

# Effects of Age, Sex and Health Status on Recovery Following Non-Surgical Tooth Extraction

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## Abstract

### **Objective:**

To assess the effects of age, sex and health status on recovery following non-surgical tooth extraction.

### **Methods:**

This prospective study was done on randomly selected 100 patients who came to the Department of oral and maxillofacial surgery, Saveetha dental college, Saveetha university, Chennai during the period of April 2016 - June 2016 for extraction of teeth for various reasons. Extractions considered in the study were those which were done only by atraumatic (non-surgical) methods. After a thorough history taking and clinical examination, extractions were done under local anesthesia and on the third and seventh day after the extraction, patients were recalled back and reviewed. Based on a scoring system, patients were categorized and data obtained. The data extracted were tabulated, statistically analyzed and results obtained.

### **Results:**

The average score of younger patients was 11 and for the elder patients the score was 16. Average score for males was 20 and for females was 25. Patients who had any previous health problems like anemia, diabetes mellitus or hypertension, malnourishment etc. showed the highest average score of 32. The results were statistically significant.

### **Conclusion:**

Younger patients had better healing of extraction sockets and faster recovery compared to elderly patients. Females experienced more pain than males in the postoperative period. Patients with general health problems showed drastically slower healing of extraction sockets compared to healthy persons.

**Keywords-** Tooth extraction, risk factors, age, sex, pain, systemic problems

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## INTRODUCTION

One of the most common procedures carried out in dental clinics is extraction of tooth [1,2]. It is frequently followed by complications such as dry socket, delayed wound healing, post operative infection, hematoma, pain, swelling or trismus [3,4]. Pain is one of the most common post operative complications after extraction and might be caused by the release of pain mediators. Pain is an important factor in clinical practice and could even discourage patients from seeking dental treatment. It begins after the anesthesia subsides and reaches its peak levels during the first postoperative day. If dry socket or infection occurs, the onset of inflammation will complicate alleviation of post operative pain [5].

Post operative pain or discomfort, delayed wound healing and loss of day at work can ultimately affect the quality of life (QOL) [6]. The recovery period after extraction of tooth for every individual varies according to several factors [7,8]. Therefore, the knowledge of risk factors for postoperative complications like age and gender of the patient and systemic health status of patient has clinical implications in treatment planning, patient management and prognosis [9,10]. Hence, this study was designed to explore the effects of age, sex and health status on recovery following non-surgical tooth extraction done on patients attending our dental institution.

## MATERIALS AND METHODS

This prospective study was done on randomly selected 100 patients who came to the Department of oral and maxillofacial surgery, Saveetha dental college, Chennai during the period of April 2016 - June 2016 for extraction of teeth for various reasons.

Physical characteristics of the patients including the patient's age, sex and previous health status were recorded preoperatively. Patients considered in the study were 16yrs and above. The age range between 16 to 25 (considered as younger patients), 25 and above (considered as elder patients) and gender (male or female) was noted. Health status was recorded through proper medical history and systemic examination. Presence of any systemic problems were noted down. Eg. Diabetes mellitus, hypertension, COPD, H/O myocardial infarction, stroke, gastric ulcers, anaemia, endocrine disorders, bleeding disorders, autoimmune disorders, infectious diseases etc.

Extraction of teeth was carried out by a single dental student under the supervision of senior doctors. Extraction of teeth was done under local anesthesia ( 2% lignocaine with 1: 80,000 adrenaline ). Extractions considered in the study were those which were done only by atraumatic (non-surgical) methods. Many patients underwent single tooth extractions and others had more than one teeth extraction.

Then, on the third and seventh day after the extraction, patient was recalled back and reviewed by a single examiner, i.e., the same student who did the procedure. Patients were asked if they were able to return to work after extraction, whether they could resume to their normal diet, if there was any post operative pain or any complications encountered. A thorough clinical examination was done to assess the status of wound healing or any problems present in the extraction socket area.

The following criteria were used to assess the patient's symptoms

Description of post-operative symptoms	
SYMPTOMS	DESCRIPTION
Pain	You wake up in the moaning or writhing and need for extra Pain killers
Nausea	You feel queasy with a strong desire to vomit
Vomiting	You are retching and bringing up liquid or solids
Disorientation	After waking up, you do not know your surroundings
Shivering	You feel cold and have shaking of your body
Sore throat	Your throat is painful and it may hurt when u try to swallow
Normal	You are awake, alert, comfortable and aware of your surrounding
Drowsiness	You feel very sleepy, tired and do not want to get out of bed
Thirst	Your mouth feels dry and you have a strong desire to drink
Trismus	You feel difficult to open mouth widely

A scoring system was used for the patient's responses as given below:

