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ABOUT THE JOURNAL

Journal of MaxilloFacial Science and Research (JMFSR, ISSN 2348-9030) is the official publication of the PMS College of Dental Science and Research. The journal started with the aim of providing our students and faculty a platform to showcase their research projects and interesting clinical cases. We also accept articles from outside the institution on topics related to all the dental specialities and related sciences. Authors are encouraged to submit research papers, case reports (new / interesting / rare cases/cases with clinical significance and inter disciplinary cases), and short communications. Special effort is made to ensure rapid publication. Articles written in English alone will be accepted provided they have not been and will not be published elsewhere. The editor and or its publisher cannot be held responsible for errors or for any consequences arising from the use of the information contained in this journal. The appearance of advertising or product information in the various sections in the journal does not constitute an endorsement or approval by the journal and or its publisher of the quality or value of the said product or of claims made for it by its manufacturer.

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A VISION FULFILLED

The grace of God Almighty is best reflected in parents with integrity and children who strive hard to realize their dreams.The late **Sri P. M. Shahul Hameed B.A (1920-1995)** gave his children the best gift in life, quality education, at a time when few realized the wonders that education could work in the lives of men and women. The PMS College of Dental Science and Research is a monument to the memory of that great soul. College was established in 2002 under the able guidance of **Dr. P.S. Thaha,** a visionary with over three decades of experience in dental education and patient care in India and abroad.This college is the first self- financing dental institution in Kerala State, the first to achieve the ISO 9001-2000 certification and NAAC accreditation among dental colleges in Kerala. In addition to undergraduate and postgraduate courses, college is currently conducting PhD programs in different specialities of dentistry recognized by Kerala University of Health Sciences and NITTE University.The college provides an excellent environment for students as well as faculty in developing knowledge, clinical skills and attaining academic excellence. PMS college has been granted the prestigious 2(f) Status by University Grants Commission.

INFORMED CONSENT AND ASSENT IN CLINICAL AND RESEARCH SETTINGS

In the realm of healthcare and research, informed consent remains a cornerstone of ethical practice. It embodies respect for individual autonomy and ensures that people are empowered to make decisions regarding their health or participation in research. Equally significant is the concept of assent, particularly in pediatric and vulnerable populations, where full legal consent may not be feasible.

Informed consent is not simply a signed document. It is a communicative and continuous process involving the disclosure of relevant information, assessment of comprehension, and assurance of voluntary agreement. The World Medical Association's Declaration of Helsinki affirms that "participation by individuals capable of giving informed consent as subjects in medical research must be voluntary" and must be based on adequate information and understanding of the subject matter.[1] When dealing with minors or individuals with diminished decision-making capacity, assent is an essential ethical tool. It refers to the child's affirmative agreement to participate, even though the legal consent is provided by parents or guardians. As Wilfond BS and Diekema DS (2012) explain, "Assent is more than agreement; it is an opportunity to respect the developing autonomy of children and to help them become involved in decisions affecting their lives".[2]

In all healthcare and research environments, it is crucial to promote ethical awareness and patient-centered communication. Professionals must be equipped not only with the knowledge of consent protocols but also with the sensitivity to engage patients and participants in meaningful dialogue. This approach fosters trust and ensures that decisions are made collaboratively, respecting each individual's rights and preferences.

Moreover, informed consent should be an ongoing process. It must be revisited whenever there are changes in procedures, risks, or expectations, especially in long-term treatments or research. This ensures transparency and sustains trust between professionals and patients or participants.

To conclude, informed consent and assent are fundamental to ethical medical and scientific practice. They reflect our commitment to human dignity, autonomy, and integrity. As professionals, it is our collective responsibility to safeguard these principles with sincerity, sensitivity, and continual ethical reflection.

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Dr. Ancy RJ
Issue Editor

AN OVERVIEW OF MEDICAL NEGLIGENCE: LEGAL AND ETHICAL IMPLICATIONS

George Skariah P,[1] Zaleeka Nazir Neelambra[2*]

ABSTRACT

Medical negligence remains one of the most challenging medico-legal issues in modern healthcare, encompassing legal, ethical, and professional implications. This review emphasizes the significance of informed consent as a cornerstone of ethical practice and a crucial safeguard against malpractice litigation. Through an analysis of legal definitions, evolving jurisprudence, and ethical guidelines, the article explores how negligence arises, the standards required of healthcare providers, and the role of informed consent in protecting patient autonomy. Case studies and legal precedents are discussed to highlight the consequences of inadequate consent and the complexity of proving negligence. Further, the review underscores the implications of negligence for patients, providers, and healthcare systems, while suggesting strategies to minimize risks. Ultimately, the article stresses the importance of transparent communication, robust documentation, and adherence to ethical principles in mitigating malpractice and fostering trust between patients and professionals.

Keywords: Medical negligence, Informed consent, Ethics, Medical records

INTRODUCTION

Medical negligence occurs when a healthcare provider fails to deliver care that meets the established standard, resulting in patient harm. This encompasses diagnostic errors, surgical mishaps, prescription mistakes, and inadequate disclosure of treatment risks. Negligence is not only a professional failure but also an ethical breach that undermines trust in the healthcare system.[1]

In India, courts often rely on the Bolam test, which evaluates whether a doctor's actions align with those of a reasonably competent professional in the same field. While this test provides clarity, evolving jurisprudence emphasizes patient rights and accountability. Negligence in the medical context typically involves three elements: breach of duty, dereliction in fulfilling duty, and consequent harm.[2]

Medical records hold special significance. Under the Indian Evidence Act of 1872, such records serve as documented evidence.[3] Proper documentation is therefore both an ethical and legal requirement.

Consent represents a fundamental ethical principle. Even without a formal agreement, healthcare providers are obligated to disclose relevant information to ensure patients understand their treatment. Failure to do so can result in negligence claims.[3] The Consumer Protection Act of 2019 further expanded patient rights, allowing individuals to seek redress against healthcare providers for negligence through consumer courts.[4]

Studies reveal that many dental and medical professionals lack sufficient knowledge of the laws governing their practice, leaving them vulnerable to malpractice suits.[5] To protect themselves and safeguard patients, healthcare providers must recognize their dual responsibility: to uphold both professional standards and legal-ethical duties.

With negligence cases increasing and patients becoming more aware of their rights, this review aims to integrate legal frameworks, ethical standards, and practical realities. Healthcare professionals must be equipped not only with clinical expertise but also with medico-legal literacy to protect both themselves and their patients.

OBJECTIVES

The review aims to achieve several objectives:

1. Define medical negligence and explore its legal, ethical, and professional dimensions.
2. Analyse procedures for obtaining informed consent, emphasizing common pitfalls.
3. Illustrate the role of informed consent in malpractice cases through case law examples.
4. Assess the implications of negligence on patient safety, healthcare delivery, and the legal landscape.
5. Provide recommendations for healthcare professionals to minimize risks.

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METHODOLOGY

This review synthesizes evidence from peer-reviewed journals, medico-legal textbooks, case reports, and ethical guidelines. Themes such as negligence, informed consent, and professional accountability were explored. Case studies, including Canterbury v. Spence, were used to demonstrate the impact of inadequate consent.[6]

Limitations include reliance on secondary sources and jurisdiction-specific laws, particularly Indian frame works. However, global perspectives were incorporated where relevant to highlight shared medico-legal challenges.

ANALYSIS

1. Legal Framework and Definition of Medical Negligence:

Medical negligence requires proof of duty of care, breach, causation, and damage. Duty refers to the legal and ethical obligation of healthcare providers to act in the best interest of their patients, ensuring that treatment decisions are made with reasonable skill and care. A breach occurs when this duty is not upheld and the standard of care falls below what is expected of a competent professional in the same specialty. Causation establishes the direct link between the breach of duty and the injury suffered, while damage refers to demonstrable harm that is compensable under the law.[7]

In India, courts frequently rely on the Bolam principle, which compares the actions of a doctor with those of a reasonably competent practitioner in the same field. However, over the years, patient-centered approaches have become more prominent, with courts increasingly emphasizing not only professional competence but also the importance of communication, disclosure, and respect for patient autonomy. This shift indicates that legal frameworks are evolving to balance both clinical judgment and patient rights.[2]

2. Importance of Informed Consent:

IInformed consent safeguards patient autonomy and serves as a critical defense against allegations of malpractice. It requires four essential elements: disclosure, comprehension, voluntariness, and competence. Disclosure involves providing patients with complete information about the procedure, including its risks, benefits, and alternatives. Comprehension ensures that the patient has genuinely understood the information presented, which may require providers to use simplified explanations or supportive materials. Voluntariness guarantees that the decision is made free from coercion, and competence verifies that the patient has the mental and legal capacity to make healthcare choices.[7]

Two standards guide informed consent:

- Reasonable patient standard: What a typical patient would expect to know before agreeing to treatment.
- Reasonable physician standard: What a competent physician in the same specialty would normally disclose.[6]

Challenges often arise in low-literacy populations or when complex medical information must be conveyed within a limited consultation time. Cultural differences, language barriers, and unequal power dynamics between patients and doctors further complicate the process.

3. Case Studies in Medical Negligence and Informed Consent:

The landmark case of Canterbury v. Spence (1972) demonstrates the central role of informed consent in malpractice litigation. In this case, a patient undergoing spinal surgery was not informed of the potential risk of paralysis, which subsequently occurred. The U.S. court ruled in favor of the patient, establishing that physicians have a duty to disclose all significant risks that may influence a patient's decision. This case reshaped the legal understanding of informed consent, shifting it toward a more patient-centered standard.[6]

In the Indian context, courts have also emphasized that even rare but significant risks must be disclosed to patients. Failure to do so is considered negligence, as it denies patients the opportunity to make an informed choice about their care. These rulings underscore that informed consent is not merely a formality but a crucial component of ethical and legal medical practice.[8]

4. Exceptions and Challenges in Informed Consent

While informed consent is a legal and ethical requirement, exceptions exist. Emergencies often require immediate interventions where seeking consent is not feasible; in such situations, treatment can be provided under the doctrine of implied consent. Patients lacking decision-making capacity, such as those with severe cognitive impairment or

unconsciousness, present additional challenges. In such cases, decisions are made by legally recognized surrogates or through advance directives.

These exceptions often involve ethical dilemmas, as healthcare providers must balance the urgency of treatment with respect for autonomy. The law generally provides protection for practitioners acting in good faith to preserve life or prevent serious harm. Nonetheless, providers are encouraged to document their decisions carefully, noting the clinical justification for bypassing standard consent procedures.

5. Implications for Healthcare Providers

The consequences of medical negligence are profound, extending beyond financial liability to include malpractice lawsuits, disciplinary actions, criminal charges, and reputational harm. Repeated allegations or proven cases of negligence can lead to suspension of medical licenses and loss of public trust. In addition, the stress associated with litigation can negatively affect professional performance and mental well-being.

