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Patients' Satisfaction with Primary Health Care Centers: A Study in Al Qassim Region, Saudi Arabia

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ABSTRACT

Patient satisfaction is a critical metric for evaluating the quality, responsiveness, and patient-centeredness of primary healthcare (PHC) systems. In alignment with Saudi Vision 2030, the Kingdom's healthcare framework is undergoing an extensive transformation toward value-based, integrated care networks. This study evaluates patient satisfaction levels and identifies the socio-demographic and structural determinants influencing PHC service utilization in the Al Bukayriyah region of Al-Qassim Province, Saudi Arabia. This study utilized a descriptive cross-sectional design, collecting data from adult respondents across selected PHC centers via a structured, validated questionnaire. The survey captured demographic variables, facility infrastructure conditions, and healthcare provider behaviors using a five-point Likert scale. Overall, 51% of respondents reported positive satisfaction (very satisfied or satisfied), 25% remained neutral, and 24% expressed dissatisfaction. While facility cleanliness and interpersonal provider respect received favorable ratings (exceeding 60% approval), significant operational bottlenecks were identified. Specifically, 34% of respondents expressed dissatisfaction with physician and staff availability, 28% with pharmacy drug consistency, and 29% with consultation length. Although fundamental PHC services and interpersonal care dimensions achieve moderate to high approval, systemic challenges regarding staffing capacity, operational flow, and waiting times require targeted administrative intervention. Addressing these constraints is vital to optimizing patient experience and fulfilling the strategic objectives of Saudi Arabia's Health Sector Transformation Program.

Keywords: Primary Healthcare, Patient Satisfaction, Service Quality, Socio-Demographic Determinants, Healthcare Transformation.

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INTRODUCTION

Patient satisfaction has increasingly become the definitive benchmark for evaluating the overall quality, responsiveness, and patient-centeredness of modern healthcare systems (Press, 2002; Hong *et al*., 2025). According to the World Health Organization, Primary Health Care (PHC) serves as the foundational cornerstone in the delivery of comprehensive health services, encompassing preclusive, preventive, curative, and rehabilitative care (WHO, 2023). Essentially, PHC constitutes the vital entry point where individuals first interface with the continuum of a healthcare system (Wolcott *et al*., 2009). When patients report high satisfaction with primary care services, it correlates with improved treatment adherence, better health outcomes, and higher system productivity (Papanicolas *et al*., 2019; Al Huseini *et al*., 2026). Systematically capturing patient feedback allows healthcare organizations to align operations with consumer expectations, thereby fostering institutional accountability and guiding strategic resource allocation (Doyle *et al*., 2013).

Globally, across advanced healthcare infrastructures in North America and Europe, patient-reported experience measures (PREMs) and satisfaction metrics are instrumental in shaping value-based care models and evidence-based health reforms (Mostafavi, *et al*., 2026). Despite its critical role, accurately measuring and benchmarking satisfaction remains complex due to varying cultural expectations and the absence of a universally standardized assessment tool (Paul, 2025). While European Union health reports frequently denote generally positive public satisfaction trends, developing and rapidly restructuring health economies require localized evaluations tailored to unique structural transformations (OECD, 2023).

In the Kingdom of Saudi Arabia, patient satisfaction has assumed unprecedented strategic importance. Driven by the ambitious objectives of Saudi Vision 2030 and the Health Sector Transformation Program, the Kingdom's healthcare framework is undergoing a profound paradigm shift—moving from a traditional hospital-centric, curative model to an integrated, value-based digital ecosystem centered on health clusters and robust primary care networks (MOH, 2024; Vision Realization Programs, 2026). Although recent empirical assessments indicate varying degrees of public satisfaction across different regions—highlighting persistent challenges such as appointment waiting times, continuity of care, and structural bottlenecks (Alzahrani & Felix, 2025) evaluating grassroots-level perceptions remains vital. Given that comprehensive micro-level evaluations of PHC satisfaction remain limited in specific urban sectors of the Kingdom, this study aims to investigate the determinants, impact, and significance of patient satisfaction within Saudi Arabia's evolving primary healthcare system.

