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IMPACT OF ORAL SURGERY ON QUALITY OF LIFE IN ELDERLY PATIENTS: A PROSPECTIVE COHORT STUDY PROTOCOL

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Abstract

Background

The global population is aging rapidly, leading to an increased demand for healthcare services tailored to older adults. Oral health is a critical component of general well-being and significantly influences nutrition, communication, self-esteem, and social engagement. Elderly individuals frequently experience oral conditions such as tooth loss, periodontal disease, chronic pain, and impaired mastication, all of which can adversely affect their quality of life (QoL). Oral surgical procedures, including tooth extractions and dental implant placement, are commonly performed to alleviate pain, restore oral function, and improve overall well-being. However, evidence regarding the impact of oral surgery on QoL among elderly populations remains limited, particularly in developing countries.

Objective

To evaluate the impact of oral surgical procedures on quality of life among elderly patients and to assess the influence of systemic comorbidities on postoperative recovery and treatment outcomes.

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Methods

A prospective cohort study will be conducted at the Department of Oral and Maxillofacial Surgery, Watim Dental Hospital, Rawalpindi. A total of 120 patients aged 60 years and older undergoing oral surgical procedures will be recruited. Participants will be assessed preoperatively, at 2 weeks postoperatively, and at 3 months postoperatively. Quality of life will be evaluated using the Oral Health Impact Profile (OHIP-14) or Geriatric Oral Health Assessment Index (GOHAI). Pain will be measured using the Visual Analog Scale (VAS), while chewing ability, social interaction, and patient satisfaction will be assessed using validated questionnaires. Statistical analysis will be performed using SPSS software.

Expected Results

The study is expected to demonstrate significant improvements in oral health-related quality of life, pain reduction, chewing efficiency, social interaction, and patient satisfaction following oral surgical interventions.

Conclusion

Findings from this study may provide evidence supporting the role of oral surgery in improving quality of life among elderly individuals and guide clinicians in optimizing treatment planning for patients with systemic comorbidities.

INTRODUCTION

Population aging represents one of the most significant demographic transitions of the twenty-first century. According to the World Health Organization (WHO), the proportion of individuals aged 60 years and above is increasing worldwide, creating new healthcare challenges and priorities. Oral health has emerged as an essential determinant of healthy aging because it directly affects nutrition, communication, appearance, psychological well-being, and social participation.

Older adults are particularly susceptible to oral diseases, including dental caries, periodontal disease, edentulism, oral infections, and oral pain. These conditions frequently result in difficulties with mastication, speech impairment, nutritional deficiencies, reduced self-confidence, and social isolation. Consequently, poor oral health can substantially diminish quality of life.

Oral surgical interventions such as tooth extraction, alveoloplasty, implant placement, pre-prosthetic surgery, and management of oral pathology are commonly employed to restore oral function and alleviate pain. Although these procedures are often successful

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clinically, their broader impact on patients' quality of life remains underexplored, especially among elderly populations.

Oral Health-Related Quality of Life (OHRQoL) has become an increasingly important outcome measure in contemporary dental research. Unlike traditional clinical outcomes, OHRQoL reflects patients' perceptions of their oral health and its influence on daily activities, emotional well-being, and social functioning. Instruments such as the Oral Health Impact Profile (OHIP-14) and Geriatric Oral Health Assessment Index (GOHAI) have been widely used to quantify these outcomes.

Furthermore, elderly patients often present with multiple systemic diseases, including diabetes mellitus, hypertension, cardiovascular disease, and osteoporosis. These conditions may influence wound healing, postoperative complications, and recovery duration. Understanding the relationship between systemic comorbidities and postoperative outcomes is essential for improving treatment planning and patient care.

Despite increasing attention to geriatric oral health, there is a scarcity of prospective studies evaluating the impact of oral surgery on quality of life in elderly patients within developing healthcare settings. Therefore, this study aims to investigate the effectiveness of oral surgical interventions in improving quality of life and identify factors influencing postoperative recovery.

