

Factors Associated with Health Service Utilization in the Commune of Abomey, Zou Department, Benin, in 2025

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Abstract

Introduction: Effective use of health services remains a major public health challenge in Benin, despite improvements in the availability of health infrastructure. It is influenced by economic, sociocultural, geographic, and organizational factors. This study aimed to estimate the frequency of health service utilization and to identify the factors associated with it in the commune of Abomey, Zou department, in 2025. **Methods:** An analytical cross-sectional mixed-methods study was conducted from October to December 2025 among adult residents of the commune of Abomey. The quantitative component used two-stage cluster sampling and included 1162 participants. The qualitative component comprised three focus group discussions bringing together the general population, community and religious leaders, and stakeholders from the Zou Departmental Hospital Center (CHDZ). Associations were examined using binary logistic regression accounting for the survey design and sampling weights. Qualitative data were analyzed thematically and triangulated with the quantitative findings. **Results:** Of the 1162 participants, 67.2% reported having been ill or injured in the past two years. Among these participants (n = 781), 82.8% [95% CI: 80.2 - 85.5] had consulted a health service during their most recent episode, corresponding to 55.7% of all participants surveyed. Public health centers were the main source of care (57.3%), followed by public hospitals (23.7%). Self-medication was very common (87.0%), and 47.3% of

participants reported having previously forgone care for financial reasons. In the multivariable model, men had lower odds of using health services than women (adjusted odds ratio [aOR] = 0.46; 95% CI: 0.22 - 0.97; $p = 0.042$). Self-medication before seeking care was also associated with lower service utilization (aOR = 0.25; 95% CI: 0.10 - 0.58; $p = 0.003$). Similarly, lack of trust in the health system was associated with lower utilization (aOR = 0.50; 95% CI: 0.27 - 0.94; $p = 0.033$). The qualitative data further highlighted the importance of reception, interpersonal quality of care, availability of services and medicines, and cost of care in care-seeking pathways. **Conclusion:** Among participants who reported an episode of illness or injury in the two years preceding the survey, 82.8% had consulted a health service during their most recent episode, corresponding to 55.7% of all participants surveyed. However, self-medication, male sex, and lack of trust in the health system were associated with lower service utilization.

Keywords

Health Service Utilization, Care-Seeking, Self-Medication, Trust, Financial Accessibility, Benin, Mixed-Methods Study

1. Introduction

Health service utilization is a key factor in improving population health, reducing maternal, neonatal, and child mortality, and progressing toward universal health coverage. However, in sub-Saharan Africa, and particularly in Benin, utilization remains insufficient despite substantial coverage of health infrastructure. In 2015, the availability of health facilities in Benin reached 93.1%, but actual service use was markedly lower, with attendance of only 50.3% according to the study “Health insurance and health service utilization” (2017) and 34% in some rural areas, revealing substantial underutilization [1] [2]. Disparities are particularly pronounced in rural areas: in Toffo, for example, only 54% of the population used curative services at community health centers [3]. Among mothers of febrile children in southwestern Benin, 76% of cases were managed at home, and only 6% sought care at a health center as the first line of care [2]. These observations underscore the key role of financial, geographic, sociocultural, and organizational factors, as well as trust in health care providers and perceived quality of services. In addition, self-medication, use of traditional practitioners, and cultural norms strongly influence care choices, particularly in rural areas. Education, income level, health information, and gender norms are also key determinants [3]. Despite public policies aimed at reducing these barriers, such as partial fee exemptions for certain types of care and the promotion of community health, challenges persist in terms of governance, availability of quality services, and community participation [4]. This study aimed to estimate the rate of health service utilization and to identify the factors associated with it in the commune of Abomey, Zou department, Benin, in 2025.

2. Study Setting and Methods

2.1. Study Setting

The study was conducted in the commune of Abomey, located in the Zou department in southern Benin.

2.2. Study Methods

2.2.1. Study Type and Period

We conducted an analytical cross-sectional study using a mixed-methods approach from October to December 2025.

2.2.2. Study Population

The study population consisted of all residents of the commune of Abomey. Adults aged ≥ 18 years who had lived in the commune for at least six months, to ensure a minimum length of residence allowing sufficient exposure to the local context and health care supply, and who gave informed consent were included. Closed households ($n = 10$), people absent after two visits ($n = 0$), people with deafness or disability ($n = 0$) or unable to complete the interview ($n = 0$), and unusable forms ($n = 0$) were excluded.

2.2.3. Sampling

For the quantitative component, a two-stage cluster sampling design was used, with an additional selection of one respondent within households when several people were eligible: neighborhoods/villages constituted the primary clusters and households the secondary units. The sample size was calculated using the Schwartz formula, based on a health service utilization frequency of 50.3%, a design effect of 1.5, and a precision of 4%, yielding a minimum sample of 901 participants. Allowing for a 20% margin of error, the final expected sample size was 1140 participants. At the first stage, from the sampling frame constituted by the register of villages and city neighborhoods of Zou (Fourth General Population and Housing Census [RGPH4], 2013), thirty clusters were selected by probability proportional to size sampling. The sampling interval was 3075, obtained by dividing the cumulative population of 92,266 inhabitants by 30 clusters. A random number of 2000, drawn in Excel between 1 and the sampling interval, identified the first cluster. Subsequent clusters were selected by successively adding the sampling interval to the starting number. At the second stage, 38 households were selected in each cluster, for a planned total of 1140 participants. At the end of data collection, 1162 eligible participants had actually been surveyed, *i.e.*, 22 more than initially planned. In the absence of a household sampling frame, in each cluster the interviewer stood at the center of the neighborhood or village and randomly chose a direction using the “spinning pen” method. The first household was selected at random, and then every second household was surveyed, proceeding along the right-hand side of the chosen direction to ensure regular dispersion of surveyed households within each cluster. In each selected household, only one eligible respondent was retained. When several household members met the inclusion criteria, one of

them was selected by random draw. Interviewers made a first visit to the selected household and a second visit at a different time in case of absence. After two unsuccessful visits, the household was considered a nonrespondent and was replaced according to the replacement procedure defined in the sampling plan.