Problem Statement

Within the context of Saudi Arabia's ongoing healthcare transformation, achieving uniform patient satisfaction nationwide is a core strategic objective (Sheera *et al*., 2026). This implies that high standards of primary healthcare delivery should be mirrored not only in major metropolitan centers like Riyadh and administrative hubs but equitably across all provinces, governorates, and rural sectors of the Kingdom. However, empirical evidence shows persistent disparities in patient satisfaction. While major urban centers often report favorable satisfaction indices due to better-resourced infrastructure and advanced facility clustering, peripheral or less-developed regions frequently encounter lower satisfaction outcomes. This regional variance highlights a critical equity challenge within Saudi Arabia's public health framework. Furthermore, these discrepancies are heavily influenced by Saudi Arabia's diverse socio-demographic landscape. Variables such as geographical location, infrastructural development levels, age, and socioeconomic status play a profound role in shaping patient experiences and expectations. Because localized geographical disparities directly impact health equity and service utilization, identifying the specific socio-demographic and structural determinants of patient satisfaction outside major metropolitan areas remains an urgent empirical gap that must be addressed to ensure the success of national healthcare reforms.

Objectives of the Study

The objective of this study is to comprehensively evaluate patient satisfaction levels regarding primary healthcare (PHC) services in Al Qassim, Saudi Arabia, and to investigate the impact and relationships between various socio-demographic factors (such as age, gender, education, and socioeconomic status) and patient experiences.

LITERATURE REVIEW

Measuring patient satisfaction is essential in modern healthcare administration, as it significantly promotes clinical accountability, operational transparency, and systemic quality improvement (Alshammari, 2014). Fundamentally, evaluating patient satisfaction requires a comparative analysis of a patient's lived healthcare experience against their initial expectations (Albaqami & Alshagrawi, 2025; Radwan et al., 2023). Within primary healthcare (PHC) settings, numerous empirical evaluations emphasize that patient perception is shaped by a multi-dimensional matrix of core attributes, including clinical competence, interpersonal communication, staff empathy, physical facility ambience, and service accessibility (Al-Huseini *et al*., 2026). Effective interpersonal dynamics—such as active listening, courtesy, and clear explanations—alongside clinical competency are consistently identified as primary drivers of positive patient experiences (Albaqami & Alshagrawi, 2025).

In the context of the Kingdom of Saudi Arabia, the rapid restructuring of the healthcare landscape under Vision 2030 has elevated the importance of patient experience metrics (Al-Huseini *et al*., 2026; Sheerah et al, 2026). Historically, regional studies yielded varying insights; for instance, early evaluations in Majmaah reported an 82% satisfaction rate primarily linked to provider competence and facility hygiene (Mohamed, 2015), while assessments in Jubail highlighted accessibility and professional humanness as key anchors of positive feedback (Almoajel *et al*., 2014). Similarly, foundational research across Riyadh primary care centers revealed that while enablement and reception services scored favorably (exceeding 70%), continuity of care frequently lagged as a primary area requiring structural enhancement (Al Sakkak *et al*., 2008).

Recent contemporary studies demonstrate a measurable evolution and optimization in Saudi primary care networks, driven by health cluster transformations and digital health integration (Al-Huseini *et al*., 2026). Recent clinical audits across urban and regional PHC centers indicate high approval ratings for specialized clinical touchpoints—such as laboratory, pharmacy, and diagnostic imaging services—while logistical barriers like waiting times, appointment scheduling bottlenecks, and parking availability continue to challenge overall satisfaction scores (Albaqami & Alshagrawi, 2025; Al-Huseini, 2026). Furthermore, contemporary demographic analyses consistently show that socio-demographic determinants—including age, educational attainment, marital status, and geographical distribution—play a statistically significant role in modulating patient expectations and satisfaction outcomes across the Kingdom (Albaqami & Alshagrawi, 2025).