One of the most damaging outcomes of inadequate informed consent is the erosion of trust in the provider–patient relationship. Patients who feel misled or uninformed are more likely to pursue legal action and less likely to cooperate in treatment.

To minimize risks, healthcare professionals should:

- Ensure detailed documentation of every stage of the consent process.
- Adopt patient-centered communication, using plain language and confirming understanding.
- Engage in continuous medico-legal education to stay informed about evolving laws and ethical standards.[9]

Ultimately, adopting a proactive approach that emphasizes transparency, respect for patient autonomy, and thorough documentation can help healthcare providers reduce the risk of litigation and maintain professional credibility.

DISCUSSION

Medical negligence has become a global concern, with research showing a steady increase in cases in recent decades.[9] The World Health Organization (WHO) identifies patient safety as a global challenge, emphasizing systemic reforms to minimize negligence.[10]

Factors contributing to negligence include:

- Technical errors in procedures
- Misdiagnosis or delayed diagnosis
- Prescription mistakes[2]
- Poor communication and inadequate consent
- Resource limitations in developing countries

Negligence carries heavy costs—financial, emotional, and reputational—affecting both patients and healthcare institutions.[2] In addition to monetary compensation, malpractice cases often cause psychological distress to patients and families, while healthcare providers may experience professional burnout, defensive medicine practices, and loss of confidence.

Legislative reforms, such as India's Consumer Protection Act of 2019, have expanded patient rights and accountability mechanisms.[4] At the same time, these reforms necessitate heightened awareness among healthcare providers of their legal obligations. Failure to keep pace with evolving legislation increases the vulnerability of practitioners to litigation.

From an ethical standpoint, negligence reflects a failure to prioritize patient welfare. Building a culture of transparency, empathy, and shared decision-making can reduce malpractice cases and restore trust. Medical education must integrate legal literacy, ethics, and communication training. Institutions should enforce strict consent procedures, conduct regular audits, and encourage patient involvement in care decisions.

A multidisciplinary approach, combining clinical training with legal and ethical perspectives, is essential to reduce negligence rates and improve patient safety. Furthermore, collaboration between policymakers, professional councils, and healthcare organizations is required to create uniform guidelines, improve awareness, and provide continued professional development.

CONCLUSION

Medical negligence, especially in the context of informed consent, is a pressing issue with wide-ranging legal, ethical, and professional consequences. Robust consent protocols, transparent communication, and comprehensive documentation are crucial to safeguarding both patients and practitioners. Negligence must be recognized not only as a legal liability but also as an ethical failure that undermines the trust central to the provider–patient relationship.

The analysis highlights that the duty of care, disclosure of information, and respect for patient autonomy are fundamental to minimizing malpractice risks. Courts in India and globally are moving toward patient-centered standards, which demand greater

accountability and communication from healthcare providers. Failure to meet these expectations can lead to lawsuits, reputational damage, and diminished confidence in the healthcare system.

The future will bring new challenges, including telemedicine, digital health technologies, and artificial intelligence, all of which will complicate consent and accountability frameworks. It is essential that healthcare professionals stay updated on evolving laws and ethical standards to adapt their practices accordingly. Strengthening medico-legal education, promoting a culture of shared decision-making, and embedding ethics into everyday clinical care will play a vital role in reducing negligence.

By cultivating transparency, empathy, and professional responsibility, healthcare systems can move closer to achieving a balance between patient rights and provider protection. In doing so, both patient safety and public trust in healthcare can be significantly enhanced.

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KNOWLEDGE & AWARENESS OF CONE BEAM COMPUTED TOMOGRAPHY (CBCT) AMONG DENTAL STUDENTS AND DENTAL PRACTITIONERS: A QUESTIONNAIRE SURVEY

Anchitha Elsa Shaji[1], Sunila Thomas[2*], Jincy Thomas[3]

ABSTRACT

Objective: The present study was carried out to evaluate the knowledge & awareness of Cone beam computed tomography (CBCT) among Dental students and Dental practitioners.

Materials and methods: A questionnaire consisting of 18 multiple choice questions was given to 101 Dental students and Dental practitioners. The obtained data was analysed using statistical software and different tests.

Results: There was 100% response rate. 99% participants were aware of CBCT being used for dento-maxillofacial imaging. 53% of participants have advised their patients for CBCT. 97% agreed that a CBCT should be provided in the Dental Institutes, 71% of the participants would choose to use CBCT in their clinical practice and 73.2% participants feel the necessity of providing CBCT in their speciality which shows a positive attitude towards CBCT. 57.6% UGs and 60% interns obtained knowledge through lectures and 44% PGs through curriculum and 52% General Practitioners through Continuing Dental Education (CDEs.)

74.2% have not attended any workshops/CDE regarding CBCT and 98% feel that CDEs must be conducted to increase their knowledge about CBCT which emphasizes the need of conducting CDEs. Majority of the participants do not know about radiation doses, equivalent background radiation and selection of CBCT based on Field of View(FOV) which indicates their lesser awareness towards radiation doses. There was significant association between education level and their reference for CBCT, acquisition of knowledge about CBCT and willingness to use CBCT.

Conclusion: The present study shows the need for conducting more CDEs to update knowledge about CBCT.

Keywords: questionnaire, CBCT, awareness, survey, dental practitioners.

INTRODUCTION

Cone beam computed tomography (CBCT) is a three dimensional imaging modality for dento-maxillofacial imaging.[1] Radiation exposure dose from CBCT is 10 times less than from conventional CT scans during maxillofacial exposure. Furthermore, CBCT is highly accurate and can provide a three-dimensional volumetric data in axial, sagittal and coronal planes.[2]

CBCT is indicated for diagnosis and treatment planning in every speciality of dentistry. Applications of CBCT include nerve tracing in third molar extraction, implant planning, maxillofacial surgeries, sinus pathologies, in endodontics for locating additional roots and accessory canals and in detecting vertical root fracture, orthodontic cases and orthognathic surgeries, in evaluating cysts and tumors, in TMJ disorders, and even used in forensic dentistry.[3]

Accessibility of CBCT in dental centres has prompted dental specialists to use CBCT as a routine radiographic investigation, without adequately aware of the radiation safety guidelines. Hence the present study was conducted to evaluate the knowledge & awareness of CBCT among Dental students and Dental practitioners.

MATERIALS AND METHODS

The study was conducted in PMS Dental College, Thiruvananthapuram, Kerala. A structured questionnaire based on previous literature consisting of 18 close ended questions was given to 101 participants [25 under-graduate (UG), 25 post-graduate (PG), 26 Interns and 25 general practitioners] (Table1). A prior consent was obtained from the participants and their confidentiality was maintained. Personal interview was done with the questionnaire. The completed questionnaires were collected, and obtained data was tabulated.

Data was analyzed using the statistical package SPSS 22.0 (SPSS Inc., Chicago, IL) and level of significance was set at $p< 0.05$. Descriptive statistics was performed to assess the proportion of each category of the respective groups. Inferential statistics was done using chi square test for proportion.

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Table 1-QUESTIONNAIRE

Knowledge and awareness of CBCT among dental students and dental practitioners-A Questionnaire-based survey

(Please tick the appropriate box)

1.	Which gender do you identify with? Male ☐ Female ☐
2.	What is your educational/job status? UG☐ Interns☐ PG☐ Dental practitioner☐
3.	Are you aware of CBCT being used for dentomaxillo-facial region? Yes ☐ No ☐
4.	Have you advised your patients for CBCT imaging? Yes ☐ No ☐
5.	Do you use CBCT as a screening procedure in diagnosis? Yes ☐ No ☐
6.	Do you take CBCT for child patients? Yes ☐ No ☐
7.	Do you think CBCT should be provided in dental institute? Yes ☐ No ☐
8.	Would you choose to use CBCT as an imaging modality in your clinical practice? Yes ☐ No ☐
9.	How did you obtain knowledge about CBCT? Lectures ☐ CDE ☐ Curriculum based ☐
10.	Have you attended any workshops/ CDE regarding CBCT? Yes ☐ No ☐
11.	Are you aware of radiation dose from CBCT? Yes ☐ No ☐
12.	Do you know the equivalent background radiation for CBCT? 10 days☐ 15 days ☐ 20 days ☐ Don't know ☐
13.	Do you select CBCT based on FOV? Yes ☐ No ☐
14.	For which cases would you choose to use CBCT? a. Assessment of Impacted teeth ☐ b. Implant planning ☐ c. Evaluation of patients with cysts and tumours ☐ d. Orthodontic assessment ☐ e. All the above ☐ f. Other reasons specify…….
15.	Do you think it is necessary for a CBCT unit to be available in your speciality? Yes ☐ No ☐
16.	Do you feel CDE/ Workshops should be conducted to increase your knowledge about CBCT? Yes ☐ No ☐
17.	Which year of dental education should include lectures on CBCT? a. Pre-clinical ☐ b.Clinical ☐ c. Internship ☐ d. PG ☐ e. No need ☐
18.	Would you consider the benefit and risk while prescribing CBCT? Yes ☐ No ☐

RESULTS:

101 questionnaires were returned because the interviews were done personally. 100 % response rate with 75 female and 26 male respondents.

Among 101 participants, UGs comprised of 26 whereas Interns, PGs and General Practitioners comprised of 25 each.

About 99% of the participants were aware of CBCT being used for dento-maxillofacial region.

53% of the participants have advised CBCT for their patients. Among them, 39.6% of the participants were general practitioners. Pearson chi square analysis (p=0.000) showed significant association between educational status and their reference for CBCT. (Table 2)

Table 2: Association between education and their reference for CBCT

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	20.822	3	.000
Likelihood Ratio	22.153	3	.000
N of Valid Cases	101		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.88.			

63% of respondents said they would not employ CBCT as a screening method, comprising of 28.5% UGs (18), 25% interns (16), 23% PGs (15) & 22% Dental practitioners (14), indicating that dental practitioners have lower awareness and knowledge regarding the misuse of CBCT as a screening tool. (Figure 1)

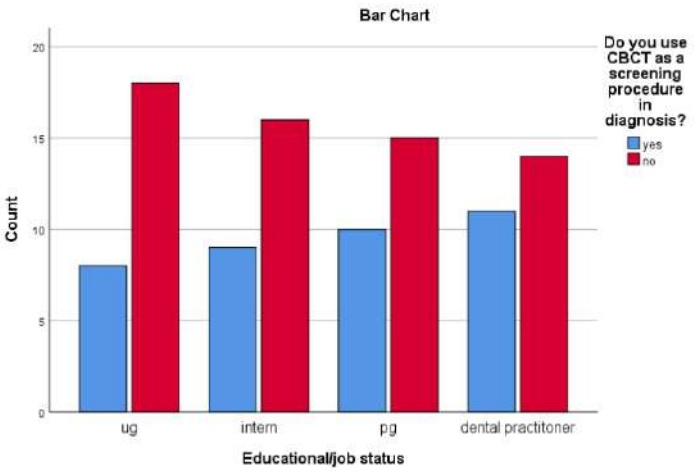

Fig 1 : CBCT as a screening procedure

78.2% of the participants would not take CBCT for child patients. Among this, highest were interns (29.1%) followed by UGs (26.5%), General Practitioners (25.3%) and PGs (18.9%) which shows greater awareness of knowledge for interns.