For the qualitative component, three focus groups were organized: one with the general population (10 participants), one with religious leaders, delegates, and notables (8 participants), and one at the Zou Departmental Hospital Center (CHDZ) (10 participants). Participants were purposively selected according to their profile and experience related to health service utilization.

2.3. Variables

The dependent variable was use of a health service during the most recent episode of illness or injury that occurred in the two years preceding the survey (Yes/No). It was defined as use of a public or private health facility, including a public health center, public hospital, private clinic, or faith-based/NGO hospital, or use of certain actors in the care pathway (traditional practitioner/healer, community relay [CR], home nurse, personal physician, or qualified community health worker [QCHW]) when they were involved in referring the patient to a public health center, public hospital, private clinic, or faith-based/NGO hospital. It was defined based on the participant's report of having used at least one care provider during that episode. It was coded "Yes" when the participant reported having consulted at least one provider, regardless of provider type, and "No" when no provider had been consulted. For a single episode of illness or injury, several providers could be consulted. In that case, the participant was considered to have used a health service, and the dependent variable was coded "Yes" only once, regardless of the number and type of providers consulted.

The independent variables included sociodemographic characteristics (age, sex, position in the family, educational level, occupation, marital status, religion, and place of residence); economic characteristics (socioeconomic level [EMICoV], cost of care, source of financing, and transport costs); cultural characteristics (religious/cultural influences, influence of others, self-medication, and perception of quality of care); and organizational and institutional characteristics (trust in the health system, staff respect and courtesy, and availability and financial accessibility of medicines). Socioeconomic status was measured using the EMICoV score (Integrated Modular Survey on Household Living Conditions [Enquête Modulaire Intégrée sur les Conditions de Vie des ménages]). The score comprised 12 components: main material of the exterior walls of the dwelling, household size, main energy source for lighting, number of rooms used for sleeping, main cooking fuel, ownership of a motorcycle, moped, or car, number of mobile phones, ownership or rental status of a developed, built-up, or irrigated plot, ownership of a television or VCD/DVD player, ownership of a radio, educational level, and occupation. Each category was assigned a number of points ranging from 0 to 50 depending on the component. The total score was the sum of the points obtained

across the 12 components, with a theoretical maximum of 115 points. The total score was then converted to a percentage of the maximum score using the following formula: EMICoV score (%) = (score obtained/115) × 100. According to the thresholds defined in the tool, socioeconomic level was classified as high for a score ≥85%, middle for a score between 50% and 85%, and low for a score ≤ 50%.

2.4. Data Collection

Quantitative data were collected through face-to-face interviews using a structured digital questionnaire. Qualitative data were obtained using an interview guide. Interviewers were trained, and data collection was supervised daily to ensure data quality and consistency.

3. Data Processing and Analysis

Quantitative data were analyzed using R software, version 4.5.2. Continuous variables were described by their median and interquartile range (skewed distribution). Categorical variables were presented as counts and proportions. The distribution of continuous variables was assessed graphically. Given the cluster sampling design, bivariate associations were assessed using the Rao-Scott adjusted χ^2 test. When the conditions for applying for this test were not met because of small counts, Fisher's exact test was used. Variables with a p-value < 0.20 in the bivariate analysis, as well as variables considered theoretically important, were entered into a binary logistic regression model. A backward stepwise elimination procedure was used to identify factors associated with health service utilization. The statistical significance threshold for the final model was 5%.

A multivariable analysis incorporated the sampling weights and the cluster structure using the *svyglm* function of the *survey* package in R. Results were presented as adjusted odds ratios (aORs) with their 95% confidence intervals and p-values, accounting for the sampling design and weighting. Weights were calculated from each participant's overall probability of selection. Although the sampling design was described as two-stage cluster sampling (cluster, then household), an additional selection occurred within the household when there were several eligible persons. The individual overall probability of selection was therefore calculated by taking these three stages into account: $P_i = P_1 \times P_2 \times P_3$, where P_1 was the probability of selecting the cluster, P_2 the probability of selecting the household within the cluster, and P_3 the probability of selecting the individual within the household. The first-stage probability (P_1) corresponded to the probability of selecting the cluster, calculated from the cluster's population size and the number of clusters to be selected, relative to the total population of the study area. The second-stage probability (P_2) corresponded to the ratio of the number of households to be surveyed in the cluster to the total number of households in the neighborhood/village. The third-stage probability (P_3) corresponded to the inverse of the number of eligible persons who could be selected within the household. The participant's overall probability of selection was therefore $P_i = P_1 \times P_2 \times P_3$. The

sampling weight assigned to each participant was the inverse of their overall probability of selection: $W_i = 1/P_i$, that is, $W_i = 1/(P_1 \times P_2 \times P_3)$. These weights were incorporated into the analyses to account for participants' unequal selection probabilities. The quality of the final model was assessed using the variance inflation factor (VIF) to detect possible multicollinearity among the explanatory variables, as well as a global model test and an examination of influential observations. The characteristics of the final model, including the retained variables, multicollinearity indicators, and the global test, are presented in the Results.

