

Incidental Findings in Digital Panoramic Radiographs among Dental School's Patients

Hazar S. AlHarbi¹, Shaikha Aldukhail², Sara M. Elkhateeb^{3,4*}

1. Department of Basic Dental Sciences, College of Dentistry, Princess Nourah Bint Abdulrahman University, Riyadh 11671, Saudi Arabia.
2. Department of Preventive Dental Sciences, College of Dentistry, Princess Nourah bint Abdulrahman University, Riyadh 11671, Saudi Arabia.
3. Department of Basic Dental Sciences, College of Dentistry, Princess Nourah bint Abdulrahman University, Riyadh 11671, Saudi Arabia.
4. Associate Professor, Department of Oral Medicine, Periodontology, Diagnosis and Oral Radiology, Faculty of Dentistry, Ain Shams University, Cairo, Egypt.

Abstract

Incidental findings are the radiographic findings detected in an asymptomatic or a symptomatic patient, these findings, however, are not correlated to the patient's clinical symptoms.

Our objective was to report the prevalence of incidental findings, detected in digital panoramic radiographs, yet were not noted within the initial clinical examination of the patient attending the dental clinics at "Princess Nourah bint Abdulrahman University (PNU)".

All panoramic radiographs performed from April 2018 till March 2021 retrieved from the archives of the Axiom Clinical and Practice Management Software database of the dental clinics at (PNU). A representative random sample of 400 out of 4010 panoramas were examined. All incidental radiographic findings were recorded and were categorized into five groups.

About half of all examined panoramas had at least one incidental finding (46.8%). The most common incidental findings were idiopathic osteosclerosis (7.5%). Age of the patients was found to be significantly associated with the presence of at least one incidental finding.

Incidental findings are common among patients in Saudi Arabia. This underscores the need for dental practitioners to examine the panoramic radiographs systematically and comprehensively for all patients, to make note of, record and properly manage these findings.

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Introduction

The new era of multi discipline involvement in the process of diagnosis, increase the responsibility on the general dental practitioner. The focus on clinical diagnosis and treatment of caries and periodontal disease results on subsequent loss of identification of major findings. Careful radiological overview and continuous consultation with oral radiologist will boost dentist professional efficacy. The general dentist can play a central role in detection of highly clinically significant conditions. The recent increase in the number of imaging studies involving the head and neck, raise the attention

of anatomical variations that may be correlated with clinical disease.

Panoramic radiograph is a remarkably important imaging modality that has become the mainstay imaging tool of most dental practices since the 1960s. Panorama is a two-dimensional radiographic examination for both jaws which is frequently done for new patients after clinical examination.¹

It offers a screening view for maxillary, mandibular arches in addition to the adjacent structures, such as the temporomandibular joints, cervical vertebrae, and the lower part of the orbital cavity.²

Incidental findings are the radiographic findings which are detected in a healthy asymptomatic patient or in a symptomatic patient, where the findings were not apparently correlated to the patient's symptoms and are detected in panoramic radiographs. Detection and reporting of such findings are of utmost significance because they may require further medical and/or dental intervention.^{3, 4}

*Corresponding author:

Sara M. Elkhateeb,
Airport Road, Princess Nourah bint Abdulrahman University
Staff Housing, Riyadh,
Saudi Arabia
E-mail: smelkhateeb@pnu.edu.sa

The 2013 presidential commission for the study of bioethical issues recommends “all clinicians anticipate and plan for incidental findings and communicate that plan to their patients.” this emphasizes on the importance of incidental findings recognition in order to deem appropriate diagnosis and proper intervention.⁵

Our objectives were to report the prevalence of incidental findings, detected in digital panoramic radiographs, yet were not noted within the initial clinical examination of the patient attending the dental clinics at Princess Nourah bint Adulrahman University (PNU). In addition, to exploring factors associated with the presence of incidental findings in routine panoramic radiographs.