Literature Review

The relationship between oral health and quality of life has been extensively documented. Previous studies have shown that oral diseases significantly affect physical, psychological, and social dimensions of health. Tooth loss and chronic oral pain have been associated with reduced nutritional intake, lower self-esteem, and impaired social interaction.

Locker et al. demonstrated that oral disorders negatively affect functional and psychosocial well-being among older adults. Similarly, Slade reported that OHIP scores correlate strongly with perceived oral health status and daily functioning.

Research investigating the impact of dental implants among elderly populations has shown substantial improvements in chewing ability, speech, and self-confidence. Implant-supported prostheses have been associated with higher patient satisfaction and enhanced oral health-related quality of life compared to conventional dentures.

Several studies have also highlighted the role of oral surgery in pain relief and restoration of oral function. Surgical removal of non-restorable teeth and management of oral pathology often result in significant symptom improvement. However, postoperative

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discomfort and delayed healing remain concerns, particularly among medically compromised elderly individuals.

Systemic diseases have been identified as important predictors of oral surgical outcomes. Diabetes mellitus has been linked to delayed wound healing and increased risk of infection. Cardiovascular disease may influence surgical planning and postoperative recovery due to medication use and physiological limitations.

Although existing literature supports the benefits of oral surgical interventions, most studies focus on clinical outcomes rather than patient-centered measures such as quality of life. Additionally, evidence from South Asian populations remains limited. This study seeks to address these gaps by evaluating changes in quality of life following oral surgery in elderly Pakistani patients.

Objectives

Primary Objective

To assess the impact of oral surgical procedures on the quality of life of elderly patients aged 60 years and above.

Secondary Objectives

1. To evaluate changes in pain levels following oral surgery.
2. To assess improvement in chewing ability after treatment.
3. To determine changes in social interaction and psychological well-being.
4. To evaluate patient satisfaction with oral surgical treatment.
5. To investigate the influence of systemic comorbidities on postoperative recovery and quality-of-life outcomes.

Hypotheses

Null Hypothesis (H0)

Oral surgery has no significant effect on the quality of life of elderly patients.

Alternative Hypothesis (H1)

Oral surgery significantly improves the quality of life of elderly patients.

Materials and Methods

Study Design

This study will be conducted as a prospective cohort study to evaluate the impact of oral surgical procedures on the quality of life of elderly patients. A prospective design has

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been selected because it allows assessment of changes in patient-reported outcomes over time and facilitates evaluation of the temporal relationship between oral surgical interventions and subsequent improvements in quality of life. Participants will be followed from the preoperative period through postoperative recovery, enabling comprehensive assessment of both short-term and medium-term outcomes.

Study Setting

The study will be carried out in the Department of Oral and Maxillofacial Surgery, Watim Dental Hospital, Rawalpindi, Pakistan. The hospital serves a large and diverse patient population from urban and rural areas and routinely performs a wide range of oral surgical procedures, making it an appropriate setting for investigating oral health outcomes among elderly patients.

Study Duration

The total duration of the study will be six months. Patient recruitment will occur during the initial phase of the study, followed by postoperative follow-up and data collection. Each participant will be followed for a period of three months after surgery.

Study Population

The target population will consist of elderly patients aged 60 years and above who are scheduled to undergo oral surgical procedures at Watim Dental Hospital. The study population will include both male and female patients requiring oral surgical management for various dental and oral conditions.

Sample Size

A total of 120 participants will be enrolled in the study. The sample size has been determined based on previous studies evaluating oral health-related quality of life following dental and oral surgical interventions, while considering the expected effect size, confidence interval of 95%, statistical power of 80%, and potential loss to follow-up during the study period.

Sampling Technique

A consecutive non-probability sampling technique will be employed. All eligible patients presenting to the Oral and Maxillofacial Surgery Department during the study period and meeting the inclusion criteria will be invited to participate until the required sample size is achieved.