Post – operative pain was assessed using a 4 point verbal rating scale ( 1- no pain, 2- mild pain, 3- moderate pain, and 4 – severe pain ) whereas other symptoms was scored as ( 1 – not at all, 2 – a little, 3 – quite a lot, 4 – very much ). For the patient free of symptoms was given a score of 1. Hence, the accumulative scores were marked with the minimum score possible as 10 and maximum score as 36. The patients were then categorized under 4 categories based on total number of scores calculated for each patient:  
 Category 1 : Not at all affected ( Score 10 )  
 Category 2 : A little affected ( Score 15 to 21)  
 Category 3 : Quite a lot affected ( Score 22 to 30)  
 Category 4 : Very much affected ( Score 31 to 36)

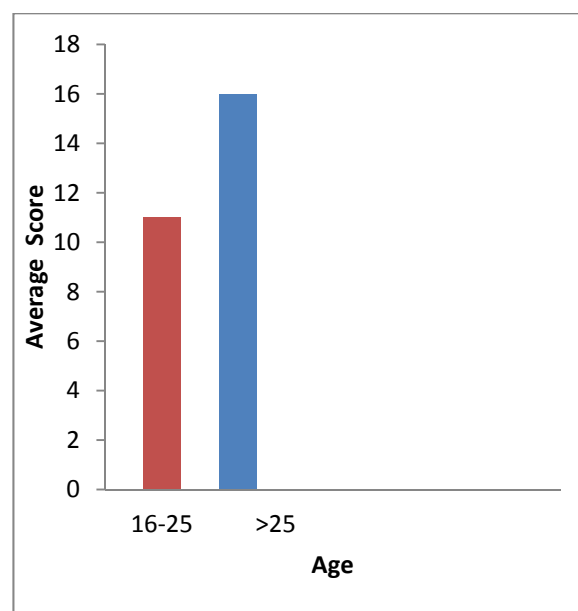
“Recovery time,” was defined as the median number of days needed to reach “no pain” (1 on the 4 point verbal rating scale) and “not at all/very little” (1 or 2 on the 4 point scale), for each of the other variables (symptoms) examined. The data extracted were tabulated, statistically analyzed and results obtained.

## RESULTS

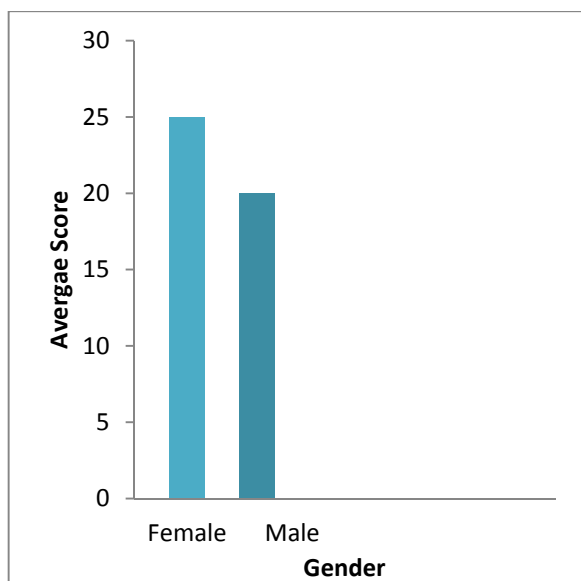
In our study, out of 100 patients 46 were males and 54 were females. Patients were asked to rate their scoring, based on severity of their symptoms and thus the results were plotted. Scores were obtained for each patient and an average was calculated under each category. The average score of younger patients was 11 and for the elder patients, the score was 16. Average score for males was 20 and for females was 25, thereby showing females had more postoperative problems than males. 30 patients who had any previous health problems like anemia, diabetes mellitus or hypertension, malnourishment etc. showed the highest average score of 32, which shows they had delayed recovery after extractions and more postoperative complications. Total number of patients under each parameter and average score under each category are shown below (Table 1). The relationship between the patients parameters like age, sex, systemic health problems and postoperative complications are shown in figures 1, 2 and 3 respectively. The results were statistically significant.

**Table 1. Patients parameters and scores obtained**

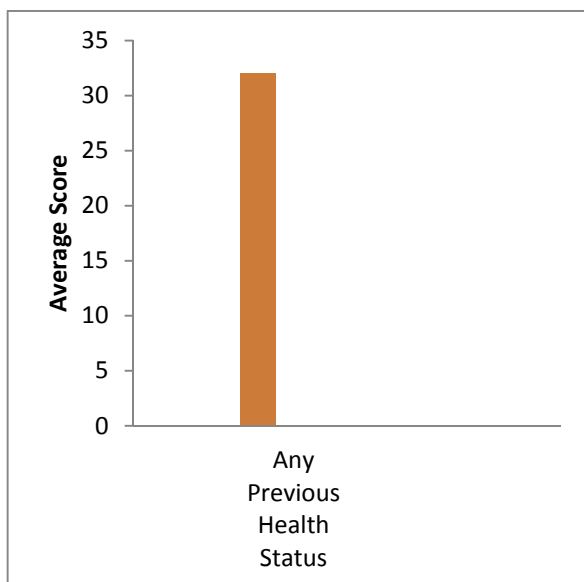
Factors	Total number of patients ( 100)	Average score
<b>Age</b> (16 to 25)	33	11
(above 25)	67	16
<b>Gender</b> (Male)	46	20
(Female)	54	25
<b>Any Previous Health problems (yes)</b>	30	32



