

Evaluation of quality of life following dental extraction

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ABSTRACT

Among several treatment modalities done in dental clinics, dental extractions are the most frequently carried out treatment. Tooth extraction is indicated in cases such as chronic periodontal disease, abscess, root caries, root stumps, fractured teeth, and failed root canal treatments with the persistence of periapical cysts or granulomas, impacted teeth, or to facilitate orthodontic or prosthodontic rehabilitation. The consequence of routine tooth extraction could lead to dentoalveolar diseases, which cause tooth loss. The various complications of surgical procedures are delayed wound healing, postoperative bleeding, remnant bony spicules, and nerve paresthesia. This study aimed to assess the impact of nonsurgical tooth extraction on the quality of life of patients. Institutional patient data from January 2021 to April 2021 were analyzed, in which 2000 patients who had undergone extractions at our dental institution were included in our study. The data evaluating the patients' quality-of-life postextraction were recorded. It included speech variation, social interaction, postoperative pain, sleep impairment, and inability to work. Data obtained were statistically analyzed using SPSS, and results were obtained. Most men (49%) experienced an inability to work compared to women (25%). 38% of females had moderate-to-severe pain, whereas males (21%) had only mild pain. 21% of males are isolated socially due to feeling sick, whereas 20% of females are isolated socially due to pain. Speech was affected more postextraction. Most of the patients could not go to work for 1–3 days following the removal of the tooth. Most of the patients were pleased with the procedure, with their symptoms disappearing after the procedure, and were not worried about dental extractions.

Key words: Extraction, healing, innovative technique, oral surgery, surgical wound, tooth

INTRODUCTION

Out of all the treatment modalities performed by dentists, dental extractions are common.^[1] Tooth extraction is indicated in cases such as chronic periodontal disease, periapical or periodontal abscesses, nonrestorable

caries, root stumps, fractured teeth, and failed root canal treatments with the persistence of periapical cysts or granulomas, impacted teeth, or to facilitate orthodontic or prosthodontic rehabilitation.^[2,3] The consequence of routine tooth extraction could lead to dentoalveolar diseases, which can cause tooth loss.^[4] The various complications of surgical procedures are delayed wound healing, postoperative bleeding, remnant bony spicules, and nerve paresthesia.^[5]

Complications of extractions could be multifactorial and are attributed to the health status of the patients, medical history, habits, and systemic and local factors.^[6,7] Following routine dental extractions, complications, such as pain, discomfort, inability to work, and delayed healing of socket, can occur.^[8] In systemic conditions like diabetes, decreased

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synthesis of collagen and decreased angiogenesis can cause impaired wound healing.^[9] Progressive retardation of the immune system in human immunodeficiency virus infection^[10] and decreased oxygen supply in chronic obstructive pulmonary disease, Cushing's syndrome, and malnutrition are also implicated in delayed wound healing.^[11] Other factors which harm wound healing are systemic conditions such as renal failure, hepatic disorders, chemotherapy or radiotherapy, thyroid imbalances, and immunosuppressive disorders.^[12,13]

The pooling of blood in the socket of a freshly extracted tooth promotes the settling and remodeling of woven bone, which marks the end phase of the healing cycle. Consumption of cigarette smoke harms wound healing due to negative effects on clot formation. Studies have shown that fibroblast growth, production of fibronectin and collagen, and osteoblast activity are limited by the presence of nicotine.^[14] Drugs affect the postextraction phase and can cause bleeding, especially if the patient is on antiplatelet therapy or has platelet disorders, hepatic disorders, or hypertension.^[15,16] Unusual complications can occur depending on the site of surgery when multiple dental extractions are performed. In case of fracture of the maxillary tuberosity or oroantral fistula, root apices of maxillary posterior teeth are approximated with the floor of the maxillary sinus. The root apices of the lower posterior teeth are usually situated close to the inferior alveolar nerve of the mandible.^[17] Postoperative swelling, bleeding, and infection at the site of surgery can be related to surgical intervention, especially in cases of impacted teeth, as they require a more invasive approach.^[18]

This study aimed to assess the quality of life following nonsurgical tooth extraction.

