

Original article

Comparative Study of Dental Service Quality Between an Academic University Dental Clinic and a Private Dental Clinic in Tripoli, Libya

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Keywords

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ABSTRACT

Dental service quality influences patient satisfaction and healthcare utilization. In developing healthcare systems such as Libya, comparing dental care settings helps identify service gaps and inform quality improvement. This study was conducted to compare the quality of dental services between an academic university dental clinic (Altahadi Dental Medical University Clinic) and a private dental clinic (Abuselem Dental Clinic) in Tripoli, Libya. A comparative cross-sectional study was conducted among 200 participants, comprising 100 participants from each clinic (50 patients and 50 dental healthcare workers [DHCWs]). Two structured questionnaires assessed patient satisfaction, accessibility, clinic environment, clinical care, staff-reported service quality, and work environment. Descriptive statistics were used to compare service quality across domains. Patient satisfaction was higher at the university clinic, with 74% reporting satisfaction or high satisfaction compared with 54% at the private clinic. The university clinic also demonstrated better ratings for cleanliness (94% vs. 70%), infection-control practices (98% vs. 70%), pain management (94% vs. 66%), treatment explanations (84% vs. 62%), willingness to recommend (86% vs. 72%), and intention to return (86% vs. 68%). The private clinic had more experienced staff, with 54% reporting more than five years of experience compared with 20% at the university clinic, but staff reported greater workload pressures, including limited time per patient (62% vs. 24%) and working without dental assistants (100% vs. 76%). University-clinic staff reported better clinical supervision (94% vs. 56%) and training opportunities (88% vs. 46%). Both clinics provided generally satisfactory dental services, but organizational and staffing differences influenced service quality. Strengthening supervision, optimizing staffing, reducing workload, and improving operational efficiency may enhance dental service delivery in both settings.

Introduction

Oral health is an integral component of general health, influencing nutrition, communication, psychological well-being, and overall quality of life. High-quality dental services are essential for preventing oral diseases, enabling timely diagnosis and effective treatment, and ensuring patient satisfaction. In developing healthcare systems such as Libya, increasing demand for oral healthcare and differences in service delivery across academic, governmental, and private sectors highlight the importance of evaluating dental service quality.

Dental service quality encompasses the provision of safe, effective, timely, and patient-centred care and is influenced by infrastructure, staff competence, infection-control practices, communication, accessibility, and organizational factors. In Tripoli, dental services are provided through university clinics, governmental facilities, and private centres, with academic clinics generally offering affordable, supervised care alongside an educational mission, while private clinics tend to emphasize individualized and efficient service delivery. Comparing these different models can help identify their respective strengths and limitations, support quality improvement, and inform local policies related to staffing, clinical supervision, infection control, and quality assurance.

This study compared dental service quality between Altahadi Dental Medical University Clinic and Abuselem Dental Clinic in Tripoli, from the perspectives of both patients and dental healthcare workers, with the aim of generating evidence-based recommendations for both settings.

Methods

Study design and setting

A comparative cross-sectional study was conducted at two dental care settings in Tripoli, Libya: Altahadi Dental Medical University Clinic (an academic teaching clinic) and Abuselem Dental Clinic (a private clinic).

Study population and sampling

The study included 200 participants recruited over a defined period using convenience sampling: 100 patients (50 per clinic)

and 100 dental healthcare workers, comprising dentists and dental assistants/interns (50 per clinic).

Data collection tools

Two structured, self-administered questionnaires were used. The patient questionnaire captured demographic data and rated accessibility and appointment scheduling, clinic environment and facilities, dental care and professionalism (communication, explanation of treatment, pain management, infection control), and overall satisfaction, recommendation, and return intention. The staff questionnaire captured professional profile (position, years of experience), service quality and work environment (adequacy of instruments/materials, patient load, infection-control compliance), and training and support (clinical supervision, continuing-education opportunities, and workload-related challenges).

Statistical analysis

Data were analyzed descriptively. Categorical responses are presented as frequencies and percentages, compared between the two clinics across all domains.

Ethical considerations

Informed consent was obtained from all participants, and confidentiality of patient and staff information was maintained throughout the study.

Results

A total of 200 participants were enrolled, 100 from each clinic, comprising 50 patients and 50 DHCWs per site. The gender distribution of patients was balanced at both clinics (Table 1). Patients at Abuselem clinic were somewhat younger overall, whereas Altahadi clinic served a wider age range, including more patients over 60 years. University-educated patients formed the largest group at both clinics, particularly at Altahadi (66%). The proportion of first-time versus follow-up visits was similar between sites.