MATERIALS AND METHODS

Study Design and Setting

This study utilized a descriptive cross-sectional research design to evaluate patient satisfaction levels and identify the socio-demographic determinants influencing primary healthcare (PHC) service utilization. The study was conducted within selected primary healthcare centers located in Al Bukayriyah, Al-Qassim Province, Kingdom of Saudi Arabia.

Study Population and Eligibility Criteria

The target population comprised adult community members who visited the designated PHC facilities to avail healthcare services.

Inclusion Criteria

Patients aged 18 years and older of both genders who visited a primary healthcare center in Al Bukayriyah during the study period.

Exclusion criteria: Individuals under the age of 18, patients visiting emergency-only or specialized tertiary facilities outside the PHC network, and those who declined to provide informed consent.

Sample Size and Sampling Technique

A convenience sampling technique combined with systematic random selection was employed to recruit participants attending four primary healthcare centers in Al Bukayriyah. A total sample size of n=240 questionnaires were initially distributed to

account for potential non-response or incomplete submissions, yielding a final valid analytical sample of n=200 completed responses (achieving an effective response rate of 83.3%).

Data Collection Instrument

Data were gathered using a structured, self-administered questionnaire adapted from validated instruments assessing patient satisfaction and health service quality. The instrument was divided into sections capturing patient socio-demographic profiles (age, gender, educational attainment, marital status, and occupation) and multi-dimensional dimensions of PHC satisfaction (such as staff communication, facility cleanliness, accessibility, and waiting times). To accommodate the diverse demographic profile of the region, the questionnaire was prepared in both English and Arabic.

Professional forward-backward translation protocols were observed to ensure semantic equivalence. Arabic versions were administered to native Arabic speakers, while assisted verbal administration by trained research aids was made available exclusively for illiterate participants to eliminate reporting bias.

Pilot Testing and Instrument Validation

Prior to full-scale deployment, a pilot test was conducted with a preliminary sample of n=20 patients from the target population. Feedback obtained from the pretesting phase was used to refine question clarity, modify ambiguous phrasing, and ensure cultural appropriateness. Data from the pilot phase was excluded from the final statistical analysis.

Data Collection Procedure

Prior to questionnaire distribution or interviews, written informed consent was formally obtained from every participant. The research team thoroughly briefed prospective participants regarding the voluntary nature of the study, the research objectives, and their absolute right to withdraw at any stage without penalty. Complete anonymity, privacy, and confidentiality of all collected records were strictly maintained throughout the study.

Statistical Analysis

Data from the retrieved questionnaires were checked for completeness, coded, and entered a secure electronic database. Statistical analyses were performed using Microsoft Excel and standard statistical software. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize socio-demographic distributions and patient satisfaction levels across dimensions. Results are graphically represented using bar charts and pie diagrams to facilitate data interpretation.

RESULTS AND FINDINGS

Socio-Demographic Characteristics

Table 1 shows that of the 200 respondents, 116 were male (58%), and 84 were female (42%). Participants represented a diverse distribution of age brackets: 45% were aged 18–25 years, 33% were aged 26–35 years, 14% were aged 36–45 years, and 8% were aged above 45 years. Regarding marital status, single individuals constituted the majority at 64%, followed by married participants at 21%, divorced individuals at 9%, and widows at 6%.

Educational attainment varied among respondents, with 49% holding university graduate degrees, 30% having completed primary education, 14% reporting other educational levels, 5% having intermediate education, and 2% possessing a secondary education. In terms of occupational status, 43% belonged to the working class, while 57% were non-working. Single respondents comprised the largest demographic group among the participants. Furthermore, nearly half of the respondents (49%) held university graduate degrees, a factor that likely facilitated effective communication and comprehension of the survey instrument.

