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Kap Survey on The Use of Contrastors for Dental Photography by Undergraduate and Postgraduate Dental Students

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ABSTRACT

Introduction: Dental photography is one of the major tools for dentistry. The first process of photography was presented to the world by Louis J. M. Daguerre at the Paris Academy of Sciences on January 7, 1839. Dental photography plays an important role for patient education, documenting cases, patient records, diagnosis and treatment planning, medicolegal purposes, and for the assessment of procedures. It's also used for training, educating, and motivating patients, for academic purposes in institutions and of late in marketing.

Materials and method: A well structured questionnaire comprising 13 questions covering socio-demographic information, knowledge, attitude, perception was framed, administered and circulated to college students through an online survey link. The sample size was 100 undergraduate students and postgraduate students.

Result : Among the dental students 83% of the students felt that it is important to maintain a dental photography record. 78% of the population find it time consuming, whereas the rest did not find it time consuming. Among the total participants 46% documented cases for treatment planning 34% documented cases for medical legal reasons and the rest, for better communication. 52% of the total population felt that contrastors were used to isolate the field of interest from the background, 22% of the population felt that contrastors bring out reflection of composite, 26% of the population felt that contrastors were used to stimulate darkness. Chi square value shows the p value is 0.047 ($p<0.05$) which is statistically significant.

Conclusion: From the survey conducted among the undergraduate and postgraduate dental students, it was concluded that dental photography is a very important aspect in dentistry. Hence it is necessary to have the awareness and knowledge regarding the carius tools and techniques used to make the job easier and faster.

Keyword: *Contrastors, Dental photographs, Documentation, Innovative, Medico legal cases*

1. INTRODUCTION

The first dental school, which also housed the world's first photographic gallery, opened in 1840 and was run by a dentist who also happened to be a photographer[1]. Photography and dentistry have been collaborators since then, as photography has become an important part of a patient's record and treatment plan. Dental photography is one of the major tools for dentistry.[2] The first process of photography was presented to the world by Louis J. M. Daguerre at the Paris Academy of Sciences on January 7, 1839.1 In that same year, Alexander S.Wolcott, a manufacturer of dental instruments from New York, designed and patented the first camera from the Daguerre concept. This camera used a concave mirror to form an image on a photographic plate [3–5]

Recently Dental practitioners use dental photography for patient education, documenting cases, patient records, diagnosis and treatment planning, medicolegal purposes, and for the assessment of procedures.[6,7] It's also used for training, educating, and motivating patients, for academic purposes in institutions and of late in marketing [8] Dental Photography often

represents to be one of the best methods to collect and preserve evidence in daily practice, institutional cases, and also in forensics cases [5] Dentistry is an important example of digital dental photography (DDP), which has become an essential part of orthodontic treatments as well.[9,10] DDP enables clinicians to record key stages of any treatment. It is believed that if the causes of the errors are defined, proper solutions can be implemented [11,12]

Contrastors are used to create a black background to capture the images of anterior teeth.[13] It enhances the transparency of incisal edges and blocks the structures of the oral cavity behind the teeth.[14,15] The contrastors are made up of a black anodized aluminium or bendable copper sheet covered with silicone rubber and are also available in different shapes.[16] In the photographs of the frontal teeth, it is found that the background usually distracts the attention of the viewer, hence to eliminate the inconvenience caused contrastors are used, which are dark autoclavable matte metallic shields, available in various shapes, used to enhance the teeth contrast and to create a uniform black background [17]. Contrastors can be handmade out of black cardboard or dark matte plexiglass or can be purchased from specialized manufacturers.[18]

DDP primarily focuses on the technological aspects of the different procedures and their possible influences on picture quality.[19] The patient's perception of the procedure has not been addressed to date but has great importance in today's healthcare approach.[1][20] In addition, the new instrument designs should be patient-centered to increase comfort and efficiency. [21]Our team has extensive knowledge and research experience that has translated into high quality publications[22–31][32–36]

Hence this survey aimed to evaluate the knowledge awareness and the use of contrastors for dental photography

2. MATERIALS AND METHOD

A well structured questionnaire comprising 13 questions covering socio-demographic information, knowledge, attitude, perception was framed, administered and circulated to college students through an online survey link. The sample size was 100 undergraduate students and postgraduate students. The questions were carefully studied and the corresponding answers were marked by the participants.