97.0% think that a CBCT should be provided in dental institutes. All PGs and Dental Practitioners agreed to this which shows a positive attitude towards CBCT.

71.2% would choose to use CBCT as an imaging modality in their clinical practice. Among this PGs and UGs were more willing to use.

57.6% UGs and 60% interns have obtained knowledge about CBCT through lectures and 44% PGs through curriculum and 52% General Practitioners through CDEs.

Table 3: Association between education and acquisition of knowledge about CBCT

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	28.337[a]	9	.001
Likelihood Ratio	28.074	9	.001
N of Valid Cases	101		

a. 4 cells (25.0%) have expected count less than 5. The minimum expected count is 0.25.

Statistical analysis showed significant association between educational status and acquisition of knowledge regarding CBCT (Table 3).

74.2% participants have not attended any workshops/CDE regarding CBCT which reflects the need of conducting more CDEs.

Regarding the knowledge about radiation doses, around half of the participants were not aware of radiation dose from CBCT. Among them dental practitioners form the largest group with 31.3% (16) followed by interns with 25.4% (13), UGs with 23.5% (12) and PGs with 19.6% (10), (Figure 2) and about 90% of the participants does not know the equivalent background radiation for CBCT indicating lesser awareness about radiation dose.

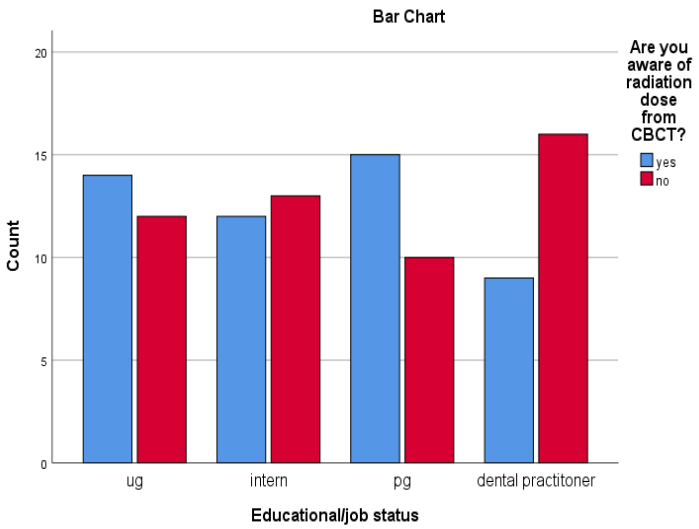

Fig 2: Awareness about radiation dose

When asked about Field of view (FOV), 68.3% participants do not select CBCT based on FOV indicating lack of awareness about FOV.

62.3% of the participants would choose to use CBCT for multiple uses like assessment of impacted teeth, implant planning, evaluation of patients with cysts and tumours, orthodontic assessment etc whereas General Practitioners emphasized more on dental implants.

73.2 % of the participants think it is necessary for a CBCT unit to be available in their speciality. Among them, the highest were PGs, 32.4% (24) followed by UGs 24.3% (18), dental practitioners 22.9% (17) and interns 20.2% (15) (Figure 3). Statistical analysis showed significant association between educational status and their willingness to use CBCT. Majority of

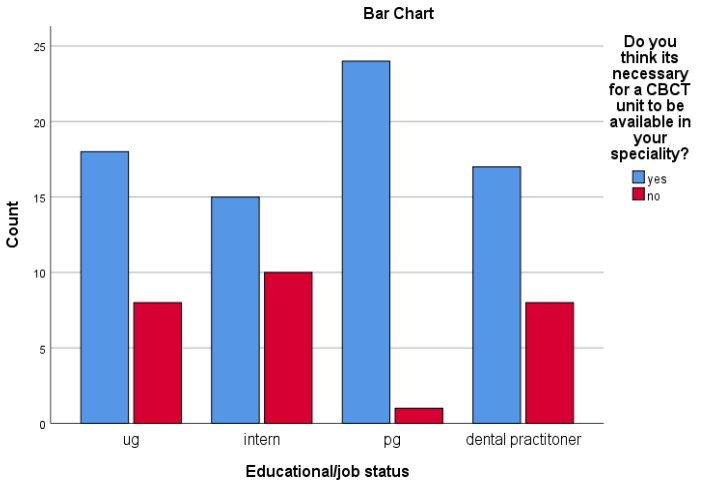

Fig 3: Necessity for CBCT in their departments

the PGs (96%) think it's necessary which shows the importance of CBCT and their willingness to use CBCT.

About 98% feel that CDE/Workshops should be conducted to increase their knowledge about CBCT which reflects the positive attitude towards CBCT.

64.3% of the participants opted clinical period for lectures in CBCT.

98% of the participants would consider the benefit and risk while prescribing CBCT.

DISCUSSION

Similar to many technologies, CBCT has also changed from a specialized tool in dentistry to a standard and common imaging technique for dental implants, orthodontics, orthognathic surgery, and endodontics due to its low cost, ease of access, and reduction of radiation exposure.[4]

This study used a questionnaire to gauge the awareness about CBCT among dental students & general dental practitioners.

In this study, it is found that almost all are aware of CBCT, albeit to varied degrees, and this highlights the lack of comprehensive and reliable information on CBCT, as it is a relatively new development in the field of oral and maxillofacial radiology.

Among 101 participants, 52.4% have advised their patients for CBCT imaging. Among these, highest were General Practitioners (39.6%), followed by PGs (30.1%), interns (16.9%) and UGs (13.2%).Statistical analysis shows a significant association between education and their reference for CBCT.

In response to the question whether CBCT will be utilized as a screening procedure in diagnosis, 62.3% of participants indicated that they would not do so. Among this, highest were UGs with 28.5% followed by interns (25.3%), PGs (23.8%) and General Practitioners (22.2%).

78.2% would not take CBCT for child patients. Out of these participants, highest were found to be interns (29.1%) followed by UGs (26.5%), General Practitioners (25.3%) and PGs (18.9%) indicating a higher level of knowledge awareness among interns. The education level and their use of CBCT in child patients were significantly associated with this question.

As per ICRP 2013 Guidelines, the radiation risk of children is 2-3 times higher than the adults, hence CBCT should be taken for them, only if absolutely indicated.[5]

Around 97% agreed the necessity of CBCT in all Dental Institutes which is in agreement with the study done by Kamburoglu et al[6] where it constitutes about 91% and 71% are willing to use CBCT in their clinical practice which reflects a positive attitude towards CBCT. Among this, PGs and UGs constitutes the highest.

Knowledge of CBCT was attained by different ways including lectures, curriculum and CDEs among which lectures comprised of maximum about 40.5%. Most of the participants gained knowledge through lectures which is similar to the study done by Balabaskaranet al[1] where it was about 48%.

36.5% UGs & interns have obtained knowledge through lectures, 44% PGs in curriculum & 52% general practitioners through CDEs. These values show significant association between education and acquisition of knowledge.

Only 25.7% of the participants have attended work shops/CDE regarding CBCT which emphasizes the need for conducting more CDEs.

About 50.4% of the participants were not aware of radiation dose which is in contradictory to the results found by Dupare et al[7] where almost 90% of the participants agreed the fact that the radiation from CBCT is less that radiation from CT. Among 50.4% who were not aware of radiation dose, 31.3% are general practitioners which shows that they are not very well acquainted with the advanced technologies, thus, they should be made more aware of it.

About 90% does not know the equivalent background radiation which shows lack of awareness about radiation doses. Hence there is a need for educating them on the necessity of adequate radiation safety

measures to be adopted while taking CBCT.

Only 31.6% participants select CBCT based on FOV and PGs comprise of the maximum which shows that PGs were more aware about FOV, and their different sizes as compared to undergraduate Students, Interns and General practitioners.

62% participants would use CBCT for multiple purposes which is in contradictory to the studies done by Boreak et al[8] where it constitutes only about 37% and Kamburoglu et al[5] where 43.6% participants used for implant planning. In our study General Practitioners emphasized more on implant planning which shows their minimal awareness on CBCT indications in other specialities.

The necessity of CBCT in their speciality is emphasized more by PGs (32.4%) which is similar to the study by Sathawaneet al[3] followed by UGs (24.3%), dental practitioners (22.9%) and interns (20.2%) whose statistical values showed high significance and the necessity of conducting CDEs was commented by almost all the participants which reflected their positive attitude towards CBCT which is in line with the study done by Dupare et al.[7]

About 98% feel that CDE/Workshops should be conducted to increase their knowledge about CBCT which is in line with the study done by Dupareet al[7] where 92% agreed to this.

64.3% of the participants opted clinical period for lectures in CBCT. (UGs 27.6%, interns 26.2%, 23% each for PGs and General Practitioners) which is in concordance with the studies done by Kamburo gluet al.5 and Balabaskaran et al.[1]

Almost 98% of the participants would consider the benefits and risk while prescribing CBCT which will be advantageous to the patient.

CONCLUSION

Therefore, it was concluded that sound knowledge of oral radiology along with CBCT is important due to its wide applications in dentofacial imaging.

It is recommended that Continued Dental Education programmes to be conducted by Oral and Maxillofacial Radiologists to create awareness among Dental Practitioners on the radiation hazards and safety measures to be adopted while taking CBCT.

Oral Medicine and Radiology Department in the Dental Institutes should be equipped with CBCT and there is a need for a comprehensive training by the Maxillofacial Radiologist for the UG and PG students in the Dental Institution to update their knowledge on the applications of CBCT.

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CHALLENGES IN ACCESSING ORAL HEALTHCARE: A QUALITATIVE STUDY AMONG PREGNANT WOMEN IN CALICUT, KERALA

Shradha Anil Kuzhivilayil[1*], Neethu Suresh[2]

ABSTRACT

Background: Pregnancy is physiological state in which a women's body undergoes several dynamic changes due to hormonal variations and oral cavity is no exception. The common oral health problems seen in pregnant women are dental caries, gingivitis, periodontal diseases, tooth mobility, pyogenic granuloma, gingival hyperplasisa and salivary alterations. In this study we aimed to identify the barriers to utilization of oral health care services by pregnant women in Kozhikode district, Kerala.

