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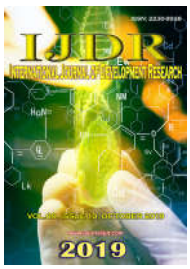

RESEARCH ARTICLE OPEN ACCESS

KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING GAG-REFLEX IN CHILDREN AMONG POST-GRADUATE STUDENTS OF PEDIATRIC AND PREVENTIVE DENTISTRY IN INDIA- AN ELECTRONIC CROSS-SECTIONAL SURVEY

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ABSTRACT

Introduction: The gag reflex is a usual response for patients, considered to shield the airway and eradicate irritants from the posterior oropharynx and the upper gastro-intestinal tract. Gag reflex is aannoying problem in various dental techniques and may result in a compromised management. If the dentist efforts to recognize the circumstances that trigger disruptive gagging, this may optimize patient care and operational success. ***Aim:*** To evaluate the knowledge, attitude and practice regarding gag-reflex in children among post-graduate students of Pediatric and preventive dentistry in India. ***Methodology:*** A list of registered Post graduate Students with Indian Society of Pediatric & Preventive Dentistry was obtained from the office of Indian Society of Pediatric & Preventive Dentistry. A questionnaire was sent to all the participants through e-mail whose information was obtained from the office of Indian Society of Pediatric & Preventive Dentistry. The questionnaire was sent twice to each student. A response was awaited for a period of 3 months. ***Results*****:** 27 Post graduate Students thought that Anxiety and fear was a main reason for gag reflex in children .233 Post graduate Students thought that during gag reflex there is no change in Pulse Rate of the children .69 Post graduate Students Always changed or modified their impression technique or impression material in children with gag reflex .173 (58.2%) Post graduate Students agree with rubber-dam application is useful to prevent gag reflex in children .275 (92.6%) Post graduate Students did not take gagging severity index (GSI)/gag prevention index (GPI) before treating a child with gag-reflex. ***Conclusion****:* The study revealed that Post graduate students of Pediatric and preventive dentistry in India have the knowledge regarding patient's gag, but their attitude and practice toward the management of the children with gag-reflex is less.

Citation: ***Dr. Roshani Patel, Dr. Bhavna Dave, Dr. Seema Bargale et al*****, 2019.** "Knowledge, attitude and practice regarding gag-reflex in children among post-graduate students of Pediatric and preventive dentistry in India- An electronic cross-sectional survey", *International Journal of Development Research*, 09, (10), 30553-30559.

INTRODUCTION

Gagging is supposed to be a comparatively conjoint oral health concern. A behavioral response, gagging nonetheless is based on an native biotic mechanism (i.e, the pharyngeal reflex) that averts choking (Randall *et al.,* 2014). It is a defensive reflex of the airway that actions to remove undesirable factual from the or opharynx and upper gastrointestinal tract (Akarslan *et al.,* 2010). As gagging is reflected to be a harmful experience it is imaginable that exact dental stimuli that elicit a gag reflex could simply convert aversive stimuli leading to evasion behaviour with negative magnitudes for oral wellbeing and dental procedures (Vanhartem *et al.,* 2015). The basis of gagging has been considered as either somatic (initiated by sensory nerve stimulation from direct contact) or psychogenic (modulated by higher centres in the brain) (Shriprasad *et al.,* 2012). Gag reflex is an inherited reflex and it progressively reverts during the kid's first four years of life, as his/her oral utilities begin to develope, varying from the infantile ways of breathing and pull to the more mature tasks of nasal breathing and swallowing (Eachempati *et al.,* 2014). Numerous dental procedures such as gaining maxillary and mandibular impressions, preparation of cavities, crowns or root canal treatment for posterior teeth, captivating intra-oral radiographs exclusively for the posterior teeth might cause extravagant gag reflex (Murthy *et al.,* 2011). For several patients, severe gagging can be prompted by the dentist's fingers or instruments contacting the oral mucosa or even by nontactile stimuli.[7] In order to handle a patient with gagging, the clinician