MATERIALS AND METHODS

Study design and study setting

This was a retrospective study, in which the records of 86,000 patients were analyzed from January 2021 to April 2021. Two thousand patients who had undergone extraction of teeth at our dental institution were shortlisted based on the inclusion and exclusion criteria. Informed written consent was obtained from the study participants, and the study was performed (Ethical approval number-SDC/SIHEC/2021/DIASDATA/0619-0320/).

- Inclusion criteria – All patients above 18 years of age who underwent dental extractions
- Exclusion criteria – Patients below 18 years of age.

Data collection

The data for this study were taken after analyzing the records of patients who reported to our dental college. Two thousand patients who matched the inclusion criteria were included in the study. Repeated patient

details and partially filled data were excluded. An external reviewer was used to review the data. The data evaluating the patients' quality-of-life postextraction were recorded. It includes speech variation, social interaction, postoperative pain, sleep impairment, and inability to work.

Statistical analysis

The Chi-square test (at a significance level of $P < 0.05$) was done using SPSS statistical package for social science for windows versions, 20.0, SPSS Inc, (Chicago IU, USA), and the results were obtained.

RESULTS

The gender distribution in our study is shown in Figure 1. About 51% belonged to the male gender and 49% belonged to the female. The reasons for extraction among the sample of the population are depicted in Figure 2. About 33% had extraction due to decayed tooth, 33% had extraction due to root canal failure, and 34% had extraction due to malpositioned tooth. The instruments used for the extraction in the sample population are shown in Figure 3. About 33% used forceps for extraction, 33% used elevator for extraction, and 34% used both elevator and forceps for extraction. The tooth indicated for extraction in the sample population is depicted in Figure 4. About 23% had an extraction of molars, 21% had an extraction of premolars, 24% had an extraction of canines, and 32% had an extraction of incisors.

The associations between the speech variation after extraction and gender showed that among males, 31% had

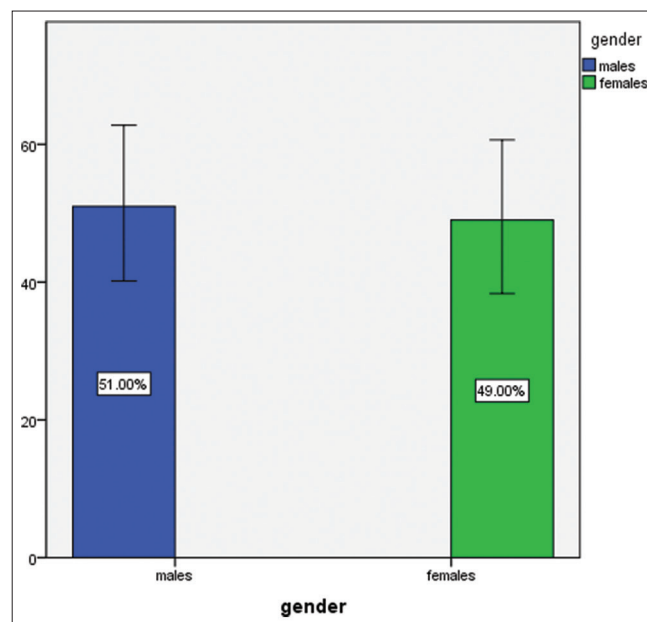


Figure 1: The bar graph shows the distribution of various genders in the sample population

the inability to speak and 20% had the ability to speak. Among females, 27% had the inability to speak and 22% had the ability to speak [Figure 5]. The associations between gender and degree of postoperative pain showed that among males, 21% had mild pain, 4% showed a moderate degree of pain, 4% showed a severe degree of pain, and 22% showed no pain. Among females, 7% showed a mild degree of pain, 19% showed a moderate degree of pain, 19% showed a severe degree of pain, and 4% showed no pain [Figure 6].

