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A Comparison of Patients' Satisfaction of Oral Squamous Cell Carcinoma Treated at Public and Private Healthcare Institutions: A Cross-Sectional Study Using the Healthqual Model

Maryam[1], Uzma Zareef [2], Kaneez Zehra[3], Atiqa Zahid[4], Aurangzaib Akram[5], Saveeta Arjan[5]

[1]Department of Oral Pathology, Liaquat College of Medicine and Dentistry, Karachi, Sindh, Pakistan.
[2]Department of Oral Pathology, Liaquat College of Medicine and Dentistry, Karachi, Sindh Pakistan.
[3]Department of Dental Materials and Science, Jinnah Sindh Medical University, Karachi, Sindh, Pakistan.
[4]Department of Dental Materials, Sindh Institute of Oral Health Science, Karachi, Sindh, Pakistan.
[5]Dow University of Health Sciences Karachi, Sindh, Pakistan.

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Correspondence to: Maryam,
Department of Oral Pathology, Liaquat College of Medicine and Dentistry, Karachi, Sindh, Pakistan.
Email: maryam.abid63@yahoo.com

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ABSTRACT

Background: Patient satisfaction is a vital indicator of healthcare quality, particularly for oral squamous cell carcinoma (OSCC) patients whose treatment demands long-term, multidisciplinary care. The HEALTHQUAL model provides a robust framework for evaluating service quality in healthcare. **Objectives:** To compare satisfaction levels of OSCC patients treated under the health scheme in public versus private tertiary care hospitals in Karachi, using the HEALTHQUAL model. **Methods:** A comparative cross-sectional study was conducted at Jinnah Postgraduate Medical Centre (public) and Darul Sehat Hospital (private) from January to June 2025. A total of 200 OSCC patients (100 from each setting) were recruited through purposive sampling. Satisfaction was measured across five HEALTHQUAL domains using a prevalidated questionnaire. Independent samples t-tests and Chi-square tests were performed in SPSS v22. **Results:** Private hospital patients reported significantly higher satisfaction in all domains: Environment (4.52 ± 0.44 vs. 2.74 ± 0.88, $p < 0.001$), Empathy (4.61 ± 0.39 vs. 3.93 ± 0.59, $p = 0.008$), Efficiency (4.57 ± 0.41 vs. 3.69 ± 0.63, $p = 0.001$), Safety (4.55 ± 0.38 vs. 3.96 ± 0.64, $p = 0.015$), and Improvement (4.58 ± 0.40 vs. 3.99 ± 0.65, $p = 0.012$). Overall satisfaction was significantly higher in private hospitals (4.57 ± 0.36) compared to public (3.54 ± 0.56, $p < 0.001$). Higher education and younger age were associated with greater satisfaction ($p < 0.05$). **Conclusion:** OSCC patients under the health scheme are more satisfied with private healthcare services across all HEALTHQUAL domains. Enhancing environmental quality, empathy, and efficiency in public hospitals could improve equity in cancer care delivery.

INTRODUCTION

Oral squamous cell carcinoma (OSCC) comprises the majority of oral malignancies and carries significant physical, psychosocial, and financial burdens, markedly diminishing patients' quality of life (1). The disease and its treatment including surgery, radiotherapy, and chemotherapy often impair speech, mastication, swallowing, and facial aesthetics, significantly reducing quality of life (2,3). Patient satisfaction, a key indicator of healthcare quality, influences outcomes including adherence to treatment, loyalty, and overall health system performance (4)

HEALTHQUAL is a validated multidimensional instrument to measure healthcare service quality from patients' perspective. It includes dimensions such as environment (tangibles), empathy, efficiency, effectiveness (or improvement), and safety (5). Compared to generic scales (e.g., SERVQUAL), HEALTHQUAL offers healthcare-specific constructs and stronger psychometric validity (6). Its use allows nuanced comparison across institutions, capturing both structural and process aspects of patient satisfaction. While patient satisfaction in general medical and primary care settings has been studied using HEALTHQUAL, no study has examined OSCC patient satisfaction under public vs private institutions in Pakistan. This study will fill that gap by applying the HEALTHQUAL model to compare satisfaction among OSCC patients treated in public and private settings under a unified health scheme.