has to recognize its numerous fundamental etiological mechanisms, analyst the spectacle and precise it by using therapeutic means and methods altered to the respective aetiology (Eachempati *et al.,* 2014). In children with an extreme gagging reflex, measures such as radiological inspections maynot be accomplished, making it harder to reach at the accurate diagnosis. Additional, complications in taking maxillary impressions might avert other children from undergoing orthodontic management or wearing (prosthetic) removable appliances (Katsouda *et al.,* 2016). Several techniques to avoid gagging ranging from behavioural modifications, pharmacological methods, and non-pharmacological techniques (Eachempati *et al.,* 2014). Effective management of gagging depends on management of the reason and not only symptoms. By comprehensive inspection, taking of sufficient medical history, and discussion with the patient, the dentist needs to define if the patient‘s problem is associated to iatrogenic reasons, organic instabilities, anatomic or psychological reasons (Musani *et al.,* 2010). The management of the gagging patient may be prejudiced by the severity and etiology of the problem. It is needed that the clinician obtains a thorough history in an deliberate, sympathetic way and the environment should be calm and soothing. The approach of the clinician to the patient may stimulus the treatment consequence. If the dentist efforts to recognize the circumstances that generate disruptive gagging, this may elevate patient overhaul and operational success (Roy *et al.,* 2016). Thus, this electronic cross-sectional survey was done to assess the knowledge, attitude and practice of children’s gag reflex among post-graduate students of Pediatric and preventive dentistry in India as gagging is further common in children and is puzzling to manage.

MATERIALS AND METHODS

Study design

i. **Place of study:** The study was conducted in the Department of Pediatric & Preventive Dentistry, K.M Shah Dental College & Hospital, Sumandeep Vidyapeeth, Piparia, Vadodara.

ii. **Source of data:** A list of registered Post graduate Students with Indian Society of Pediatric & Preventive Dentistry was obtained from the office of Indian Society of Pediatric & Preventive Dentistry.

iii. **Related approvals:** Nil

iv. **Sample description:** To calculate the sample size for the present study the following formula was used.

Sample size n = [DEFF xNp(1-p)]/ [$(d^2/Z^2_{1-\alpha/2}$x (N-1)+p x (1-p)]

Population size (for finite population correction factor or fpc) (N): 500
Hypothesized % frequency of outcome factor in the population (p): 50% ± 5
Confidence limits as % of 100(absolute ± %) (d): 5 %
Design effect (for cluster surveys-*DEFF*): 1

Substituting the values in the formula, a sample size of 218 was derived. However, an additional 10% were included in the study [N = 239.8 (rounded off to 240)] in order to compensate for potential refusals. The sample size of the present study was thus estimated to be 240 at 95% confidence interval.

v. **Selection criteria**

A) **Inclusion criteria:** Registered ISPPD student members of Pediatric and preventive dentistry.

B) **Exclusion criteria:**
- Post-graduate students who refused to give consent.
- Post-graduate students who could not be contacted.
- Post-graduate students who did not fill the complete questionnaire.

Materials and equipments for the study

Instrument and supplies:

1. A list of Registered ISPPD student members of Pediatric and preventive dentistry.
2. Online Survey Forms comprising of a Questionnaire

MATERIALS AND METHODS

Sampling methodology: It is a cross-sectional survey study design which was conducted to assess knowledge, attitude and practice regarding gag-reflex in children among post-graduate students of Pediatric and preventive dentistry in India.

Source of questionnaire: The questionnaire was modified from the key article and self-prepared. It is validated and reliable using chi- square test. Validation wasdone by the Professors, Readers and Senior Lecturers of the Department of Pediatric & Preventive Dentistry of the same institute. After that the concurrent validation of the same questionnaire was done on a sample of 10 registered post-graduate students of Pediatric and preventive dentistry.

Method of examination: A questionnaire was sent to all the participants through e-mail whose information was obtained from the office of Indian Society of Pediatric & Preventive Dentistry. Each student was sent the questionnaire twice. A response was awaited for a period of 3 months.