The associations between gender and isolation reasons postextraction showed that among males, 8% were isolated

due to pain, 4% were isolated due to swelling, 9% were isolated due to physical appearance, 9% were isolated due to bad mood, and 21% were isolated due to feeling sick. Among females, 20% were isolated due to pain, 12% were isolated due to swelling, 9% were isolated due to physical appearance, and 8% were isolated due to bad mood [Figure 7]. The associations between gender and sleep impairment postextraction showed that among males, 33% had sleep impairment and 18% did not have sleep impairment. Among females, 37% had sleep impairment and 12% did not have sleep impairment [Figure 8]. The associations between gender and inability to work showed that among males, 49% had the inability to work and 2% did not have the inability to work. Among females, 25% had

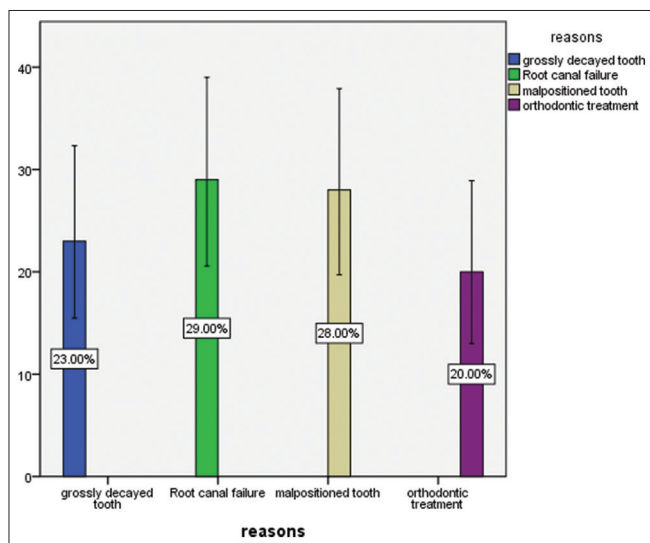


Figure 2: The bar graph shows the reasons for extraction among the sample of the population

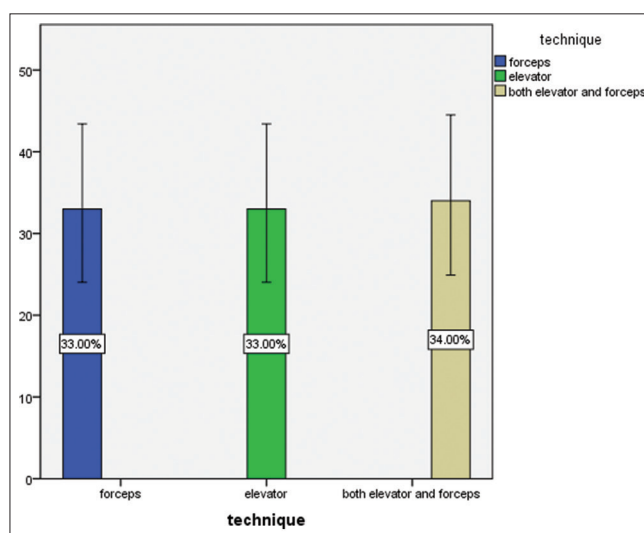


Figure 3: The bar graph denotes the instruments used for the extraction of the sample population