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Eligibility Criteria

Inclusion Criteria

Participants fulfilling all of the following criteria will be eligible for inclusion:

1. Patients aged 60 years or older.
2. Patients scheduled to undergo oral surgical procedures such as tooth extraction, surgical extraction, alveoloplasty, pre-prosthetic surgery, or dental implant placement.
3. Patients classified as American Society of Anesthesiologists (ASA) Physical Status I, II, or III.
4. Patients able to provide written informed consent.
5. Patients capable of understanding and completing study questionnaires.

Exclusion Criteria

Participants meeting any of the following criteria will be excluded:

1. Patients with severe cognitive impairment, dementia, or psychiatric disorders that may interfere with questionnaire completion.
2. Patients currently receiving active treatment for head and neck malignancies.
3. Patients with recent maxillofacial trauma within the preceding six months.
4. Patients with uncontrolled systemic diseases categorized as ASA Physical Status IV or above.
5. Patients unwilling to participate or unable to attend follow-up appointments.
6. Patients with communication difficulties preventing reliable completion of assessment tools.

Study Variables

Independent Variables

The independent variables will include:

- Age
- Gender
- Educational status
- Marital status
- Smoking history
- Type of oral surgical procedure
- Presence of diabetes mellitus
- Presence of cardiovascular disease
- Hypertension

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- Number of comorbid conditions
- Medication use
- Postoperative complications

Dependent Variables

The primary and secondary outcome variables will include:

- Oral health-related quality of life score
- Pain score
- Chewing ability score
- Social interaction score
- Patient satisfaction score
- Duration of recovery
- Presence of postoperative complications

Recruitment Procedure

Patients attending the Oral and Maxillofacial Surgery Department will be screened for eligibility by the principal investigator. Eligible participants will be informed regarding the purpose, objectives, benefits, and potential risks of the study. Written informed consent will be obtained before enrollment.

Each participant will be assigned a unique identification number to maintain confidentiality and facilitate follow-up assessments.

Data Collection Procedure

Data collection will be performed at three predefined time points:

Baseline Assessment (Preoperative)

Before surgery, participants will undergo a comprehensive assessment including demographic, medical, and oral health evaluations.

The following information will be recorded:

- Age
- Gender
- Educational level
- Occupation
- Residence
- Medical history
- Medication history

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- Smoking status
- Presence of diabetes mellitus
- Presence of cardiovascular disease
- Other systemic illnesses
- Type of planned oral surgical procedure

Baseline measurements of pain, oral health-related quality of life, chewing ability, social interaction, and psychological well-being will also be obtained.

First Follow-Up Assessment (2 Weeks Postoperative)

At two weeks following surgery, participants will be reassessed to determine immediate postoperative outcomes.

The following parameters will be evaluated:

- Pain intensity
- Surgical site healing
- Presence of complications
- Functional improvement
- Ability to chew food
- Social interaction
- Patient satisfaction

Second Follow-Up Assessment (3 Months Postoperative)

At three months after surgery, participants will undergo final evaluation to assess medium-term outcomes and overall quality of life improvement.

The following data will be collected:

- Current pain status
- Oral health-related quality of life
- Functional chewing ability
- Social interaction and confidence
- Satisfaction with treatment outcome
- Duration of recovery
- Any delayed complications

Study Instruments

Visual Analog Scale (VAS)

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Pain intensity will be measured using a 10-cm Visual Analog Scale ranging from 0 (no pain) to 10 (worst imaginable pain). Participants will indicate the severity of pain experienced at each assessment point.

Oral Health Impact Profile (OHIP-14)

The OHIP-14 questionnaire will be used to assess oral health-related quality of life. This validated instrument evaluates seven domains:

- Functional limitation
- Physical pain
- Psychological discomfort
- Physical disability
- Psychological disability
- Social disability
- Handicap

Higher scores indicate poorer oral health-related quality of life.