RESULTS

- Out of 500 Post graduate Students 297 (59.4%) had replied to the questionnaire. Out of 297 Post graduate Students, 97 (32.7%) were first M.D.S., 87 (29.3%) were second M.D.S and 113 (38%) were third M.D.S. (Table 1 and Graph 1). All of them (100%) were aware about the term gag reflex (Table 2 and Graph 2), 293 (98.7%) Post graduate Students thought that children are affected with gag reflex (Table 3 and Graph 3).
- 140 (47.1 %) Post graduate Students face maximum gag reflex in Irrespective of age.(Table 4 and Graph 4).
- 127 (42.8%) Post graduate Students treat <5 children with gag reflex in a month.(Table 5 and Graph 5).
- 127 (42.8%) Post graduate Students thought that Anxiety and fear was a main reason for gag reflex in children. (Table 6 and Graph 6).
- 226 (76.1%) Post graduate Students encountered maximum gag reflex during Impression procedure. (Table 7 and Graph 7).
- 161 (54.2%) Post graduate Students felt maximum gag reflex in children Touching transition to soft palate during diagnosis using mouth mirror.(Table 8 and Graph 8).

Table 1. Distribution of the participants according to the post-graduation Course

	Post-graduation Course	Percent
First M.D.S.	97	32.7
Second M.D.S.	87	29.3
Third M.D.S.	113	38
Total	297	100

Table 2. Percentage of the paticipants which were aware about the term gag reflex

	Are you aware about the term gag reflex?	Percent
Yes	297	100

Table 3. Percentage of the paticipants for children affecting with gag reflex

	Do you think that children are affected with gag reflex?	Percent
No	4	1.3
Yes	293	98.7
Total	297	100

Table 4. Percentage of the paticipants for children facing maximum gag reflex in different age group

	In which age group of children you face maximum gag reflex?	Percent
2–5 years	67	22.6
6–10 years	86	29
11–14 years	4	1.3
Irrespective of age	140	47.1
Total	297	100

Table 5. Percentage of the paticipants for children treated in a month with gag reflex

	4. How many children do you treat in a month with gag reflex ?	Percent
Very occasional	67	22.6
<5	127	42.8
5–10	85	28.6
>10	18	6.1
Total	297	100

Table 6. Percentage of the paticipants for reason of gag reflex in children

	What do you think is a main reason for gag reflex in children?	Percent
Anxiety and fear	127	42.8
Unexpectableodour	5	1.7
Unpalatable taste	61	20.5
Unpleasant touch	104	35
Total	297	100

Table 7. Percentage of the paticipants for procedure in which they encounter maximum gag reflex

	6. In which procedure you encounter maximum gag reflex in your patient?	Percent
Diagnostic procedure	1	0.3
Impression procedure	226	76.1
Operative procedure	13	4.4
Radiographic procedure	57	19.2
Total	297	100

Table 8. Percentage of the paticipants for maximum gag reflex in children during diagnosis using mouth mirror

	7. While doing diagnosis using mouth mirror when do you feel maximum gag reflex in children?	Percent
At the level of second molars.	62	20.9
Touching behind the upper incisors.	6	2
Touching the maxillary process, at the level of second molars.	68	22.9
Touching transition to soft palate.	161	54.2
Total	297	100

Table 9. Percentage of the paticipants for change in pulse rate of the children during gag reflex

	8. Do you think during gag reflex there is a change in Pulse Rate of the children?	Percent
No	64	21.5
Yes	233	78.5
Total	297	100

Table 10. Percentage of the paticipants for change or modify impression technique or impression material in children with gag reflex

	9. Have you ever changed or modified your impression technique or impression material in children with gag reflex?	Percent
Always	69	23.2
Never	25	8.4
Often	97	32.7
Very few times	106	35.7
Total	297	100

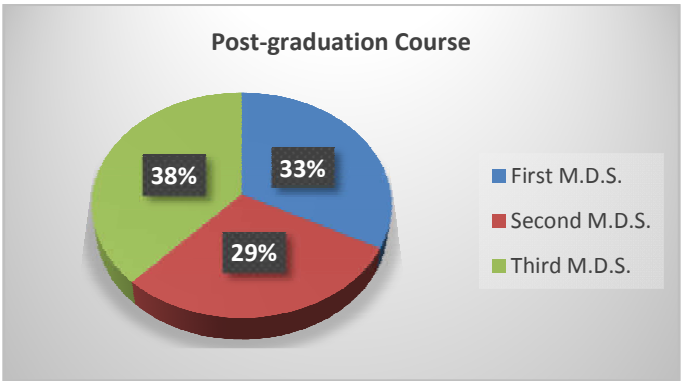
Table 11. Percentage of the paticipants for considering the best way to prevent gag reflex in children

