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RESEARCH ARTICLE

KNOWLEDGE, AWARENESS AND PRACTISE AMONG DENTAL PRACTITIONERS REGARDING TRAY SELECTION FOR ALGINATE IMPRESSION

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ABSTRACT

Aim: To evaluate the knowledge, awareness and practice of tray selection for alginate impression among dental practitioners

Objective: To assess the extent of knowledge among dental practitioners regarding tray selection for alginate impression

Materials & Method: The survey was cross-sectional in design. 100 questionnaires were distributed to the dental practitioners in Chennai. The questionnaire consisted of 10 multiple-choice questions.

Results: The 100 questionnaires which was obtained was then evaluated and tabulated. It is clearly evident that the level of awareness among the dental practitioners regarding tray selection for alginate impression is high. The level of awareness regarding the perforated trays is 89% which is satisfactory. When asked about the frequency of changing of trays were 59% of them have said that after 15 impression they will change the trays, 27% said less than 15 impression and 14% said less than 5 impressions

Conclusion: The results obtained from this survey shows that dental practitioners have good knowledge and awareness on tray selection for alginate impression. Proper measures can be taken to improve the level of knowledge among dental practitioners.

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INTRODUCTION

Alginate is an elastic, irreversible hydrocolloids impression material which was originally developed in the 1930s. This impression material has been used in dentistry for over 50 years. Alginate is one of the most frequently used dental material as it is simple, cost effective and indispensable part in dentistry (Kaur *et al.,*; Nandini *et al.,* 2008) Alginate impression material has been a staple of most dental practices (Nandini *et al.,* 2008; Anusavice *et al.,* 2013). It takes time for dental practitioners to get a hand of using alginate impression (Nandini *et al.,* 2008) Alginate is flexible, easily mixed and manipulated, inexpensive, yields fairy accurate single reproductions. (Tsuchihira, 2003) An ideal impression material should be peasant taste & odor, not contain any toxic and irritating ingredients, have adequate shelf life, should be easy to disinfect without loss of accuracy, be compatible with die and cast material, be dimensional stable, have good elastic properties, be easy to manipulate, have adequate setting characteristics, have a satisfactorily high degree of reproduction details and be economical. It should also be able to reproduce hard and soft tissues accurately to obtain biologically, mechanically, functionally and aesthetically acceptable restorations. (Faria *et al.,* 2008) Alginate impression material can be used in making preliminary impressions, study modes, impressions of opposing arch dentition and for impressions for fabrication of provisional crown-and-bridges (Kaur *et al.,*; Nandini *et al.,* 2008; Ashley *et al.,* 2005) Impressions in orthodontic models, mouth guards for sports persons and bleaching trays can also be made by using alginate. (Kaur *et al.,*; Ashley *et al.,* 2005) Alginate is generally used to prepare study models of the human dental arcades (Tsuchihira, 2003) There has been a study that showed that alginate impression can be used as a final impression for indirect restorations when the preparation margins are chamfer (Tsuchihira, 2003) It is important for a dental practitioner to have knowledge and awareness regarding tray selection for all impression material and it has to be correct for the dental arch. (Nandini *et al.,* 2008) Tray selection is an important step I fabricating impression for either complete or partial denture patients. Knowledge and awareness regarding tray selection for alginate impression was done on dental practitioners. Their feedback and response was evaluated.

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METHODS

The survey was cross-sectional in design. 100 questionnaires were distributed to the dental practitioners in Chennai. The

questionnaire consisted of 10 multiple-choice questions. Following participant self-administered enrolment in the study, data were collected by questionnaire that assessed participants' knowledge about tray selection for alginate impression.

Table 1. Questionnaire used

S. No.	Questions
1	Gender A. Female B. Male
2	Age A. 20-30 B. 30-40 C. 40-50 D. Above 50
3	What type of tray do you use to make alginate impression? A. Metal B. Plastic C. Others
4	How do you sterilize the trays before making impression? A. Autoclave B. Cold sterilisation C. Not sure
5	Are you aware of the type of perforation present in the tray? A. Yes B. No
6	How do you select the tray for maxillary arch? A. Randomly and Arbitrarily B. Measuring the landmarks C. Trial and error on the patient's mouth
7	How do you select the tray for mandibular arch? A. Randomly and Arbitrarily B. Measuring the landmarks C. Trial and error on the patient's mouth
8	Which type of tray do you prefer? A. Rigid B. Non-Rigid
9	Do you modify your tray before making impression? A. Yes B. No
10	What are the materials you use for modification? A. Wax B. Tracing stick impression compound C. Heavy bodied silicone
11	How do you clean your trays following cast retrieval? A. Chemical B. Mechanical C. None
12	What is the frequency for which you change the trays? A. After 15 impressions B. Less than 15 impressions C. Less than 5 impression

