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Determinants of Patient Satisfaction with Primary Health Care Services in Sabha, Libya: A Cross-Sectional Study

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Keywords:
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ABSTRACT

Background: Patient satisfaction is a recognised indicator of primary health care quality. Primary health care (PHC) centres in Libya serve as the gateway to public health services, yet evidence from southern regions remains sparse. This study assessed patient satisfaction across six service domains at PHC facilities in Sabha and identified which domains most strongly predicted overall satisfaction.

Methods: A descriptive cross-sectional survey was conducted at five PHC facilities in Sabha, southwestern Libya, in November–December 2025. Of 120 consecutive adult attendees approached, 89 met inclusion criteria (74.2% response rate). A 32-item questionnaire adapted from the validated Patient Satisfaction Questionnaire-III measured six service domains on a 4-point scale and overall satisfaction on a 5-point scale. Spearman correlations, Mann–Whitney U and Kruskal–Wallis H tests were applied.

Results: The sample was predominantly female (70.8%; mean age 30.0 ± 11.1 years). Overall satisfaction was moderately high (mean 3.66/5.0; 62.1% reporting high satisfaction). Staff communication was the highest-rated domain (72.9% positive) and waiting time the lowest (46.9% positive, 18.8% poor). Administrative staff interaction was the strongest predictor of overall satisfaction ($\rho = 0.667$, 95% confidence interval (CI) 0.541–0.766, $p < 0.001$). Internal consistency was acceptable (Cronbach $\alpha = 0.717$). Neither gender ($p = 0.578$) nor age group ($p = 0.709$) predicted satisfaction.

Conclusions: Primary health care users in Sabha reported generally positive satisfaction, yet waiting time and administrative staff performance emerged as the areas most clearly associated with poor ratings. These gaps appear structural rather than demographic, pointing to facility-wide operational improvement as the appropriate response.

محددات رضا المرضى عن خدمات الرعاية الصحية الأولية في مدينة سبها، ليبيا: دراسة مقطعية

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الكلمات المفتاحية:
رضا المرضى
الرعاية الصحية الأولية
ليبيا
دراسة مقطعية
وقت الانتظار
جودة الخدمات الصحية

الملخص

الخلفية: يُعد رضا المرضى مؤشرًا معترفًا به لجودة الرعاية الصحية الأولية. وتمثل مراكز الرعاية الصحية الأولية في ليبيا بوابة الخدمات الصحية العامة، غير أن بيانات المناطق الجنوبية ما تزال شحيحة. هدفت هذه الدراسة إلى تقييم رضا المرضى عن ستة مجالات خدمية في مرافق الرعاية الصحية الأولية بمدينة سبها، وتحديد المجالات الأقوى ارتباطًا بالرضا العام.

الطرائق: أُجريت دراسة مقطعية وصفية في خمسة مرافق للرعاية الصحية الأولية بمدينة سبها جنوب غرب ليبيا في نوفمبر وديسمبر 2025. ومن بين 120 مراجعًا بالغًا دُعوا بالتتابع، استوفى 89 مشاركًا معايير الإدراج (معدل استجابة 74.2%). واستُخدم استبيان من 32 بندًا مقتبس من استبيان رضا المرضى الثالث (PSQ-III) لقياس ستة مجالات خدمية على مقياس رباعي، والرضا العام على مقياس خماسي. وطُبقت اختبارات ارتباط سبيرمان ومان–ويتني U وكروسكال–واليس H.

النتائج: كان معظم المشاركين إناثًا (70.8%)، وبلغ متوسط العمر 30.0 ± 11.1 سنة. وكان الرضا العام مرتفعًا بدرجة

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معتدلة (المتوسط 3.66 من 5.0؛ وأفاد 62.1% برضا مرتفع). وحصل التواصل مع الموظفين على أعلى تقييم (72.9% إيجابية)، ووقت الانتظار على أدنى تقييم (46.9% إيجابية و18.8% ضعيفة). وكان التعامل مع الموظفين الإداريين أقوى مؤشر للرضا العام ($\rho = 0.667$؛ فاصل الثقة 95%: 0.541–0.766؛ $p < 0.001$). وكان الاتساق الداخلي مقبولًا (معامل كرونباخ ألفا = 0.717). ولم يرتبط الرضا بالجنس ($p = 0.578$) أو بالفئة العمرية ($p = 0.709$).