Methods: It was a qualitative study with in depth interviews (IDIs). It was conducted based on the consolidated criteria for reporting qualitative research (COREQ) checklist. We included 40 pregnant women from private as well as government hospitals in Kozhikode district. The study was conducted for a period of 3 months.

Result: Lack of awareness regarding common oral health problems in pregnancy, Lack of awareness regarding effect of poor oral health on pregnancy, Misconceptions regarding the effect of dental treatment on pregnancy, Lack of family support, Use of home remedies, Relying on social media information were some of the barriers identified during the study.

Conclusions: This study aimed at identifying the barriers so that the findings of this study could be used as a baseline information for designing future interventional studies for improving the oral health care utilization of pregnant women in Kerala.

Keywords: Qualitative study, Oral Health, Pregnant women, Dental Health.

INTRODUCTION

Pregnancy is physiological state in which a women's body undergoes several dynamic changes due to hormonal variations and oral cavity is no exception.[1] The common oral health problems seen in pregnant women are dental caries, gingivitis, periodontal diseases, tooth mobility, pyogenic granuloma, gingival hyperplasia and salivary alterations.[2] Pregnant women encounter many oral health problems and failure in treating those problems can affect the health of both the mother and the unborn child.[3] Unfortunately, the use of oral health care services among pregnant women is notably low even in developed countries.[4] To understand complex psychosocial factors like barriers, qualitative study would be a better method compared to quantitative studies. In India, to the best of our knowledge, few studies have done that. The present study aimed to identify the barriers to the utilization of oral health care services by pregnant women in Kozhikode district, Kerala.

MATERIALS AND METHODS

The study setting was Kozhikode district of Kerala, India. This was a Qualitative study with In-depth interviews (IDIs). The study was conducted based on the consolidated criteria for reporting qualitative research (COREQ) checklist.[5] The study subjects here were Pregnant women consulting in government and private Hospitals in Kozhikode. The exclusion criteria comprised of pregnant women who did not consent for in-depth interviews. In this study, we used the purposive sampling method. The interviews were conducted till data saturation was obtained. A total of 40 in-depth interviews were conducted and the study period was three months. The interviews were conducted based on a pilot tested interview guide. Audio recording of the interviews were done. Field notes were made during the interviews. Duration of each interview ranged between 20 to 30 minutes. The data was transcribed and then translated. The data was then coded manually. All the participants were contacted via telephone to clarify the doubts. Major and minor themes were derived from data. Participant quotations are presented to illustrate the findings.

The study complied with the basic ethical principles of research. Ethical clearance was obtained from institutional ethics committee. Participant information sheet in local language (Malayalam) were given to the participants. Written informed consent in local language (Malayalam) were taken from the

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RESULTS

Table 1a

Major Barrier 1a	LACK OF AWARENESS regarding oral health problems during pregnancy.
Initial coding	Most of the pregnant women had dental caries and bleeding from gums while brushing. Some reported the presence of loose teeth. They considered these as minor problems. Some pregnant women were not aware of any oral changes during pregnancy.
Intermediate coding	Most pregnant women suffered from oral health problem during pregnancy but they were not aware about severity of the problems. Some pregnant women were not aware of any of oral changes during pregnancy.
Advanced coding	Among pregnant women there is - Lack of awareness regarding oral health problems during pregnancy. This shows the importance of seeking oral health during pregnancy

"I am five months pregnant…I have a loose teeth and I have bleeding from gums while I brush my teeth so now I brush my teeth only once a day"

Major Barrier 1a, Lack of awareness regarding oral health problems during pregnancy - Common oral health problems in pregnancy. Most of the pregnant women had dental caries and bleeding from gums while brushing. Some reported presence of loose teeth. They considered these as minor problems. Some pregnant women were not aware of any oral changes during pregnancy. Among pregnant women there is Lack of awareness regarding oral health problems during pregnancy. This shows the importance of seeking oral health during pregnancy.

Table 1b

Major Barrier 1b	LACK OF AWARENESS regarding its correlation to pregnancy outcome
Initial coding	Most of the pregnant women had dental caries and bleeding from gums while brushing. Some reported the presence of loose teeth. They considered these as minor problems. Some pregnant women were not aware of any oral changes during pregnancy.
Intermediate coding	Most pregnant women suffered from oral health problem during pregnancy but they were not aware about severity of the problems. Some pregnant women were not aware of any of oral changes during pregnancy.
Advanced coding	Among pregnant women there is - Lack of awareness regarding oral health problems during pregnancy. This shows the importance of seeking oral health during pregnancy

"I don't know any thing about that… nobody told me….can bad oral health affect the baby… I don't know"

Major Barrier 1b: Lack of awareness regarding its correlation to pregnancy outcome - Effect of poor oral health on pregnancy. Only one participant reported that poor oral health may badly affect the baby.Majority of the pregnant women had no idea regarding the effect of poor oral hygiene on pregnancy outcome. Among pregnant women there is - Lack of awareness regarding the effect of poor oral hygiene on pregnancy outcome.

Table 2

Major Barrier 2	Misconceptions regarding the effect of dental treatment on pregnancy
Initial coding	Dental treatment can adversely affect the baby. Dentist give strong painkillers. Medicines given by the dentist will react with the medicines which the pregnant women is already taking. All dental treatments should be taken after five months of pregnancy.
Intermediate coding	There existed many misconceptions regarding the effect of dental treatment on baby, drug interaction, time of
Advanced coding	Many pregnant women had many Misconceptions regarding the effect of dental treatment on pregnancy.

"I am six months pregnant my mother, grand mother and mother-in law all have told me that dental treatment is not "good" during pregnancy …my neighbor 'chechi' visited a dentist due to tooth pain while she was pregnant and something happened to her child…so I wont go to dentist during pregnancy"

Table 3

Major Barrier 3	Lack of family support
Initial coding	Even when pregnant women had tooth pain family members advised her not to get dental treatment and to follow home remedies till delivery. Since dental treatment was delayed some women had to undergo extraction of tooth after delivery which could have been saved if proper treatment was provided on time.
Intermediate coding	Some pregnant women faced lack of family support to avail oral health care during pregnancy. They had to wait till after delivery to avail oral health care.
Advanced coding	Some pregnant women faced– Lack of family support in utilizing oral health services.

"I had tooth pain when I was pregnant with my first baby, but the elders in my home told me it was not safe to go to dentist during pregnancy . I used eucalyptus oil brought from Gulf .. I went to dentist after delivery….my tooth was extracted."

Major barrier 3: Lack of family support. Even when pregnant women had tooth pain family members advised her not to get dental treatment and to follow home remedies till delivery. Since dental treatment was delayed some women had to undergo extraction of tooth after delivery which could have been saved if proper treatment was provided on time. Some pregnant women faced lack of family support to avail oral health care during pregnancy. They had to wait till after delivery to avail oral health care. Some pregnant women faced–Lack of family support in utilizing oral health services.

Table 4

Major Barrier 4	Use of Home remedies
Initial coding	Many pregnant women tried to manage their oral health problems by themselves. Many of them had tooth pain and bleeding from gums. They tried to manage those problems by placing eucalyptus oil on tooth with pain and by salt water gargling.
Intermediate coding	Many pregnant women tried to manage their oral health problems by using home remedies without seeking proper oral health care.
Advanced coding	Use of home remedies

"when I get tooth pain I place eucalyptus oil on tooth … my sister also did the same ..and salt water gargle…most

Major Barrier 4: Use of home remedies. Many of them had tooth pain and bleeding from gums. They tried to manage those problems by placing eucalyptus oil on tooth with pain and by salt water gargling. Many pregnant women tried to manage

their oral health problems by using home remedies without seeking proper oral health care - Use of home remedies.

Table 5

Major Barrier 5	Relying on social media information.
Initial coding	Some pregnant checked social media like YouTube, for information regarding oral health in pregnancy. When they found that oral changes occur in pregnancy they decided not to worry about it.
Intermediate coding	Incomplete and Misguiding information from social media affected oral health care utilization decision of pregnant women.
Advanced coding	Relying on social media information

I checked my gums were red and I checked about that on YouTube…it showed that it is common during pregnancy…so I stopped worrying ”

Major Barrier5: Relying on social media information. Some pregnant checked social media like YouTube, for information regarding oral health in pregnancy. When they found that oral changes occur in pregnancy they decided not to worry about it. Incomplete and Misguiding information from social media affected oral health care utilization decision of pregnant women. Relying on social media information.

Table 6

Major Barrier 6	Travelling difficulties
Initial coding	Some pregnant women reported that even though they wanted to go to dentist , due to their physical condition they had difficulty in travelling
Intermediate coding	Travelling difficulties due to physical conditions
Advanced coding	Travelling difficulties.

I had tooth pain last month ..I thought of going to the dental doctor ..but in my condition…I try to avoid travel as much as possible ..so I took Paracetamol…and pain

Major Barrier 6: Travelling difficulties. Some pregnant women reported that even though they wanted to go to dentist , due to their physical condition they had difficulty in travelling. Travelling difficulties due to physical conditions. Travelling difficulties.

DISCUSSION

Our study aimed to identify the barriers to utilization of oral health care services by pregnant women.

Major barriers identified in our study were lack of awareness, misconceptions regarding effect of dental treatment on pregnancy, lack of family support, use of home remedies, relying on social media information, and travel difficulties.

Our findings were similar to the findings of others qualitative studies from other parts of the world.

Bahramian et al[2] from Iran reported that lack of knowledge, misbelieves, cost of dental care, physiological changes, fear and other psychological conditions and time constraint were the main barriers to utilization of oral health care services by pregnant women.

According to Rocha et al[3] lack of information and myths and beliefs about dental treatment during pregnancy were the most common barriers to utilization of oral health care services by pregnant women.

This finding concurs with Garcia R et al.[6], who indicated logistical constraints as a major constraint in dental visitation, particularly for vulnerable groups.

A gap reiterates the findings by Jessani A et al[7] where many respondents reported being aware of basic oral health issues, only a few were knowledgeable about the implications of poor oral hygiene on pregnancy outcomes

Thomas NJ et al[8] found out that there was a significant association between dental knowledge and practices with both education and socio-economic status.

According to Bogges KA et al[9] medical and dental care providers who treat women of reproductive age and pregnant women need to develop policy strategies to address this population's access barriers to, and use of, dental care services.

According to Yenen Z et al[10] there are many myths about the safety of dental care during pregnancy. As a result, pregnant women tend to receive less dental

care than non pregnant women.

CONCLUSION

Major barriers identified in our study were lack of awareness, misconceptions regarding effect of dental treatment on pregnancy, lack of family support, use of home remedies, relying on social media information, and travel difficulties. Strength- It was conducted based on the Consolidated criteria for reporting qualitative research (COREQ) checklist. Participants were contacted via telephone to clarify the doubts. Limitation: No repeat interviews were carried out.