Table 1. Sociodemographic characteristics of patients by clinic (n = 50 per clinic)

Characteristic	Abuselem (%)	Altahadi (%)
<i>Gender</i>		
Male	52	50
Female	48	50
<i>Age group</i>		
< 18 years	0	4
18–30 years	38	20
31–45 years	36	34
46–60 years	26	24
> 60 years	0	18
<i>Level of education</i>		
Primary	26	18
Secondary	34	16
University	40	66
<i>Type of visit</i>		
First visit	48	50
Follow-up visit	52	50

Ease of access was rated good or excellent by 64% of Abuselem patients and 88% of Altahadi patients (Table 2). Waiting times exceeding 30 minutes were common at both clinics, affecting roughly two-thirds of patients. Appointment scheduling satisfaction (satisfied or very satisfied) was higher at Altahadi (64%) than at Abuselem (40%), where 60% of patients gave a neutral rating. Clinic cleanliness and comfort were rated favorably overall; Altahadi scored notably higher on cleanliness (94% good/excellent vs. 70%) and on equipment availability rated 'very adequate' (48% vs. 10%), while Abuselem patients more often described the waiting area as simply 'comfortable' (82%) and Altahadi patients more often as 'very comfortable' (40%).

Table 2. Accessibility, appointment system, and clinic environment (patients, n = 50 per clinic)

Indicator	Abuselem (%)	Altahadi (%)
Ease of accessing the clinic		
Excellent	16	16
Good	48	72
Fair	12	4
Poor	20	8
Very poor	4	0
Waiting time before treatment		
< 15 min	8	8
15–30 min	30	20
30–60 min	34	34
> 60 min	28	38
Appointment scheduling satisfaction		
Very satisfied	4	28
Satisfied	36	36
Neutral	60	22
Dissatisfied	0	10
Very dissatisfied	0	4
Cleanliness of the clinic		
Excellent	20	40
Good	50	54
Fair	16	4
Poor	10	2
Very poor	4	0
Availability of dental equipment		
Very adequate	10	48
Adequate	60	52
Inadequate	30	0
Comfort of waiting area		
Very comfortable	4	40
Comfortable	82	50
Uncomfortable	14	8
Very uncomfortable	0	2

Patients at Altahadi clinic rated the dentist's communication skills, explanation of the treatment plan, pain management, and infection-control practices consistently higher than patients at Abuselem clinic (Table 3). Notably, 84% of Altahadi patients reported the treatment plan was clearly explained, versus 62% at Abuselem, and infection-control practices were rated good or excellent by 98% of Altahadi patients compared with 70% at Abuselem. Overall satisfaction (satisfied or very satisfied) was reported by 74% of Altahadi patients, including 40% who were very satisfied, versus 54% at Abuselem, where very satisfied responses were rare (6%). Willingness to recommend the clinic (86% vs. 72%) and to return for future treatment (86% vs. 68%) both favored Altahadi clinic.

Table 3. Dental care, professionalism, and overall satisfaction (patients, n = 50 per clinic)

Indicator	Abuselem (%)	Altahadi (%)
Dentist's communication skills		
Excellent	18	32
Good	50	50
Fair	18	6
Poor	6	12
Very poor	8	0
Explanation of treatment plan		
Clearly explained	62	84
Poorly explained	36	14
Not explained	2	2
Pain management during treatment		

Excellent	18	48
Good	48	46
Fair	26	2
Poor	6	4
Very poor	2	0
Infection control practices		
Excellent	16	56
Good	54	42
Fair	22	2
Poor	4	0
Very poor	4	0
Overall satisfaction		
Very satisfied	6	40
Satisfied	48	34
Neutral	42	18
Dissatisfied	0	6
Very dissatisfied	0	2
Would recommend the clinic (Yes)		
Yes	72	86
Would return for future treatment (Yes)		
Yes	68	86

Among staff, all Abuselem respondents were dentists, whereas 24% of Altahadi staff were dental assistants supporting the dentist (Table 4). Abuselem staff were considerably more experienced, with 54% having more than five years of experience versus 20% at Altahadi, consistent with the academic clinic's larger junior workforce. Instrument and material adequacy was rated similarly favorably at both sites. Patient load was heavier at Abuselem, where half of staff reported seeing more than 20 patients per day, compared with 20% at Altahadi.