Materials and methods

This cross-sectional, retrospective study. All digital panoramic radiographs used as a part of dental care on patients from April 1st, 2018, through March 30th, 2021, at the Faculty of Dentistry, Princess Nourah bint Adulrahman University Riyadh, Saudi Arabia.

Data were retrieved from the archives of the Axiom Clinical and Practice Management Software database (Axiom) of the dental clinics. All Digital panoramic radiographs were acquired by Planmeca ProMax 2D imaging unit (Helsinki, Finland). About 4010 panoramic radiographs were performed during the recruitment period. Our sample size calculations resulted in a minimum sample of 347 radiographs needed for complete and accurate representation of the dental clinics patients, at the (95%) level of confidence and ($\pm 5\%$) margin of error. A simple random sample of 400 panoramas were selected for this study. Other measures included were patients' ages, chief complaint, and sex.

Inclusion criteria: Radiographic findings that were not correlated with the documented chief complaint nor any other clinical findings among asymptomatic patients were included. The chief complaints of included patients were checked from their files on Axiom to be sure that the recorded radiographic findings were not related to the chief complaint. Panoramic radiographs that were unclear due to positioning error, distortion or patient movement were discarded.

Observed Incidental findings were categorized into the following groups: dental

anomalies, Temporomandibular joint (TMJ), soft tissue calcifications, ossification, paranasal sinuses, periapical lesions, and intrabony pathological findings (Figure 1).

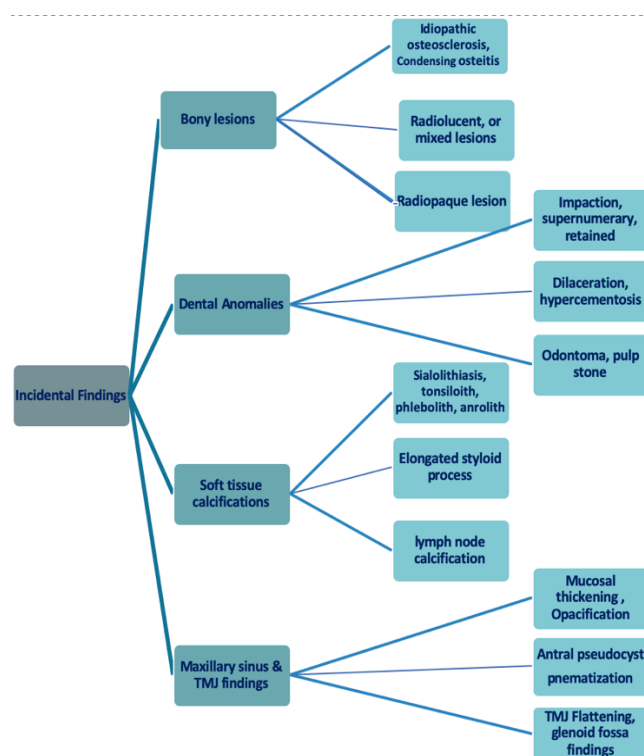


Figure 1. Scheme for categories of incidental findings in panoramic radiograph with clarification for most common findings.

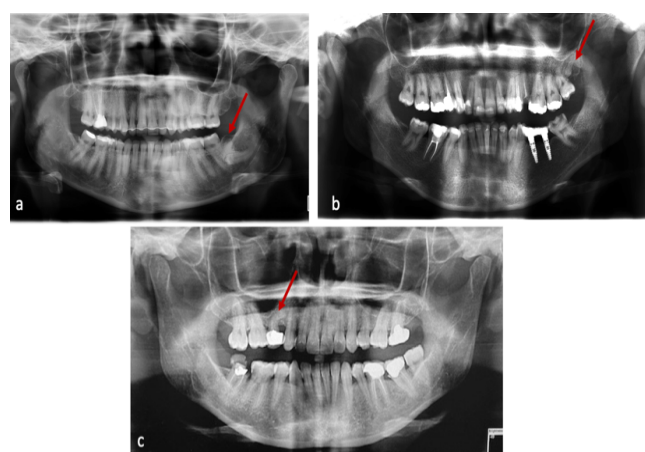


Figure 2. a-) Panoramic radiograph showing impacted tooth #38 with associated pericoronal pathological lesion. b-) Panoramic radiograph showing impacted disto-molar with microdontia distal to tooth #28. c-) Panoramic radiograph showing sharp dilaceration in tooth #14.