Table 1

Socio-Demographic Characteristics of the Respondents

Socio-demographic Variables		Number (N= 200)	Percentage
Age	18 - 25 Years	90	45%
	26 - 35 Years	66	33%
	36 - 45 Years	28	14%
	Above 45 Years	16	8%
Gender	Male	116	58%
	Female	84	42%
Marital Status	Married	42	21%
	Single	128	64%
	Divorced	18	9%
	Widow	12	6%
Education	Primary	60	30%
	Intermediate	10	5%
	Secondary	4	2%
	Graduate	98	49%
	Others	28	14%
Occupation	Working	86	43%
	Non-working	114	57%

Measurement of Satisfaction Levels

The survey instrument utilized a five-point Likert scale to evaluate overall patient satisfaction, with response options ranging from very satisfied to very dissatisfied. As detailed in Table 2, among the 200 respondents across various socio-demographic backgrounds, 14% (n = 28) reported being very satisfied with the primary healthcare services, and 37% (n = 74) indicated they were satisfied. Conversely, a quarter of the participants—25% (n = 50)—maintained a neutral stance, while 15% (n =30) were dissatisfied, and 9% (n = 18) stated they were very dissatisfied. Combined, positive responses (very satisfied and satisfied) accounted for 51% of the total sample, while negative responses (dissatisfied and very dissatisfied) totaled 24%, highlighting notable areas for operational and service quality enhancement within the primary healthcare centers.

Table 2

Level of Satisfaction of Respondents

Level of satisfaction	Number	Percentage
Very Satisfied	28	14%
Satisfied	74	37%
Neutral	50	25%
Dissatisfied	30	15%
Very dissatisfied	18	9%
Total number of respondents	200	100%

Respondents' Opinion on Health Care Facilities and Infrastructure

Participants evaluated various physical and operational dimensions of the primary healthcare facilities using a five-point Likert scale (Table 3). Regarding the physical environment, respondents expressed predominantly positive opinions about the

cleanliness of the waiting halls, with 24% reporting being very satisfied, 45% satisfied, 18% neutral, 9% dissatisfied, and 4% very dissatisfied. Similarly, appraisals for the cleanliness of the examination rooms were favorable, showing 19% very satisfied, 37% satisfied, 20% neutral, 16% dissatisfied, and 12% very dissatisfied. Evaluations concerning toilet cleanliness were more polarized: 19% were very satisfied, 32% satisfied, 18% neutral, 15% dissatisfied, and 16% very dissatisfied.

In terms of medical resources and staffing, responses revealed notable operational bottlenecks. Regarding the availability of doctors and other medical staff, 11% were very satisfied, 25% satisfied, 20% neutral, while over a third (34%) expressed dissatisfaction and 10% were very dissatisfied. Pharmacy drug availability elicited mixed responses, with 27% very satisfied, 19% satisfied, 11% neutral, 28% dissatisfied, and 15% very dissatisfied. Finally, ratings for the availability of medical equipment showed that 12% were very satisfied, 30% satisfied, 21% neutral, 23% dissatisfied, and 14% very dissatisfied. Overall, cumulative positive ratings (very satisfied and satisfied) for several key infrastructure and staffing items remained below 50%, reflecting targeted areas for administrative improvement.

Table 3

Level of Satisfaction with Facilities According to Socio-Demographic Variables

Facilities /Infrastructure	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
Mean score	23%	38%	16%	14%	9%
Cleanliness of waiting all	24%	45%	18%	9%	4%
Cleanliness of toilets	19%	32%	18%	15%	16%
Cleanliness of examination room	19%	37%	20%	16%	12%
Availability of doctors & other staff	11%	25%	20%	34%	10%
Availability of drugs in pharmacy	27%	19%	11%	28%	15%
Availability of medical equipment	12%	30%	21%	23%	14%

Respondent's Opinion on Health Care Providers' Behaviors

Participants evaluated various dimensions of healthcare providers' behavior and clinical interactions. Regarding the explanation and clarity of treatment provided by healthcare professionals, 25% of respondents were very satisfied, 28% satisfied, 15% neutral, 20% dissatisfied, and 12% very dissatisfied. When assessing the overall care and concern provided by the medical staff, 21% reported being very satisfied, 33% satisfied, 17% neutral, 10% dissatisfied, and 19% very dissatisfied. Evaluations concerning interpersonal respect demonstrated favorable outcomes, with 29% very satisfied, 33% satisfied, 16% neutral, 12% dissatisfied, and 10% very dissatisfied. Similarly, perceptions regarding privacy and confidentiality during examinations were largely positive, showing 34% very satisfied, 28% satisfied, 21% neutral, 9% dissatisfied, and 8% very dissatisfied.