Implication

Research Implications -The findings of this study could be used as a baseline information for designing future interventional studies for improving the oral health care utilization of pregnant women in Kerala.

Policy Implications -The findings of this study could help the policy makers to plan, develop and implement programs to overcome the barriers faced by pregnant women in utilization of oral health care services

Ethical Consideration

The study complied with the basic ethical principles of research. The study was approved by the IEC Participant information sheet in local language (Malayalam) were given to the participants. Written informed consent in local language (Malayalam) were taken from the participants.

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INFLUENCE OF DIETARY BEHAVIOUR AND HORMONAL CHANGES ON PERIODONTAL HEALTH AMONG FEMALE ADOLESCENTS - A QUESTIONNAIRE STUDY

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ABSTRACT

Background

Adolescence, a transitional phase between childhood and adulthood, is characterized by physical, emotional, endocrinological, and mental changes. In women, periodontal health is significantly impacted by hormonal fluctuations.The fast-paced modern lifestyle is significantly shaping our dietary habits, often leading to the consumption of unhealthy foods.. Weight gain resulting from poor dietary choices can negatively impact periodontal health, highlighting a correlation between specific nutrient intake and the development of periodontal disease.

Methodology

A Questionnaire study was conducted among female outpatients of PMS Dental College Vattappara, Trivandrum in age group ranging from 13 to 20 years. A structural questionnaire regarding details of dietary behaviour and oral changes was developed to collect the data.

Results and Discussion

Out of 200 female participants included in survey 50% people are following irregular pattern of food habit, 96% people taking fatty food and junk food weekly. 18% of participants having oral changes during the mensural cycle, 20% people experiencing apthous ulcer during cycle, 14% having bleeding on gums, 9% having swelling on gums ,10% experiencing bad breath, 5% having burning sensation .

Hormonal fluctuations during a female's lifetime may produce an exaggerated inflammatory response to dental plaque, resulting in gingival inflammation. Irregular eating habits affect circulating oxidative stress and antioxidative status which are involved in the progression of periodontitis.

Keywords: Diet, Adolescents,Gingivitis,Periodontitis.

INTRODUCTION

Periodontal disease progression and severity mainly depends on subgingival microbiota which is countered by the host immune response and further modulated by the genetic and epigenetic factors and also environmental factors.Adolescence, transitional phase of growth and development between childhood and adulthood characterized by physical emotions, endocranial changes and mental growth Periodontal health in women is affected by fluctuations in sex hormones. During puberty, an increased level of sex hormones, such as progesterone and estrogen, increases blood circulation in the gingiva, leading to a greater susceptibility to irritation from food particles, plaque bacteria, and calculus.[1]

The busy and modern life style of today is influencing our food habit mainly unhealthy food which might be due to easy availability, taste, low cost, marketing strategies and peer pressure, has made them popular among youths, adolescence and children. The frequent consumption of fatty foods and infrequent consumption of vegetables were associated with an increased risk of periodontitis. Various epidemiologic studies indicated that overweight and obesity are risk factors for chronic diseases, including periodontitis among young adults. Weight gain from unhealthy eating habits may be detrimental to the periodontal health which shows a correlation between the intake of specific nutrients or food and periodontal disease.[2]

The present study is intended to assess dietary behaviour and hormonal changes on periodontal health among female adolescents of reproductive age group.

METHODOLOGY

This was a Questionnaire study conducted among female outpatients of PMS Dental College Vattappara, Trivandrum in age group ranging from 13to20 years.

A structured questionnaire regarding details of dietary behaviour and oral changes was used to collect the data. Prior to the distribution of

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questionnaire, the purpose and design of study was explained to all subjects and informed consent was obtained.

Questionnaire (Table 1)

A validated structured questionnaire was used for this study and included the eating habits, hormonal changes and oral changes.

Q no.	Question	Option
1	Is your menstrual cycle normal	Yes/No/Mostly
2	Do you experience any oral changes during the cycle	Yes/No/maybe
3	How many days prior the cycle do you notice the changes	<7/>7/during/ not noticed
4	Have you experienced bleeding in gums	Yes/No/sometimes
5	Have you experienced swelling in gums	Yes/No/sometimes
6	Have you experienced bad breath during the cycle	Yes/No/sometimes
7	Have you had burning sensation in oral cavity during the cycle	Yes/No/sometimes
8	Have you developed aphthous ulcer	Yes/No/sometimes
9	Have you had alterations in taste sensation during the cycle	Yes/No/sometimes
10	Do you experience any psychological discomfort during the cycle	Yes/No/sometimes
11	Do you have an irregular eating pattern	Yes/No/mostly
12	Type of diet	Veg/non veg/vegans
13	Frequency of consuming food	Once daily / Twice daily/ thrice daily
14	Do you have habit of eating until full	Yes/No/mostly
15	Frequency of consumption of snack in between meals	Once/twice/ more than twice
16	How often do you consume fatty foods and junk food	Daily/weekly/monthly
17	How often do you consume sweet food	1-2 times/week. 3-4 times/week. Everyday
18	How often do you consume soft drinks	1-2 times/week. 3-4 times/week. Everyday
19	Consumption of green leafy vegetables and fruits in diet	Daily/weekly/ 2-3times/week
20	Do you have an habits of skipping breakfast	Yes/No/Mostly

STATISTICAL ANALYSIS

Data was analyzed using the statistical package SPSS 26.0 (SPSS Inc., Chicago, IL) and level of significance was set at $p<0.05$. Descriptive statistics was performed to assess the mean and standard deviation of the respective groups. Chi square test was used for association.

RESULT

Out of 200 female participants included in survey17% were having abnormal menstrual cycle. 59% of females had psycological discomfort during the cycle.

Considering the oral changes;18% people having oral changes during the cycle, 20% people experiencing apthous ulcer during cycle, 14% having bleeding on gums, 9% having swelling on gums, 10% experiencing bad breath, 5% having burning sensation .

Considering the eating pattern; 17% people are taking non vegetarian diet, 50% people are following irregular pattern of food habit, 96% people taking fatty food and junk food weekly, 91% people having the habit of skipping food, 46% having habit of consuming sweets on everyday.

TABLE 2-Association between Oral changes during cycles and other symptoms

		Do you experience any oral changes during the cycle?			Total	p value
		yes	no	maybe		
Bleeding gums	Yes	4	23	2	29	0.004*
	No	6	130	5	141	
	Sometimes	2	22	6	30	
Bad Breath	Yes	4	13	4	21	0.005*
	No	8	150	8	166	
	Sometimes	0	12	1	13	
Burning Sensation	Yes	5	5	1	11	0.0001*
	No	4	165	12	181	
	Sometimes	3	5	0	8	
Aphthous Ulcer	Yes	4	30	6	40	0.0001*
	No	2	130	5	137	
	Sometimes	6	15	2	23	
Taste Sensation	Yes	5	17	3	25	0.0001*
	No	5	147	6	158	
	Sometimes	2	11	4	17	

This study results shows that the occurrence of oral changes in female population like bleeding gums, bad breath, burning sensation, experiencing apthous ulcer and taste alteration were found to statistically significant (p-0.004), (p-0.005 (p-0.0001), (p-0.0001), (p-0.0001) respectively.

TABLE 3-Association between How many days prior to the cycles do you notice the changes and oral symptoms.

		How may days prior do you notice the changes ?				Total	p value
		<7	>7	During	Not noticed		
Bleeding gums	Yes	12	0	1	16	29	0.018*
	No	45	33	7	56	141	
	Sometimes	7	3	4	16	30	
Aphthous Ulcer	Yes	8	5	2	25	40	0.002*
	No	52	26	5	54	137	
	Sometimes	4	5	5	9	23	
Taste Sensation	Yes	6	8	2	9	25	0.33
	No	51	25	8	74	158	
	Sometimes	7	3	2	5	17	

The results shows that female participants experiencing bleeding gums, and aphthous ulcer, seen to be statistically significant with (p value-0.018,0.002) and taste alteration prior to or during cycle were not statistically significant (p value 0.33).

TABLE 4-Association between Psychological Discomfort and oral symptoms

		Do you experience any Psychological Discomfort?			Total	p value
		YES	NO	SOME TIMES		
Bleeding gums	Yes	23	1	5	29	0.002*
	No	83	39	19	141	
	Sometimes	13	6	11	30	
Aphthous Ulcer	Yes	31	5	4	40	0.0001*
	No	80	40	17	137	
	Sometimes	8	1	14	23	
Taste Sensation	Yes	20	3	2	25	0.0001*
	No	94	39	25	158	
	Sometimes	5	4	8	17	

Table 4 shows the association of hormonal changes along with the oral changes where it shows statistically significant of changes like bleeding gums, experiencing aphthous ulcer and taste alteration among female adolescents wassignificant in correlation with hormonal changes with p value (p-0.002, p-0.0001 p-0.0001) respectively.

TABLE 5- Association between Irregular eating pattern and oral symptoms

		Do you have irregular eating pattern			Total	p value
		YES	NO	MOSTLY		
Bleeding gums	Yes	14	10	5	29	0.003*
	No	73	60	8	141	
	Sometimes	14	8	8	30	
Aphthous Ulcer	Yes	18	20	2	40	0.0001*
	No	73	53	11	137	
	Sometimes	10	5	8	23	
Taste Sensation	Yes	13	10	2	25	0.0001*
	No	80	65	13	158	
	Sometimes	8	3	6	17	

Table 5 demonstrates an association between irregular eating pattern among female adolescents and oral symptoms where bleeding gums, aphthous ulcer, Taste alteration were found to be statistically significant (p value -0.003,0.0001,0.0001) respectively.

TABLE 6-Association between eating full or snaking with oral symptoms

		Do you eat Full or snacking			Total	p value
		YES	NO	MOSTLY		
Bad Breath	Yes	8	7	6	21	0.001*
	No	33	118	15	166	
	Sometimes	1	5	7	13	
Burning Sensation	Yes	3	7	1	11	0.04*
	No	39	119	23	181	
	Sometimes	0	4	4	8	
Aphthous Ulcer	Yes	10	26	4	40	0.0001*
	No	29	95	13	137	
	Sometimes	3	9	11	23	
Taste Sensation	Yes	5	15	5	25	0.003*
	No	32	110	16	158	
	Sometimes	5	5	7	17	
Bleeding Gum	Yes	13	11	5	29	0.0001*
	No	50	35	56	141	
	Sometimes	15	14	1	30	

Table 6 demonstrated an association between eating full or snacking among female adolescents with oral symptoms like bad breath, burning sensation, aphthous ulcer, taste alteration, bleeding gums were seen to be statistically significant (p value-0.0001, 0.04, 0.0001, 0.003, 0.0001) respectively.