الاستنتاجات: أبدى مستخدمو خدمات الرعاية الصحية الأولية في سبها رضا إيجابيًا عمومًا، إلا أن وقت الانتظار وأداء الموظفين الإداريين برزا كأكثر المجالات ارتباطًا بالتقييمات الضعيفة. وتبدو هذه الفجوات في الجودة هيكلية لا ديموغرافية، مما يجعل تحسين العمليات على مستوى المرافق كافة الاستجابة المناسبة.

1. Introduction

Primary health care (PHC) constitutes the first point of contact between individuals and the healthcare system. The 1978 Declaration of Alma-Ata, endorsed by 134 WHO member states, established community-based care as a foundation for the "Health for All" strategy [1]. Subsequent research has demonstrated that countries with robust primary care infrastructure experience lower all-cause mortality, reduced health inequities, and better population health outcomes across diverse economic contexts [2]. The COVID-19 pandemic underscored the vulnerability of health systems in which primary care has been under-resourced, revealing critical weaknesses in preparedness and continuity [3].

Patient satisfaction has become a widely adopted measure of healthcare quality and system performance [4]. While clinical indicators capture dimensions of technical quality, satisfaction surveys assess the patient experience, including perceived accessibility, interpersonal communication, and the physical environment of care [5,6]. Satisfied patients demonstrate greater treatment adherence, improved self-reported health status, reduced emergency department utilisation, and stronger continuity with care providers [7,8]. These associations are particularly pronounced in primary care settings, where longitudinal relationships between patients and healthcare teams form the basis of service delivery [9].

A systematic review by Batbaatar et al. of 53 studies across 19 countries identified provider interpersonal skills as the strongest determinant of patient satisfaction, while waiting times and bureaucratic barriers were the most common sources of dissatisfaction [9]. Libya presents a particularly relevant context for examining these dynamics. The country's National Health System operates primary care centres, polyclinics, and health units as the official gateway to public healthcare. Since the political transition in 2011, the system has faced substantial challenges, including workforce shortages, supply chain disruptions, uneven quality of care across regions, and limited health information infrastructure [10,11]. A recent editorial has argued that gaps in laboratory and surveillance capacity delay the recognition of disease outbreaks across North Africa [12].

Sabha, located in southwestern Libya's Fezzan region, typifies these challenges. As the largest urban centre in the south, Sabha serves a dispersed population across a vast desert territory, with PHC facilities operating under resource constraints that exceed those in northern coastal cities [11]. A recent field report from Ghat, further south, described chronic shortages of diagnostics, medicines and specialists, together with referral delays caused by distance and damaged infrastructure [13]. Despite the strategic importance of PHC in this region, no published study has quantitatively assessed patient satisfaction with PHC services in Sabha or disaggregated determinants by service domain.

The objectives of this study were to assess overall patient satisfaction and domain-specific ratings at five PHC facilities in Sabha, to identify which service domains most strongly predict overall satisfaction, and to determine whether satisfaction varies by gender or age group. The findings are intended to inform quality improvement priorities for PHC services in southern Libya.

2. Materials and Methods

2.1. Study design and setting

A descriptive cross-sectional study was conducted across five PHC facilities in Sabha city, southwestern Libya, from November to December 2025. The selected facilities (Al-Jadeed Healthcare Centre, Al-Qardah Healthcare Centre, Abdelkafi Healthcare Centre, Al-Thanawiya Healthcare Centre, and the Outpatient Department of Sabha Medical Centre) were purposively selected to represent diverse geographic catchment areas within the city.

2.2. Participants

Adults (18 years and above) attending the selected PHC centres for any consultation during the study period were approached consecutively on designated data-collection days. A target of 120 questionnaires was set based on a convenience sampling frame consistent with the available study period. Patients who declined to participate, who were unable to complete the questionnaire, or whose responses contained 20% or more missing items were excluded. After quality screening, 89 questionnaires were retained (74.2% response rate).

2.3. Instrument

The study questionnaire was adapted from the Patient Satisfaction Questionnaire-III (PSQ-III), a validated 50-item instrument developed by Ware et al. that measures multiple dimensions of satisfaction with medical care [14]. The short form (PSQ-18),

described by Marshall and Hays [15], provides a concise alternative with acceptable subscale reliability across diverse healthcare settings; its validity has been confirmed in Arabic-speaking Middle Eastern contexts [16]. Our instrument comprised 32 items structured around a 4-point Likert scale (1 = Poor, 2 = Average, 3 = Good, 4 = Excellent) for domain items and a single global satisfaction item rated on a 5-point scale (1 = Very Dissatisfied to 5 = Very Satisfied), covering six service domains: appointment availability, medical explanation quality, staff communication, waiting time, facility cleanliness, and administrative staff interaction.