Qualitative data were collected using an interview guide during three focus group discussions. Discussions were conducted in French or Fon, depending on participants' preferred language, and were audio-recorded. The recordings were then transcribed verbatim. Discussions conducted in Fon were translated into French before analysis. Qualitative data were analyzed using NVivo 14 following a thematic analysis approach with deductive coding. Two coders participated in the analysis. Any disagreements in interpretation or code assignment were discussed until consensus was reached. Information saturation was reached after the third focus group discussion. Deductive coding was based on the dimensions defined in the analytical framework and the interview guide. It covered access to and use of health services, economic, sociocultural, and geographic factors, perceptions of the health system, complementary and alternative therapies in relation to modern medicine, and recommendations. The qualitative findings were then compared with the quantitative results in a triangulation approach.

4. Ethical Considerations

The study received approval from the Teaching and Research Unit in Public Health of the Faculty of Health Sciences of Cotonou (REF 293 FSS/DSP/SCOM of October 1, 2025). The study obtained a favorable opinion from the committee of the Zou Departmental Health Directorate (N1549-2025/DDS-Zou/SA of October 9, 2025), followed by local administrative authorization from the Abomey city hall (No. 12A/32/MA/SE/SA of October 9, 2025). Participants provided written or verbally informed consent, and the data were anonymized and secured. Participants had the right to withdraw at any time without penalty, and audio recordings were stored securely with access restricted to the investigators. Data confidentiality and participant anonymity were guaranteed throughout the study.

5. Results

5.1. Sociodemographic Characteristics

The median age of the participants was 36 years, with an interquartile range (IQR) of 27 - 50 years and a range of 18 to 90 years. The 25 - 34 age group was the most represented (28.3%). Women made up most of the sample (73.2%). Regarding position in the family, spouses/partners were the most represented (50.6%). Regarding educational level, 35.8% of participants had no formal education, 29.1% had attained primary education, and 33.2% had attained secondary education. Re-

garding marital status, most participants were cohabiting (71.3%). The main occupation was dominated by traders (33.0%). In terms of religion, participants were mainly Christian (50.3%), and most lived in urban areas (58.5%) (**Table 1**).

Table 1. Distribution of participants by sociodemographic characteristics, Abomey, Benin, 2025 (N = 1162).

	Count	Percentage (%)
Age group (years)		
≤24	189	16.3
25 - 34	329	28.3
35 - 44	227	19.5
45 - 54	183	15.7
55 - 64	111	9.6
≥65	123	10.6
Sex		
Female	851	73.2
Male	311	26.8
Position in the family		
Spouse/partner	588	50.6
Household head	444	38.2
Child	82	7.1
Grandparent	37	3.2
Other*	11	0.9
Educational level		
None	416	35.8
Primary	338	29.1
Secondary	386	33.2
Higher	22	1.9
Main occupation		
Trader	383	33.0
Artisan/Laborer	362	31.2
Homemaker	177	15.2
Civil servant	61	5.2
Farmer	34	2.9
Livestock farmer	13	1.1
Traditional practitioner	11	0.9
Student	9	0.8
Unemployed	90	7.7
Other**	22	1.9
Marital status		
Cohabiting	829	71.3
Widowed	129	11.1
Married	113	9.7

Continued

Single	78	6.7
Divorced	13	1.1
Religion		
Christian	585	50.3
Traditional	531	45.7
Muslim	10	0.9
No religion	36	3.1
Place of residence		
Urban	680	58.5
Rural	482	41.5

*Cousin (4), niece (3), aunt (2), brother (2); **Driver (7), security guard (5), photographer (5), screen printer (3), surveyor (2).

5.2. Distribution of Participants by Economic Characteristics and Financial Accessibility

Most participants had a low socioeconomic level (73.9%), while 24.7% had a middle level and 1.4% a high level. Among participants concerned by the question on the cost of care, 50.8% considered cost to be a barrier to consultation. Among those who had sought care, financing relied mainly on personal savings (55.2%) and help from a relative (29.7%). Care was rated as moderately affordable by 70.0% of participants. The qualitative data complement these results by highlighting expectations focused mainly on reducing the cost of consultations, tests, and medicines. Participants thus expressed a wish for more financially accessible care.

In addition, 47.3% of participants reported having previously forgone care for financial reasons. Among participants who sought care, expenditures for a common illness were between 5000 and 10,000 CFA francs for 35.7% of them, whereas 25.4% reported expenditures above 20,000 CFA francs. Transport costs were a barrier to accessing care for 17.4% of participants who answered this question. Most participants were unaware of health assistance or insurance programs (80.6%). Among those who were aware of them, 13.7% were beneficiaries, and health insurance coverage was very low, with only 3.4% of participants reporting being covered (**Table 2**).

Table 2. Distribution of participants by economic constraints and financial accessibility, Abomey, Benin, 2025 (N = 1162).