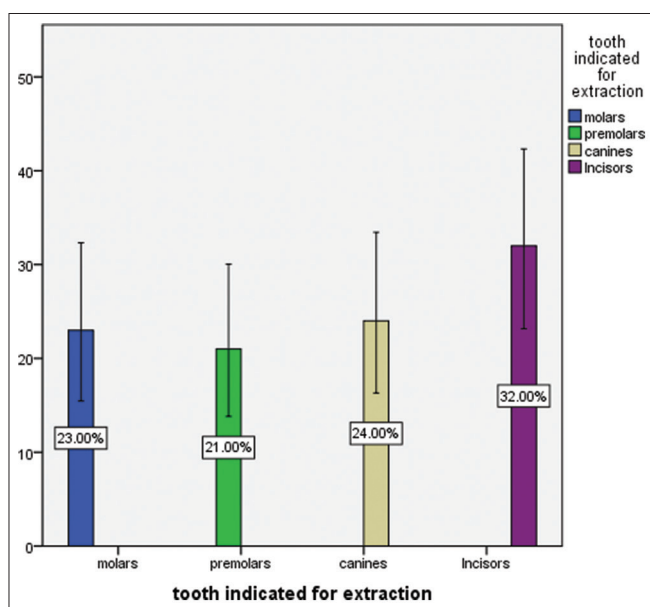


Figure 4: The bar graph denotes the tooth indicated for extraction of the sample population

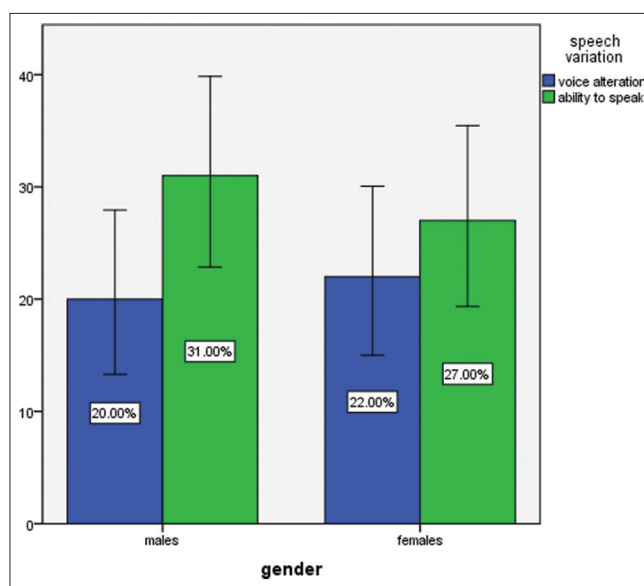


Figure 5: The bar chart depicts the speech variation postextraction based on gender. Chi-square test ($P > 0.15$), statistically not significant

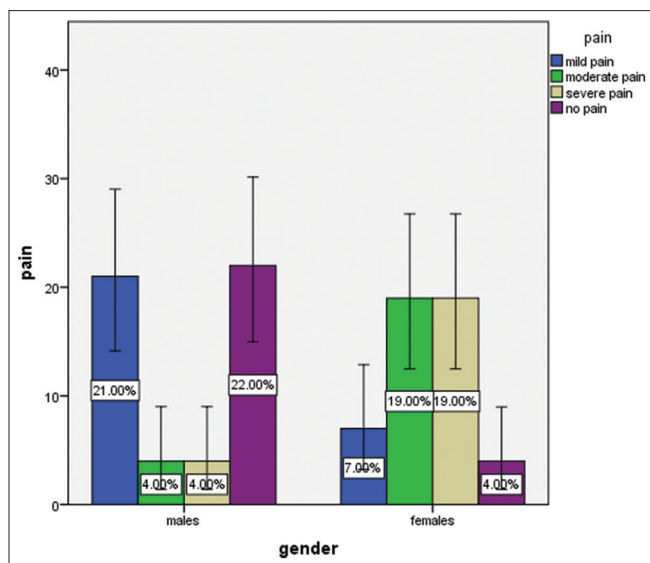


Figure 6: The bar chart describes the degree of postoperative pain based on gender. Chi-square test ($P = 0.03$), statistically significant. Most of the men experienced mild pain, whereas women experienced moderate-to-severe pain