	10. What do you consider the best way to prevent gag reflex in children?	Percent
Schedule the appointment in the evening before taking the food	34	11.4
Schedule the appointment in the morning after taking the food	43	14.5
Schedule the appointment in the morning before taking the food	220	74.1
Total	297	100

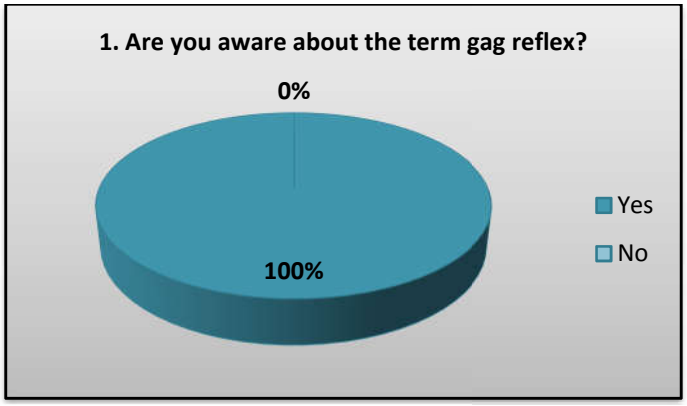
Table 12. Percentage of the paticipants for the method they prefer for preventing gag reflex in children

	11. In the following which method you prefer for preventing gag reflex in children?	Percent
Aplication of Local anaesthetic sprays or gels.	78	26.3
Conscious sedation	10	3.4
Distraction techniques	208	70
Transcutaneous electric nerve stimulation (TENS)	1	0.3
Total	297	100

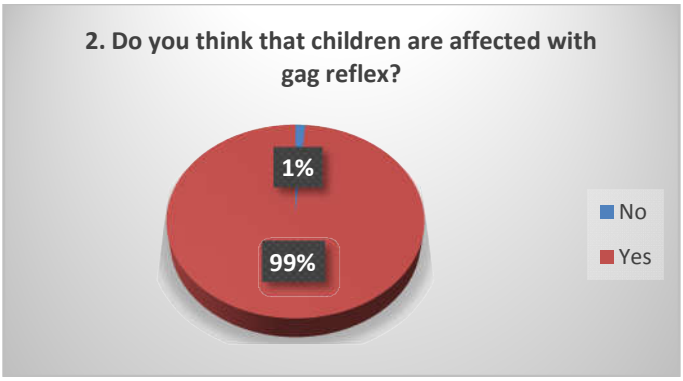
- 233 (78.5%) Post graduate Students thought that during gag reflex there is no change in Pulse Rate of the children. (Table 9 and Graph 9).
- 106 (35.7%) Post graduate Students Very few times changed or modified their impression technique or impression material in children with gag reflex. (Table 10 and Graph 10).
- 220 (74.1%) Post graduate Students considered that Schedule the appointment in the morning before taking the food is the best way to prevent gag reflex in children.(Table 11 and Graph 11).
- 208 (70%) Post graduate Students preferred Distraction techniques for preventing gag reflex in children.(Table 12 and Graph 12).
- 173 (58.2%) Post graduate Students agree with rubber-dam application is useful to prevent gag reflex in children.(Table 13 and Graph 13).
- 275 (92.6%) Post graduate Students did not take gagging severity index (GSI)/gag prevention index (GPI) before treating a child with gag-reflex (Table 14 and Graph 14).
- 240 (80.8%) Post graduate Students were not aware about Gagster (Technique for maxillary impression to prevent gagging) (Table 15 and Graph 15).



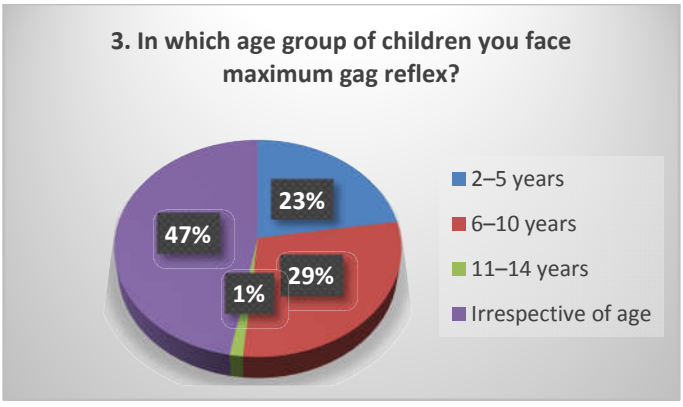
Graph 1. Distribution of the participants according to the post-graduation Course