TABLE 7- Association of Type of Diet and Frequency of consumption with aphthous ulcer

		Have you developed aphthous ulcer			Total	p value
		YES	NO	SOME TIMES		
Type of Diet	VEG	5	13	1	19	0.02*
	NON VEG	34	120	18	172	
	VEGAN	1	4	4	9	
Total		40	137	23	200	
		Have you had alteration in taste sensation			Total	p value
		YES	NO	SOME TIMES		
Frequency of consuming food?	ONCE DAILY	4	7	3	14	0.04*
	TWICE DAILY	9	42	3	54	
	THRICE DAILY	12	109	11	132	
Total		25	158	17	200	

The study results shows an association between type of diet and frequency of consumption were found to be statistically significant with aphthous ulcer and alteration in taste sensation with p value (p -0.02) and (p-0.04).

DISCUSSION

Periodontal disease is a chronic inflammatory disease that begins in the gingiva and spreads throughout the periodontal tissues, leading to the destruction. Among middle-aged individuals, the prevalence of periodontal disease is higher in women than in men. Previous studies done by Akemi et al reported that in addition to microbial factors various environmental factors that predisposing the host to periodontal disease include smoking habits, drinking habits and dental hygiene.[3] Our study results were also shown that there is an association between type of diet and frequency of food consumption with oral changes.

Hormonal changes during puberty, menstruation and pregnancy affect a women's oral health. Menstruation, a normal consequence of hormonal changes in a woman's body is affected by dietary habit. Menstrual health is affected by the food habit and it can arise different menstrual disorders. The reproductive function depends on the hormonal balance which in turn depends upon the type of food and food habit. Menstrual disorders are the common feature of eating disorders and is multifaceted and the result of a complex interplay of many factors including weight loss, decreased body fat, hypoleptinemia, abnormal eating attitudes and behaviours, exercise, and psychological stressors. Menstrual problems were found to have significant relationship with the non-vegetarian diet.[4] The person with vegetarian diet had less menstrual problems than that of non-vegetarian diet. When comparing the severity of the oral health problem and food habit, our study also showed that menstrual problems were associated with food eating pattern of the participants.

Female sex hormones such as estrogen and progesterone affect the periodontium. Pregnancy, mensuration, use of oral contraceptives, and menopause affect the gingival health in women. The premenstrual period and adolescence can be a critical period in a life of women marked by physical and physiologic changes in the body. During mensuration, fluctuations of steroid sex hormones occur, and women report an increase in gingival inflammation and increased associated discomfort. Hormonal level fluctuations during puberty affect both the gingival tissues and the sub-gingival microflora, causing hyper plastic reaction with inflammation of the inter dental papilla. The erythematous and edematous gingiva during the menstrual cycle results in easily provoked bleeding and exudation during day-to-day activities such as mastication and brushing.[5] Our

study results were found to be in accordance with these studies.

Shourie et al concluded that the ovarian hormones have a negligible effect on clinically healthy period ontium though these hormones may exaggerate gingivitis and clinical significance of the same is uncertain. In addition, sex hormones increase vascular permeability and enhance proteolytic enzyme interaction with inter leukin-6, an inflammation mediator.[6]

Khosravisamani et al demonstrated the effect of the menstrual cycle on the levels of interleukin 1 beta and tumor necrosis factor alpha in gingival crevicular fluid and on periodontal clinical parameters such as gingival bleeding in healthy females and concluded that changes occurring during the menstrual cycle influence the periodontium and can induce inflammatory conditions.[7]

Hormonal fluctuations during a female's lifetime may produce an exaggerated inflammatory response to dental plaque, resulting in gingivitis. Dental plaque deposition and high inflammatory gingiva (bleeding and redness) are typical features of hormone-associated gingivitis. Symptoms vary according to individuals' responses to hormonal changes. Susceptibility to infections (e.g., periodontal infection) increases due to variations in the immune system and can be elucidated by the hormonal changes and suppression of T-cell activity, decreased neutrophil chemotaxis and phagocytosis, altered lymphocyte response and depressed antibody production, chronic maternal stress.[8]

The biologic mechanisms underlying the association of eating habits with the periodontal condition are not well established. Various studies suggested that eating habits affect circulating oxidative stress and antioxidative status which are involved in the progression of periodontitis, eating habits may increase or decrease the risk of periodontitis through the modulation of these factors.[2]

CONCLUSION

The hormonal fluctuations can occur throughout a woman's life, resulting in changes in the gingival and periodontal tissues, and these hormonal changes affect therapeutic decision-making in periodontics. This study had self-reporting data and could have been reported by the participants based on their level of understanding of the questions. It is recommended that further studies both cross-sectional and longitudinal clinical and microbiologic studies should be done from adolescence to adulthood, during menstruation and correlating impact of dietary habits on oral health.

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ESTIMATION OF PROPORTION OF RISK FACTORS ASSOCIATED WITH NEWLY DIAGNOSED ASTHMATIC CHILDREN

A Sumi[1*], S S Jayakrishnan[2], A Veena[3]

ABSTRACT

Objective: To estimate the proportion of risk factors in newly diagnosed asthmatic children.

Methods: A prospective observation study was conducted in newly diagnosed asthmatic children and their caregivers inorder to estimate the proportion of risk factors associated with their disease. Data regarding the age, triggering factors and risk factors were collected by direct interview with the children and their caregivers.

Results: Allergic rhinitis and family history of Bronchial Asthma were the only two risk factors reported. Allergic rhinitis constituted 33% and family history of Bronchial Asthma constituted 22% respectively. 45% children had both Allergic rhinitis and family history of Bronchial Asthma.

Conclusion: Childhood asthma is a complex and multifactorial disease influenced by a combination of genetic, environmental and socioeconomic factors. The identified risk factors including family history and allergic rhinitis underscore the importance of comprehensive approach to the prevention and management. The new strategy for the early prevention of childhood asthma includes prenatal and perinatal intervention, infancy and early childhood interventions, environmental modifications, nutritional interventions, microbiome targeted interventions, genetic and epigenetic considerations.

Keywords: Bronchial asthma, Risk factors, Allergy, Triggering factors, Age

INTRODUCTION

Bronchial asthma is a chronic inflammatory disorder of the airways that is characterized by airflow obstruction, bronchial hyper-responsiveness and underlying inflammatory changes.[1] Both symptoms and airflow limitation characteristically vary over time and in intensity. These factors that can cause expiratory flow limitation can be viral respiratory infections, exercise, exposure to allergen or change in weather.[2] A combination of environmental exposures and inherent biologic and genetic susceptibilities has been implicated in the etiology of asthma. Asthma is a serious global health problem affecting all age groups, with global prevalence ranging from 1% to 21% in adults and with up to 20% of children aged 6–7 years experiencing severe wheezing episodes within a year. In developing country like India, the prevalence of asthma is variable from one region to another. Some sample studies showed median prevalence of 4.75%.[3]

Asthmais a heterogenous disease usually characterized by chronic airway inflammation. It can be defined by a history of respiratory symptoms such as wheeze, shortness of breath, chest tightness, cough that vary over time and in intensity together with variable expiratory airflow limitation. Asthma can cause varying restriction in the physical, emotional and social spheres of patient's life. Childhood asthma is the most common cause of emergency department visits, hospitalizations and missed school days.It affects children educational potential and adversely affects their quality of life.[1]

Exposure to indoor and outdoor allergens can overlap in their role as factors causing increased risk of asthma as well as triggering exacerbations. Exposure to house dust mite is an independent risk factor for development of asthma. Outdoor air pollutants have a major role in aggravating chronic diseases in children especially asthma as well as development of the disease.[4] smoking causes accelerated decline in lung function and increases the severity of the disease. Even prenatal smoking exposure is shown to increase the risk of asthma development.

Higher prenatal vitamin E and zinc levels was

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associated with lower risk of development of wheeze upto age 5 year. No protective effect against the development of atopic disease in infants has been shown by excluding certain allergic food items from maternal diet during pregnancy.[5,6]

Early childhood risk factors of persistent asthma include parental asthma, atopic dermatitis or eczema, allergic rhinitis, food allergy, pneumonia or bronchiolitis requiring hospitalization, wheezing apart from colds, male gender, low birth weight, environmental tobacco smoke exposure and reduced lung function at birth.

Effective asthma management requires good relation between the health care provider and the patient which is attained by teaching communication skills to health care provider and providing health education to the patient. Patients should be given the opportunity to decide about the treatment options. This type of shared care is said to have better outcome. Good communication by the health care provider is associated with good outcome. Health literacy means the patients should be able to understand basic health informations and make decisions based on that. Less health literacy is associated with poor asthma control.

In India, there is a scarcity of data on quality of life, risk factors and the severity of asthma in newly diagnosed asthmatic children. Several studies had reported that youth with asthma displays a higher prevalence of anxiety & depression disorders than healthy youth.[4] Asthma is a serious global health problem and its prevalence is increasing, especially among children. It represents a significant social and economic burden.

MATERIALS AND METHODS

The present study was a prospective observational study. The study setting was paediatric department of SAT hospital, Govt. Medical college, Thiruvananthapuram. The study population was children with newly diagnosed asthma having 6-12 years of age. Sample size was calculated based on study conducted by *Battula M et.al* [1]

Using the equation $n = \frac{(Z_{1-\alpha/2})^2 \times \sigma^2}{d^2}$

$= \frac{(1.96)^2 \times (0.2378)^2}{(0.05)^2}$

≈ 98 Anticipating 10% drop out sample size is rounded to 100.

σ= Standard deviation of quality of life score (0.2378)

d= Absolute precision (0.05)

Where,

$(Z_{1-\alpha/2})$= 1.96 at 5% level of significance

Study included 6–12-Year-old children with newly diagnosed asthma and children and family members who could read and respond to questionnaire. The exclusion criteria were the children who were previously treated with inhaled steroids and those with intellectual disability and those who refused to participate in the study. Duration of the study was one year. Using standard data collection form data were obtained from the children and their caregivers by direct interview. study variables were Age, Gender, Body mass index, Allergic history, Triggering factors, Risk factors.

Regarding ethical clearance it was obtained from Institutional Ethics Committee/ Human Ethics Committee of Government Medical college, Thiruvananthapuram. HEC.NO.08/23/2022/MCT.

All data were kept confidential and used only for the purpose of the study and no cost was incurred from the patients.

Study procedure

- Data were collected from newly diagnosed asthmatic children and their caregivers who met the inclusion criteria. Detailed information regarding the study were explained to the participants and the informed consent was obtained from their caregivers.
- Demographic, Socioeconomic, Allergic history, BMI etc were collected from the case sheets and from the caregivers.

STATISTICAL ANALYSIS

- Collected data were entered into Microsoft excel format and analysed using IBM SPSS version 22.
- Demographic variables were expressed as frequency and percentages.