Conversely, operational and time-related aspects revealed notable areas of dissatisfaction. Regarding waiting times for service delivery, 10% were very satisfied, 31% satisfied, 27% neutral, 14% dissatisfied, and 18% very dissatisfied. For counseling and health education received, 19% were very satisfied, 20% satisfied, 28% neutral, 19% dissatisfied, and 14% very dissatisfied. Finally, ratings concerning the length of consultation time showed that 18% were very satisfied, 25% satisfied, 19% neutral, 29% dissatisfied, and 9% very dissatisfied, highlighting consultation duration and waiting times as key contributors to patient discontent.

Table 4

Respondents' Opinions on Health Providers' Behaviors'

Variables	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
Mean score	22.30%	28.28%	20.42%	16.14%	12.85%
Explanation of treatment received	25%	28%	15%	20%	12%
Concern /care provided by health providers	21%	33%	17%	10%	19%
Respectful behavior of health providers	29%	33%	16%	12%	10%
Privacy & confidentiality during examination	34%	28%	21%	9%	8%
Waiting time for availing services	10%	31%	27%	14%	18%
Counseling & health educatioı received	19%	20%	28%	19%	14%
Length of consultation	18%	25%	19%	29%	9%

Figure 1 illustrates the variation in overall patient satisfaction levels across different socio-demographic variables among the respondents. The data indicates that satisfaction ratings fluctuate depending on characteristics such as age, gender, marital status, educational attainment, and occupational status. Younger cohorts and highly educated respondents reported distinct perceptual trends regarding service delivery, highlighting how demographic backgrounds shape patient expectations and experiences within primary healthcare settings (Albaqami & Alshagrawi, 2025).