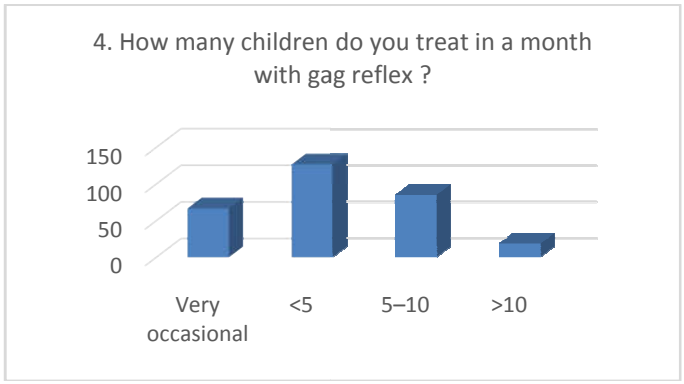
Graph 2. Percentage of the paticipants which were aware about the term gag reflex



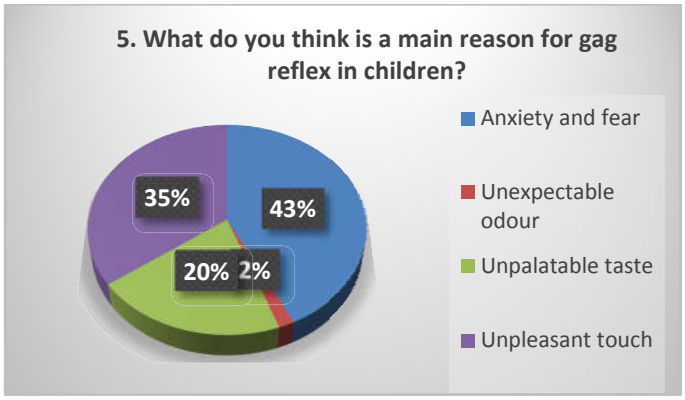
Graph 3. Percentage of the paticipants for children affecting with gag reflex



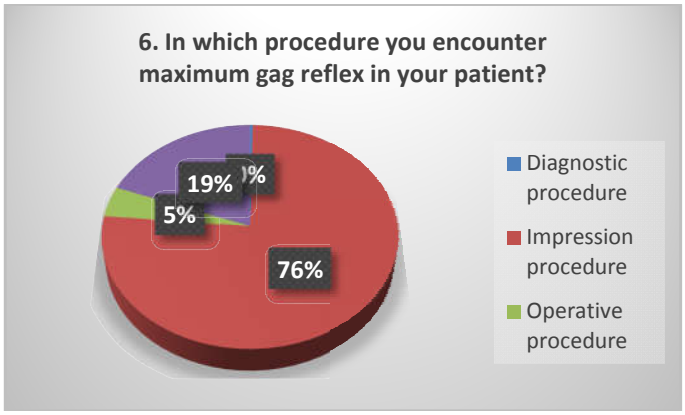
Graph 4. Percentage of the paticipants for children facing maximum gag reflex in different age group



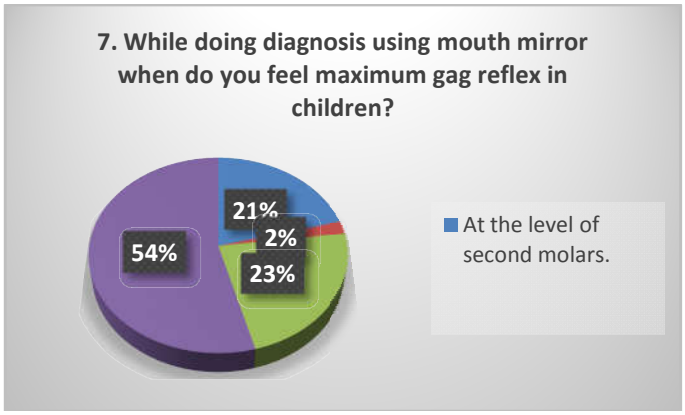
Graph 5. Percentage of the paticipants for children treated in a month with gag reflex