Locally, there is limited evidence comparing patient satisfaction between public and private institutions, particularly in oral oncology under national health schemes. Understanding patient perceptions in these

settings is critical, as satisfaction correlates strongly with treatment adherence and quality of life.

LITERATURE REVIEW

Setyawan et al. (2020) conducted a comparative cross-sectional study assessing patient satisfaction and loyalty in public and private primary healthcare facilities in Indonesia, finding significantly higher satisfaction scores in private institutions due to better resource allocation, reduced waiting times, and more effective communication (4). These results align with international findings showing institutional characteristics play a pivotal role in shaping patient experiences and perceived quality of care. Agarwal (2022) applied the HEALTHQUAL model during the COVID-19 pandemic in an empirical study at PMCH, Udaipur, demonstrating its suitability for healthcare quality assessment by encompassing environment, empathy, efficiency, improvement, and safety dimensions (5). Lee (2017) originally developed and validated the HEALTHQUAL scale as a multi-item instrument specifically tailored to healthcare, addressing limitations of the more generic SERVQUAL framework (7). Shaikh and Sarkar (2023) compared patient satisfaction in public and private hospitals under a health scheme using HEALTHQUAL, reporting efficiency as a particularly strong determinant of satisfaction (6). Sharifi et al. (2021) further compared SERVQUAL and HEALTHQUAL in Iranian health centers, concluding that HEALTHQUAL captured healthcare-specific service attributes more effectively (8). Chauhan and Limbad (2023) evaluated government and private hospitals in Surat using extended HEALTHQUAL dimensions, revealing empathy, tangibility, efficiency, and safety as key predictors of satisfaction (9). Lee and Kim (2017) examined healthcare service quality across different patient treatment types, confirming the robustness of the five-dimension HEALTHQUAL model including care improvement (10). These studies collectively demonstrate HEALTHQUAL's adaptability and validity across varied healthcare contexts. Markovic et al. (2024) investigated the quality of life of OSCC patients in a cross-sectional study, noting that disease and treatment effects substantially reduced overall QoL (1). Rogers et al. (2016) identified predictors of QoL in oral cancer patients, highlighting the influence of clinical, demographic, and psychosocial factors (2). Chandu et al. (2006) reviewed literature on health-related QoL in oral cancer, emphasizing the long-term physical and psychological impact of treatment (3). Yuwanati et al. (2021), in a systematic review and meta-analysis, found significant deterioration in oral health-related QoL following OSCC treatment (11). Gondivkar et al. (2021) conducted a comparative study on different treatment regimens, reporting notable variations in both oral and general QoL outcomes (12). Dixit et al. (2024) analyzed data from over 12,000 cancer patients in India, establishing that healthcare setting type (public, semi-private, or private) significantly influenced QoL and satisfaction scores (13).

While HEALTHQUAL has been validated in multiple healthcare settings, no study has yet applied it specifically to OSCC patients treated under a health scheme in both public and private tertiary care hospitals. Given OSCC's profound functional and psychosocial burdens, as evidenced by Markovic et al. (1), Yuwanati et al. (11), and Gondivkar et al. (12), coupled with institutional differences in satisfaction reported by Shaikh and Sarkar (6) and Dixit et al. (13), there is a clear need for context-specific satisfaction assessment. This study will bridge this gap, providing actionable insights for improving OSCC care quality and equity.

METHODOLOGY

Study Design and Setting: A comparative cross-sectional study was conducted at two tertiary care hospitals in Karachi, Pakistan: Jinnah Postgraduate Medical Centre (JPMC), a public-sector institution, and Darul Sehat Hospital (DSH), a private-sector institution. Both facilities provide oncology services under the national health scheme.