	Count	Percentage (%)
Socioeconomic level		
Low	859	73.9
Middle	287	24.7
High	16	1.4
Cost of care as a barrier to consultation (n = 1041)		
Yes	529	50.8
No	512	49.2

Continued

Source of financing for care (n = 650)		
Personal savings	359	55.2
Help from a relative	193	29.7
Loan	61	9.4
Sale of assets	16	2.5
Insurance	4	0.6
Other	17	2.6
Affordability of care in the locality		
Unaffordable	10	1.5
Barely affordable	136	20.9
Moderately affordable	455	70.0
Very affordable	49	7.5
Forgone care for financial reasons		
Yes	550	47.3
No	612	52.7
Expenditure categories (n = 650)		
<5000 CFA francs	98	15.1
5000 - 10,000 CFA francs	232	35.7
10,001 - 20,000 CFA francs	155	23.8
>20,000 CFA francs	165	25.4
Transport costs as a barrier to accessing care (n = 650)		
Yes	113	17.4
No	537	82.6
Awareness of health assistance or insurance programs		
Yes	226	19.4
No	936	80.6
Beneficiary of health insurance programs (n = 226)		
Yes	31	13.7
No	195	86.3
Health insurance coverage		
Yes	40	3.4
No	1122	96.6

5.3. Distribution of Participants by Sociocultural Characteristics

Most participants believed that certain illnesses were spiritual or mystical in nature (57.7%). However, religious or cultural considerations influenced the decision to seek care in only 15.7% of participants. Influence from those around them before consultation was reported by 26.4% of participants, while 15.9% reported having been discouraged from seeking care by those around them. Self-medication, by contrast, was very common, affecting 87.0% of participants (**Table 3**).

Table 3. Distribution of participants by sociocultural beliefs, Abomey, Benin, 2025 (N = 1162).

	Count (n)	Percentage (%)
Attribution of certain illnesses to spiritual or mystical causes		
Yes	671	57.7
No	491	42.3
Religious or cultural influence on care-seeking		
Yes	183	15.7
No	979	84.3
Influence of those around the person on care-seeking		
Yes	307	26.4
No	855	73.6
Being discouraged from seeking care		
Yes	185	15.9
No	977	84.1
Self-medication before seeking care		
Yes	1011	87.0
No	151	13.0

5.4. Distribution of Participants by Organizational and Institutional Characteristics

Regarding geographic accessibility, most participants lived 1 - 5 km from the nearest health center (63.3%), and the motorcycle was the main means of transport used to access care (68.9%), followed by walking (26.6%). In addition, 86.3% of participants reported trusting the local health system. Regarding reception, 53.8% reported that health care staff sometimes received them with respect and courtesy, versus 36.0% who reported that this was always the case. As for the availability of prescribed medicines, 76.8% of participants rated them as sometimes available, whereas 13.3% considered them always available. Among participants who answered the question on the affordability of available medicines, 78.5% rated them as moderately affordable and 8.3% as easily affordable (**Table 4**).

Table 4. Distribution of participants by organizational factors, Abomey, Benin, 2025 (N = 1162).

	Count	Percentage (%)
Distance between home and nearest health center		
<1 km	255	21.9
1 - 5 km	735	63.3
5 - 10 km	126	10.8
>10 km	46	4.0
Most used mode of transport to access care		
Walking	309	26.6
Motorcycle	801	68.9
Taxi	25	2.2

Continued

Car	5	0.4
Not applicable	22	1.9
Trust in the local health system		
Yes	1003	86.3
No	159	13.7
Respectful and courteous reception by health care staff (n = 650)		
Never	10	1.5
Sometimes	350	53.8
Rarely	56	8.6
Always	234	36.0
Availability of prescribed medicines in health facilities (n = 1107)		
Never available	5	0.5
Rarely available	105	9.5
Sometimes available	850	76.8
Always available	147	13.3
Financial accessibility of medicines (n = 1090)		
Not at all affordable	14	1.3
Hardly affordable	130	11.9
Moderately affordable	856	78.5
Easily affordable	90	8.3

Regarding institutional factors, 56.2% of participants reported that the tests requested could not be performed on site. Waiting time before consultation was considered reasonable by 78.0% of participants, and 82.0% judged cleanliness and hygiene to be satisfactory. Staff professionalism was reported by 88.3% of participants. A perceived lack of equipment or staff was reported by 37.7%. The qualitative data complements these findings by highlighting expectations for strengthening staffing and equipment in health facilities. Some participants also wished to be able to receive comprehensive care at the nearest health facility. Finally, 21.8% of participants reported having changed health centers because of poor service, and 21.7% reported having been poorly received by a health worker (**Table 5**).

Table 5. Distribution of participants by institutional factors, Abomey, Benin, 2025 (N = 650).

	Count (n)	Percentage (%)
Requested tests available on site		
Yes	285	43.8
No	365	56.2
Reasonable waiting time before consultation		
Yes	507	78.0
No	143	22.0

Continued

Satisfactory cleanliness and hygiene		
Yes	533	82.0
No	117	18.0
Staff professionalism		
Yes	574	88.3
No	76	11.7
Lack of equipment/staff		
Yes	245	37.7
No	405	62.3
Changed health center because of poor service		
Yes	142	21.8
No	508	78.2
Having been poorly received by a health worker		
Yes	141	21.7
No	509	78.3

5.5. Health Service Utilization

Over the past two years, 67.2% of participants reported having been ill or injured at least once. Among these participants ($n = 781$), 82.8% had consulted a health service during their most recent episode, *i.e.*, 647 of all 1,162 participants surveyed (55.7%). Among participants who had sought care ($n = 647$), the analysis of therapeutic itineraries showed that care-seeking mainly involved public health centers (57.3%) and public hospitals (23.7%). Regarding the nature of the illness or event reported ($n = 725$), acute illnesses were the most frequent (42.8%), followed by childbirth (22.1%) and chronic illnesses (18.1%). As for the time between symptom onset and consultation ($n = 647$), 46.4% of participants consulted within 1 to 3 days, 28.0% within 24 hours, and 17.0% waited more than 7 days (**Table 6**).

