment was classified as secondary or vocational education, higher education, master's-level education and doctoral-level education. Self-reported health status was categorized as healthy, practically healthy or ill. Patient-reported service-experience variables included satisfaction with healthcare services and experience of informal or additional payment. Satisfaction was classified as satisfied, partially satisfied or dissatisfied. Informal-payment experience was categorized as yes or no according to whether respondents reported making an informal or additional payment while obtaining healthcare. Satisfaction and patient experience were treated as explanatory variables rather than study outcomes, consistent with their proposed role in shaping patients' perceptions of whether meaningful provider choice was available [3,25,26]. Reported reasons for dissatisfaction and barriers to patient choice were examined separately as exploratory multiple-response variables. The barrier analysis was restricted to respondents who reported being unable to exercise at least one form of provider choice. Participants could report more than one barrier; therefore, the corresponding percentages were calculated using the relevant subgroup as the denominator and were not expected to sum to 100%.

Categorical variables were summarized using frequencies and percentages. Associations between explanatory variables and each patient-choice outcome were initially assessed using Pearson's chi-square test. Expected cell frequencies were examined when evaluating contingency tables, and

exact procedures were considered where the assumptions underlying the chi-square test were not satisfied [37]. Two separate multivariable binary logistic regression models were subsequently fitted. Healthcare facility choice was entered as the dependent variable in the first model and physician choice as the dependent variable in the second. Both models simultaneously included sex, age group, educational attainment, self-reported health status, awareness of healthcare rights, satisfaction and informal-payment experience. Selection of the covariates was guided by the study's conceptual framework and their potential relevance to patient choice rather than exclusively by statistical significance in the bivariate analyses. This approach reduced the risk of excluding conceptually important explanatory factors solely on the basis of preliminary significance testing [38]. For categorical explanatory variables, one category was specified as the reference group. The reference categories were female sex, age younger than 30 years, secondary or vocational education, healthy status, awareness of healthcare rights, satisfaction with healthcare services and no informal-payment experience. Adjusted odds ratios (aORs) and their 95% confidence intervals (CIs) were calculated. An aOR below 1.00 indicated lower adjusted odds of reporting provider choice relative to the reference category. Statistical significance was defined using a two-tailed *p* value of less than 0.05. Logistic-regression estimates were interpreted in accordance with established methodological recommendations [39]. Only respondents with complete information for all variables included in the respective model were analysed. Consequently, the healthcare facility-choice model included 258 complete cases and the physician-choice model included 225 complete cases. Because of the cross-sectional design, the estimated odds ratios were interpreted as measures of association rather than causal effects. No imputation of missing values was performed.

The doctoral research topic, work plan and scientific supervision were approved by the Scientific Council of the Faculty of Public Health of Azerbaijan Medical University on 3 July 2024 (Protocol No. 10). The research programme was subsequently approved by the Department of Public Health and Healthcare Organization on 8 January 2025 (Protocol No. 6). Participation in the sociological survey was voluntary, responses were collected anonymously and data were analysed only in aggregated form. No personally identifying information was collected. No separate prospective written informed-consent form was administered before completion of the electronic questionnaire; voluntary completion and submission of the anonymous questionnaire indicated the respondent's willingness to participate. The study was subsequently reviewed and approved by the Clinical Research Ethics Committee of Azerbaijan Medical University on 3 July 2026 (Protocol No. 63; registration No.

AMU/CR-LEC-2026-063/03). The research was conducted in accordance with applicable ethical principles for research involving human participants and the principles of the Declaration of Helsinki [40].

Results

Availability of Healthcare Facility and Physician Choice

Of the 497 survey participants, 318 provided a definitive “Yes” or “No” response regarding their ability to choose a healthcare facility. Among these respondents, 226 (71.1%) reported being able to choose a facility, whereas 92 (28.9%) reported that facility choice was unavailable. A definitive response regarding physician choice was provided by 286 respondents. Of these, 196 (68.5%) reported being able to choose their physician, while 90 (31.5%) reported that physician choice was unavailable (Table 1). Thus, approximately three in ten respondents who provided definitive answers reported restrictions in each form of provider choice.