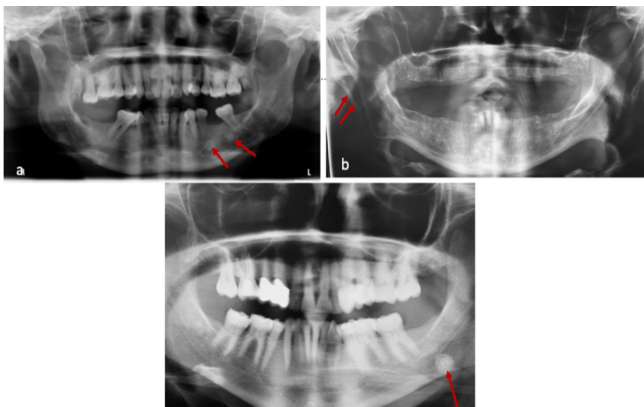


Figure 3. a-) Panoramic radiograph showing two idiopathic osteosclerosis in the left mandibular premolar-molar region.
b-) Panoramic radiograph showing elongated styloid process.
c-) Panoramic radiograph showing radiopaque mass which is most probably stone in the left submandibular salivary gland.



Figure 4. Panoramic radiograph showing small radiopacity in the right maxillary sinus and carotid artery calcification at the right side.

Two experienced investigators, an oral and maxillofacial radiologist and an oral and maxillofacial pathologist have separately examined the first 40 radiographs to identify possible codes for the incidental findings. The investigators met regularly to go over their initial coding and created an incidental findings codebook after achieving a high inter-rater agreement score. Then they performed a systematic panoramic evaluation under standardized conditions using a display monitor calibrated for the examination of the radiographic findings under proper ambient light and they documented the detected incidental findings according to pre-defined criteria.³ The viewing of panoramic images was further manipulated and enhanced using brightness, contrast, and

sharpness tools of Planmeca software to improve the detection and interpretation of any incidental findings. When there were any conflicts in the radiographic examination, consensus was reached by the investigators. Furthermore, all images were deidentified prior to the data collection and all panoramic radiographs were coded. This study was approved by the ethical committee at PNU, IRB No: H-01-R-059.

Statistical analysis: Data were cleaned prior to the statistical analysis, to assess the percentage of missingness in the variables of interest. Descriptive analysis (frequency and prevalence with [SD]) were used to summarize the incidental findings and socio-demographic characteristics. Factors associated with (incidental findings) were further explored using logistic regression. The reported adjusted odds ratios (AORs) and 95% confidence intervals (95%CI) were adjusted for relevant demographic covariates (Sex and /age). Statistical significance was defined as a P value less than 0.05. Analysis was performed with STATA version 14.2.

Results

Description of study population (n=400):

The sociodemographic and incidental findings of the study sample of dental clinics patients are presented in Table 1. In total, about (80%) of our sample were females and around half (48%) were between 18-29 years old. Dilaceration (3.51%) and impactions (3.26%) were the most common dental anomalies observed in our sample. Among dental clinics patients, (7.5%) had idiopathic osteosclerosis, (7.3%) had eagle syndrome, (4.3%) had periapical radiolucencies and (2.76%) had signs of TMJ flattening. (Table1)

Prevalence of incidental radiographic findings by sex and age groups:

Incidental findings were observed in (52%) of male patients' radiographs, and (46%) of females. Older adults had a higher prevalence of radiographic findings (62% for people 50-59 years) and (73% for people 60+ years) (Table 2). In males the most frequent dental anomalies were impactions (3.7%) and retained deciduous (3.7%). While dilacerations were the highest anomaly among females (4%) and around (3%) of females had some flattening of the TMJ. The most frequent soft tissue calcification observed in both males and females was Eagle syndrome