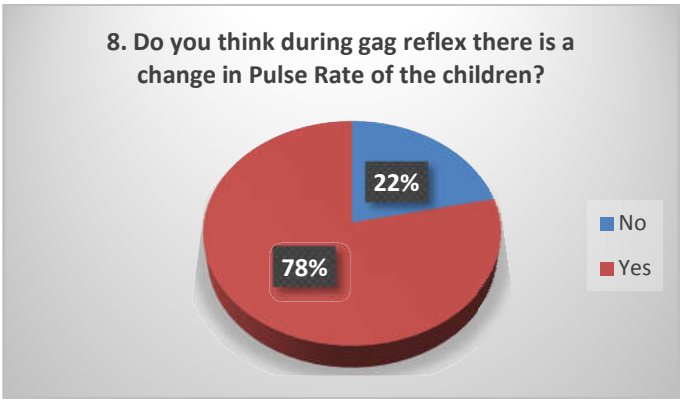
Graph 6. Percentage of the paticipants for reason of gag reflex in children



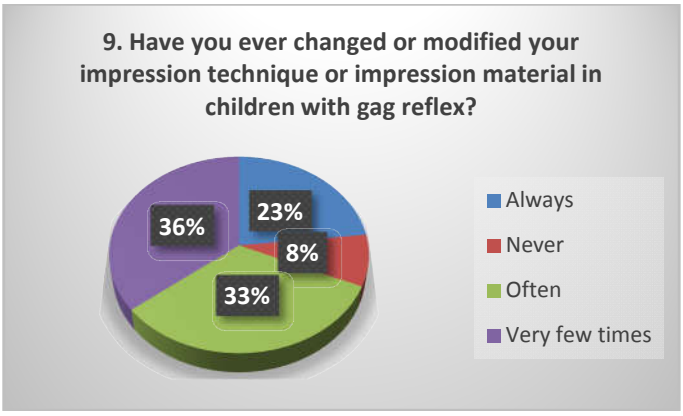
Graph 7. Percentage of the paticipants for procedure in which they encounter maximum gag reflex



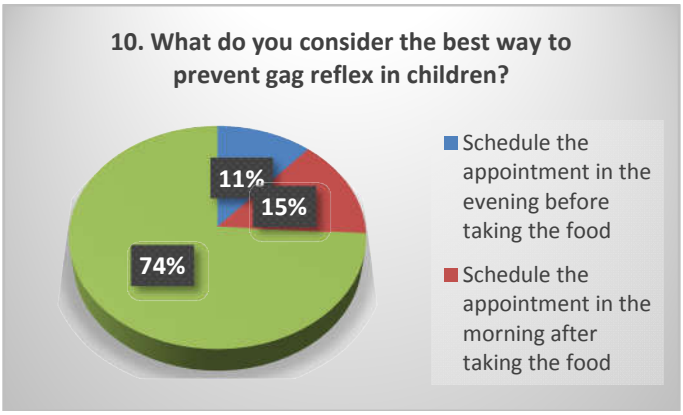
Graph 8:Percentage of the paticipants for maximum gag reflex in children during diagnosis using mouth mirror



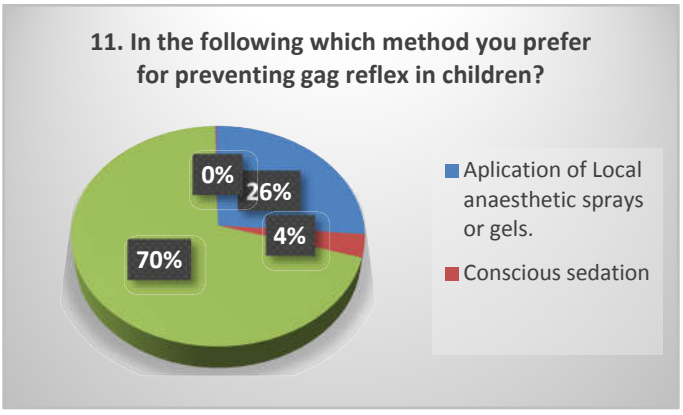
Graph 9.Percentage of the paticipants for change in pulse rate of the children during gag reflex



Graph 10. Percentage of the paticipants for change or modify impression technique or impression material in children with gag reflex



