UNIVERSITI SAINS MALAYSIA

APEX™

ORAL HEALTH EDUCATION MODULE FOR MOTHERS (OHEM)

Organising an oral health change in families through family bonds.

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Foreword

Oral health is a vital component of overall health and well-being. Establishing good oral hygiene habits early in life can significantly reduce the risk of dental disease and improve oral health outcomes. Recognising the pivotal role mothers play in shaping their children's health behaviours, this **Oral Health Education Module for Mothers (OHEM)** has been developed as a comprehensive educational tool to empower mothers with the knowledge and skills necessary to instil lifelong oral hygiene practices in their families.

OHEM provides essential information on oral health, including the structure and function of teeth, common oral diseases, preventive care strategies, and effective oral hygiene practices. It also outlines structured methodologies for delivering oral health education through lectures, exhibitions, and demonstrations. By equipping mothers with this knowledge, OHEM serves as a bridge between healthcare professionals and families, ensuring that oral health awareness reaches communities in a clear, accessible, and practical manner.

The development of OHEM is the result of collaborative efforts by dental public health experts, general dental practitioners, pediatric dentists, and dental nurses from Malaysia and Pakistan. Their expertise and dedication in the review process have resulted in a validated, scientifically sound, and user-friendly manual. OHEM is designed for community-based interventions and mainly benefits families in underprivileged settings with limited access to dental care. However, its principles and practices apply universally to families striving to improve their oral health.

We hope OHEM will be a valuable resource for mothers, educators, and healthcare providers. By working together, we can promote a culture of oral health awareness, reduce the burden of dental diseases, and ensure that future generations grow up with strong, healthy smiles.

Professor Dr. Norhayati Luddin
Dean
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Contributors

Prof Dr Sidra Mohiuddin

Dr. Sidra Mohiuddin is a dental public health professional with extensive experience in academic, research, and community settings. She earned her BDS with distinction from Hamdard University in 2006 and her MDS in Community Dentistry/Dental Public Health from Dow University in 2015. She is affiliated as a Professor and Head of Department at Ziauddin College of Dentistry, where she mentors undergraduate and postgraduate students. She is currently pursuing a PhD in Dental Public Health at Universiti Sains Malaysia.

Her doctoral research focuses on developing and validating the Oral Health Education Module for Mothers (OHEM) and on assessing tools to improve oral health knowledge, attitudes, and practices among mothers and children.

She gratefully acknowledges her supervisor, Dr. Basaruddin Ahmad, for his continuous guidance and mentoring throughout the OHEM project. She also thanks Dr. Yousra Altaf, Dr. Ramsha Zarar, and Dr. Ammarah Nauman for their support of the OHEM photography, as well as Prof. Dr. Nazish Fatima for her moral support. Special appreciation goes to Associate Prof. Dr. Fizza Saher for providing oral anatomy models and to her students, Ahad, Danial, Fatima, Maher, and Umaiya, for participating as models in the project.

Prof Dr Mervyn Hosein

Prof Dr Mervyn Hosein completed their BDS at Liaquat Medical College, Jamshoro, in 1973. He secured Fellowships in Dentistry from the Royal Colleges of Surgeons of Edinburgh and England, and upon his return, went into private practice in Karachi. In 1985, he secured the Fellowship of the Royal College of Surgeons in Ireland. He is a pioneer in the field of Maxillofacial surgery, having established the Department at Liaquat National Hospital in 1985, where he remains a part-time consultant. He also founded the teaching Department of Maxillofacial Surgery at Dow Medical College/Civil Hospital in 1990. Resigning from Government Service in 2002, he joined Hamdard University as a Professor of OMFS and Vice Principal at the College of Medicine and Dentistry. In March 2015, he joined Ziauddin University as a Professor of Oral and Maxillofacial Surgery and Principal of the Dental Faculty. He retired from active administration and full-time academia but continues to work part-time at his private clinic and the Liaquat National Hospital.