(6.2%) and (7.6%) respectively. About (13%) of those aged 50-59 had signs of Eagle syndrome. The most common intraosseous finding among males were periapical radiolucencies (6.2%), while females had more idiopathic osteosclerosis (8.2%). Similarly, idiopathic osteosclerosis were observed in about (9%) of patients aged 30-39, (15%) of patients aged 40-49, and (10%) of patients aged 60+. About (10%) of patients aged 40-49 and patients aged 50-59 had maxillary sinus pneumatization (Table 2&3).

Characteristic		N	%
Sex	Male	81	20.40%
	Female	316	79.60%
Incidental radiographic findings	Yes	187	46.75%
Age	<18 years	50	12.5%
	18-29 years	193	48.25%
	30- 39 years	56	14%
	40- 49 years	41	10.25%
	50- 59 years	31	7.75%
	60+	26	6.5%
Dental anomalies	Odontoma	4	1%
	Impaction	13	3.26%
	Mesiodense	1	0.25%
	Retained deciduous.	7	1.75%
	Hypercementosis	2	0.50%
	Dilaceration	14	3.51%
	Congenital missing	8	2.01%
	Pulp stone	9	2.26%
	Transposition	1	0.25%
	Microdontia	1	0.25%
	Supernumerary	1	0.25%
TMJ	Flattening	11	2.76%
	Glenoid fossa abnormalities	1	0.25%
Soft Tissue Condition	Phlebolith	1	0.25%
	Sialolith	1	0.25%
	Tonsilolith	4	1%
	Antrolith	1	0.25%
	Muscle calcification	1	0.25%
	Eagle syndrome	29	7.27%
	Calcification of carotid Artery	3	0.75%
	Lymph node calcification	2	0.50%
Intraosseous findings	Idiopathic osteosclerosis	30	7.52%
	Fibrous lesion	4	1%
	Periapical RL	17	4.26%
	Pericoronal RL	2	0.50%
	BM osteoporotic defect	3	0.75%
	Condensing osteitis	11	2.76%
	Inferior alveolar canal findings	3	0.75%
	Periapical mixed	1	0.25%
	Peri coronal mixed	1	0.25%
	Hyperplastic follicle		
Maxillary Sinus	Sinus opacification	11	2.76%
	Mucosal thickening	2	0.50%
	Pneumatization	10	2.51%
	Dome shape RO	8	2.01%
	Interruption of sinus floor	1	0.25%

Table 1. Descriptive table of PNU dental clinic's patients (N=400).

Association between incidental radiographic findings, sex, and age groups
The associations between incidental

radiographic findings, sex, and age groups were outlined in (Table 3). Sex was not found to be significantly associated with incidental radiographic findings at $P=0.05$. Meanwhile, age of patients was significantly associated with incidental findings. Patients who were 18-29 years had four times the odds (AOR: 4.2, 95%CI: 1.9- 9.3) of having radiographic findings, compared to pediatric patients <18 years. Similarly, the odds of experiencing any incidental findings were higher the older the patients were, corresponding to around 6 folds higher (AOR 5.82, 95%CI:2.2-15.3), 8 folds higher (AOR 7.8, 95%CI:2.8-21.9) and 12-fold higher (AOR 12.1, 95%CI:3.9-37.6) for patients aged 40-49, 50-59 and 60+ respectively (Table 4).

	Male AOR (95%CI)	Fem ale AOR (95% CI)	<18 AOR (95% CI)	18-29 AOR (95% CI)	30- 39 AOR (95% CI)	40- 49 AOR (95% CI)	50- 59 AOR (95% CI)	60+ AOR (95% CI)
Incidental radiographic findings	Observed (yes)	Reference (1.2)	0.68 (0.4-1.2)	Refer ence (1.9- 9.3)	4.18 (2.2- 13.5)	5.42 (2.2- 15.3)	5.82 (2.2- 21.9)	12.14 (3.9- 37.6)
P-value	-	0.17	-	<0.001	<0.001	<0.001	<0.001	<0.001

Table 4. Association between incidental radiographic findings, sex, and age groups - PNU dental clinic's patients.