Study Duration: Data collection was carried out from January 2025 to June 2025.

Study Population: The study population comprised patients diagnosed with oral squamous cell carcinoma (OSCC) who had completed treatment under the national health scheme.

Inclusion Criteria

- Patients diagnosed histopathologically with OSCC.
- Treated within the last 12 months at either JPMC or DSH.
- Willing to participate and provide informed consent.

Exclusion Criteria

- Patients undergoing ongoing active treatment.
- Referred patients with incomplete medical records.
- Patients unwilling or unable to provide informed consent.

Sample Size and Sampling Technique

The sample size was calculated using Open Epi (95% confidence interval, 5% margin of error), resulting in a required total of 200 participants — 100 from each institution. Purposive sampling was employed to recruit eligible patients during follow-up visits.

Data Collection Procedure

Ethical approval and institutional permissions were obtained prior to data collection. Eligible patients were approached during their follow-up visits to oncology outpatient clinics. Written informed consent was obtained from all participants. Data were collected using a prevalidated HEALTHQUAL-based questionnaire, administered either manually or via Google Forms by trained data collectors. Confidentiality and privacy were maintained throughout.

Data Collection Tool

The HEALTHQUAL questionnaire assessed five service quality domains:

1. **Empathy** – interpersonal communication, respect, and individualized attention.
2. **Tangibility** – physical environment, equipment, and facility cleanliness.
3. **Safety** – patient safety measures and perceived security of care.
4. **Efficiency** – promptness, timeliness, and resource availability.

5. **Improvement** – follow-up care, patient-centered enhancements, and service upgrades.

Each item was rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). An overall patient satisfaction score was calculated as the mean of all domain scores.

Study Variables

- **Independent variable:** Type of healthcare institution (Public vs. Private).
- **Dependent variables:** Satisfaction scores in each HEALTHQUAL domain and overall satisfaction.

Statistical Analysis

Data were analyzed using SPSS v22. Descriptive statistics (mean, standard deviation, frequencies, and percentages) summarized the data. For normally distributed data, independent samples t-tests compared mean scores between groups. Associations between categorical variables and satisfaction levels were evaluated using the Chi-square test. A p-value of <0.05 was considered statistically significant.

RESULTS

Sociodemographic Characteristics

Of 200 OSCC patients, 118 (59%) were male and 82 (41%) female, with a mean age of 48.6 ± 10.4 years. Most were married (72%) and had secondary education (38%). Employment status showed 61% unemployed. Monthly household income was below PKR 20,000 for 46% of participants. Disease stage at diagnosis was Stage III (40%) and Stage IV (32%). Treatment modalities included surgery (18%), radiotherapy (22%), chemotherapy (15%), and combined modalities (45%).

HEALTHQUAL Domain Scores

Private hospital patients reported significantly higher satisfaction across all domains (Table 1). The largest gap was in Environment (mean difference 1.78), followed by Efficiency (0.88).

Table 1

Comparison of HEALTHQUAL Domain Scores between Public and Private Hospitals

Domain	Public (n=100) Mean ± SD	Private (n=100) Mean ± SD	p-value	Mean Difference
Environment	2.74 ± 0.88	4.52 ± 0.44	<0.001	1.78
Empathy	3.93 ± 0.59	4.61 ± 0.39	0.008	0.68
Efficiency	3.69 ± 0.63	4.57 ± 0.41	0.001	0.88
Safety	3.96 ± 0.64	4.55 ± 0.38	0.015	0.59
Improvement	3.99 ± 0.65	4.58 ± 0.40	0.012	0.59
Overall Satisfaction	3.54 ± 0.56	4.57 ± 0.36	<0.001	1.03

Associations with Demographics

Chi-square analysis indicated that younger patients (<50 years) and those with secondary education or higher had significantly higher satisfaction scores across most domains ($p < 0.05$). Gender was not significantly associated with satisfaction.