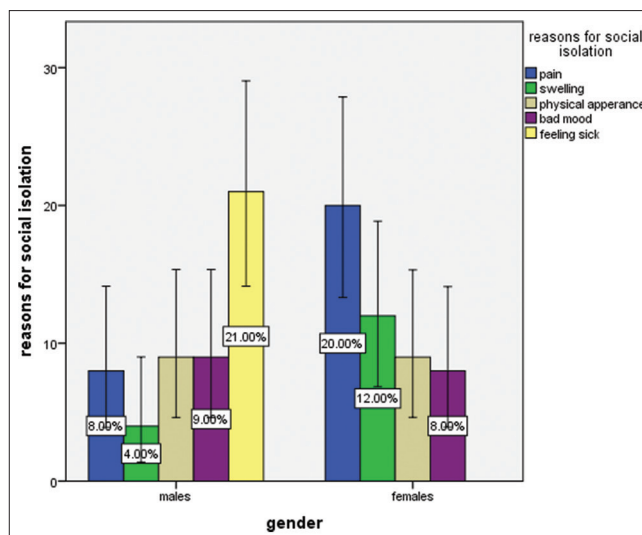


Figure 7: The bar chart describes the reasons for social isolation postextraction based on gender. Chi-square test ($P = 0.04$), statistically significant. Men were socially isolated due to feeling sick, whereas for women, the pain was the main reason

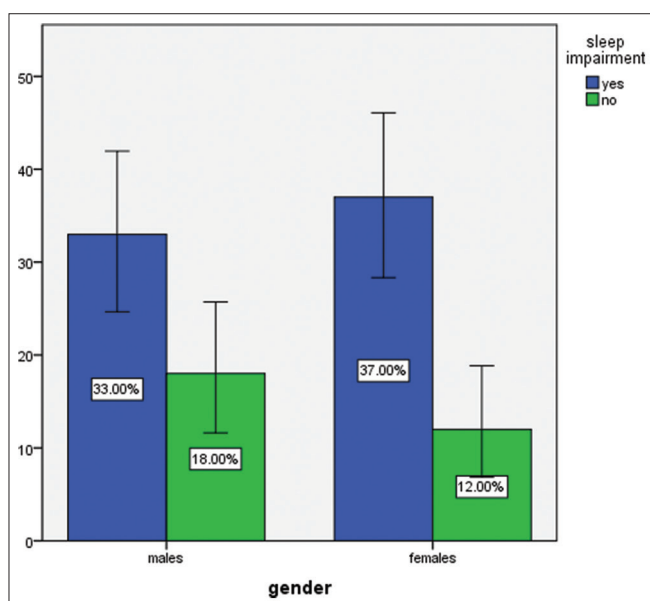


Figure 8: The bar graph shows sleep impairment postextraction based on gender. The Chi-square test ($P = 0.10$) was not statistically significant

the inability to work and 24% did not have the inability to work [Figure 9].

DISCUSSION

Dental extractions are the most frequently performed treatment modality in a dental clinic. Consent from the patient should be taken before the procedure, where the patient should be informed about the reasons and the complications associated with a dental extraction.^[19]

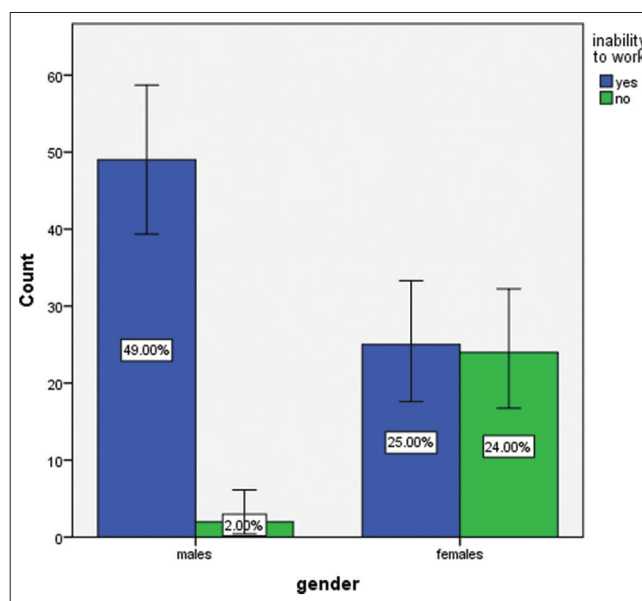


Figure 9: The bar chart describes the inability to work postextraction based on gender. The Chi-square test ($P = 0.02$) was statistically significant. Most of the men experienced an inability to work compared to women

Nowadays, patients feel privileged to know about the procedure (and the risks involved) which is to be performed on them before agreeing to the procedure. The surgeon could avoid a lawsuit by properly documenting the various social, physical, and psychological ramifications using a properly verified questionnaire in the written consent form, which will be signed by the patient before the procedure.