RESULTS

Distribution of patients according to gender

Gender	Frequency	Percentage (%)
Male	53	48
Female	57	52

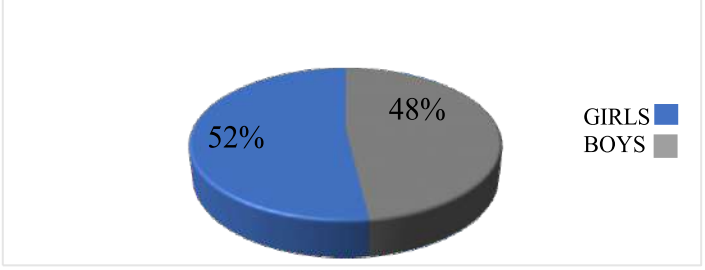

Figure 1: Percentage distribution of sample according to gender

In the study population majority of patients were females (52%) and 48% patients were males.

Distribution of patients according to age

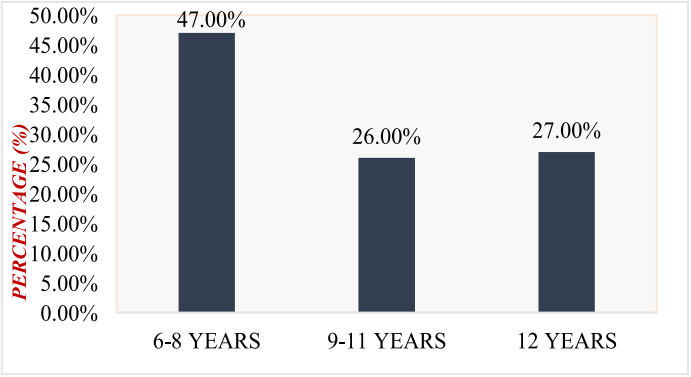

Figure 2: Percentage distribution of patients according to age

Majority of patients were in the age group 6-8 years (47%). Only 26% patients were in 9-7 years of age and 27% patients were in the age group 12 years. Mean age was found to be 8.10 years.

Residing area	Frequency	Percentage (%)
Rural	59	54
Urban	51	46

Table 2: Distribution of patients according to residing area

Majority of the patients (54%) were from rural area and 46% were from town area in the study.

Distribution of patients according to residing area

Socioeconomic class	Frequency	Percentage (%)
Upper	0	0
Upper middle	0	0
Lower middle class	17	16
Upper lower class	85	77
Lower	8	7

Table 3: Distribution of patients according to socioeconomic class

Out of 110 patients 77% of them were from upper lower class in the socio-economic strata as per Kuppuswami classification. Only 7% patients were from lower class in the socioeconomic strata.

Distribution of patients according to education of caregiver

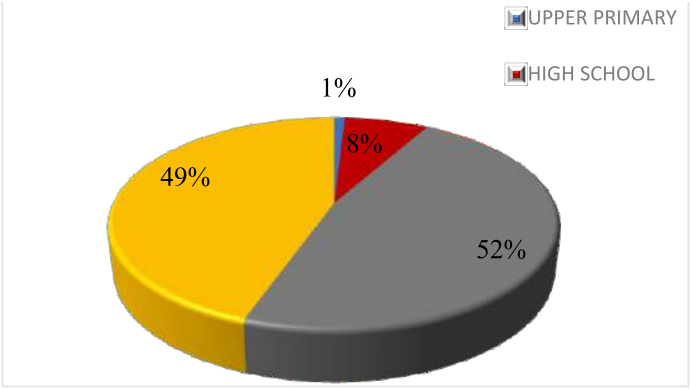

Figure 3: Percentage distribution of patients

Out of the total study population majority of the care givers were with higher secondary education (52%) and 49% caregivers had degree qualification. The education level of 8% of parents was high school education and only 1% had upper primary education.

Distribution of patients according to asthma severity

Severity	Frequency	Percentage (%)
Mild	2	2
Moderate	100	91
Severe	8	7

Table 4: Frequency and percentage distribution according to asthma severity.

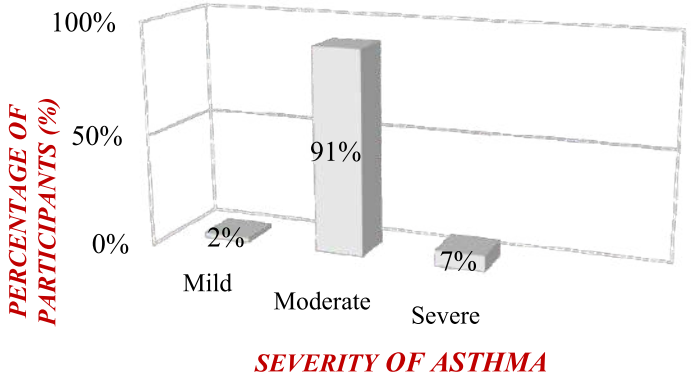

Figure 4: Percentage distribution according to disease severity.

It was observed that, out of the total study population majority of the parents reported moderate exacerbations (91%). 7% of them were with severe asthma and only 2% patients were with mild asthma.

Distribution of patients according to body mass index

Severity	Frequency	Percentage (%)
Mild	2	2
Moderate	100	91
Severe	8	7

Table 5: Frequency and percentage distribution of patients according to BMI

Out of 110 patients reported, 83.63% children were on underweight category. 14.54% children had normal weight and only 1.83% patients were over weight.

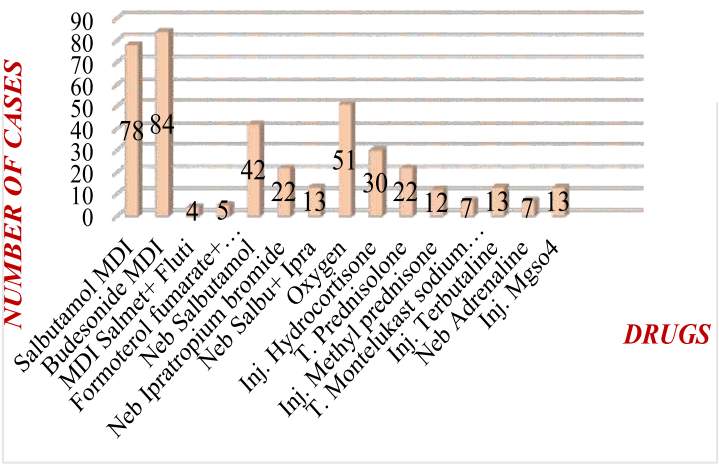

Figure 5: Frequency distribution according to prescribed anti asthmatic drugs.

Of the 110 patients 84 patients were prescribed with Budecort MDI. 13 patients received salbutamol + Ipratropium nebulization. Only 4 patients were prescribed with Salmeterol and Fluticasone inhalation. 7 patients took Adrenaline nebulization and 13 patients received MgSO4 injection.

Distribution of sample according to triggering factors

Table 6: Frequency and percentage distribution according to triggering factors

Triggering factors	Frequency	Percentage (%)
Dust allergy	57	51.8
Drug allergy	5	4.5
Food allergy	12	10.9
Skin allergy	13	11.8
Cold climate	52	47.3
Exposure to pets	51	46.4
Physical activities	37	33.6
Passive smoking	19	17.3
Environmental smoke	9	8.2

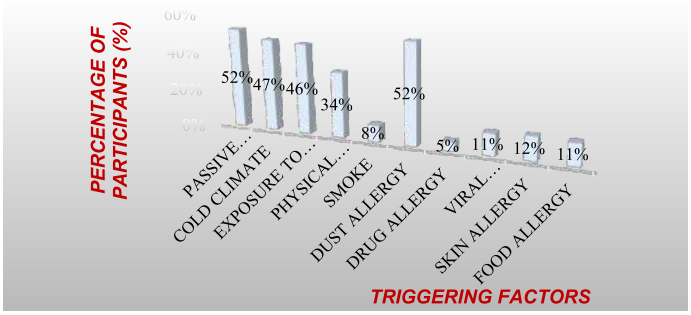

Figure 6: Percentage distribution according to triggering factors

Distribution of sample according to risk factors

Risk factors	Frequency	Percentage (%)
Family history of bronchial asthma	19	22%
Allergic rhinitis	28	33%
Both	39	45%

Table 7: Frequency and percentage distribution according to risk factors.

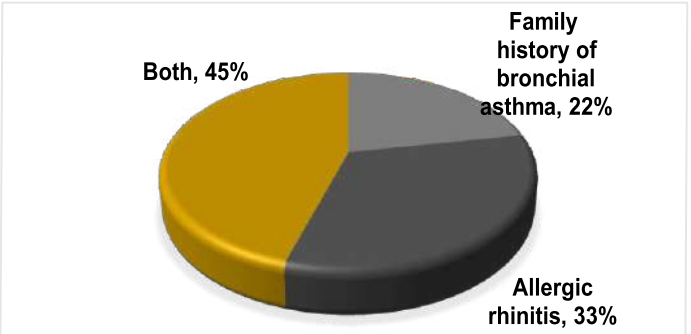

Figure 7: Percentage distribution according to risk factors

DISCUSSION

In our study majority of participants (52%) were found to be females. Battula M et a[3]. and Nair S et al reported a higher incidence of bronchial asthma in male population.[1, 2] Mean age of children were 8.1 years with a S.D of 1.91. About 53.63 % of the children lived in rural areas. Savadahiya D et al reported in his study that urban children in the age group of 6-12 years experienced more episodes of breathing difficulty.[7]

77% of the study population belonged to the upper lower class in the Socio-economic strata as per Kuppuswamy classification. In contrast to our study Battula M et al reported high proportion of patients in the lower middle class.[1]

Only 14.5% of children participated in our study were found to have normal BMI. 83.63% children were underweight category. No obese patients were found in our study. Findings were not in concordant with Battula M et al. In their study 84% patients had normal weight.[1]

Most common triggering factor exhibited by the patients were dust allergy (52%) and passive smoking (52%). 46% children gave a history of exposure to pets.

Allergic rhinitis and family history of Bronchial Asthma were the only two risk factors reported. Allergic rhinitis constituted by 33% and family history of Bronchial Asthma constituted 22% respectively. 45% children had both Allergic rhinitis and family history of Bronchial Asthma. Similar finding were reported by Battula M et al.[1] Atopic dermatitis and Allergic conjunctivitis were not present in the children diagnosed with asthma.

The future perspectives include prospective study to findings, development of effective interventions and investigation of interactions between genetic and environmental factors.

CONCLUSION

This observational study highlights the significant burden of risk factors associated with newly diagnosed asthmatic children. The findings demonstrate that the most common risk factors were family history of asthma (22%), Exposure to tobacco smoke (52%) and allergic rhinitis (33%). The key implications for the prevention of childhood asthma includes early identification of risk factors, reduction of environmental exposures, promotion of healthy life style, genetic counselling, and family centred care and socioeconomic disparities necessitate equitable access to health care.