Table 6. Distribution of participants by health service utilization, Abomey, Benin, 2025 ($N = 1162$).

	Count	Percentage (%)
Ill or injured at least once in the past 2 years		
Yes	781	67.2
No	381	32.8
Consulted health service during most recent episode ($n = 781$)		
Yes	647	82.8
No	134	17.2
Facility/service consulted: therapeutic itinerary ($n = 744$)*		
Public health center	426	57.3
Public hospital	176	23.7
Private clinic	53	7.1
Pharmacy	29	3.9

Continued

Faith-based/NGO hospital	22	3.0
Traditional practitioner/healer	12	1.6
Community relay (CR)	9	1.2
Home nurse	8	1.1
Personal physician	6	0.8
Qualified community health worker (QCHW)	3	0.4
Nature of illness/event (n = 725)		
Acute illness	310	42.8
Childbirth	160	22.1
Chronic illness	131	18.1
Antenatal care (ANC) visit	72	9.8
Injury	18	2.5
Other event	34	4.7
Time to consultation (n = 647)		
Less than 24 hours	181	28.0
1 - 3 days	300	46.4
4 - 7 days	56	8.7
More than 7 days	110	17.0

*In our survey, several providers could be consulted for the same episode of illness or injury; percentages are therefore calculated based on reported consultations and may not sum to 100%.

5.6. Relationship between Participants' Sociodemographic Characteristics and Health Service Utilization

The analysis of the relationship between sociodemographic characteristics and health service utilization showed that only sex was significantly associated with the use of health services ($p = 0.020$). The proportion of utilization was higher among women than among men, at 85.0% and 75.9%, respectively (**Table 7**).

Table 7. Relationship between sociodemographic factors and health service utilization, Abomey, Benin, 2025 (N = 781).

	Total (N = 781)	Health service utilization				OR [95% CI]	p
		Yes (n = 647)		No (n = 134)			
		n	%	n	%		
Age group (years)							0.105
≤24	119	103	86.6	16	13.4	0.9 [0.5 - 1.8]	
25 - 34	225	196	87.1	29	12.9	1	
35 - 44	156	125	80.1	31	19.9	0.6 [0.3 - 1.0]	
45 - 54	119	96	80.7	23	19.3	0.6 [0.3 - 1.1]	
55 - 64	71	54	76.1	17	23.9	0.5 [0.2 - 0.9]	
≥65	91	73	80.2	18	19.8	0.6 [0.3 - 1.1]	
Sex							0.020
Female	594	505	85.0	89	15.0	1	
Male	187	142	75.9	45	24.1	0.5 [0.4 - 0.8]	

Continued

Educational level							0.055
None	276	225	81.5	51	18.5	0.7 [0.5 - 1.2]	
Primary	238	204	85.7	34	14.3	1	
Secondary	255	212	83.1	43	16.9	0.8 [0.5 - 1.3]	
Higher	12	6	50.0	6	50.0	0.2 [0.05 - 0.5]	
Main occupation							0.276
Trader	250	202	80.8	48	19.2	0.7 [0.4 - 1.2]	
Artisan/Laborer	238	199	83.6	39	16.4	0.8 [0.4 - 1.5]	
Homemaker	138	119	86.2	19	13.8	1	
Civil servant	40	32	80.0	8	20.0	0.6 [0.2 - 1.6]	
Farmer	19	16	84.2	3	15.8	0.8 [0.2 - 3.2]	
Livestock farmer	9	8	88.9	1	11.1	1.3 [0.1 - 10.8]	
Traditional practitioner	4	2	50.0	2	50.0	0.2 [0.02 - 1.2]	
Student	6	5	83.3	1	16.7	0.8 [0.1 - 7.2]	
Unemployed	60	51	85.0	9	15.0	0.9 [0.4 - 2.1]	
Other**	17	13	76.5	4	23.5	0.5 [0.1 - 1.7]	
Marital status							0.302
Cohabiting	549	460	83.8	89	16.2	0.9 [0.4 - 1.7]	
Widowed	89	73	82.0	16	18.0	0.7 [0.3 - 1.7]	
Married	89	76	85.4	13	14.6	1	
Single	43	28	65.1	15	34.9	0.3 [0.1 - 0.7]	
Divorced	11	10	90.9	1	9.1	1.7 [0.2 - 14.5]	
Reported religion							0.471
Christian	409	334	81.7	75	18.3	0.8 [0.2 - 2.4]	
Traditional	338	283	83.7	55	16.3	0.9 [0.3 - 2.8]	
Muslim	8	8	100.0	0	0.0		
No religion	26	22	84.6	4	15.4	1	
Place of residence							0.051
Urban	440	356	80.9	84	19.1	1	
Rural	341	291	85.3	50	14.7	1.4 [0.9 - 2.0]	