The data collected were tabulated using excel sheets and then appropriate statistics were done using Microsoft excel software.The data was collected and statistically analysed using the SPSS software and conducted the chi square test. Each output variable was collected as ordinal data and the data represented as pie charts. The Sampling method used was Simple randomised sampling. The independent variables are college students and the dependent variables are knowledge, attitude, practice and perception. The statistics used in this study are Descriptive statistics. Correlation analysis was done using the pearson and chi square test, where the p value is less than 0.05.

3. RESULT

Survey on the use of contrastors in dental photography gave the results as 51% were between the age group of 20- 25 years, 38% for between the age group of 25-30 years and the rest were above 30 years. Among the population 79% were female and 21% were male. Among the dental students 83% of the students felt that it is important to maintain a dental photography record. 78% of the population find it time consuming, whereas the rest did not find it time consuming. Among the total participants 46% documented cases for treatment planning 34% documented cases for medical legal reasons and the rest, for better communication. 60% of the total population took a few seconds to take a proper gentle photograph, 30% took one minute whereas the rest took more than a minute to take a proper Dental photograph. 47% of the population document cases in their iPad, 29% document cases in DSLR whereas 17% document cases in the mobile phone. Among the total population 90% were aware of contrastors. Among which 81% used contrastors in their daily practice. Among the total population 75% were aware of the difference between intraoral mirrors and contrastors. 48% of the population thought it was more convenient to use intraoral mirrors whereas 25% felt that contrastors were expensive, and the rest found it time consuming. 52% of the population stated that contrastors were used to isolate the field of interest from the background, 26% stated that contrastors simulate darkness and 22% stated that contrastors bring out reflection of composite. The bar graph represents that 83% of the total population said yes, among which 49% were between the age group of 20-25 years, and 28% were between 25- 30 years and 6% were above 30 years. Chi square value shows the p value is 0.001 ($p<0.05$) which is statistically significant. 52% of the total population felt that contrastors were used to isolate the field of interest from the background, 22% of the population felt that contrastors bring out reflection of composite, 26% of the population felt that contrastors were used to stimulate darkness. Chi square value shows the p value is 0.047 ($p<0.05$) which is statistically significant.

TABLE 1: Represents the socio demographic data of the respondents along with the significant finding of the study.

Si.No	Question	Options	Percentage
1.	Age	• 20-25 years • 25-30 years • Above 30 years	• 51% • 38% • 11%
2.	Gender	• Male • Female	• 21% • 79%
3.	Percentage distribution on the usage of contrastors.	• Yes • No	• 81% • 19

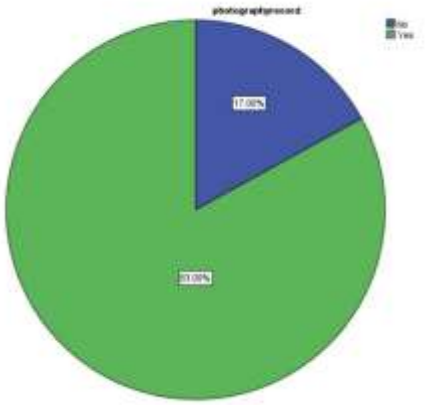

Figure 1: Pie chart showing the percentage distribution of responses on maintenance of photography record 83%- yes (green), 17%- no (blue).

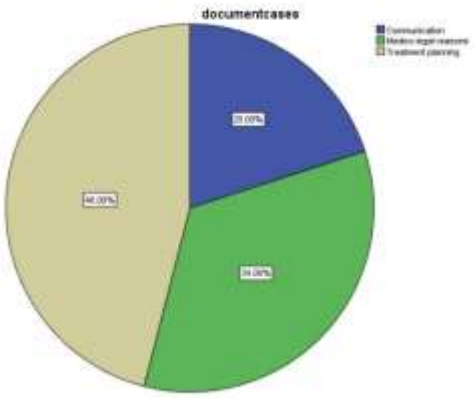

Figure 2: Pie chart showing the percentage distribution of responses on the purpose of documenting cases, 46% - treatment planning (grey), 34%- medico legal reasons (green), 20%- communication (blue).