Sociodemographic and Health-Related Differences in Patient Choice

Healthcare facility choice differed significantly across age groups ($\chi^2=13.77$, $p=0.003$). The highest proportion was observed among respondents aged 30–39 years (81.7%), followed by those aged <30 years (75.0%), 40–49 years (65.6%) and ≥ 50 years (56.7%). Facility choice was also associated with self-reported health status ($\chi^2=7.00$, $p=0.030$), decreasing from 83.6% among healthy respondents to 70.0% among practically healthy respondents and 60.0% among respondents who considered themselves ill. Physician choice differed significantly by sex ($\chi^2=3.89$, $p=0.049$), educational attainment ($\chi^2=16.04$, $p=0.001$) and self-reported health status ($\chi^2=6.02$, $p=0.049$). It was reported by 72.4% of women and 59.8% of men. Across educational categories, physician choice declined from 83.5% among respondents with secondary or vocational education to 64.3% among those with higher education, 61.4% among those with master’s-level education and 47.6% among those with doctoral-level education. Physician choice was reported by 77.6% of healthy respondents, 69.1% of practically healthy respondents and 52.8% of respondents who considered themselves ill (Table 2).

Multivariable Analysis of Healthcare Facility Choice

The healthcare facility-choice model included 258 respondents with complete information for all variables entered into the analysis. The model simultaneously adjusted for sex, age group, educational attainment, self-reported health status, awareness of healthcare rights, satisfaction and informal-payment experience. Compared with satisfied respondents, partially satisfied respondents had 76% lower adjusted odds of reporting facility choice (aOR=0.24; 95% CI: 0.09–0.63; $p=0.004$). Dissatisfied respondents had 90% lower adjusted odds of reporting facility choice (aOR=0.10; 95% CI: 0.03–0.30; $p<0.001$). Respondents reporting an informal or additional payment had 71% lower adjusted odds of reporting facility choice than those reporting no such payment (aOR=0.29; 95% CI: 0.14–0.61; $p=0.001$). Master’s-level education was also associated with lower facility choice relative to secondary or vocational education (aOR=0.34; 95% CI: 0.12–0.92; $p=0.034$). The adjusted associations are presented in Table 4.

Multivariable Analysis of Physician Choice

The physician-choice model included 225 complete cases and adjusted for the same explanatory variables. Compared with satisfied respondents, dissatisfied respondents had 73% lower adjusted odds of reporting physician choice (aOR=0.27; 95% CI: 0.09–0.78; $p=0.016$). Partial satisfaction was associated with lower adjusted odds, but the association was not statistically significant (aOR=0.48; 95% CI: 0.20–1.19; $p=0.114$). Respondents reporting an informal payment had 68% lower adjusted odds of physician choice than those reporting no such payment (aOR=0.32; 95% CI: 0.15–0.69; $p=0.003$). Compared with secondary or vocational education, higher education (aOR=0.31; 95% CI: 0.12–0.78; $p=0.013$) and master’s-level education (aOR=0.16; 95% CI: 0.06–0.49; $p=0.001$) were independently associated with lower physician choice (Table 4).

Reported Barriers to Patient Choice

Among the 123 respondents who reported being unable to exercise at least one form of provider choice, 74 (60.2%) reported inability to obtain a referral to the desired healthcare facility. Long waiting time was reported by 48 respondents (39.0%), while 22 (17.9%) reported that an additional payment was required (Table 5).