5.7. Relationship between Economic and Organizational Factors and Health Service Utilization

The analysis of socioeconomic and institutional factors showed that the distance between home and the nearest health center was significantly associated with health service utilization ($p = 0.037$). The proportion of utilization was 81.0% among participants living less than 1 km away and 81.4% among those living 1 - 5 km away, compared with 87.1% among those living 5 - 10 km away and 97.4% among those living more than 10 km away. The qualitative data complement this result by showing that the proximity of the health facility played a role in the choice of care provider. However, distance and operating hours were described as posing few constraints when the health facility was located close to home and care

was perceived as prompt. Trust in the local health system was also significantly associated with health service utilization ($p = 0.003$). Utilization was reported by 84.9% of participants who trusted the local health system, versus 69.2% of those who did not ($OR = 0.4$; 95% CI: 0.2 - 0.6). The qualitative data shed light on this result by showing that trust was closely linked to participants' experiences with health professionals. Some participants reported negative experiences related to poor reception, disparaging remarks, mockery, or slow service delivery, particularly in the maternity ward and, to a lesser extent, in emergency departments. Thus, beyond technical competence, perceived quality of care appeared to be associated with listening, respect, reception, and the staff's ability to reassure patients. This perception is illustrated by the following verbatim quote: "They insult [patients] too much." The qualitative data also complement these results by highlighting strong expectations for improved reception and respect toward patients. Participants particularly wished for better relationships with health professionals, consistent with the negative experiences of reception reported in their accounts.

Although socioeconomic level was not significantly associated with health service utilization in the bivariate analysis ($p = 0.177$), the qualitative data highlight the role of financial constraints in care-seeking pathways. Some participants reported that they could forgo consultation when they lacked the necessary resources, with costs applying to care as well as to medicines and tests. This constraint is illustrated by the following verbatim quote: "Everything requires money, even basic care." However, experiences varied across groups: at the Hounli health center, cost was not spontaneously considered a determining factor in care-seeking. These findings thus show that financial constraints may influence care-seeking or the forgoing of care in some contexts, even though no statistical association with socioeconomic level was found in the quantitative analysis (Table 8).

Table 8. Relationship between economic and organizational factors and health service utilization, Abomey, Benin, 2025 (N = 781).

	Total (N = 781)	Health service utilization				OR [95% CI]	p
		Yes (n = 647)		No (n = 134)			
		n	%	n	%		
Socioeconomic level							0.177
Low	563	462	82.1	101	17.9	0.8 [0.5 - 1.3]	
Middle	204	173	84.8	31	15.2	1	
High	14	12	85.7	2	14.3	1.1 [0.2 - 5.0]	
Awareness of health assistance or insurance programs							0.141
Yes	165	143	86.7	22	13.3	1	
No	616	504	81.8	112	18.2	0.7 [0.4 - 1.1]	
Distance between home and nearest health center							0.037
<1 km	168	136	81.0	32	19.0	1	
1 - 5 km	474	386	81.4	88	18.6	1.0 [0.6 - 1.6]	
5 - 10 km	101	88	87.1	13	12.9	1.6 [0.8 - 3.2]	
>10 km	38	37	97.4	1	2.6	8.7 [1.1 - 65.8]	

Continued

Trust in the local health system							0.003
Yes	677	575	84.9	102	15.1	1	
No	104	72	69.2	32	30.8	0.4 [0.2 - 0.6]	
Health insurance status							0.931
Yes	28	26	92.9	2	7.1	1	
No	753	621	82.5	132	17.5	0.3 [0.1 - 1.5]	

5.8. Relationship between Sociocultural Factors and Health Service Utilization

The analysis of sociocultural factors and perceptions related to health services showed that several variables were significantly associated with their utilization.

Self-medication before consultation was significantly associated with health service utilization ($p = 0.002$). The proportion of utilization was 80.8% among participants who practiced self-medication, versus 95.4% among those who did not. Participants who reported self-medication had lower odds of using health services ($OR = 0.2$; 95% $CI: 0.1 - 0.5$). The qualitative data converge with this result, showing that, for some participants, self-medication was the first resort for symptoms considered mild, with consultation occurring only if symptoms persisted or worsened. It thus appears to be a practice that may precede and delay care-seeking at health facilities. The qualitative data also show that therapeutic itineraries are plural, with self-medication potentially occurring sequentially or alongside modern care, religious practices, and complementary and alternative therapies.

The perception of quality care in public facilities was also significantly associated with health service utilization ($p = 0.010$). Utilization was reported by 84.8% of participants who perceived care as being of good quality, versus 71.8% of those who did not. The latter had lower odds of using health services ($OR = 0.5$; 95% $CI: 0.3 - 0.7$). The qualitative data help clarify this perception of quality: beyond technical competence, participants associated quality of care with listening, respect, reception, and the staff's ability to reassure patients. Negative experiences, including disparaging remarks, mockery, and slow service delivery, were reported particularly in the maternity ward and, to a lesser extent, in emergency departments. In emergency departments, some remarks were described as anxiety-provoking: "They tell us outright that if we don't hurry up, we are going to die right now." These qualitative findings thus complement the quantitative results by showing that the perception of quality of care also rests on the relational experience of care-seeking.

The attribution of certain illnesses to a spiritual or mystical origin was not significantly associated with health service utilization in the bivariate analysis ($p = 0.059$). The qualitative data qualify this result by showing that beliefs and traditions did not systematically constitute an alternative to modern care. They could instead accompany the use of biomedical services, as illustrated by the following

verbatim quote: “Prayer does not heal an abscess; when you are sick, you go to the hospital, and you also pray.” The qualitative data thus suggests a possible coexistence of spiritual practices and care-seeking. The qualitative data also reveal an emergent finding: a nuanced place for complementary and alternative therapies and traditional practices in therapeutic itineraries. Their use was associated with beliefs, culture, and traditions, but also with their financial and physical accessibility. Some participants reported using them when modern care was ineffective or on the recommendation of a health worker. Their effectiveness was judged on the basis of experience and intergenerational transmission, as illustrated by the following verbatim quote: “passed down from generation to generation.” Participants did not necessarily describe them, however, as an exclusive alternative to modern medicine. Our findings thus highlight plural therapeutic itineraries in which modern medicine, self-medication, religious practices, and complementary and alternative therapies may follow one another or complement one another (Table 9).