2.4. Statistical analysis

Descriptive statistics (mean, standard deviation (SD), median, interquartile range (IQR), frequencies, and percentages) were computed for all variables using Minitab Statistical Software, version 21.1 (Minitab LLC, State College, PA, USA). Internal consistency of the composite domain score was assessed with Cronbach's alpha. Non-parametric tests were selected given the ordinal scaling of satisfaction items and the non-normal score distribution. Spearman rank-order correlation coefficients (ρ) were computed between each domain rating and the overall satisfaction score, with 95% confidence intervals (CIs) calculated via Fisher z-transformation. Effect sizes were interpreted according to Cohen's conventions as small (ρ < 0.3), medium (0.3–0.5), or large (> 0.5) [17]. A Mann–Whitney U test compared overall satisfaction between male and female respondents; effect size was quantified using the rank-biserial correlation coefficient. A Kruskal–Wallis H test compared satisfaction across four age groups. The Bonferroni-adjusted significance threshold for the six domain correlations was α = 0.008. Inferential analyses were conducted in R, version 4.2.1 (R Foundation for Statistical Computing, Vienna, Austria). Statistical significance was set at α = 0.05.

2.5. Ethical considerations

The study received ethical approval from the Research Ethics Committee, Faculty of Medicine, Sebha University (Protocol No. 216/88/7848, dated 15 October 2025). All participants provided verbal informed consent prior to inclusion. Anonymity was maintained throughout data collection and analysis; no personally identifiable information was recorded. Participation was entirely voluntary. All procedures were conducted in accordance with the ethical principles of the World Medical Association Declaration of Helsinki (2013 revision).

3. Results

3.1. Demographic characteristics

Of the 120 questionnaires distributed, 89 met inclusion criteria (response rate 74.2%). The sample was predominantly female (n = 63; 70.8%), with 26 male respondents (29.2%). The mean age was 30.0 ± 11.1 years (median 29.0; IQR 20–38). Among respondents who specified their age group (n = 88), 77.3% (n = 68) were aged under 35 years, consistent with the predominance of younger adults in PHC utilisation for acute care and preventive services. One respondent did not specify an age group and was excluded from age-stratified analyses. Demographic data are presented in Table 1.

Table 1. Socio-demographic characteristics of the study population (N = 89)

Variable	Category	n	%
Gender	Female	63	70.8
	Male	26	29.2
Age (years)	Mean ± SD	30.0 ± 11.1	
	Median (IQR)	29.0 (20–38)	
	Range	18–60	
Age group	≤ 25 years	38	43.2
	26–35 years	30	34.1
	36–45 years	13	14.8
	> 45 years	7	7.9

Minimum age 18 years per inclusion criteria. Age group percentages calculated among 88 respondents who specified age group. IQR, interquartile range; SD, standard deviation.

3.2. Domain-level satisfaction ratings

Satisfaction scores varied across the six service domains (Table 2). Staff communication received the highest mean rating (2.96 ± 0.79; 72.9% positive responses). Facility cleanliness (2.87 ± 0.78; 69.1%) and administrative staff interaction (2.85 ± 0.94; 66.3%) ranked second and third. Medical explanation quality achieved a mean of 2.81 ± 0.85 (61.1% positive). Appointment availability scored 2.66 ± 0.93 (55.8% positive). Waiting time received the lowest satisfaction rating across all domains (mean 2.42 ± 0.95; median 2.0), with only 46.9% positive responses and the highest proportion of Poor ratings (18.8%). The 26-percentage-point difference between the highest-rated domain (staff communication, 72.9%) and the lowest (waiting time, 46.9%) indicates systematic variation in perceived service quality.

