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# **Comprehension level of dental clinics visitor toward negative effect of dental radiography in Balikpapan city**

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## **Comprehension level of dental clinic visitor to negative effect of dental radiograph at Balikpapan city**

**Siti Nurwahidah Sri Lestari<sup>1</sup>, Muliaty Yunus<sup>2</sup>**

Dental Student at Hasanuddin University<sup>1</sup>

Radiology Department, Faculty of Dentistry of Hasanuddin University<sup>2</sup>

Makassar, Indonesia

### **ABSTRACT**

*Dentists have an important role to give a direction to the patients about the benefit of dental radiograph, and also the risk behind radiograph if they don't use it properly or without permission from their dentist/doctor. Dentist should have do infection control to protect the patient from radiation, so we can reduce the negative impact which may happened. The purpose of this study was to determine the visitor of dentist level of understanding about dental radiograph negative effect. This study use 100 samples of adult patients consisted of 34 men and 66 women, all respondents fill out questionnaires about their level of understanding appropriate dental radiographs negative effect. The data were processed using a table consisting of a table and the general level of understanding of the general characteristics of the respondents tables such as age and gender. The results showed a total of 31 samples of the general level of understanding reached an average is (31%), while the number of respondents that level of understanding is still below the average is 69 samples (69%). The conclusion of this study is a dentist or an operator of dental radiograph should increase their communication with the patient, especially tell them about the negative impact that may happened if they do not use radiograph based on its indication.*

**Keywords :** dental radiograph, comprehension level, negative effect

**Correspondent:** Siti Nurwahidah Sri Lestari, E-mail : siti\_n.lestari@yahoo.com

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## INTRODUCTION

In this century radiography technology has increase , especially in terms of better image quality. It enhance application of radiographic for various clinical conditions. But there are some harmful causes behind the quality, like carcinogenic effects and others caused because of high doses exposure of X-ray to obtain maximum image quality.<sup>1</sup>

X-rays were discovered by Wilhelm Roentgen in 1895. Roentgen called them X-rays because of their unknown origin. Afterward, Dr. Otto Walkhoff produced the first dental radiography device.<sup>2</sup>

The discovery of X-rays and radioactive rays have their advantages and disadvantages. Radiation on dental radiographs not only contribute as a source of energy and treatment, but also have risk for human health

On March 1896, Edison reported eyes irritation cause of dental radiography. Others found that X-rays also caused dermatitis and severe injury.

On 1920, the researchers recommended radiation protection to prevent radiation exposure directly.<sup>2,3</sup>

Nowadays, along with improvement in dental radiography, there are some negligence because of minimum patient comprehension level, such as using dental radiography without indication and reference from dentist.

Dental radiographs are risky if the application is not based on obvious reason. Sometimes, patient feel anxious of risk behind radiation but not really understand the reason, and what kind of potential risk that could appear from dental radiographs. However, radiographs also have important role for the dentist job, especially in diagnose or before and after treatment, such asin orthodontics treatment, and odontectomy to determine classification.<sup>2</sup>

Dentists should have consider wisely if they want to use dental radiographs, it should has specific reason, and expectation that the radiographs would give specific information they need.<sup>2</sup>

There are some studies that investigate about the negative effects of radiation on Hiroshima and Nagasaki victims. These study conclude that there is a relation between exposure doses and risk of radiography.

Moreover, dental radiographs exposure have relation with meningioma, salivary gland tumor, and thyroid gland tumor<sup>2</sup>. Some studies also discuss about dental radiographs application for pregnancy, sometimes dentist being afraid of take risk to prescribe dental radiographs for pregnant women, so they delayed the treatment. Dental radiographs safe for pregnant women as long as it use low exposure dose and have a good radiation protection. Even though the dental radiographs are safe, but there are some consideration, such as gestational age, in 2 weeks of pregnancy, it only give biologic response. Kusama reported, fetus did not absorb radiation directly, it absorb radiation approximately 0,01 mGy,

and recommendation dose for pregnant women is less than 10 rad.<sup>4,5</sup> Hence, a dentist have an important role to direct their patient about advantages and also disadvantage of radiography if they do it without indication. The dentist also should do infection control and radiation protection to minimize the negative effects.