There is an ample number of studies that focus on the standard of living of patients who underwent dental

extractions. Complications of tooth extraction are a dry socket which could be due to an increase of fibrinolytic activities that causes a breakdown of vascular clots. In a study, it was found that dry socket incidence was lessened after antifibrinolytic agents were kept at the site of surgery.^[20] Various studies showed that the incidence of dry sockets is increased in patients with smoking habits.^[19-21] The pooling of blood in the socket after an extraction is decreased due to cigarette smoking, which leads to delayed or impaired wound healing.^[22] Moreover, the existence of cytotoxic materials like nicotine limits gene expression, which is vital in angiogenesis and osteoblastic activity, and may result in an unfavorable consequence, namely the heightened catabolic response.^[2]

Based on the results of numerous studies, postoperative complications usually develop due to coagulopathy, smoking, and the grounds of extraction, specifically periodontitis, fracture, or unrestorable caries.^[6-10] It is indicated in the literature that after the extraction of a tooth, a vascular clot is formed at the site, which is followed by movement of epithelium near the site of the clot, followed by bone remodeling activity.^[11,12] The healing of the site is accentuated by the placement of sutures.^[15] Drugs like antihypertensive/platelet/coagulant have a significant effect on postoperative bleeding after dental extractions.^[7,8] Certain studies depict that dental extraction in patients on an antiplatelet regimen can be performed without any concern for the safety of the patient.^[16-18] In a study done by Savin and Ogden,^[21] the results depicted that diet variations were most frequently affected after dental extraction in the range of 24%–32%. Evaluating the dietary changes revealed that the most frequent issues were the inability or struggle in mastication and the inability to enjoy the experience of eating food. Therefore, the patients must be cautioned about the postoperative dietary experience and should be informed regarding the uneasiness in mastication and deglutition after the dental extraction is performed. Savin and Ogden suggested a change in the food intake in patients who underwent third molar extractions, especially if they are unable to enjoy food. Dietary options, which involve the consumption of food which do not require too much chewing, should be recommended to the patient.^[21]

In a similar study, the results stated that, unlike dietary options, speech alterations and phonetics were not affected, which could be because dental extractions do not reduce oral cavity volume or affect the mobility of the tongue.^[14] Hence, the speech will not be affected after simple or complicated surgical dental extractions.^[16-18] However, in our study, speech variations postextraction were observed among the patients, and it affected their quality-of-life postextraction. In certain studies, few patients showed a minor change in appearance.^[19-21] Usually, third molar removal procedures induce a temporary reversible swelling, which can cause a mild change in appearance. Uncomplicated tooth extractions

seldom cause postoperative swelling.^[22,23] Sleeplessness was considered a regular experience among patients who underwent nonsurgical dental extractions.^[7,8,14] According to Colorado-Bonnin, a lengthy surgery and early drowsiness due to postoperative painkillers can cause sleeplessness in patients undergoing third molar surgery.^[24]

CONCLUSIONS

In our study, the speech of the patients was more affected postextraction. Most of the patients could not go to work for 1–3 days following the removal of the tooth. Most of the patients were pleased with the procedure, with their symptoms disappearing after the procedure, and were not worried about dental extractions. However, not more than half of them would like to experience the same in the future. Patients must be educated regarding the possibility of temporary discomfort after simple dental extractions. If the patients follow strict instructions after dental extraction, such as avoidance of mouth rinses and refraining from smoking, they can easily avoid discomfort and prevent the occurrence of postextraction complications.

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Conflicts of interest

There are no conflicts of interest.

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