Table 2. Distribution of satisfaction ratings by service domain

Domain	n	Excellent, n (%)	Good, n (%)	Average, n (%)	Poor, n (%)	Mean ± SD	Median
Staff communication	87	23 (26.4)	41 (47.1)	21 (24.1)	2 (2.3)	2.96 ± 0.79	3.0
Cleanliness	85	18 (21.2)	41 (48.2)	23 (27.1)	3 (3.5)	2.87 ± 0.78	3.0
Administrative staff interaction	86	25 (29.1)	32 (37.2)	21 (24.4)	8 (9.3)	2.85 ± 0.94	3.0
Medical explanation	86	21 (24.4)	32 (37.2)	30 (34.9)	3 (3.5)	2.81 ± 0.85	3.0

Domain	n	Excellent, n (%)	Good, n (%)	Average, n (%)	Poor, n (%)	Mean ± SD	Median
Appointment availability	86	18 (20.9)	30 (34.9)	29 (33.7)	9 (10.5)	2.66 ± 0.93	3.0
Waiting time	87	12 (13.8)	29 (33.3)	30 (34.5)	16 (18.4)	2.42 ± 0.95	2.0

Domains ordered by descending mean score. Rating scale: 1 = Poor, 2 = Average, 3 = Good, 4 = Excellent. n varies due to item non-response. SD, standard deviation.

3.3. Overall patient satisfaction

Overall satisfaction, measured on a 5-point scale, yielded a mean of 3.66 ± 1.05 (median 4.0; mode 4.0). High satisfaction (scores 4–5) was reported by 62.1% of respondents (n = 54); 29.1% (n = 25) expressed neutral satisfaction (score 3); and 8.1% (n = 7) reported low satisfaction (scores 1–2). The distribution was positively skewed, with the majority of responses concentrated in the satisfied range (Table 3). The composite domain score showed satisfactory internal consistency (Cronbach's α = 0.717) and correlated strongly with the global satisfaction rating (ρ = 0.717, 95% CI 0.607–0.798, p < 0.0001), confirming the multi-domain measure as a coherent summary of patient experience.

Table 3. Distribution of overall patient satisfaction (n = 86)

Score	Label	n	%	Cumulative %
1	Very dissatisfied	6	7.0	7.0
2	Dissatisfied	1	1.2	8.1
3	Neutral	25	29.1	37.2
4	Satisfied	37	43.0	80.2
5	Very satisfied	17	19.8	100.0
Mean ± SD	3.66 ± 1.05			

Three respondents among the 89 included did not complete the global satisfaction item; n = 86 for this analysis. SD, standard deviation.

3.4. Correlation analysis: domain predictors of overall satisfaction

All six service domains showed statistically significant positive correlations with overall satisfaction (all p ≤ 0.0002; Table 4). Administrative staff interaction was the strongest predictor (ρ = 0.667; 95% CI 0.541–0.766; large effect), followed by appointment availability (ρ = 0.599; 95% CI 0.458–0.714; large) and waiting time (ρ = 0.541; 95% CI 0.388–0.666; large). Staff communication (ρ = 0.507; 95% CI 0.346–0.643) and cleanliness (ρ = 0.457; 95% CI 0.285–0.603) showed medium-to-large effects, while medical explanation quality demonstrated a moderate association (ρ = 0.372; 95% CI 0.188–0.533). Administrative staff interaction was the top predictor despite ranking only third in mean satisfaction score, a dissociation indicating disproportionate influence on global satisfaction assessments. All six correlations remain significant after Bonferroni correction for multiple comparisons (adjusted α = 0.008).

Table 4. Spearman rank-order correlations between service domains and overall satisfaction

Service domain	Spearman ρ	95% CI	p value	Effect size
Administrative staff interaction	0.667	0.541–0.766	< 0.0001	Large
Appointment availability	0.599	0.458–0.714	< 0.0001	Large
Waiting time	0.541	0.388–0.666	< 0.0001	Large
Staff communication	0.507	0.346–0.643	< 0.0001	Medium to large
Cleanliness	0.457	0.285–0.603	< 0.0001	Medium
Medical explanation quality	0.372	0.188–0.533	0.0002	Medium

Effect size thresholds: small ρ < 0.3; medium 0.3–0.5; large > 0.5. All p values two-tailed. All correlations survive Bonferroni correction (adjusted α = 0.008). CI, confidence interval.

3.5. Satisfaction by gender and age group

A Mann–Whitney U test revealed no significant difference in overall satisfaction between male and female patients (U = 864.0, p = 0.578; Table 5). Both groups shared identical median scores (4.0) and similar proportions reporting high satisfaction (males 65.4%; females 61.9%). The effect size was negligible (rank-biserial r = 0.055), confirming that gender did not moderate satisfaction in this cohort.