RESULTS

Table 2. General awareness on tray selection among dental students

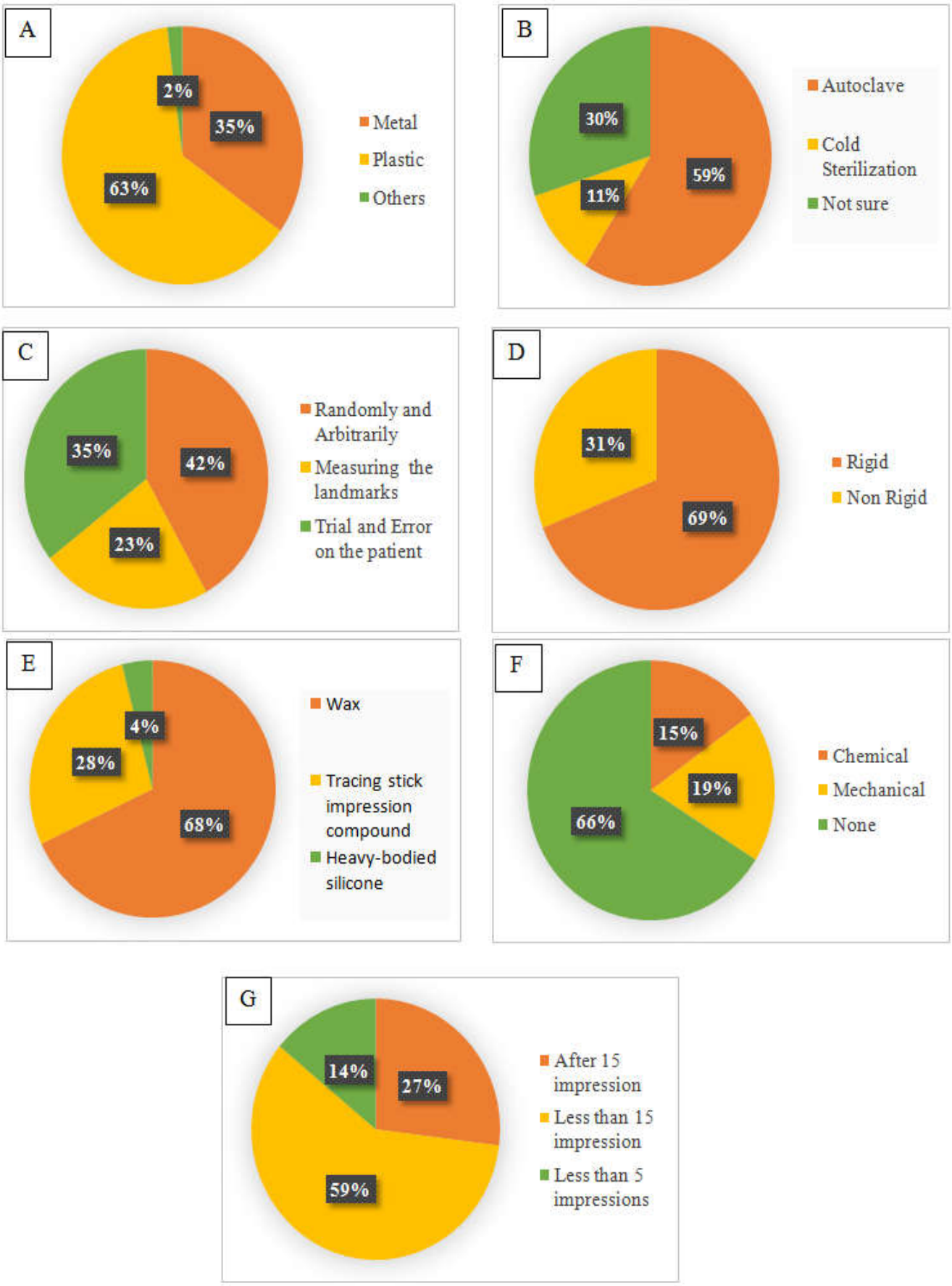
S. No	Questions	Respondence %
1	Gender	
	Female	31
	Male	69
2	Age	
	20-30	52
	30-40	39
	40-50	9
	Above 50	0
3	Are you aware of the type of perforation present in the tray?	
	Yes	89
	No	11
4	Do you modify your tray before making impression?	
	Yes	88
	No	12