Dr Mohammad Zulkarnain Bin Sinor

Dr Mohd Zulkarnain Bin Sinor obtained his BDS from the University of Malaya in 1993 and completed MComm Med in Dental Public Health from Universiti Sains Malaysia in 2008. He served as a dental officer in the Ministry of Health, Malaysia, and as a lecturer at the Islamic Science University of Malaysia before joining the School of Dental Sciences at the Universiti Sains Malaysia in 2012. He has extensive experience teaching at both undergraduate and postgraduate levels, as well as supervising master's and PhD students. He actively supervises and participates in community projects, with a particular interest in oral health among children and older adults.

Dr Siti Sarah Binti Ayub

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Dr Maria Ishaq Khattak

Dr Maria Ishaq Khattak, an academic from Peshawar, Pakistan, is the Head of the Department of Dental Public Health at Khyber Medical University. She holds a master's in Dental Public Health from the University of Leeds and is a diplomate with the Royal College of Surgeons, London. She earned her PhD from Universiti Sains Malaysia, focusing on the experiences of patients with oral cancer during the COVID-19 pandemic.

Dr Khattak has published in several international and national journals and has participated in significant national research projects, including the National Nutrition Survey 2018 by Aga Khan University, Gender- Based Violence studies with the World Health Organisation (WHO), and climate change and health research funded by the Foreign, Commonwealth & Development Office (FCDO). She is a postdoctoral fellow at the Centre of IMPACT at the University of York. Dr Khattak remains committed to improving public health in low- and middle-income countries and striving for research that positively impacts lives.

Dr Sarliza Binti Yasmin

Dr Sarliza Yasmin Sanusi graduated from the University of Western Australia in 1999 and subsequently specialised in pediatric dentistry at the University of Queensland, where she obtained her master's degree in 2005. She is also a member of the Royal Australasian College of Dental Surgeons (Pediatric Dentistry). She worked in Australia for four years and subsequently joined academia at the School of Dental Sciences, Universiti Sains Malaysia, as a lecturer in 2008. Her research interests include pulp therapy in primary dentition and children with special needs.

Ms Ng Sue Fen

I start my study of 'Diploma Juruterapi Pergigian' at Pusat Pergigian Kanak-Kanak & Kolej Latihan Pergigian Malaysia in Georgetown, Penang (2012 - 2015). I started working as a Dental Therapist at USM in September 2015. I spent three years treating patients under the age of 18 at Pead's Clinic. I have two years of experience working with a Dental Special Needs Clinic and four years at the Dental Health Education unit, where I educated patients about the importance of oral hygiene and how to maintain it.

Dr Basaruddin Bin Ahmad (Editor)

Dr Basaruddin Ahmad graduated from the University of Malaya in 1993 with a Bachelor of Dental Surgery degree. He also received an MBA from the University of Leeds in 1996, an MSc in Medical Statistics from the London School of Hygiene and Tropical Medicine in 2003, and a PhD from University College London in 2008. He worked as a dental officer at the University of Malaya and in private practice before joining the School of Dental Sciences at the Universiti Sains Malaysia in 2001. He teaches research methodology and medical statistics at both undergraduate and postgraduate levels, and has graduated students with master's and PhD degrees. He is interested in research study design, statistical methods, and dental public health.

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1. INTRODUCTION

1.1 Oral Health Educational Module (OHEM)

The Oral Health Educational Module (OHEM) is a comprehensive guide for oral health educators who wish to implement intervention programs to enhance children's oral health by educating and empowering their mothers. OHEM aims to equip mothers with essential oral health knowledge, enabling them to effectively communicate this information to their children. The module covers fundamental oral health concepts and provides detailed instructions on preparing and delivering intervention materials. It also guides mothers in actively engaging with their children while teaching them about oral health. Additionally, the module includes an assessment tool to evaluate the intervention's effectiveness in enhancing mothers' and children's understanding of oral health.

OHEM was developed by oral health care professionals and underwent a thorough review to ensure the information is suitable for its intended audiences. It is designed for implementation in community settings, such as households, communal areas, community halls, and primary healthcare centres. The development of OHEM is primarily aimed at less affluent populations with a limited understanding of the importance of oral health and restricted access to oral health care services.