**Fig.1 Relationship between age and postoperative complications**



**Fig.2 Relationship between sex and postoperative complications**



**Fig.3 Relationship between systemic problems and postoperative complications**

#### DISCUSSION

Despite advances and progress in preoperative, operative and post operative management and patient care, which makes dental treatment today easier than before, many patients still develop complications after extraction of tooth. Hence, this study was carried out if factors like age, gender and previous health status affects the recovery after extraction.

In this study, Age of the patient was categorized into 16 to 25 and above 25, the average score of younger patients was 11 and for the elder patients score was 16. This shows that younger patients after extraction had minimum post operative symptoms and complications with faster recovery than the elderly. The production and process of sensory

stimuli might be influenced by aging. The elderly could be at higher risk or post-operative symptoms or complications, such as severe pain and sensory disturbances, possibly because of this group's poorer blood supply to jaws, healing potential and denser bones. According to Chaushu et al. [11] teenagers over 15 years will experience delayed recoveries than among the younger group following premolar tooth extractions for orthodontic purposes and recovery was not significantly affected by sex, number of extractions, and duration of the treatment. In another study [12], it was found to have variable effects on postoperative swelling, with the age group 25 years and above having statistically significant more swelling at day 7, compared to the 16–25 years age group. This was also supported by the findings of previous authors [8,13,14] who observed greater swelling and higher pain scores in older patients. The differences may be explained in terms of variation in the vascular permeability between older and younger patients [15].

According to Phillips et al. [16] patients younger than 21 years, including adolescents completing an orthodontic treatment plan, recover more quickly for quality of life (QOL) outcomes, pain, lifestyle, and oral function compared with those 21 years and older. Older age and high levels of preoperative difficulty index were found to result in more postoperative facial swelling in patients undergoing impacted third molar removal surgery.

In our study, the effect of gender on recovery after extraction of tooth was assessed. Results showed score of males were 20 and by females were 25. This proves females have a higher risk of developing post operative symptoms like prolonged pain etc. compared to males who had less postoperative complications. This is in accordance to the study by Berge [17] who reported females to have prolonged inability to work following tooth removal. The results could be due to females might have a higher sensitivity to pain stimuli perhaps due to psychosocial factors (mood, sex role beliefs, pain coping strategies, and pain-related expectancies), catastrophizing and sex hormones [18,19]. Also, in some the thin mandible of women might render them more vulnerable to pain and complications after dental procedure. Phillips et al [7] reported that, after third-molar surgery, delayed healing, wound infection, and alveolar osteitis were not associated with age at the time of surgery if these outcomes were controlled for the complexity of surgery. However, prolonged recovery as evaluated by quality of life (QOL) outcomes was significantly more likely for subjects older than 18 and for females patients [7].

Seward et al [20] stated that females present with more pain and facial swelling after third molar surgery. Benediktsdottir et al [8] in their study, found that males have a lower risk for reporting more severe postoperative pain compared with females. The authors attributed the increased severity of postoperative pain in females to the higher occurrence of alveolar osteitis in females.

Snyder et al [21] reported that a significantly greater proportion of female patients took pain medications after third-molar surgery each day, beginning with day 5 and continuing through the 14-day study period. Fillingim et al

[22] concluded that women have a lower threshold for experimental pain as well, suggesting that processing for painful stimuli differs by sex. On the contrary no association was found between age and sex of subjects and inability to work following non-surgical tooth extraction according to a study by Adeyemo et al [23].

Patients who had any health problems like anemia, diabetes mellitus, malnourishment, autoimmune disorders or infectious diseases showed the highest average score of 32 indicating that they were very much affected. This proved that patients with systemic diseases had the least healing recovery after extraction and showed severe pain and post operative complications like infection and dry socket. Patients with diabetes mellitus or any bleeding disorders will have very poor wound healing and more susceptible to other complications like dry socket and secondary infections [24]. In patients with poorly controlled blood sugar levels, dental extraction should be avoided, if unavoidable it should be done under adequate prophylactic antibiotic cover. Healing was faster and better without any post-extraction complications in normal healthy person.

### CONCLUSION

Younger patients had better healing of extraction sockets and faster recovery compared to elderly patients. Females experienced more pain than males in the postoperative period. Patients with general health problems showed drastically slower healing of extraction sockets compared to healthy persons.

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