Table 9. Relationship between sociocultural factors and health service utilization, Abomey, Benin, 2025 (N = 781).

	Total (N = 781)	Health service utilization				OR [95% CI]	p
		Yes (n = 647)		No (n = 134)			
		n	%	n	%		
Certain illnesses are spiritual or mystical in nature							0.059
Yes	480	400	83.3	80	16.7	1.1 [0.7 - 1.6]	
No	301	247	82.1	54	17.9	1	
Religious/cultural influences before going to the hospital							0.611
Yes	133	107	80.5	26	19.5	0.8 [0.5 - 1.3]	
No	648	540	83.3	108	16.7	1	
Influence of those around the person before seeking consultation							0.120
Yes	243	208	85.6	35	14.4	1	
No	538	439	81.6	99	18.4	0.6 [0.5 - 1.1]	
Being discouraged from seeking care							0.894
Yes	154	129	83.8	25	16.2	0.9 [0.5 - 1.9]	
No	627	518	82.6	109	17.4	1	
Self-medication before consultation							0.002
Yes	673	544	80.8	129	19.2	0.2 [0.1 - 0.5]	
No	108	103	95.4	5	4.6	1	
Perception of quality care in public facilities							0.010
Yes	664	563	84.8	101	15.2	1	
No	117	84	71.8	33	28.2	0.5 [0.3 - 0.7]	
Health services easily accessed by women/men							0.742
Yes	614	512	83.4	102	16.6	1	
No	167	135	80.8	32	19.2	0.8 [0.5 - 1.3]	

5.9. Factors Associated with Health Service Utilization

In the final model, three factors were significantly associated with health service utilization after accounting for the sampling design. Sex was associated with health service utilization: compared with women, men had lower odds of using health services (aOR = 0.46; 95% CI: 0.22 - 0.97; $p = 0.042$). Self-medication before seeking care was also associated with lower health service utilization (aOR = 0.25; 95% CI: 0.10 - 0.58; $p = 0.003$). Likewise, lack of trust in the health system was associated with lower health service utilization compared with having trust in the health system (aOR = 0.50; 95% CI: 0.27 - 0.94; $p = 0.033$). The final model was globally significant relative to the null model (Rao-Scott test, $p = 0.025$). Variance inflation factors (VIFs) ranged from 1.93 to 7.30 (**Table 10**).

Table 10. Logistic regression of factors associated with health service utilization in the final model, Abomey, Benin, 2025 (N = 781).

	Health service utilization		Odds ratio [95% CI]			
	Yes, n (%)	No, n (%)	Crude	Adjusted (simple design)	Adjusted (cluster design)	p (cluster design)*
Sex						
Female	505 (85.0)	89 (15.0)	1	1	1	
Male	142 (75.9)	45 (24.1)	0.56 [0.37 - 0.83]	0.46 [0.23 - 0.94]	0.46 [0.22 - 0.97]	0.042
Self-medication						
No	103 (95.4)	5 (4.6)	1	1	1	
Yes	544 (80.8)	129 (19.2)	0.20 [0.08 - 0.51]	0.26 [0.10 - 0.70]	0.25 [0.10 - 0.58]	0.003
Trust in the health system						
Yes	575 (84.89)	102 (15.1)	1	1	1	
No	72 (69.2)	32 (30.8)	0.40 [0.25 - 0.64]	0.48 [0.26 - 0.88]	0.50 [0.27 - 0.94]	0.033

5.10. Sensitivity Analysis after Excluding Childbirth and Antenatal Care Episodes

A sensitivity analysis was conducted after excluding episodes whose nature was recorded as “childbirth” and/or “antenatal care (ANC) visit,” to examine the robustness of the association between sex and health service utilization. After excluding episodes recorded as childbirth and/or antenatal care visits, the analysis included 549 participants. The association between sex and health service utilization was attenuated and was no longer statistically significant (aOR = 0.59; 95% CI: 0.29 - 1.17; $p = 0.132$), whereas the associations with self-medication and with lack of trust in the health system remained statistically significant (**Table 11**).

Table 11. Sensitivity analysis of factors associated with health service utilization after excluding childbirth and antenatal care episodes, Abomey, Benin, 2025.

	Crude OR [95% CI]	aOR [95% CI]		p (cluster design)
		Simple design	Cluster design	
Sex				
Female	1	1	1	-
Male	0.72 [0.45 - 1.06]	0.59 [0.35 - 0.97]	0.59 [0.29 - 1.17]	0.132

Continued

Self-medication				
No	1	1	1	-
Yes	0.24 [0.09 - 0.59]	0.30 [0.11 - 0.81]	0.30 [0.13 - 0.67]	0.004
Trust in the health system				
Yes	1	1	1	-
No	0.39 [0.22 - 0.61]	0.39 [0.21 - 0.72]	0.39 [0.22 - 0.67]	<0.001

Source: Authors' analysis based on the study data, Abomey, 2025.