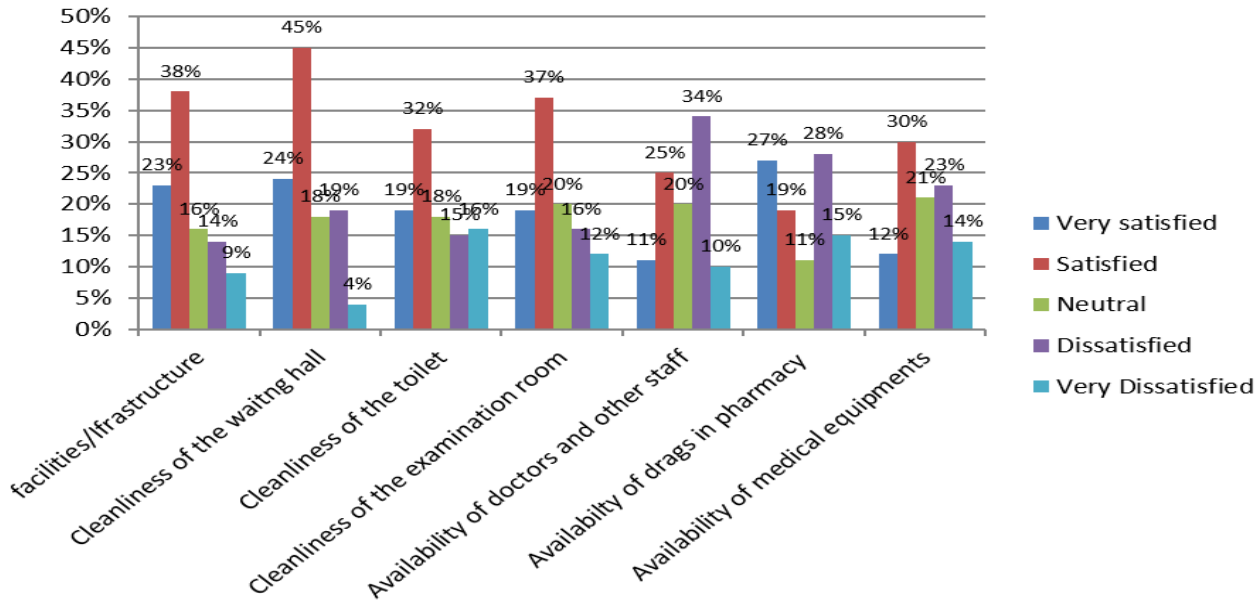


Figure 1

Level of Satisfaction of Respondents According to Sociodemographic Variables

Figure 2 illustrates respondents' evaluations of various dimensions of healthcare providers' behaviors and clinical interactions. The data highlights a distinct dichotomy: while interpersonal attributes such as staff respect, privacy, and confidentiality received predominantly favorable ratings, operational and time-dependent factors—particularly waiting times and the overall length of consultations—elicited notable dissatisfaction, underscoring critical areas for clinical and administrative enhancement.

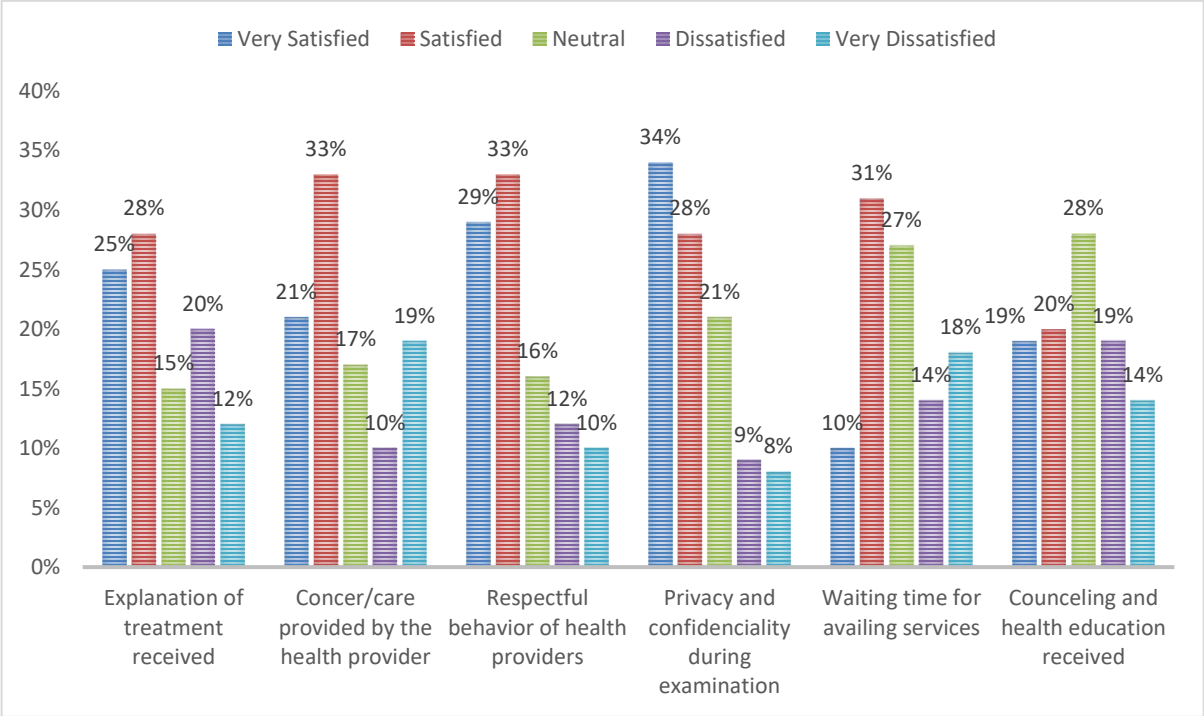


Figure 2

Respondents' Opinions on Health Care Providers' Behaviors

Figure 3 summarizes the overall patient satisfaction levels reported by the respondents across the primary healthcare centers. The distribution demonstrates that while a combined majority of participants expressed favorable sentiment (very satisfied and satisfied), a notable proportion remained neutral or reported dissatisfaction. This spread highlights the ongoing need for targeted quality improvement initiatives to bridge the gap between patient expectations and actual service delivery.