Satisfaction Level Categories

When categorizing satisfaction (Low < 3.90, Medium 3.91–4.50, High ≥ 4.51), private hospitals had the majority of patients in the High satisfaction category for all domains, while public hospitals had most patients in Low or Medium categories (Table 2).

Table 2

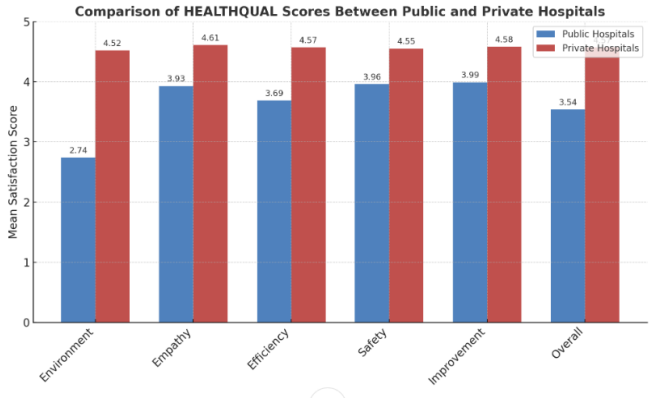
Proportion of Patients by Satisfaction Category

Domain	Public Low/Medium/High (%)	Private Low/Medium/High (%)
Environment	84 / 12 / 4	4 / 20 / 76
Empathy	48 / 42 / 10	8 / 23 / 69
Efficiency	50 / 38 / 12	6 / 24 / 70
Safety	40 / 46 / 14	5 / 26 / 69
Improvement	38 / 48 / 14	4 / 28 / 68
Overall Satisfaction	62 / 30 / 8	6 / 24 / 70

Graphical Comparison of HEALTHQUAL Scores

Figure 1 shows the mean satisfaction scores for each HEALTHQUAL domain in public and private hospitals for OSCC patients under the health scheme. Scores in all domains were significantly higher in private hospitals ($p<0.05$).

Figure 1



Associations with Demographics

Chi-square analysis indicated that:

- **Age:** Patients <50 years reported higher satisfaction in environment, empathy, and efficiency domains ($p<0.05$).
- **Education:** Those with secondary or higher education had significantly higher scores in empathy and improvement domains ($p < 0.05$).
- **Gender:** No significant differences in satisfaction by gender.

DISCUSSION

This study reveals marked disparities in satisfaction among OSCC patients treated under the health scheme in public versus private tertiary hospitals. Private hospitals outperformed public ones across all HEALTHQUAL domains, echoing findings by Shaikh & Sarkar (2023) and Setyawan et al. (2020), where private institutions consistently scored higher on environment, empathy, and efficiency.

The largest gap was in environment, likely due to differences in infrastructure maintenance, cleanliness, and availability of modern equipment. Given the extensive treatment course for OSCC, such environmental factors may significantly influence comfort, trust, and adherence.

Empathy and efficiency also showed significant

differences. Private institutions may have lower patient-to-staff ratios, enabling more individualized attention and shorter wait times — critical for oncology patients requiring timely interventions.

The safety and improvement domains, although higher in private facilities, had smaller gaps, suggesting that some safety protocols are relatively standardized under the health scheme, but follow-up and care continuity may still favor private settings.

These results align with international evidence from Chauhan & Limbad (2023) and Yuwanati et al. (2021), underscoring the importance of both tangible and intangible service factors in patient-centered oncology care.

CONCLUSION

Private tertiary hospitals provided significantly higher patient satisfaction among OSCC patients under the health scheme across all HEALTHQUAL domains. Public hospitals require focused improvements in environment, empathy, and efficiency to achieve parity. Continuous patient feedback mechanisms and resource allocation are recommended to enhance the quality of public-sector oncology services.

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