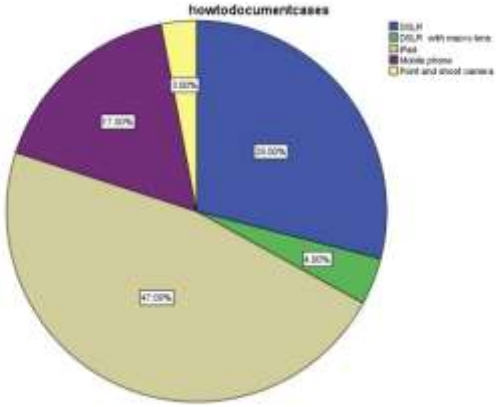

Figure 3: Pie chart showing the percentage distribution of responses on how to document cases, 47% - ipad (grey), 29%- DSLR (blue), 17%- mobile phone (purple), 3%- point and shoot camera (yellow), 4%- DSLR with macro lens (green).

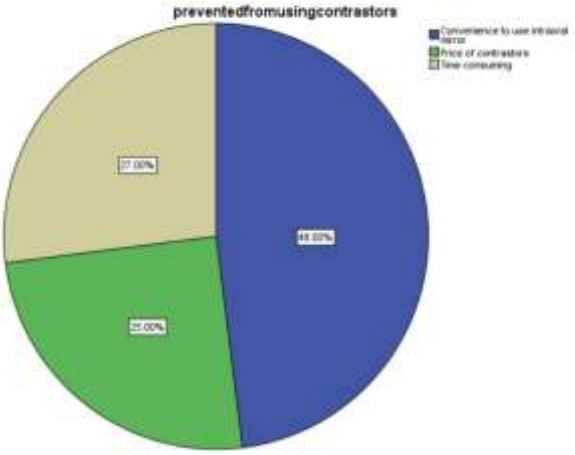

Figure 4: Pie chart showing the percentage distribution of responses on the reason for preventing the use of contrastors 48%- convenience to use intraoral mirror (blue), 27%- time consuming (grey), 25%- price of contrastors (green)

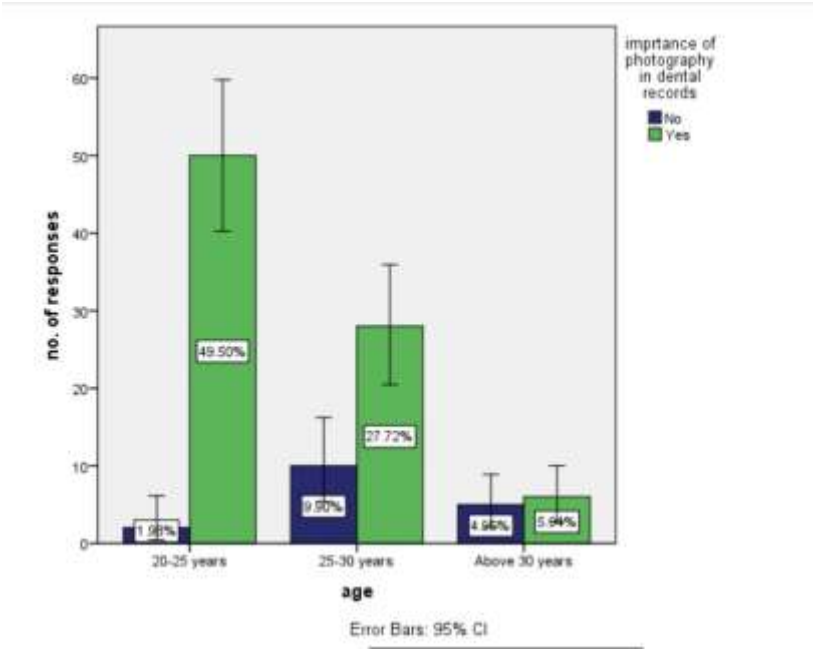

Figure 5: Bar graph depicts the association between the age and the importance of photographs in dental records. X denotes age and Y denotes the importance of photographs in dental records. Green represents yes and blue represents no. 83% of the total population said yes, among which 49% were between the age group of 20-25 years, and 28% were between 25- 30 years and 6% were above 30 years. Chi square value shows the p value is 0.001 (p<0.05) which is statistically significant.