Graph 11. Percentage of the paticipants for considering the best way to prevent gag reflex in children



Graph 12.Percentage of the paticipants for the method they prefer for preventing gag reflex in children

Table 13. Percentage of the paticipants for rubber-dam application to prevent gag reflex in children

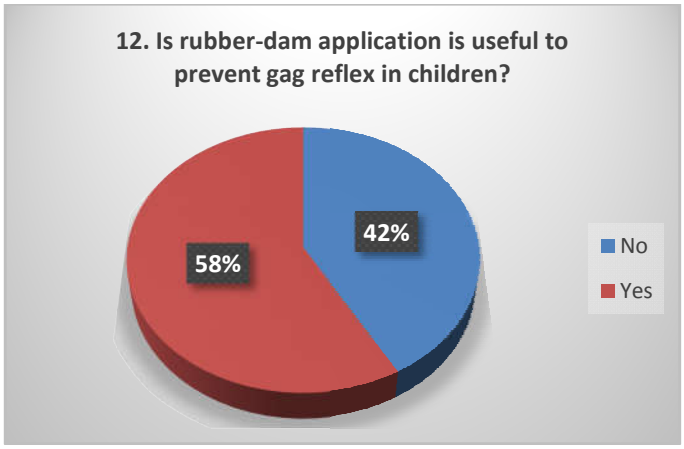
	12. Is rubber-dam application is useful to prevent gag reflex in children?	Percent
No	124	41.8
Yes	173	58.2
Total	297	100

Table 14. Percentage of the paticipants for taking gagging severity index (GSI)/gag prevention index (GPI) before treating a child with gag-reflex

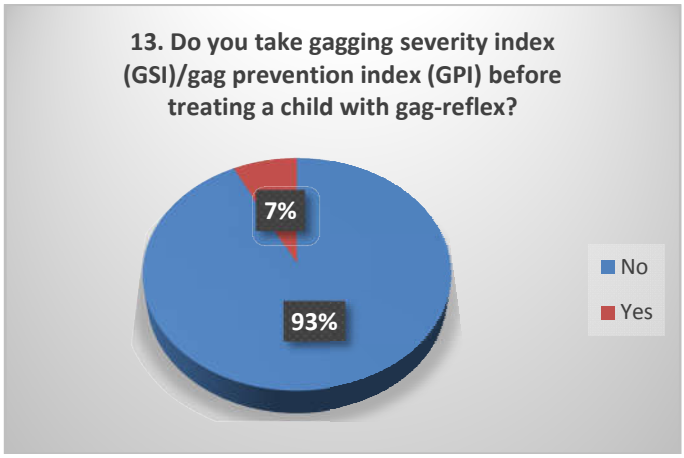
	13. Do you take gagging severity index (GSI)/gag prevention index (GPI) before treating a child with gag-reflex?	Percent
No	275	92.6
Yes	22	7.4
Total	297	100

Table 15. Percentage of the paticipants which were aware about the Gagster (Technique for maxillary impression to prevent gagging)

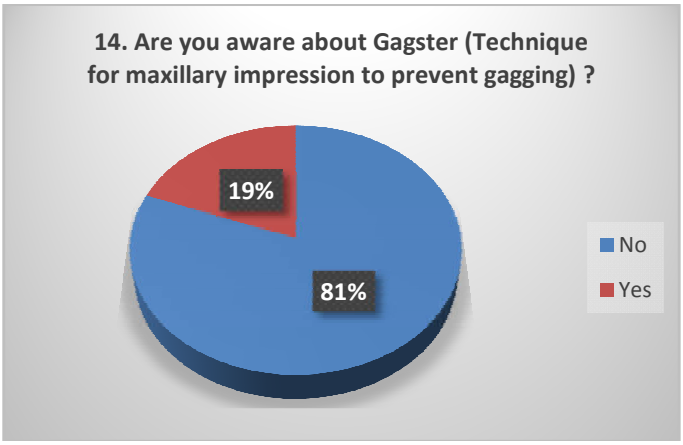
	14. Are you aware about Gagster (Technique for maxillary impression to prevent gagging) ?	Percent
No	240	80.8
Yes	57	19.2
Total	297	100



Graph 13. Percentage of the paticipants for rubber-dam application to prevent gag reflex in children