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TREATMENT OF CLASS III GINGIVAL RECESSION WITH THIN GINGIVAL PHENOTYPE AND SHALLOW VESTIBULE WITH TWO STAGE PROCEDURE OF LASER VESTIBULOPLASTY FOLLOWED BY GINGIVAL UNIT GRAFT: A CASE REPORT WITH 2 YEARS FOLLOW UP

Bolla Sushma,[1*] A Amarender Reddy,[2] Rampalli Viswa Chandra,[3] Anumala Naveen,[4] Vallabhdas Santosh kumar Goud [5]

ABSTRACT

Purpose: It is important to identify the cause of gingival recession to reduce the progression of disease and favorable treatment outcomes. Thin gingival phenotype and shallow vestibule are common predisposing factors for gingival recession.

Method: In the present case report, a 20 year old female patient came with the chief complaint of receeding gums in the lower front teeth region since 2 months. On clinical examination, Class III gingival recession with shallow vestibule and thin gingival phenotype was seen. So, a two stage treatment plan with laser vestibuloplasty followed by gingival unit graft was performed to address the shallow vestibule and thin phenotype respectively.

Result: The 2 years follow up results showed significant root coverage, improvement in the gingival phenotype thickness and vestibular depth.

Conclusion: Two stage procedure of laser vestibuloplasty followed by gingival unit graft showed long term results without relapse.

Keywords: Gingival unit graft, laser vestibuloplasty, gingival phenotype, soft tissue augmentation, shallow vestibule

INTRODUCTION

The main characteristic of gingival recession is the apical migration of marginal gingiva as well as the fact that the latter is gradually displaced away from the cement-enamel junction, thereby exposing the root surface to the oral environment.[1] Causes of gingival recession can be low-level and long-lasting trauma, chronic inflammatory periodontal disease, decreased alveolar bone crest thickness, thin gingival phenotype, frenulum insertion, aggressive tooth brushing, shallow vestibular depth.[2] Gingival recession may increase tooth hypersensitivity, cause pain, root caries, unesthetic appearance of the gums, periodontal attachment loss and tooth loss, and make oral hygiene and plaque control difficult.[3] These clinical problems can be resolved by root coverage treatments, including free gingival graft, pedicle graft, connective tissue graft, coronally positioned flap and guided tissue regeneration.[4]

Diagnostic process that takes into account of possible etiologic factors and evaluates the presence of bad habits may contribute to the occurrence of complications and side events with detrimental effects on the expected treatment outcome. According to Mazzotti C et al., the principal elements that lead to treatment errors are associated with an incorrect diagnosis, non-identification of the etiology.[5] Hence, the treatment by eliminating the etiological factors is essential for long term success.

The term periodontal biotype introduced by Seibert and Lindhe categorized the gingiva into "thick-flat" and "thin-scalloped" biotypes. Thick gingival tissue is associated with a broad zone of the keratinized tissue and flat gingival contour suggestive of thick bony architecture and also is more resistant to inflammation and trauma. Thin gingival tissue is associated with a thin band of the keratinized tissue, scalloped gingival contour suggestive of thin bony architecture and is more sensitive to inflammation and trauma. Inflammation of the periodontium results in increased pocket formation and gingival recession in thick and thin tissues respectively.[6]

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Hence, in clinical practice identification of the periodontal biotype is significant.

A shallow vestibule is associated with plaque accumulation and consequently marginal gingival inflammation which leads to mobility, bone loss, gingival recession. The principal elements that lead to treatment errors are associated with an incorrect diagnosis, non-identification of the etiology. So, elimination of etiological factors is essential for successful outcomes in gingival recession treatment.

The present case report shows a patient with shallow vestibule and thin gingival phenotype leading to class III gingival recession. Therefore, the aim of present case report is to increase the depth of vestibule, increase the gingival tissue thickness and root coverage with two stage procedure of laser vestibuloplasty and gingival unit graft.

CASE REPORT

A 20 year old female patient came to the Department of Periodontology, SVS Institute of Dental Sciences, Mahabubnagar, India with the chief complaint of receeding gums in the lower front teeth region since 2 months. On clinical examination class III gingival recession was seen irt 31, 41. Thin gingival phenotype with inadequate vestibular depth was also seen (Fig 1a). and radiographically interdental bone loss was seen. Based on clinical and radiographical examination laser vestibuloplasty followed by gingival unit graft was planned and informed consent was taken from the patient.

Fig 1 a: Pre-op showing shallow vestibular depth.
b: Laser vestibuloplasty.
c: Periodontal pack placed. d: Post op 10 days

At the initial visit scaling and root planning was performed. Patient was recalled after 1 week for revaluation and laser vestibulopasty. After administration of local anesthesia laser vestibuloplasty was performed with 980-nm diode laser in noncontact mode (2 mm of focal distance) with a 300-nm fiber, continues mode, 1.5 W power (Fig 1b) and periodontal pack was placed at the surgical site to prevent replase (Fig 1c). Patient was recalled after 10 days for suture removal (Fig 1d).

3 months post operatively the healing was uneventful with noticeable increase in the vestibular depth (Fig 2a). So, the gingival unit graft procedure was planned to increase the thickness of gingival and root coverage.

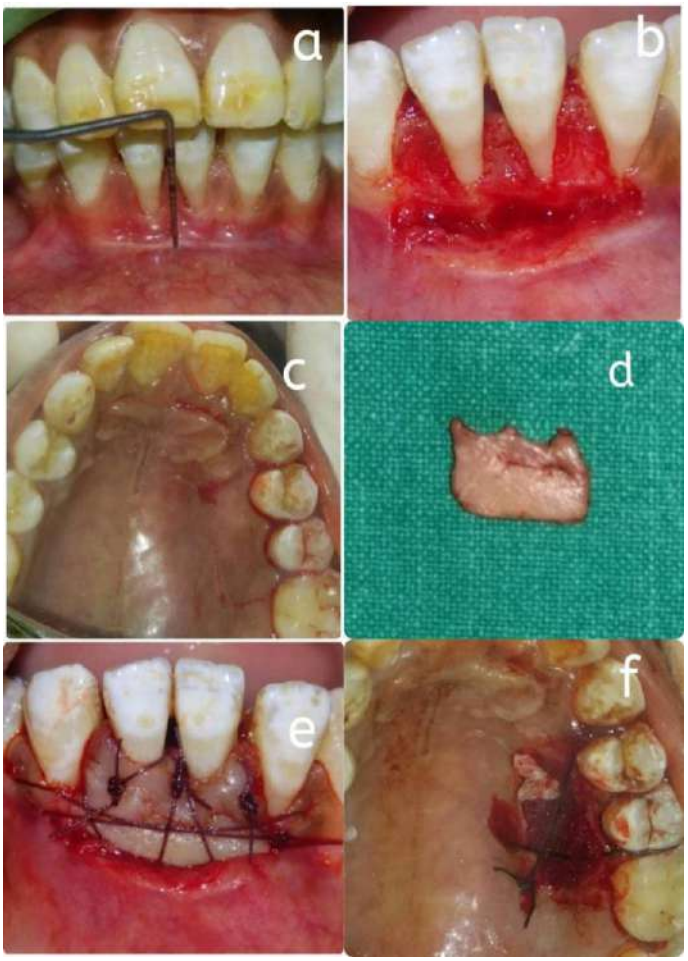

Fig 2 a: post op 3 months after laser vestibuloplasty.
b: Recipient site preparation.
c; Harvesting gingival unit graft from donor site.
d: Gingival unit graft. e: GUG sutured to recepient site.
f: Gelfoam sutured to donor site.

Recipient site

After achieving local anesthesia in both groups, the preparation of the recipient site was begun by making

two vertical incisions extending to the adjacent teeth and about 3 to 4 mm beyond the mucogingival junction, as well as a horizontal incision at the mucogingival junction. A sharp split-thickness flap was reflected, and the surfaces between these incisions were de-epithelialized (Fig 2b).

Donor site

At the gingival unit side, the palatal tissue, including the marginal and interdental gingiva, was harvested from the palatal aspect of the maxillary premolars (Fig 2c). The graft was contoured, adapted and sutured at the level of the CEJ (Fig 2d, e). At donor site gel foam was placed and sutured (Fig 2f). The sutures were removed after 10 days and healing was uneventful. (Fig 3a, b)

2 years after the surgery root coverage was seen with increase in the gingival thickness even at the interdental areas with adequate vestibular depth. (Fig 3c, d)

Fig 3 a: Post OP 10 days healing at donor site.
b: Post OP 10 days healing at recipient site.
c: Post OP 2 years. d: Vestibular depth post op 2 years

DISCUSSION

In contrast to the conventional submarginal design, gingival unit graft proposes the use of involving the marginal and papillary part of the gingiva in the FGG. The authors suggest that the blood supply in the marginal and papillary part of the gingiva is higher containing several interconnecting loops, hairpin networks, anastomoses and form a dense vascular plexus compared to that of the apical gingiva. This vascular part of gingiva when included in the graft gives superior tissue integration with recipient bed along with a more esthetic coverage and favorable tissue blend.[7] In the present case, also there is adequate increase in the width of attached gingival, thin biotype changed to thick biotype with significant root coverage and increase in the soft tissue thickness in the interdental areas.[8] This technique can be performed for soft tissue grafting of the interdental papilla and root coverage in esthetically sensitive areas.

While shallow vestibule does not deter fixed prosthetic replacement, it causes food impaction against the gingival margin and into the interproximal spaces, leading to poor plaque control[9]. Several studies indicate that an adequate width of attached gingiva is essential for the proper oral hygiene. Wennstrom and Pini-prato stated that the shallow vestibule and insufficient width of attached gingiva might cause the accumulation of food during mastication and also act as barrier to maintaining good oral hygiene.[10]

In the present case, laser vestibuloplasty was performed followed by gingival unit graft procedure as a two stage technique after 3 months. Because with longer wavelengths (Er,Cr:YSGG, Er:YAG and CO2), tissue penetration is considerably less, but there is potential for the build-up of char (carbonised products of ablation). Keratinised mucosa overlying the alveolar ridge exists as an outer epithelium layer and an inner connective tissue layer, separated by the basal lamina, in thickness from 0.5-4.0 mm.[11] The underlying periosteum and bone, together with root surface at gingival margin levels, can be susceptible to thermal damage. This risk can exist through the penetration of short wavelengths or the conductive heat effects arising from long wavelength char that is super-heated.[12] The immediate soft tissue grafting in the area may impair the healing. So, the gingival unit graft augmentation was done after 3 months which showed significant results, however color matching was seen as the drawback for this procedure.

CONCLUSION

The long term, 2 years follow up results with two stage laser vestibuloplasty followed by GUG showed significant improvement in the gingival phenotype thickness, vestibular depth was increased and root coverage.

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