Discussion

Panoramic radiograph is a widely used dental imaging modality which characterizes by wide anatomical coverage that enables the dentist to thoroughly examine both jaws, dentitions, and associated structures to detect any positive radiographic finding.⁶

So, the aim of the current study was to evaluate the frequency of incidental findings, detected in digital panoramic radiographs for patients attended dental clinics of our College of Dentistry. All the recorded radiographic findings weren't related to the chief complains of the patients and were not related to the cause the panoramic radiograph was requested for.

Panoramic radiography has become a commonly used imaging modality in dental practice and can be a valuable diagnostic tool in the dentist's armamentarium. However, the panoramic image is a complex projection of the jaws with multiple superimpositions and distortions which may be exacerbated by technical errors in image acquisition.

Furthermore, the panoramic radiograph depicts numerous anatomic structures outside of the jaws which may create additional interpretation challenges. Successful interpretation of panoramic radiographs begins with an understanding of the normal anatomy of the head and neck and how it is depicted in this image type.

A systematic and repeated approach to examining panoramic radiographs, which is recommended to ensure that critical findings are not overlooked, is also outlined. Examples of challenging interpretations, including variations of anatomy, artefacts, and disease, are presented to illustrate these concepts.

Panoramic radiograph is an easily obtainable two-dimensional diagnostic imaging modality which allows radiographic examination of both jaws, dentition, and the associated structures. Consequently, panoramic radiograph is frequently used as an initial screening radiograph for dental patients. Panoramic radiograph utilizes short acquisition time, has high patient satisfactoriness, and uses relatively low doses of radiation compared to complete mouth series.⁵ Limitations of panoramic radiograph are inherently low-resolution which make it inappropriate to detect fine details or caries, magnification, structures superimposition and inability to view buccolingual dimension. Panoramic radiograph is used for multiple purposes which include developing teeth, fractures, trauma, pathological lesions, major abnormalities, and impactions.⁷

The percentage of reported incidental radiographic findings was between 0.33% and 68% in previous literatures.^{2,8-10} while in the current study, 187 panoramas out of 400 had incidental findings (46.8%), as well as Masood et al.⁸ found 42.5% incidental findings in 141 patients, whereas David MacDonald et al, 2020¹ reported that incidental findings were found in 32.1% of the included panorama.

In the current study, the most common incidental finding was idiopathic osteosclerosis (7.5%) then elongated styloid process (7.3%), followed by periapical radiolucencies (4.3%), while Jadu FM and Jan A 2015² reported that the most common incidental finding was elongation of styloid process or calcification of the stylohyoid ligament followed by dense bone island or idiopathic osteosclerosis.

The most frequent dental anomaly in

males of our sample were dental impactions (3.7%) (fig. 2a, 2b) and retained deciduous (3.7%), while dilaceration (3.51%) was the highest dental anomaly among females then dental impaction (fig.2c). Dilaceration (3.51%) and dental impactions (3.26%) were the most common incidental dental anomalies observed in our sample which was in accordance with David MacDonald et al, 2020¹ who stated that the most frequent dental anomaly was impacted tooth, which was discovered significantly more frequently in male while congenitally missing permanent teeth and retained primary dentition were the second most common dental anomaly. The most common intraosseous incidental finding in our study was idiopathic osteosclerosis (IO) (7.5%) then periapical radiolucencies (4.3%). Similar findings were reported in David MacDonald et al, 2020¹ study where that the most common radiopaque incidental finding was idiopathic osteosclerosis, which is a bony deposition for unknown etiology. It was stated that prevalence of IO in Saudi Arabia was 3.11%¹⁰ while in previous reports the IO prevalence varied broadly from 2.4% to 38%.¹⁰⁻¹³