Graph 14. Percentage of the paticipants for taking gaggingseverity index (GSI)/gag prevention index (GPI) before treating a child with gag-reflex



Graph 15:Percentage of the paticipants which were aware about the Gagster (Technique for maxillary impression to prevent gagging)

DISCUSSION

Overt gagging can be disturbing for both the patient and clinician. A wide multiplicity of management strategies have been defined and these should be tailored to suit the necessities of individual patients. The gagging difficulties require an imagined attitude using individualized, flexible treatment resolutions by a knowledgeable dental team. In our study, 127 participants reported anxiety and fear as a main cause of gagging and was also supported by a study conducted by Randall et al. on 478 participants and almost one‐half of them recounted higher occurrence of gagging with superior levels of dental care‐related fear, fear of pain, and more undesirable opinions about dental experts and dental treatment.[1] Our study showed that out of 299 patients, 233 reported no change in pulse rate on gagging. This finding was not associated with the study done by Hosseini et al. and concluded that gagging increased heart velocity and had a differential outcome on two divisions of cardiac autonomic nerves.[12] 226 (76.1%) Post graduate Students encountered maximum gag reflex during Impression procedure and 161 (54.2%) Post graduate Students felt maximum gag reflex in children touching transition to soft palate during diagnosis using mouth mirror in the present study. Wheras in the study of Randall et al showed gagging during dental treatment occasioning from many incentives (i.e., fingers in the mouth) informed greater levels of dental care-related fear, than did personages who reported gagging from other stimuli such as instruments or bitewing radiographs and impression materials.[1] 106 (35.7%) Post graduate Students very few times altered or changed their impression technique or impression material in children with gag reflex and 220 (74.1%) Post graduate Students considered that diary the appointment in the morning before taking the food is the finestmode to preclude gag reflex in children. Our study revealed that Distraction technique which is a non-pharmacological behavior management technique more effectual to diminish gag-reflex in children. Distraction is used provisionally for small procedures like x rays or impressions.[7,12]Distraction techniques consist of conversations, inhaling through the nose and exhaling through the mouth, enquiring patient to think of and imagine a safe, comfortable, relaxing place and then define it to the dentist, asking a patient to raise a leg off the dental chair and the hold the position until the muscles become fatigued, thus distracting attention from dental procedures.[13]NahlaNassif Debs concluded Intellectual distraction is a safe, potentially effectual, and cost-saving technique of GR (Gag-reflex) management in pediatric dentistry.[14] Our study revealed275 (92.6%) Post graduate Students did not take gagging severity index (GSI)/gag prevention index (GPI) before treating a child with gag-reflex, It is contradicted by a valid survey conducted by Hearing et al. and revealed a moderate positive correlation between the predictive gagging survey and Fiske and Dickinson's GSI.[15]A significant difference was found between the means of the patient and control group scores, demonstrating that the GPA (Gagging problem assessment questionnaire) was useful for distinguishing patients who presented gagging problems from those who did not.[16] The Classification of Gagging Problem index,[17]or the Gagging Problem Assessment,[18] are good tools to use for clinicianrated assessment. 173 (58.2%) Post graduate Students agree with rubber-dam application is useful to prevent gag reflex in children. C. D. Lynch et al. also smoothed dental treatment under rubber dam of patients with a pronounced gag reflex.[19] 240 (80.8%) Post graduate Students were not aware about Gagster (Technique for maxillary impression to prevent gagging). In this technique while taking maxillary impression plastic food grade wraps are used to reduce the posterior flow of the impression material and also avoid inadvertent aspiration.[20]

Conclusion

The study revealed that Post graduate students of Pediatric and preventive dentistry in India have the knowledge regarding patient's gag, but their attitude and practice toward the management of the children with gag-reflex is less. Gag is reflected as one of the hurdles in rendering patients accurate dental care and cure. A wide variability of management approaches have been designated till date and these should be used to suit the necessities of individual patients. In management of patients with gag reflex it is essential to take a clear history of the problem. This evidence will qualify the clinician to measure the severity of the problem and therefore make suitable choices on an ideal technique to use. Each case will requisite to be evaluated individually as the scheme needs to be adapted to that particular patient's requirements. The gagging problems require an empathetic attitude via individualized, flexible handling solutions by a knowledgeable dental team.

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