Table 1: Reported availability of healthcare facility and physician choice

Patient-choice outcome	Choice available, n (%)	Choice unavailable, n (%)	Valid responses, n
Healthcare facility choice	226 (71.1)	92 (28.9)	318
Physician choice	196 (68.5)	90 (31.5)	286

Note: Respondents selecting “Don’t know” and those with missing responses were excluded from the corresponding binary analysis

Table 2: Significant sociodemographic and health-related differences in patient choice

Patient-choice outcome	Characteristic	Category	Choice available, n (%) ¹	Choice unavailable, n (%) ¹	χ^2	p-value ²
Healthcare facility choice	Age group	<30 years	42 (75.0)	14 (25.0)	13.77	0.003
		30–39 years	89 (81.7)	20 (18.3)		
		40–49 years	61 (65.6)	32 (34.4)		
		≥50 years	34 (56.7)	26 (43.3)		
	Self-reported health status	Healthy	46 (83.6)	9 (16.4)	7	0.03
		Practically healthy	145 (70.0)	62 (30.0)		
		Ill	27 (60.0)	18 (40.0)		
Physician choice	Sex	Female	144 (72.4)	55 (27.6)	3.89	0.049
		Male	52 (59.8)	35 (40.2)		
	Educational attainment	Secondary/vocational	76 (83.5)	15 (16.5)	16.04	0.001
		Higher education	74 (64.3)	41 (35.7)		
		Master's-level education	35 (61.4)	22 (38.6)		
		Doctoral-level education	10 (47.6)	11 (52.4)		
	Self-reported health status	Healthy	38 (77.6)	11 (22.4)	6.02	0.049
		Practically healthy	132 (69.1)	59 (30.9)		
		Ill	19 (52.8)	17 (47.2)		

¹Percentages were calculated within each category.

²The χ^2 statistic and p-value refer to the overall comparison across all categories of the corresponding characteristic and are therefore shown only once for each characteristic.

Table 3: Associations of satisfaction and informal-payment experience with patient choice

Patient-choice outcome	Explanatory variable	Category	Choice available, n (%) ¹	Choice unavailable, n (%) ¹	χ^2	p-value ²
Healthcare facility choice	Satisfaction	Satisfied	91 (92.9)	7 (7.1)	44.14	<0.001
		Partially satisfied	88 (68.2)	41 (31.8)		
		Dissatisfied	29 (45.3)	35 (54.7)		
	Informal payment	No	135 (84.9)	24 (15.1)	33.34	<0.001
		Yes	66 (52.8)	59 (47.2)		
Physician choice	Satisfaction	Satisfied	71 (87.7)	10 (12.3)	25.94	<0.001
		Partially satisfied	83 (68.0)	39 (32.0)		
		Dissatisfied	27 (47.4)	30 (52.6)		
	Informal payment	No	118 (80.8)	28 (19.2)	20.95	<0.001
		Yes	55 (52.9)	49 (47.1)		

¹Percentages were calculated within each category.

²The χ^2 statistic and p-value refer to the overall association between the explanatory variable and the corresponding patient-choice outcome. Responses that could not be assigned unambiguously to the relevant category were excluded from that analysis.

Table 4: Selected adjusted associations with healthcare facility and physician choice

Patient-choice outcome	Explanatory variable	Category	Frequency, n (%) ¹	aOR	95% CI	p-value
Healthcare facility choice (n=258)	Satisfaction	Satisfied	89 (34.5)	1	Reference	—
		Partially satisfied	111 (43.0)	0.24	0.09–0.63	0.004
		Dissatisfied	58 (22.5)	0.1	0.03–0.30	<0.001
	Informal payment	No	145 (56.2)	1	Reference	—
		Yes	113 (43.8)	0.29	0.14–0.61	0.001
	Educational attainment	Secondary/vocational	78 (30.2)	1	Reference	—
		Master's-level education	53 (20.5)	0.34	0.12–0.92	0.034
Physician choice (n=225)	Satisfaction	Satisfied	71 (31.6)	1	Reference	—
		Partially satisfied	103 (45.8)	0.48	0.20–1.19	0.114
		Dissatisfied	51 (22.7)	0.27	0.09–0.78	0.016
	Informal payment	No	132 (58.7)	1	Reference	—
		Yes	93 (41.3)	0.32	0.15–0.69	0.003
	Educational attainment	Secondary/vocational	70 (31.1)	1	Reference	—
		Higher education	92 (40.9)	0.31	0.12–0.78	0.013
		Master's-level education	47 (20.9)	0.16	0.06–0.49	0.001