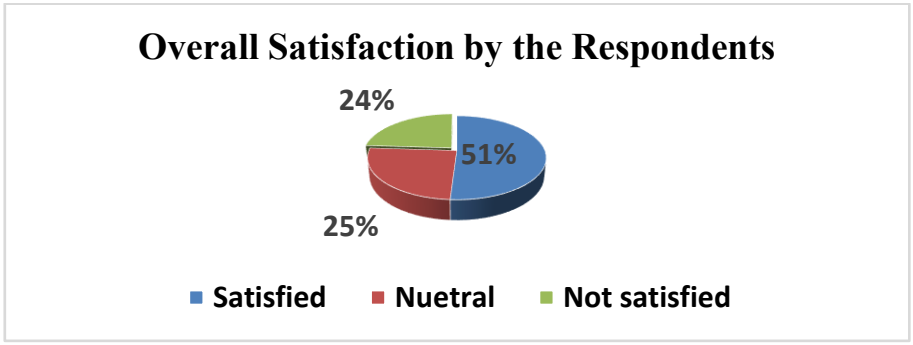


Figure 3

Overall Satisfaction with the Respondents

DISCUSSION

This study's findings provide critical insights into patient satisfaction and the structural determinants affecting primary healthcare (PHC) service delivery in the Al Bukayriyah region of Saudi Arabia. Evaluating the demographic profile, infrastructural conditions, provider behaviors, and systemic challenges reveals a complex interplay between national health transformation goals and grassroots patient experiences.

Demographic Profiles and Healthcare Utilization

The study cohort's demographic distribution shows that most respondents were young adults aged 18 to 25 years (45%) and single (64%), with nearly half holding university degrees (49%). This high educational attainment facilitated active participation and comprehension of the survey tools, mirroring observations from broader national health assessments (Albaqami & Alshagrawi, 2025). Furthermore, non-working individuals constituted over half of the respondents (57%), highlighting that public primary healthcare centers remain the primary safety net for unemployed or dependent populations who rely heavily on government-subsidized care rather than private sector alternatives (Nair & Pasha, 2025). Gender representation in the study showed a higher proportion of male respondents (58.1%), reflecting historical and cultural dynamics regarding public mobility and facility access in traditional communities. However, ongoing national reforms under Saudi Vision 2030 are rapidly transforming social norms, expanding female workforce participation, and empowering women across the healthcare sector (MOH, 2024).

General Satisfaction and Infrastructure

Overall satisfaction ratings revealed a moderate consensus, with 51% of participants reporting positive satisfaction (very satisfied or satisfied), while nearly a quarter expressed dissatisfaction. This aligns with historical regional trends indicating that while basic preventive services—such as childhood immunizations and maternal care—achieve high success rates, chronic disease management and structural workflows require targeted optimization (Al Sakkak *et al*., 2008; Al-Huseini *et al*., 2025). Facility infrastructure ratings varied significantly. While cleanliness of waiting halls and examination rooms received high approval ratings (surpassing 69% and 56% positive feedback, respectively), core operational elements such as the availability of doctors, medical equipment, and pharmacy drug supplies encountered notable criticism. Over 34% of respondents expressed dissatisfaction with staff and physician availability, echoing systemic concerns regarding physician-to-patient workloads and staffing distribution in regional PHC centers (Almoajel *et al*., 2024). Pharmacy stock consistency and equipment availability similarly recorded high dissatisfaction figures, underlining the persistent need for robust supply chain management within local health clusters.