6. Discussion

6.1. Health Service Utilization in the Commune of Abomey in 2025

In our study, among the 781 participants who reported an episode of illness or injury in the two years preceding the survey, 82.8% [95% CI: 80.2 - 85.5] had consulted a health service during their most recent episode. This proportion corresponds to 55.7% of all participants surveyed (647/1162). This proportion is higher than that reported in a study conducted in Côte d'Ivoire, where Agbré-Yacé *et al.* (2023) observed an attendance rate of 62% at reproductive, maternal, newborn, child, and adolescent health (RMNCAH) services [5]. Similarly, it remains higher than that reported in the Democratic Republic of the Congo by Many *et al.* (2023), where only 54.3% of individuals used health facilities [6]. In Cameroon, Philippe *et al.* in 2015 also noted lower utilization, estimated at 48% of households experiencing illness [7]. In contrast, it remains lower than that reported by Munyamahoro *et al.* [8]. It should be noted that the level observed in Zou is consistent with the gradual improvement observed in Benin, where overall service attendance rose from 35% to 56% according to Nahini *et al.* in 2024 [9].

6.2. Factors Associated with Health Service Utilization in the Commune of Abomey, Zou Department, 2025

- **Sex:** In the main model, men had lower odds of using health services than women (aOR = 0.46; 95% CI: 0.22 - 0.97; $p = 0.042$). This association might be related, in particular, to sex differences in exposure to the health system. Women may have more frequent contact with health services, notably in the context of pregnancy-related care, antenatal care visits, and childbirth. However, the sensitivity analysis conducted after excluding episodes whose nature was recorded as "childbirth" and/or "antenatal care visit" attenuated this association, which was no longer statistically significant (aOR = 0.59; 95% CI: 0.29 - 1.17; $p = 0.132$). The sensitivity analysis thus suggests that the association observed in the main model might be due in part to the composition of care-seeking episodes by sex. The influence of female sex was reported in the study by Budu *et al.*, which showed that women use health services more because of more frequent contact with the health system (pregnancy, vaccination, reproductive health), whereas men tend to delay seeking care [10].
- **Self-medication was associated with lower health service utilization** (aOR

= 0.25, $p = 0.003$), which is in line with the findings of studies conducted in West Africa, where the availability of over-the-counter medicines, cultural practices, and the search for quick solutions favor self-medication at the expense of consultation [2] [11].

- **Lack of trust in the health system was associated with lower health service utilization (aOR = 0.50; $p = 0.033$)**, which is consistent with several studies showing that negative experiences, perceived poor reception, or inadequate technical quality are major barriers, as described in Côte d'Ivoire and in Bukavu, where interpersonal quality of care was closely linked to service utilization [5] [12].
- **Community perceptions of the health services available in the commune of Abomey, Zou department, in 2025:** The perceptions show that trust in the health system, interpersonal quality of care, and reception strongly influence health service utilization, as reported by Sawadogo in 2016 and Agbré-Yacé *et al.* in 2023 [5] [13]. Self-medication is favored as a quick alternative, supported by cultural practices and mistrust of care, which corroborates the findings of Komboigo *et al.* 2018 and Samb *et al.* 2012 [11] [14]. High costs and limited availability of services hinder care-seeking (Manya *et al.*, 2023; Philippe *et al.*, 2015). The population believes that reducing costs and improving quality and communication would increase service use, consistent with suggestions made by Nahini *et al.* in Benin in 2024 [9]. These perceptions corroborate and help explain the quantitative findings.

6.3. Study Limitations

Our study has certain limitations that should be taken into account when interpreting the results.

- Health service utilization was ascertained from the most recent episode of illness or injury that occurred in the two years preceding the survey. This relatively long recall period may expose participants to recall bias, particularly regarding the nature of the episode, care-seeking, and the time between symptom onset and consultation.
- The quantitative data relied on participants' self-reports collected during face-to-face interviews. Some responses, particularly those relating to self-medication, beliefs, trust in the health system, or care-seeking practices, may be influenced by social desirability bias or by individual perceptions of lived experiences.
- The diversity of reported care-seeking episodes (acute illness, chronic illness, childbirth, antenatal care visit, trauma, and other situations) may also influence the observed associations. A sensitivity analysis excluding childbirth and antenatal care visits was therefore conducted to examine the influence of this composition on the association between sex and health service use.
- The cross-sectional design of the study does not allow causal relationships to be established between the identified factors and health service utilization. The

observed associations should therefore be interpreted as statistical associations and not as cause-and-effect relationships.

- The study was conducted in the commune of Abomey, and the results should be interpreted in this context. Extrapolation to other communes or to the entire Zou department should therefore be made with caution, given the socio-demographic, economic, cultural, and organizational specificities of the study context.
- The qualitative component, based on three focus groups bringing together participants with different profiles, aimed to complement and interpret the quantitative results. The qualitative data reflect the perceptions and experiences expressed by participants and cannot be considered representative of the entire population.

7. Conclusion

Among participants who reported an episode of illness or injury in the two years preceding the survey, 82.8% had consulted a health service during their most recent episode, representing 55.7% of all participants surveyed. Health service utilization was associated with sex, self-medication, and trust in the health system. Qualitative data also underscored the importance of interpersonal quality of care, the availability of care and medicines, and financial constraints in care-seeking pathways. Our findings underscore the value of improving the quality of reception, trust in health services, and the financial accessibility of care.

Author Contributions

All authors contributed to the conception, analysis, and review of the manuscript.

Conflicts of Interest

The authors declare no potential conflicts of interest regarding the conduct of this study or the writing or publication of this article.

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