¹Frequencies and percentages were calculated using the complete-case sample for the corresponding model: n=258 for healthcare facility choice and n=225 for physician choice.

Note: aOR, adjusted odds ratio; CI, confidence interval. Both models were adjusted for sex, age group, educational attainment, self-reported health status, awareness of healthcare rights, satisfaction and informal-payment experience. The table presents the reference categories and adjusted estimates specifically reported in the model results. Unreported model estimates are not represented by blank cells.

Table 5: Barriers reported by respondents unable to exercise at least one form of provider choice (n=123)

Reported barrier	n	%
Inability to obtain a referral to the desired facility	74	60.2
Long waiting time	48	39
Requirement for additional payment	22	17.9

Discussion

This study examined two related but distinct dimensions of patient choice under mandatory health insurance in Azerbaijan: the ability to choose a healthcare facility and the ability to choose a physician. Most respondents who provided a definitive response reported having both forms of choice. Nevertheless, approximately three in ten respondents reported that facility or physician choice was unavailable. This finding indicates that formal population coverage by mandatory health insurance does not necessarily ensure that every patient can exercise meaningful provider choice in practice. Patient choice depends not only on formal entitlement but also on contracted provider networks, referral arrangements, service capacity, waiting time, information availability and patients' ability to navigate the healthcare system [9,16,19,23].

The proportion reporting healthcare facility choice was slightly higher than that reporting physician choice. Although the difference was modest, it supports the decision

to analyse these outcomes separately. A patient may be able to attend a particular institution but may not have control over which physician provides care within that institution. Institutional scheduling, physician availability, internal referral arrangements and the distribution of specialists may constrain physician choice even when facility choice is available. Previous research has similarly shown that provider choice is multidimensional and that patients' ability to make a choice differs according to the decision involved, available alternatives and organizational context [9,11,13]. The most consistent finding was the relationship between healthcare satisfaction and both forms of patient choice. In the unadjusted analyses, the proportions reporting facility and physician choice declined progressively from satisfied to partially satisfied and dissatisfied respondents. After adjustment for sociodemographic characteristics, health status, awareness of healthcare rights and informal-payment experience, partial satisfaction and dissatisfaction remained independently associated with lower facility choice. Dissatisfaction also remained associated with lower physician choice.

These associations should not be interpreted as evidence that restricted choice directly caused dissatisfaction. Because exposure and outcome information were collected at the same time, the direction of the relationship cannot be established. Restricted choice may negatively affect patients' evaluations of healthcare, but unsatisfactory encounters may also influence whether respondents perceive available

alternatives as genuine or accessible. Both outcomes may additionally reflect underlying organizational problems, including limited provider availability, inconvenient referral procedures, weak communication or long waiting times. Patient experience and satisfaction capture overlapping but distinct dimensions of healthcare delivery and are shaped by both actual service events and prior expectations [3,5,25]. The findings therefore suggest an important relationship between experienced provider choice and broader perceptions of service organization rather than a simple causal pathway. The stronger association observed for dissatisfaction in the facility-choice model may indicate that institutional choice is particularly sensitive to patients' overall experience of service delivery. Healthcare facilities represent the organizational setting within which registration, referral, diagnostic procedures, waiting, payment and coordination occur. Difficulties encountered across these stages may affect both satisfaction and the perception that alternative facilities are accessible. Organizational problems that disrupt patient flow can create delays and barriers throughout the care pathway rather than at a single clinical encounter [27]. Improving choice may therefore require changes in referral coordination, appointment systems and information exchange in addition to expanding the formal number of eligible providers.