Geriatric Oral Health Assessment Index (GOHAI)

As an alternative or supplementary assessment tool, the GOHAI questionnaire may be utilized to specifically evaluate oral health concerns relevant to elderly populations. The instrument assesses physical function, psychosocial function, and pain or discomfort associated with oral conditions.

Chewing Ability Questionnaire

A structured questionnaire will be administered to evaluate participants' perceived ability to chew various food consistencies. Responses will be graded according to a standardized scoring system.

Social Interaction Assessment

Social interaction and social confidence will be measured using a five-point Likert scale questionnaire assessing communication, social participation, self-esteem, and willingness to engage in social activities.

Patient Satisfaction Questionnaire

Patient satisfaction will be evaluated using a structured five-point Likert scale ranging from "very dissatisfied" to "very satisfied." Satisfaction domains will include treatment outcome, comfort, functional improvement, esthetics, and overall treatment experience.

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Clinical Assessment

All surgical procedures will be performed according to standard clinical protocols by qualified oral and maxillofacial surgeons. Relevant clinical information will be documented, including:

- Type of surgical procedure
- Duration of surgery
- Intraoperative complications
- Postoperative complications
- Need for additional interventions
- Recovery duration

Data Management

Collected data will be entered into a password-protected electronic database. Double data entry and cross-checking procedures will be performed to minimize transcription errors. Participant identities will remain confidential throughout the study.

Statistical Analysis

Data analysis will be conducted using Statistical Package for Social Sciences (SPSS) version 26.0.

Descriptive statistics will be calculated for all study variables. Continuous variables will be presented as means and standard deviations, whereas categorical variables will be expressed as frequencies and percentages.

Normality of data distribution will be assessed using the Shapiro-Wilk test.

For comparison of preoperative and postoperative outcomes:

- Paired t-test will be used for normally distributed continuous variables.
- Wilcoxon signed-rank test will be used for non-normally distributed data.

Subgroup analyses based on diabetes mellitus, cardiovascular disease, gender, and type of surgery will be performed using:

- Independent t-test
- Analysis of Variance (ANOVA)
- Mann-Whitney U test
- Kruskal-Wallis test

Multivariable linear regression analysis will be conducted to identify independent predictors of postoperative quality-of-life improvement while adjusting for potential confounding variables such as age, sex, type of surgery, and comorbid conditions.

A p-value of less than 0.05 will be considered statistically significant.

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Ethical Considerations

Ethical approval will be obtained from the Institutional Review Board (IRB) of Watim Dental Hospital prior to commencement of the study. All procedures will be conducted according to the principles outlined in the Declaration of Helsinki.

Written informed consent will be obtained from all participants before enrollment. Confidentiality and anonymity of patient information will be strictly maintained. Participants will be informed of their right to withdraw from the study at any stage without affecting their treatment. No additional financial burden will be imposed on participants as a result of study participation.

Expected Outcomes

The study is expected to demonstrate:

- Significant reduction in oral pain after surgery.
- Improvement in oral health-related quality of life.
- Enhanced chewing ability and nutritional function.
- Increased social interaction and psychological well-being.
- High levels of patient satisfaction.
- Identification of diabetes and cardiovascular disease as factors influencing recovery duration.

Significance of the Study

This study will contribute valuable evidence regarding the effectiveness of oral surgical interventions among elderly patients in Pakistan. The findings may assist clinicians in treatment planning, improve patient counseling, and support the development of geriatric oral healthcare policies. Furthermore, understanding factors affecting postoperative recovery may facilitate individualized treatment strategies and optimize outcomes in medically compromised elderly individuals.

Conclusion

Oral health plays a fundamental role in maintaining quality of life among older adults. Oral surgical interventions have the potential to significantly improve functional, psychological, and social well-being by alleviating pain and restoring oral function. Through a prospective evaluation of elderly patients undergoing oral surgery, this study seeks to provide evidence regarding the benefits of treatment and identify factors influencing postoperative recovery. The results are expected to support the integration of

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patient-centered outcomes into routine oral and maxillofacial surgical practice and contribute to improved geriatric oral healthcare.

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