Table 4. Professional profile and workload of dental healthcare workers (n = 50 per clinic)

Indicator	Abuselem (%)	Altahadi (%)
Position		
Dentist only	100	76
Dentist with dental assistant	0	24
Years of experience		
< 1 year	16	40
1–5 years	30	40
> 5 years	54	20
Adequacy of dental instruments and materials (good/excellent)		
Good or Excellent	92	100
Patient load per day		
< 10 patients	24	50
10–20 patients	26	30
> 20 patients	50	20

Self-reported compliance with infection-control guidelines was rated good or excellent by 74% of Abuselem staff and 98% of Altahadi staff (Table 5). Clinical supervision was consistently available ('always') for 94% of Altahadi staff compared with 56% at Abuselem, and adequate training or continuing-education opportunities were reported by 88% of Altahadi staff versus 46% at Abuselem. The most frequently cited challenge differed markedly between sites: at Abuselem, 62% of staff cited limited time per patient as the main challenge, whereas at Altahadi, 74% cited high patient load. Overall staff-assessed service quality scores (rated good or excellent) were 74% at Abuselem and 100% at Altahadi.

Table 5. Infection control compliance, supervision, training, challenges, and overall staff assessment (n = 50 per clinic)

Indicator	Abuselem (%)	Altahadi (%)
Compliance with infection control guidelines (good/excellent)		
Good or Excellent	74	98
Availability of clinical supervision		
Always	56	94
Often	36	4
Sometimes	2	2
Never	6	0
Opportunities for training / continuing education		
Adequate	46	88
Limited	46	12
None	8	0
Main challenge affecting service quality		
Limited time per patient	62	24
High patient load	24	74
Lack of equipment	14	2
Overall staff assessment of service quality (good/excellent)		
Good or Excellent	74	100

Discussion

Both clinics showed a nearly equal gender distribution among patients, consistent with earlier reports that gender has minimal influence on dental service utilization and satisfaction. Most patients at both sites were working-age adults, in line with prior evidence that this group makes greater use of dental services due to higher awareness and financial independence; Altahadi additionally served a meaningfully larger share of patients over 60, and its patient base was more heavily university-educated, a pattern previously linked to greater oral-health awareness and service use.

Accessibility, appointment scheduling, and clinic environment were rated favorably at both clinics but consistently somewhat higher at Altahadi, which showed better ratings for ease of access, cleanliness, equipment availability, and appointment-scheduling satisfaction. Waiting time remained a shared challenge, with roughly a third of patients at each clinic waiting more than an hour, echoing consistent evidence that prolonged waiting negatively affects satisfaction and service perception.

Clinical-care indicators, including communication, explanation of treatment, pain management, and infection control, were rated positively at both clinics but more strongly at Altahadi, aligning with literature identifying communication and safety practices as central drivers of patient satisfaction. Overall satisfaction, recommendation, and return intention were correspondingly higher at Altahadi, consistent with evidence that satisfaction strongly predicts loyalty and repeat attendance.

From the staff perspective, a clear trade-off emerged. Abuselem staff were more experienced on average but worked with a heavier patient load, reported less consistent supervision and fewer training opportunities, and more often identified limited time per patient as their main challenge, most likely reflecting solo dentist practice without dedicated dental-assistant support. Altahadi staff were comparatively junior but benefited from stronger, more consistent supervision and training, better self-reported infection-control compliance, and higher overall self-assessed service quality, although a majority identified high patient load as their principal challenge, a pattern typical of academic clinics that combine affordable care with an educational mandate.

Taken together, the findings suggest that experienced staffing alone does not guarantee superior perceived service quality when workload and support structures are unfavorable, while structured supervision and training can help a comparatively junior workforce deliver strong patient-rated outcomes. Both settings, however, share the shared operational challenge of high patient volume relative to available staff and appointment capacity.

Conclusion

Both Altahadi Dental Medical University Clinic and Abuselem Dental Clinic provide generally satisfactory dental services, with positive patient perceptions across accessibility, communication, clinical care, infection control, and physical environment. Patient satisfaction was high at both sites but somewhat higher at Altahadi, particularly regarding communication, appointment management, infection control, and overall satisfaction outcomes. Abuselem clinic benefited from a more experienced clinical workforce but faced greater operational strain from high patient load, limited time per patient, and the absence of dedicated dental-assistant support. Differences in staffing structure, workload distribution, and organizational efficiency, rather than any single dimension, appear to drive the observed differences in

service-quality outcomes between the two settings.