Informal-payment experience was independently associated with substantially lower odds of both facility and physician choice. Respondents reporting an informal or additional payment had approximately 71% lower adjusted odds of reporting facility choice and 68% lower adjusted odds of reporting physician choice. This consistency across the two models strengthens the interpretation that informal financial interactions may reflect broader access and transparency problems within healthcare delivery. Several mechanisms may explain this relationship. Informal payments may arise when patients believe that officially covered services, preferred providers or faster access cannot otherwise be obtained. Alternatively, patients who cannot select a preferred facility or physician may be more likely to make additional payments in an attempt to overcome administrative or organizational constraints. Informal payments may also indicate inadequate communication about covered services and legitimate patient charges. International evidence shows that informal payments can weaken financial protection, produce unequal access and reduce public trust in healthcare institutions [28–31]. Social and personal connections may similarly allow some service users to bypass formal procedures, creating unequal opportunities to obtain preferred care [32].

The cross-sectional design does not allow determination of whether informal payment preceded restricted choice. However, the association remained significant after adjustment for satisfaction and individual characteristics,

indicating that it was not explained solely by dissatisfaction or sociodemographic composition. From a policy perspective, the findings support clearer communication concerning the mandatory health-insurance benefits package, legitimate payment obligations, referral rules and procedures for reporting requests for unauthorized payments. Transparent monitoring is also needed to distinguish formal co-payments or uncovered services from genuinely informal transactions. Education was another independent correlate of patient choice. Compared with respondents with secondary or vocational education, respondents with master's-level education had lower adjusted odds of reporting facility choice. Higher and master's-level education were also associated with lower adjusted odds of physician choice. These findings should not be interpreted as showing that education objectively reduces healthcare access. More highly educated respondents may possess greater knowledge of the healthcare system, have stronger preferences or expect a wider range of provider alternatives. Consequently, they may apply a more demanding standard when deciding whether meaningful choice is available.

Previous studies have shown that education can influence both patients' willingness to participate in provider selection and the type of information considered when making healthcare decisions [9,11,15]. Patients with greater health literacy may distinguish more clearly between being assigned to an available provider and actively selecting a preferred provider. They may also be more aware of specialist qualifications, institutional reputation and alternative services. The observed educational gradient may therefore reflect differences in expectations and interpretation as well as differences in actual access. Future studies should measure the alternatives offered to individual patients and the criteria they use when defining successful choice. Age was significantly associated with facility choice in the bivariate analysis, with respondents aged 30–39 years reporting the highest availability of choice and respondents aged 50 years or older reporting the lowest. This association did not remain independently significant after other variables were considered. The unadjusted age difference may therefore have reflected variation in education, health status, service experience or informal-payment exposure. Older adults may nevertheless face particular barriers arising from chronic illness, reduced mobility, dependence on referral pathways and the need for continuity with established providers. Larger studies should investigate whether these factors modify the relationship between age and provider choice.

Sex was associated with physician choice in the bivariate analysis, but the relationship was attenuated after adjustment. Similarly, self-reported health status was associated with both choice outcomes in the initial analyses but did not