The present study reported higher prevalence of IO in females than males which was comparable to findings of Srivastava K. C. et al. 2020 study⁹ Also, matching finding was detected in different populations including India.¹⁴⁻¹⁷

The current study revealed that the majority of IO found in the mandible more than the maxilla which was in harmony with the findings of Srivastava K. C. et al. 2020⁹ and Fuentes R et al. who reported that all cases of IO were in the mandible in Chile population.¹⁸ The most probable reasons for predominance of IO in the mandible were the less structural superimposition in the mandible compared to the maxilla, so IO is more clearly detected, and the second reason is the different anatomical architecture and vascular supply of the mandible than maxilla.¹⁸

Our study observed the predilection of IO in the mandibular posterior region which was resembling to the results of many previous studies.^{13,18,19} This could be attributed to the increased masticatory forces in the posterior region which may cause chronic inflammatory reaction which lead to formation of IO.^{20,21} While the occurrence of IO in premolar region is probably due to resorption of remnants of

deciduous dentition where their microscopic portions act as nidus for sclerotic bone formation.^{10,21} (fig. 3a).

In the present study, the most common soft tissue calcification was elongated styloid process or calcification of stylohyoid ligament (7.27%). While Ghassemzadeh S. et. al. 2020²² reported higher frequency of elongated stylohyoid processes (12.64%) and even higher frequency was found by Rizzatti-Barbosa et. al.²³ It was reported that there is considerable variation in the length of styloid ligament complex, and it differs between individuals. The length of styloid process considered abnormal when it exceeds 25 mm.²³ (fig. 3b).

Ghassemzadeh S. et. al 2020²² reported that the frequency of sialoliths and tonsillolith was 0.89% and 0.74%. while in our study was 0.25% and 1% respectively. (fig.3c) The second most common soft tissue calcifications in panoramic radiography in preceding studies²⁴⁻²⁶ was tonsillolith which is close to our study.

Our study found frequency of 0.75 % for carotid artery calcification (CAC). (fig. 4) While Ghassemzadeh S. et. al 2020²² and Monteiro et al²⁷ stated a prevalence of 8.28% and 9.5% respectively of the presence of carotid artery calcifications on the panoramic radiographs. However, studies of both Ghassemzadeh S. et. al 2020²² and Monteiro et. al²⁸ utilized digital panoramic radiographs, that permits low-density calcifications to be recognized, also manipulation of the image contrast can be done. Dorado et al.²⁸ found a prevalence of 15.5%, while Bryam et al.²⁹ obtained a result of 2.1%.

The detection of carotid artery calcifications in radiograph depends on comprehensive and accurate interpretation of the panoramic radiograph which demands training, the diagnosis of this type of calcification aids in evaluating persons at risk for stroke.²²

Our study reported that females had higher frequency of CAC more than male, which was in accordance with the results of Ghassemzadeh S et al. 2020²² who stated a relation between the decrease of blood estrogen levels of postmenopausal women and CAC, as reported by Friedlander and Altoman³⁰ they reported that estrogen decreases low-density lipoprotein (LDL) catabolism in blood and that increased LDL cholesterol levels in blood were correlated with the risk of cardio-vascular pathologies.

Our study reported 6.75% prevalence of maxillary sinus findings which was more than the results of Halstead et al.³¹ who reported 2% prevalence of sinus pathologies and Ghassemzadeh S et al 2020²² study declared a prevalence of 1.78% maxillary sinus pathologies. In the current study, maxillary sinusitis (opacification), pneumatization and mucous retention cyst represented the following frequencies respectively 2.76%, 2.5% and 2%, which was near to the results of Ghassemzadeh S 2020²² who stated that the antral pseudocyst and maxillary sinusitis showed the highest prevalence. The previous literature showed that the prevalence of inflammatory antral mucosal thickening or antral pseudocyst varies significantly according to population, geography, and season but the averages is around 38.89%^{32,33}.