Table 5. Overall satisfaction by gender (Mann–Whitney U test, n = 89)

Parameter	Male (n = 26)	Female (n = 63)	Test statistic	p value
Mean ± SD	3.77 ± 1.00	3.66 ± 1.07	U = 864.0	0.578
Median (IQR)	4.0 (3.0–5.0)	4.0 (3.0–5.0)		
High satisfaction (%)	65.4	61.9		
Rank-biserial r	0.055 (negligible)			

Effect size reported as rank-biserial correlation, the appropriate metric for Mann–Whitney U tests. IQR, interquartile range; SD, standard deviation.

A Kruskal–Wallis H test similarly found no statistically significant variation across the four age groups (H = 1.38, df = 3, p = 0.709; Table 6). Mean satisfaction scores ranged narrowly from 3.61 ± 1.09 (25 years and under) to 3.80 ± 0.95 (26–35 years). The oldest group (> 45 years; n = 7) recorded a lower mean (3.14 ± 1.35) and a smaller proportion of high satisfaction (42.9%), though the small cell size limits interpretation of this finding.

Table 6. Overall satisfaction by age group (Kruskal–Wallis H test, n = 88)

Age group	n	Mean ± SD	Median (IQR)	High satisfaction (%)
≤ 25 years	38	3.61 ± 1.09	4.0 (3.0–5.0)	60.5
26–35 years	30	3.80 ± 0.95	4.0 (3.0–5.0)	66.7
36–45 years	13	3.77 ± 1.01	4.0 (3.0–5.0)	61.5
> 45 years	7	3.14 ± 1.35	3.0 (2.0–4.0)	42.9

Kruskal–Wallis H = 1.38, df = 3, p = 0.709. One respondent did not specify age group and was excluded. Small n in the > 45 years group (n = 7) substantially limits statistical power for this stratum. IQR, interquartile range; SD, standard deviation.

4. Discussion

This study provides the first quantitative, domain-disaggregated assessment of patient satisfaction with PHC services in Sabha, adding to the sparse literature on Libyan primary care beyond the country's northern cities.

That 62.1% of respondents reported high satisfaction, with a mean global score of 3.66/5.0, is broadly consistent with evidence from neighbouring Arab health systems. A scoping review of patient satisfaction in Gulf Cooperation Council countries found that most cross-sectional studies identified generally satisfied populations, with variation by facility type and urban–rural location [18]. In the only published study of PHC satisfaction from Libya, Salam et al. surveyed 310 beneficiaries across nine health centres and seven polyclinics in Benghazi, recording broadly favourable ratings while identifying geographic zone, facility type, and reception quality as significant determinants [19]. Moderate satisfaction has also been reported in other Libyan care settings; in an oncology intensive care unit, family satisfaction ranged from 40% to 60% across the measured domains and was lowest for involvement in care [20]. The Sabha data replicate the moderate-to-good overall satisfaction finding and corroborate the administrative interaction effect, suggesting these may be characteristic features of Libyan PHC.

The 29.1% of respondents expressing neutral satisfaction and the 8.1% reporting low satisfaction together account for nearly 37% of patients whose quality expectations were not fully met. A systematic review by Batbaatar et al. found that service quality indicators, particularly interpersonal care and service efficiency, were the most influential determinants of satisfaction across 53 studies [9], a pattern consistent with our findings. In resource-constrained settings, converting neutral satisfaction to high satisfaction through targeted operational changes is feasible and potentially productive, as quality improvement interventions in comparable low- and middle-income country (LMIC) contexts have shown [21].

A central observation of this study is the divergence between interpersonal and operational dimensions of care. Domains involving direct human contact, specifically staff communication (72.9% positive) and facility cleanliness (69.1%), outperformed service logistics domains by 17 to 26 percentage points. This pattern suggests that the PHC workforce in Sabha possesses sound interpersonal competencies, while the administrative and logistical frameworks within which they operate remain constrained. Communication is a core component of the therapeutic relationship between clinicians and patients [22], and training in communication skills has been shown to improve patient satisfaction [23]. Unmet information needs have also been documented among outpatients in Sebha: in a survey of adult asthma patients at Sebha Medical Centre, 66.7% believed that inhalers should be reserved for emergencies and 83.3% wanted more education about their treatment [24], which supports strengthening patient explanation in local health services.