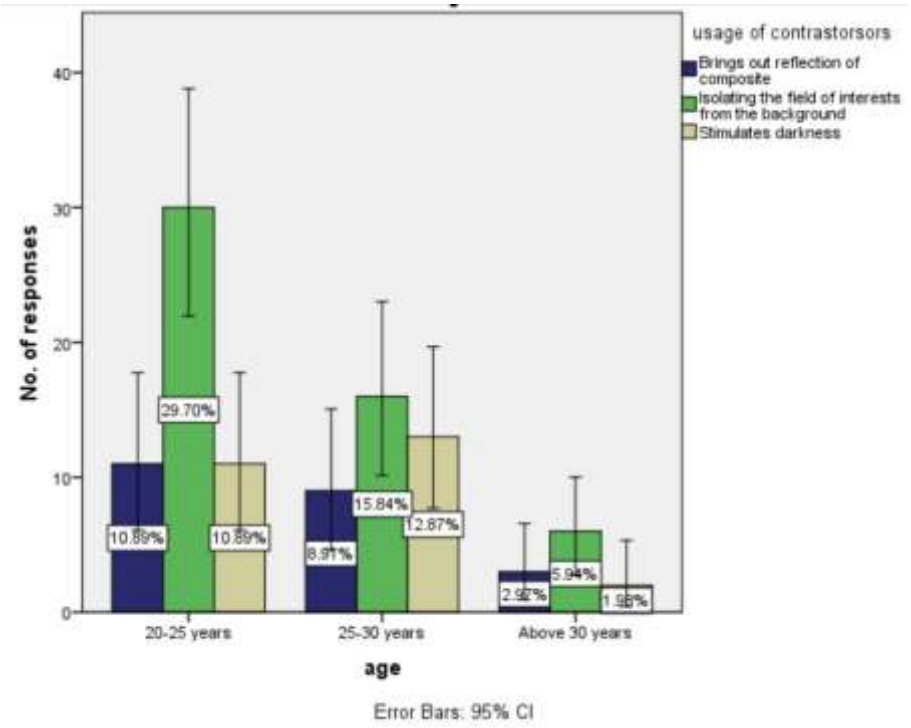

Figure 6.: Bar graph depicts the association between the age and the usage of contrastors. X denotes age and Y denotes the usage of contrastors. Green represents isolating the field of interests from the background, blue represents reflection of composite, and beige represents stimulating darkness. 52% of the total population felt that contrastors were used to isolate the field of interest from the background, 22% of the population felt that contrastors bring out reflection of composite, 26% of the population felt that contrastors were used to stimulate darkness. Chi square value shows the p value is 0.047 (p<0.05) which is statistically significant.

4. DISCUSSION

The awareness about the practice, morals and opportunity of dental photography and the use of contrastors among the dentist is of great importance in evidence based dentistry. This should be implemented at a very starting level to budding dentists so it will not be taken as a burden but considered as a routine practice in clinical setup.

Nowadays, Smartphones are considered to be the easiest and most practical tool for dental documentation.[37] The previous study results showed that more than 92% participants (both male and females) were taking pictures mostly using phone cameras (43%) followed by the DSLR camera. Hence the study concluded the use of dental photography as a choice of interest in dentistry will help students to successfully record cases and have a better opportunity in teaching, stimulus for patients and recall visit. [5]

Another study stated that Most of our respondents used ipad cameras as they are easy to handle and capable of giving a promising result. Our survey noticed that 38.4% of the participants used an iPad camera and 14.8% used a mobile camera to take photographs. The main issue faced by mobile phone cameras was low patient's acceptability, as they were apprehensive of their confidentiality. states that there was a low level of acceptability by patients to the use of personal cameras and phones compared to hospital equipment. [38]

Around a third of the students thought case recording was important for medicolegal considerations, and about half of them chose dental photography as a method of documentation. It was also found that about 56% of the students record cases on mobile phones and dedicate not more than 5 minutes for photographic documentation [39]

Another study stated that all the students in the study were found to routinely use dental photography in their regular practice. Almost 82% of the students took some form of consent from the patient before taking the photograph and 93% maintained the confidentiality of the patient in social forums, Presentations and research publications. 62% of the participants are aware of a course called dental photography and 34% have already attended a course in dental photography.[8]

Digital photography has multilevel significance and represents the synonym of contemporary dentistry. Its application in dental practice is simple, fast and utterly useful in documenting procedures of work, effectuating the education of patients and pursuing clinical investigations, thus providing many benefits to dentists and patients. [40]

5. CONCLUSION

From the survey conducted among the undergraduate and postgraduate dental students, it was concluded that dental photography is a very important aspect in dentistry. Hence it is necessary to have the awareness and knowledge regarding the carius tools and techniques used to make the job easier and faster. It was observed that the Ug and Pg students were well aware about the purpose of dental photographs and proper documentation, but required knowledge about the use of contrastors in dental photography through workshops and conferences that could help and motivate the students to put the knowledge into proper use

Conflict of interest:

The authors declare no conflict of interest.

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