The current study reported that sex was not found to be significantly associated with incidental radiographic findings ($P=0.05$) although incidental findings were present in more than half of males in our sample. Meanwhile, age of patients was significantly associated with incidental findings where incidental findings increased with older age (62% for people (50-59 years)) and (73% for people 60+ years). These results agreed with Cederhag J et al. 2020 who reported that the frequency of incidental findings was 57% and there was no difference between genders and were existent in all age groups but more frequently present in the older age groups. This study presented relatively high prevalence of incidental findings in digital panoramic radiograph as almost half of our sample showed incidental findings which reflect the importance of comprehensive and systematic approach of interpretation of panoramic radiograph to detect any significant positive radiographic finding even if it is not related to the patient's chief complaint or the purpose of x-ray request. The dentist should be knowledgeable about all anatomical structures and superimposition to be capable of recognizing any pathology or incidental finding, it is advisable to start examining bony structures and surrounding soft tissues then the alveolar processes and finally the dentition.³⁴

Also, the study revealed the importance of panoramic radiograph in showing a wide variety of significant radiographic pathological findings that some of them were not completely dental in origin like elongated styloid process, carotid

artery calcification, maxillary sinus pathologies, sialolith and antrolith. And some of these findings had remarkable clinical significance and may aid in early diagnosis of some disease as CAC which identify people with higher risk of stroke.

Also, panoramic radiograph permits the detection of pathological periapical pathosis which need dental treatment to improve dental health while other dental finding didn't need intervention.

Conclusions

Incidental findings are common among patients in Saudi Arabia. This underscores the need for dental practitioners to examine the panoramic radiographs systematically and comprehensively for all patients, in order to make

note of, record and properly manage these findings.

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Declaration of Interest

"All authors have made substantive contribution to the current manuscript, and all have reviewed the final paper prior to its submission."

		Sex		Age					
		Male N (%)	Female N (%)	<18 N (%)	18-29 N (%)	30-39 N (%)	40-49 N (%)	50-59 N (%)	60+ N (%)
<i>Incidental radiographic findings</i> <i>Dental anomalies</i>	Observed (yes)	42(51.85%)	143(45.54%)	9 (18%)	87(45.31%)	29(51.79%)	22(53.66%)	19(61.29%)	19(73.1%)
	Odontoma	0	3 (0.95%)	0	2 (1.04%)	1 (1.79%)	0	0	0
	Impaction	3(3.70%)	10(3.16%)	1(2.00%)	4(2.07%)	2(3.57%)	3(7.32%)	2(6.45%)	1(3.85%)
	Mesiodense	1(1.23%)	0	1(2.00%)	0	0	0	0	0
	Retained deciduous	3(3.70%)	4 (1.27%)	2(4.00%)	5 (2.59%)	0	0	0	0
	Hypercementosis	1(1.23%)	1 (0.32%)	0	0	1 (1.79%)	0	1(3.23%)	0
	Dilaceration	1(1.23%)	13(4.12%)	0	11 (5.70%)	1 (1.79%)	2 (4.88%)	0	0
	Congenital missing	2(2.47%)	5 (1.58%)	2(4.00%)	5 (2.59%)	0	1 (2.44%)	0	0
	Pulp stone	1(1.23%)	8 (2.54%)	0	8 (4.15%)	1 (1.79%)	0	0	0
	Transposition	0	1 (0.32%)	0	0	0	1 (2.44%)	0	0
	Microdontia	0	1 (0.32%)	0	1 (0.52%)	0	0	0	0
	Supernumerary	1(1.23%)	0	0	1 (0.52%)	0	0	0	0
<i>Intraosseous findings</i>	Idiopathic osteosclerosis	3(3.70%)	26(8.23%)	2 (4.00%)	11 (5.70%)	5 (8.83%)	6(14.63%)	3 (9.68%)	2 (7.69%)
	Fibrous lesion	0	4(1.27%)	0	0	2 (3.57%)	0	2 (6.45%)	0
	Periapical radiolucent (RL)	5(6.17%)	12(3.80%)	1 (2.00%)	14 (7.26%)	1 (1.79%)	0	0	1 (3.85%)
	Pericoronal RL	2(2.47%)	0	1 (2.00%)	0	1 (1.79%)	0	0	0
	BM osteoporotic defect	0	3(0.95%)	1 (2.00%)	0	2 (3.57%)	0	1(3.23%)	0
	Condensing osteitis	2(2.47%)	9(2.85%)	0	3 (1.55%)	3 (5.36%)	2 (4.88%)	0	2 (7.69%)
	Inferior alveolar canal findings	2(2.47%)	1(0.32%)	0	1 (0.52%)	1 (1.79%)	0	0	1 (3.85%)
	Periapical mixed	0	1(0.32%)	0	1 (0.52%)	0	0	0	0
	Pericoronal mixed	0	1(0.32%)	0	0	0	1 (2.44%)	0	0
	Hyperplastic follicle	0	1(0.32%)	0	1 (0.52%)	0	0	0	0