Waiting time represents the most pressing operational concern identified. Nearly one in five patients (18.8%) rated it as Poor, the highest proportion of negative ratings across all domains, and the median rating was 2.0 (Average), indicating that the typical patient's waiting experience falls short of the Good threshold. The evidence on this point is consistent: longer waiting times are associated with lower satisfaction in primary care [25]. Anderson et al. demonstrated that dissatisfaction associated with long waits intensifies when combined with short physician consultation time [25]. Systematic reviews also confirm that scheduling and patient flow interventions, including open-access scheduling, queue management protocols, and flow redesign, can reduce waiting times in LMIC settings without additional resources [26,27]. Prioritising appointment systems and streamlining patient flow during peak morning hours are immediately actionable steps for Sabha's PHC facilities.

The finding that administrative staff interaction is the strongest predictor of overall satisfaction ($\rho = 0.667$; large effect) has direct implications for service management. Administrative personnel represent the patient's first, and often final, point of contact with the facility; their efficiency and communication quality shape the patient's perception of the entire episode. When these interactions fall short through dismissive behaviour, confused scheduling, or inadequate information provision, the resulting negative impression tends to influence retrospective assessments of subsequent clinical contacts [28,29]. The Benghazi study specifically recommended a patient-friendly facility approach emphasising reception, physician interaction, and cordiality [19]. The present data place the correlation between administrative interaction and overall satisfaction at $\rho = 0.667$, exceeding the correlations for medical explanation quality ($\rho = 0.372$) and cleanliness ($\rho = 0.457$), confirming that investment in non-clinical staff development is central to improving the patient experience [28,29]. Structured competency training for reception staff, standardised patient communication protocols, and routine satisfaction monitoring at the administrative touchpoint are quality improvement measures warranting priority consideration for Sabha's PHC network.

The absence of statistically significant differences in satisfaction by gender ($p = 0.578$; rank-biserial $r = 0.055$) or age group ($p = 0.709$) indicates that demographic targeting is not the appropriate quality improvement strategy in this context. Batbaatar et al.'s systematic review found that sociodemographic characteristics showed the most inconsistent associations with satisfaction across the studies examined [9], and our null findings align with evidence from cross-sectional PHC studies in Saudi Arabia, Greece, and Nepal, where

service quality dimensions outweighed demographic variables in predicting satisfaction [16,30]. This demographic neutrality supports the design of quality improvement initiatives as universal service-level interventions, without patient segmentation.

The observed tendency toward lower satisfaction among patients over 45 years (mean 3.14 versus 3.61–3.80 in younger groups) warrants attention in future studies with sufficient power to assess effects in this subgroup. Older patients may hold different expectations regarding explanation quality, consultation duration, and physical accessibility.

Several limitations should be acknowledged. The sample was recruited over two months at five purposively selected urban facilities, restricting generalisability to rural PHC units, other Libyan cities, and non-participating centres. The cross-sectional design precludes causal inference. Voluntary participation and the predominance of younger, female respondents may have introduced selection bias. The 4-point domain rating scale differs from the 5-point global scale, introducing potential scalar non-equivalence. One respondent did not specify an age group, and the small cell size in the > 45 years stratum (n = 7) further limits age-related analyses. Convenience sampling was necessitated by time and resource constraints. Future research should employ random sampling with broader geographic coverage, and longitudinal designs able to trace the effects of quality improvement initiatives on satisfaction over time.

5. Conclusion

Patient satisfaction with PHC services in Sabha is moderate to high, but there is a clear difference between the perceived quality of interpersonal clinical interactions and the operational efficiency of service delivery. The former was rated favourably across the sample; the latter was not. Waiting time was the domain of greatest concern and should be the first target for facility-level operational redesign. Administrative staff interaction showed the strongest association with overall satisfaction, making front-desk staff competency and process quality a priority for investment. The absence of demographic variation in satisfaction reinforces a facility-wide rather than population-specific approach to quality improvement. These findings provide the health authorities in Sabha with evidence to guide resource allocation, staff training priorities, and monitoring frameworks for PHC quality improvement in southern Libya.

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Declarations

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Ethics approval and consent to participate: The study was approved by the Research Ethics Committee, Faculty of Medicine, Sebha University (Protocol No. 216/88/7848, dated 15 October 2025) and was conducted in accordance with the Declaration of Helsinki. Verbal informed consent was obtained from all participants.

Data availability: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Use of generative AI: None.

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