remain an independent predictor in the multivariable models. These findings demonstrate the importance of simultaneous adjustment. Apparent demographic or health-related differences may partly reflect differences in healthcare experience, education and financial interactions. The results do not establish the absence of inequity across population groups, because the sample size and complete-case analysis may have limited the power to detect smaller associations. The reported barriers provide additional context for the quantitative models. Among respondents unable to exercise at least one form of provider choice, the most frequent barrier was inability to obtain a referral to the desired healthcare facility. Long waiting time was the second most frequently reported barrier, while nearly one in five reported that an additional payment was required. These findings show that limitations on choice were linked primarily to concrete features of healthcare navigation rather than to an abstract preference for a different provider. Referral systems are necessary for coordinating care and directing patients to the appropriate level of service. However, they may restrict meaningful choice when patients do not understand the rules, contracted alternatives are limited or referral decisions are not sufficiently transparent [16,18]. The predominance of referral-related barriers suggests that implementation should be assessed not only by whether referral regulations exist but also by whether patients receive clear information about available facilities, eligibility conditions and appeal or redirection procedures. Digital referral systems could potentially improve transparency, but their effectiveness would depend on accurate provider information, interoperability and support for patients with limited digital access.

Waiting time may also interact with provider choice in both directions. Limited provider alternatives can concentrate demand and lengthen queues, whereas long waits may encourage patients to seek another provider if switching is permitted. When alternative facilities or physicians are inaccessible, waiting becomes a constraint rather than an element of choice. The coexistence of referral and waiting-time barriers in this study suggests that provider capacity and referral coordination should be examined together rather than as independent operational problems [17,27]. The findings have particular relevance to Azerbaijan's continuing health-system transformation. Mandatory health insurance now provides formal coverage for the resident population and a broad range of healthcare services [33]. However, effective coverage requires that covered services be available with sufficient quality and without unacceptable organizational or financial barriers [23,24]. Monitoring reform exclusively through enrolment, service volumes or expenditure may therefore overlook important differences between formal coverage and patients' lived experience. Facility choice, physician choice, referral success, waiting time and informal-

payment experience could be incorporated into routine patient-reported performance monitoring.

The study has several strengths. It distinguished facility choice from physician choice, examined satisfaction and informal payment within the same analytical framework and reported both unadjusted and adjusted associations. It also complemented the regression results with respondent-reported barriers, allowing the observed associations to be interpreted in relation to referral, waiting and payment experiences. The use of two separate models avoided combining conceptually different forms of provider choice into a single outcome. Several limitations should also be considered. First, the cross-sectional design precludes causal inference and does not establish the temporal order of satisfaction, informal payment and provider choice. Second, all variables were self-reported and may have been affected by recall, interpretation or social-desirability bias. Third, respondents who selected "Don't know" or did not answer the choice questions were excluded from the binary analyses. These respondents may represent individuals with limited knowledge of their entitlements, and their exclusion could have produced more favourable estimates of reported choice.

Fourth, the logistic-regression analyses were based on complete cases, reducing the analytical samples from 497 participants to 258 for facility choice and 225 for physician choice. If missingness was associated with healthcare experience or access, complete-case analysis may have introduced selection bias. Fifth, the survey did not independently verify provider availability, referral eligibility, waiting periods or payment records. The outcomes therefore represent perceived and reported choice rather than objectively documented provider options. Finally, the sample may not be fully representative of all healthcare users in Azerbaijan, particularly people with limited internet access, those who had not recently used healthcare services and residents of less accessible geographical areas. Future research should use larger and geographically stratified samples and should distinguish between choice offered, choice attempted and choice successfully exercised. Linking patient surveys with administrative information on contracted providers, referral pathways, waiting times and formal charges would help determine whether perceived restrictions correspond to documented organizational constraints. Longitudinal or mixed-methods research could further clarify whether restricted choice contributes to dissatisfaction and informal payments or whether these experiences influence patients' perceptions of available choice.

Overall, the findings indicate that patient choice under mandatory health insurance in Azerbaijan is associated more strongly with healthcare-service experience and financial interactions than with most sociodemographic characteristics.

Satisfaction and informal-payment experience were consistently associated with facility and physician choice, while referral difficulties and waiting time were the most frequently reported practical barriers. Strengthening patient choice will therefore require more than establishing a formal entitlement: it will require transparent referral processes, accessible information, adequate provider capacity, effective waiting-time management and stronger prevention of informal payments.