Table 2. Prevalence of radiographic findings (dental anomalies and intraosseous findings) by sex and age groups - PNU dental clinic's patients.

		Sex		Age					
		Male N (%)	Female N (%)	<18 N (%)	18-29 N (%)	30- 39 N (%)	40- 49 N (%)	50- 59 N (%)	60+ N (%)
Incidental radiographic findings	Observed (yes)	42(51.85%)	143(45.54%)	9 (18%)	87(45.31%)	29(51.79%)	22(53.66%)	19(61.29%)	19(73.1%)
TMJ	Condyle	1(1.23%)	10(3.16%)	0	7 (3.63%)	0	1(2.44%)	1(3.23%)	2(7.69%)
	Flattening	1(1.23%)	0	0	0	1(1.79%)	0	0	0
Soft Tissue	Glenoid fossa abnormalities	1(1.23%)	0	0	0	0	0	0	1 (3.85%)
	Phlebolith	0	1(0.32%)	0	0	0	0	0	1 (3.85%)
Calcification /ossification	Sialolith	0	2(0.64%)	0	2(1.04%)	0	0	1 (3.23%)	1 (3.85%)
	Tonsilolith	2(2.47%)	2(0.64%)	0	0	0	0	0	1 (3.85%)
Muscle	Antrolith	0	1(0.32%)	0	0	0	0	0	0
	calcification	0	1(0.32%)	0	0	1 (1.79%)	0	0	0
Eagle syndrome	calcification	5(6.17%)	24(7.59%)	0	13(6.74%)	5 (8.93%)	4 (9.76%)	4 (12.90%)	3 (11.54%)
	Eagle	1(1.23%)	2(0.64%)	0	0	0	1 (2.44%)	0	2 (7.70%)
Calcification of carotid Artery	syndrome	0	2(0.64%)	0	2(1.04%)	0	0	0	0
	Calcification of								
Lymph node calcification	sinus	3(3.70%)	8(2.54%)	0	7(3.63%)	2(3.57%)	0	2(6.45%)	0
	opacification	1(1.23%)	1(0.32%)	0	0	0	0	2(6.45%)	0
maxillary sinus	Mucosal thickening	3(3.70%)	7(2.22%)	0	1(0.52%)	1(1.79%)	4 (9.76%)	3(9.69%)	1(3.85%)
	Pneumatization	1(1.23%)	7(2.22%)	0	4(2.07%)	1(1.79%)	1 (2.44%)	1(3.23%)	1(3.85%)
Dome shape RO	Interruption of	0	1(0.32%)	0	0	1(1.79%)	0	0	0
	sinus floor								

Table 3. Prevalence of radiographic findings detected on TMJ, soft tissue and Maxillary sinus by sex and age groups - PNU dental clinic's patients.

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