Provider Behaviors, Clinical Practice and Communication

Provider-patient interactions yielded mixed evaluations. While interpersonal respect and patient privacy during examinations received favorable marks (with over 60% expressing satisfaction), operational bottlenecks such as prolonged waiting times and inadequate consultation lengths severely impacted the patient experience. Short consultation durations often involve restricted timeframes combined with language barriers stemming from a high reliance on expatriate physicians who may not be fully fluent in Arabic, which continues to distort clinical communication and diminish diagnostic accuracy (Al Huseini *et al*., 2026; Mosatafavi *et a*l., 2026). Furthermore, historical and contemporary audits indicate challenges regarding adherence to evidence-based clinical guidelines, inappropriate prescription patterns, and fragmented referral mechanisms between primary and secondary care facilities (Radwan *et al*., 2023). Insufficient feedback loops from secondary hospitals to primary care providers exacerbate these coordination gaps, leading to compromised continuity of care for chronic conditions such as diabetes and hypertension.

CONCLUSION

This study demonstrates that while patients in Al Bukayriyah, Al-Qassim Province, express general satisfaction with facility cleanliness and the respectful demeanor of medical staff, significant operational bottlenecks persist. Key drivers of patient

dissatisfaction include inadequate staff availability, pharmacy supply inconsistencies, prolonged waiting times, and restricted consultation durations. Within the framework of Saudi Vision 2030, resolving these logistical and workforce constraints is essential for healthcare administrators and policymakers to elevate service quality, optimize patient experience, and ensure the successful delivery of value-based primary healthcare across the region.

POLICY IMPLICATIONS AND STRATEGIC RECOMMENDATIONS

Addressing the structural barriers identified in this study is vital for the ongoing success of Saudi Arabia's Health Sector Transformation Program. To bridge regional disparities and elevate patient satisfaction, healthcare policymakers must prioritize several strategic interventions. Priorities should include reducing physician workloads, recruiting bilingual local staff to minimize language barriers, and providing ongoing professional training in patient-provider communication. Additional measures may include enhancing digital health integration, ensuring seamless electronic health record sharing across primary and secondary tiers, and giving clinicians unhindered access to international medical databases and evidence-based clinical pathways. Furthermore, reducing waiting times through advanced appointment-scheduling systems, improving pharmacy inventory oversight, and expanding health education initiatives to promote proactive chronic disease management would enhance the success of reform initiatives.

STUDY LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Despite providing valuable, localized insights into primary healthcare satisfaction, this study has several limitations. First, the relatively small sample size and reliance on convenience sampling may restrict the broader generalizability of the findings to the Al-Qassim Province or the Kingdom of Saudi Arabia. Second, the use of self-administered questionnaires introduces potential subjective response and recall biases. Finally, while respondents' higher education level facilitated strong survey comprehension and data quality, the overrepresentation of young, single adults means the results primarily reflect the perspectives of this specific demographic cohort.

To build upon these findings, future research should incorporate larger, multi-center cross-sectional and longitudinal study designs across diverse urban and rural settings, employ random sampling techniques to enhance demographic, age and marital status representation. These studies should integrate mixed method approaches such as qualitative patient interviews to explore the complex socio-cultural and operational determinants of healthcare quality under Saudi Vision 2030.

DECLARATIONS

Ethical Considerations: This study strictly adhered to the Declaration of Helsinki and relevant national and institutional ethical guidelines. All procedures performed in this study were consistent with the ethical standards of the Declaration of Helsinki. The study was conducted according to ethical and clinical standards for research.

Conflict of Interest: The author declares no conflicts of interest.

Consent for Publication: The author allows the publication of his research work.

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Use of Artificial Intelligence (AI)- Assisted Technology for Manuscript Preparation: No AI tools were used for data extraction, statistical analysis, result interpretation, or the generation of original scientific content. All analyses were conducted by the authors, and they take full responsibility for the integrity and accuracy of the manuscript; however, we used AI for our questionnaire alignments, yet no AI was involved in conducting the test for the analysis.

Similarity Index/ Plagiarism: The similarity index was checked, and it is well below the threshold value of 19%, whereas each source is less > 5%.

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