Conclusion

Most respondents who provided definitive answers reported being able to choose a healthcare facility or physician under mandatory health insurance in Azerbaijan. Nevertheless, approximately three in ten reported that each form of provider choice was unavailable, indicating a meaningful difference between formal entitlement and the reported ability to exercise choice in practice. Patient-reported service experience was consistently associated with both outcomes. Partial satisfaction and dissatisfaction were independently associated with lower odds of reporting healthcare facility choice, while dissatisfaction was associated with lower physician choice. Informal-payment experience remained a significant negative correlate of both facility and physician choice after adjustment. Educational differences also persisted, particularly for physician choice, possibly reflecting differences in expectations, awareness or the interpretation of meaningful choice. Difficulty obtaining a referral to the desired facility was the most frequently reported barrier, followed by long waiting time and additional-payment requirements. Strengthening patient choice therefore requires transparent and standardized referral procedures, timely access to contracted providers, clear communication about insurance entitlements and effective mechanisms for preventing and reporting informal payments. Routine monitoring of mandatory health-insurance implementation should distinguish between formal entitlement, awareness of that entitlement and the actual ability to access a preferred facility or physician. Future longitudinal, facility-level and mixed-methods studies should determine whether patient-reported restrictions correspond to documented differences in provider availability, referral authorization, waiting time and service accessibility.

Declarations

Ethics Approval

The doctoral research topic, work plan and scientific supervision were approved by the Scientific Council of the Faculty of Public Health of Azerbaijan Medical University on 3 July 2024 (Protocol No. 10). The research programme was subsequently approved by the Department of Public Health

and Healthcare Organization on 8 January 2025 (Protocol No. 6). The study was reviewed and approved by the Clinical Research Ethics Committee of Azerbaijan Medical University on 3 July 2026 (Protocol No. 63; registration No. AMU/CR-LEC-2026-063/03). The research was conducted in accordance with applicable ethical principles and the Declaration of Helsinki [40].

Consent to Participate

Participation was voluntary and responses were collected anonymously through an electronic questionnaire. No personal identification information was collected. Voluntary completion and submission of the anonymous questionnaire indicated willingness to participate. No separate prospective written informed-consent form was administered.

Consent for Publication

Not applicable. The manuscript contains no identifiable individual-level information.

Availability of Data and Materials

The dataset analysed during the current study is not publicly available because it forms part of ongoing doctoral research and contains non-public participant-level survey data. An anonymized dataset may be made available by the corresponding author upon reasonable academic request and subject to institutional and ethical requirements.

Competing Interests

The authors declare that they have no competing interests.

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Authors' Contributions

M.M.A. conceptualized the study, developed the methodology, supervised data collection, conducted the statistical analysis and drafted the manuscript. N.M.H. contributed to the interpretation of the health-system and policy context and critically revised the manuscript. K.A.B. contributed to data interpretation and manuscript revision. M.H.S. contributed to data organization, literature review and critical revision of the manuscript. A.A.T. contributed to the study design, interpretation of the findings and critical revision of the manuscript. All authors reviewed and approved the final manuscript and agreed to be accountable for the integrity of the work.

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AI Use Disclosure

Generative artificial intelligence was used to assist with English-language editing, stylistic refinement and manuscript formatting. All AI-assisted content was critically reviewed and verified by the authors. Artificial intelligence was not used to generate, modify or analyse the study data. The authors take full responsibility for the accuracy, integrity and final content of the manuscript.

Highlights

- Most respondents reported being able to choose a healthcare facility or physician.
- Approximately three in ten respondents experienced restrictions in provider choice.
- Lower satisfaction was independently associated with reduced patient choice.
- Informal payment was negatively associated with both facility and physician choice.
- Referral difficulties and long waiting times were the leading reported barriers.

Abbreviations

aOR: Adjusted odds ratio

CI: Confidence interval

MHI: Mandatory health insurance

WHO: World Health Organization

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