Recommendations

- Strengthen workforce balance by recruiting or assigning more experienced dentists at the university clinic to complement its predominantly junior staff and reinforce clinical decision-making.
- Formalize continuous supervision and mentorship arrangements, building on the university clinic's relatively strong existing supervision model, to support less experienced staff and safeguard patient safety.
- Optimize appointment scheduling through structured time-slot booking and improved patient triage at both clinics to reduce waiting-time variability and overcrowding during peak hours.
- Sustain and audit infection-control practices regularly, with refresher training to close any gap between self-reported compliance and observed practice.
- Expand staff training and continuing professional development, particularly at the private clinic, focusing on communication skills, workload management, and modern clinical techniques.
- Consider adding dedicated dental-assistant support at the private clinic to relieve solo-dentist workload and reduce time pressure per patient.

Conflicts of Interest

The authors declare no conflict of interest," or disclose any relevant financial or non-financial competing interests.

References

1. Aldossary MS, Alshammari AA, Alqahtani SA, Alzahrani AA, Althobaiti MA, Alamri KA, et al. Patient satisfaction in dental healthcare settings at Saudi Ministry of Health facilities in the Qassim region. *Patient Prefer Adherence*. 2023;17:1747–56.
2. Bogale B, Scambler S, Mohd Khairuddin AN, Gallagher JE. Oral health system strengthening in fragile and conflict-affected states: a systematic review. *J Glob Health*. 2024;14:04132.
3. Choi SE, Pandya A, White J, Mertz E, Normand SL. Quality measure adherence and oral health outcomes in children. *JAMA Netw Open*. 2024;7(1):e2353861.
4. Ho JCY, Chai HH, Luo BW, Lo ECM, Huang MZ, Chu CH. An overview of dentist–patient communication in quality dental care. *Dent J*. 2025;13(1):31.
5. Kristensen CB, Asimakopoulou K, Scambler S. Enhancing patient-centred care in dentistry: a narrative review. *Br Med Bull*. 2023;148(1):79–88.
6. Lixandru CI, Tibeica SC, Pantis C, Todea CD, Mesaros AS, Rominu M, et al. Patient satisfaction with the quality of oral rehabilitation dental services: a comparison between the public and private health system. *Dent J*. 2024;12(3):45.
7. Nenov SM, Kirkov VK, Bonev BK. Dental status of the Bulgarian population: the influence of barriers to accessing dental care. *Cureus*. 2024;16(11):e74833.
8. Sharka R, Sedayo L, Morad M, Abuljadayel J. Measuring the impact of dental service quality on revisit intention using an extended SERVQUAL model. *Front Oral Health*. 2024;5:1362659.
9. Walsh LJ. Current challenges in environmental decontamination and instrument reprocessing. *Int Dent J*. 2024;74(Suppl 2):S455–62.
10. Adekoya AF, Adeyemi OO, et al. Patient satisfaction and quality of dental care services: a cross-sectional study. *Afr Health Sci*. 2023;23(2):345–54.
11. World Health Organization. Quality of care: patient-centered health services. Geneva: WHO; 2022.
12. Centers for Disease Control and Prevention. Guidelines for infection control in dental health-care settings. Atlanta: CDC; 2020.
13. American Dental Association. Dental quality alliance: quality measures and standards. Chicago: ADA; 2018.
14. Donabedian A. The quality of care: how can it be assessed? *JAMA*. 1988;260(12):1743–8.
15. Newsome PRH, Wright GH. A review of patient satisfaction: 1. Concepts of satisfaction. *Br Dent J*. 1999;186(4):161–5.
16. Newsome PRH, Wright GH. A review of patient satisfaction: 2. Dental patient satisfaction—an appraisal of recent literature. *Br Dent J*. 1999;186(4):166–70.
17. Bamise CT, Bada TA, Sulaiman AO. Determinants of patient satisfaction with oral health care services. *Niger J Clin Pract*. 2008;11(3):225–31.
18. Al-Hussyeen AJ. Factors affecting utilization of dental health services and patient satisfaction among dental patients. *Saudi Dent J*. 2010;22(1):15–20.
19. Penchansky R, Thomas JW. The concept of access. *Med Care*. 1981;19(2):127–40.
20. Petersen PE. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century. Geneva: WHO; 2005.