### **SUBJECTS AND METHODS**

This study is descriptive observational study, one hundred dental clinic visitor, aged  $\geq 17$  years, who were collected randomly from two hospitals and two dental clinics in Balikpapan city. Informed consent was obtained from all participants, and were asked to fill in the close question and interview (if needed). The questionnaire has been used by Kathiravan et al. If the score  $\geq 8$  it means **understand**, if the score  $\leq 8$  it means **not understand**.

## RESULTS

Table 1. Comprehension level of dental clinic visitor

Comprehension level	Frequency	Percentage
Understand	31	31%
Not understand	69	69%
<b>TOTAL</b>		<b>100%</b>

Table 2. Frequency distribution of comprehension level based on questionnaire score

Score	Frequency	Relative frequency (%)
2-3	5	5%
4-5	26	26%
6-7	38	38%
8-9	19	19%
10-11	8	8%
12-13	3	3%
14-15	1	1%
<b>TOTAL</b>	<b>100%</b>	

Table 3. Comprehension level based on sex category

	Female	Male	Percentage	
			Female	Male
Understand	17	14	55%	45%
Not understand	49	20	71%	29%

Table 4. Frequency distribution based on age category

Age	Frequency	Relative frequency (%)
17-22	30	30%
23-28	25	25%
29-34	11	11%
35-40	12	12%
41-46	12	12%
47-52	5	5%
53-58	4	4%
59-64	1	1%
<b>TOTAL</b>	<b>100</b>	<b>100%</b>

Table 5. Frequency distribution of comprehension level based on age category

Age	Frequency		Relative Frequency (%)	
	<b>understand</b>	<b>Not understand</b>	Understand	Not understand
17-22	10	20	33%	67%
23-28	9	16	36%	64%
29-34	3	8	27%	72%
35-40	2	10	17%	83%
41-46	3	9	25%	75%
47-52	2	3	4%	6%
53-58	1	3	25%	75%
59-64	1	-	1%	-

Based on table 5 , 10 subjects (33%) on 17-22 years old are understand about dental radiographs negative effects, and 20 subjects (67%) on 17-22 years old are not understand about dental radiographs negative effects.

## DISCUSSION

All 100 questionnaires were returned, because the interviews were done personally, thus having a response rate of 100%. Of the

100 patients, 86 were females and 14 were males.

As seen from Table 1, the comprehension level of 31 subjects are understand include 17 (55%) subjects are females and 14 (45%) subjects are

males, and 69 subjects are not understand include 49 (71%) subjects are females and 20 (29%) subjects are males

Based on age category (Table 4), there are 30 subjects that 17-22 years old.

After observations during the study, the cause of the lack of subjects comprehension level of the negative effects on dental radiography because less intertwined communication between the dentist and the dental radiographic operator. In addition, in Balikpapan, the availability of dental radiographs and equipment and operators, the number of patients and

devices available is not comparable in number, so that when the patient takes dental radiographs, the operator does not have enough time to give description and direction about the negative effects of dental radiography. Although there are only 31 subjects that are really understood about the negative effects of dental radiography, but ninety two dental clinic visitors in Balikpapan city knew about the use of radiography in the field of dentistry, and also as many as 95 visitors said they had never done dental radiography without direction from the dentist.

## CONCLUSION

Based on the study we conclude that :

(1) The results described us about dental clinic visitors in Balikpapan city not really understand about the negative effects of dental radiography which might happened if the dentists did not prescribed it

(2) Lack of comprehension level might be caused of lack of equipment and radiographs operator in Balikpapan city.

(3) Less communication between the dentist and the dental radiographs operator and also patient before treatment.

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