DISCUSSION

It is clearly evident that the level of awareness among the dental practitioners regarding perforations present in trays are high. This shows that the dental practitioners have knowledge regarding tray perforations. When asked on the tray preference 69% of them have preferred rigid impression trays whereas 31% prefer non-rigid trays. Depending of the rigidity of the tray proper modifications can be made to the tray and a proper impression can be made. There was a study stated that some non-rigid impression trays, including disposable plastic trays and custom-made acrylic resin trays, may produce unreliable results when used with some medium-bodied elastomers. (Burton *et al.,* 1989) Modifications tend to be made to the tray before taking an impression. This tends to improve the accuracy of the impression as well as the accuracy of cast. When asked about whether or not the dental practitioners make modifications to the trays before taking impression majority of them have said that they do make modifications to the tray. There are different materials which can be used to modify the trays. Regarding what type of material was used to modify the tray, 68% of the participants have chosen wax. Wax is a common armamentarium used in a dental office as it is easily available and easy to handle. When compared to the other options, tracing stick compound (28%) and heavy bodied silicone (4%), it may be used by other dental practitioners as it may be their preference and convenience for impression taking.

A studied stated that modifications can be done depending on the operator's convenience. Stick compound is preferable as wax is nonrigid. Impression trays and their modifications should be rigid (Nandini *et al.,* 2008). Findings from a research had shown that majority of their respondents (69.9%) border molded the tray with green stick compounds whereas other materials such as wax, polyether, and polyvinylsiloxane were mentioned in 30.1% [8] Regarding what type of tray the dental practitioners prefer for alginate impression 63% have chosen plastic trays, 35% metal trays and 2% others. The reason for the preference towards plastic trays could be due mainly to reduce the level of discomfort to the patient. As metal trays tend to hurt the patient and will make the process of impression taking a little difficult. Plastic trays tend to have higher flanges when compared to metal trays thus the accuracy of the impression being made will differ as well. Plastic trays could be easier to handle and more feasible when compared to metal trays. An article had stated that metal and rigid plastic stock trays give greater accuracy in the putty/wash silicone twin mix impression technique compared with flexible plastic ones (Carrotte *et al.,* 1997) Now comes to the selection of trays for maxillary and mandibular arches. When questioned on how they select a tray for a patient, randomly and arbitrarily (42%), trial and error (35%) and measuring the landmarks (23%).

This tend to differ with ever dental practitioner. This method will differ from every dental practitioner, it depends on the preference of the dental practitioner. They would have been using a certain method for many years and have grown a custom to it. Trial and error method might be time consuming however as every patient will have a unique dental arch sometimes it may be more accurate to do a trial and error method. The frequency of changing of trays were brought to light and asked to the dental practitioners. 59% of them have said that after 15 impression they will change the trays, 27% said less than 15 impression and 14% said less than 5 impressions. It is better to change the trays often as the trays are used to produce cast and they are used as a diagnostic tool.


A
2%
35%
63%
Metal
Plastic
Others
B
30%
59%
11%
Autoclave
Cold Sterilization
Not sure
C
35%
42%
23%
Randomly and Arbitrarily
Measuring the landmarks
Trial and Error on the patient
D
31%
69%
Rigid
Non Rigid
E
4%
28%
68%
Wax
Tracing stick impression compound
Heavy-bodied silicone
F
15%
19%
66%
Chemical
Mechanical
None
G
14%
27%
59%
After 15 impression
Less than 15 impression
Less than 5 impressions

There could be damage to the tray if it used for a number of times and it could affect the patient outcome. Even though after the usage of the tray it is send for sterilization however some bacteria can still remain in the tray which was from the previous patient. It is better to take proper measures to reduce the spread of any potential disease. 59% have said that the method of sterilization of the impression trays is through autoclave. 11% have chosen cold sterilization and 30% said they were not sure. The 30% of dental practitioners have shown to have a low knowledge regarding the method of sterilization and this should be reinforced. They should have proper knowledge regarding how the tray is being sterilized as it is important. Autoclave is an effective method as it will destroy any remaining microorganism present on the tray. Autoclave sterilization and microwave sterilization has been suggested as the effective methods for the disinfection of elastomeric impressions, but subjecting elastomeric impressions to extreme temperature may have adverse effects on critical properties of the elastomers (Al Kheraif, 2013) When asked about how they clean the tray upon cast retrieval, a majority of them (66%) have chosen chemical. A study had shown that, chemical disinfection is the most widely practiced disinfection method in daily practice but is considered a less lethal procedure than other approaches because it does not eliminate all forms of microorganisms and spores. (Al Kheraif, 2013; Olin *et al.,* 1994)

Conclusion

Knowledge and awareness on tray selections for alginate impression among dental practitioners is good. However, there are a few aspects which should be reinforced to allow better knowledge and awareness among dental practitioner.

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