Nevertheless, the manual can be used for any community and differs only in the quality of materials used in the presentation.

The next chapter will present the background of the development process, followed by Chapter 3, which covers oral health topics, including oral anatomy, oral diseases, and oral hygiene instruction. Chapters 4, 5, and 6 outline the methods for delivering OHEM to mothers via lecture, exhibition, or demonstration, respectively, with a brief explanation of the background and preparation before and during delivery. Chapter 7 outlines important guidelines that educators can share with mothers when engaging with their children. The last chapter, Chapter 8, provides background and a guide to using the instrument for assessing knowledge, attitude, and practice, which was developed based on Chapter 3.

2. BACKGROUND OF OHEM DEVELOPMENT

2.1 Development of OHEM

The OHEM initiative aims to enhance children's oral health through promotion and education. Its fundamental principle is to equip educators with all the necessary information to develop an intervention program that promotes oral health among mothers without outsourcing expertise. The belief is that oral health improvement can be achieved by fostering changes in oral health behaviour through educational interventions that emphasise the learning experiences of both mothers and children, leveraging the bond they share. OHEM aims to empower mothers with the knowledge and skills that foster self-control and efficacy in their children, enabling them to achieve health-related goals. In simpler terms, the expectation is that by increasing mothers' oral health knowledge and awareness through education, their children will adopt healthier oral health behaviours.

Adopting a healthy lifestyle may result from changes in cognitive, affective, and psychomotor domains throughout the learning process. The cognitive learning domain involves the understanding and processing of factual knowledge. For instance, one can learn that consuming sugary snacks or fizzy drinks can lead to dental caries, and that good oral hygiene can help preventdental plaque accumulation, bleeding gums, bad breath, and caries.

The affective learning domain addresses how attitudes, emotions, and behaviours change in response to new understanding. For example, knowledge about the effects of frequent sugar consumption on the risk of dental caries and the benefits of brushing in preventing plaque accumulation and dental caries can raise awareness, transforming beliefs and opinions about the importance of reducing intake and maintaining good oral hygiene into concrete aims. The psychomotor domain focuses on developing the skills necessary to apply understanding and achieve aims, such as choosing to snack less often, opting for sugar-free beverages, and practicing effective brushing and flossing routines.

Oral health education can be conducted in various settings, including dental practices, primary health care centres, hospitals, clinics, schools, colleges, pre-education facilities, local authority services, commercial organisations, workplaces, community initiatives, residential homes for older individuals, and day-care centres. Oral health messages can be delivered in one-on-one communication, group discussions, lectures, demonstrations, and exhibitions. Additionally, it can be disseminated indirectly by training parents, teachers, and peers, who can then pass the information to others. Involving mothers to teach their children about oral health through family-based interventions can benefit the entire family. The indirect approaches may also benefit from using teaching aids, such as printed materials (e.g., brochures and mini-books) or electronic media (e.g., television, radio, and social media platforms).

In communities where the high prevalence of dental caries among children is partly attributed to a lack of oral health education within families, a family-based intervention can be a valuable approach. One primary advantage is using family dynamics to encourage understanding of oral health and facilitate behavioral change among multiple family members simultaneously; each member can positively influence and motivate others, fostering a supportive environment for all. Learning through interaction within a family is not limited by time and frequency, allowing for continuous monitoring and progress assessment. Such engagement also enriches family time and strengthens interpersonal relationships, yielding long-term benefits. Parents will become more attuned to their children's health status and oral health needs, such as the frequency of toothbrush changes and the suitable amount and type of toothpaste to use. Moreover, parents can nurture and promote oral health in accordance with their cultural beliefs.

The knowledge base for OHEM is drawn from the academic curricula utilised in dental schools and relevant literature. It emphasises foundational concepts in oral and tooth anatomy, common oral diseases, and practical oral hygiene instructions. Specifically, the learning outcomes of OHEM include the understanding of,

1. general functions of the mouth,
2. oral and dental anatomy and the risk of developing oral diseases,

3. the common oral diseases: dental plaque, dental caries, gingivitis, and periodontitis,
4. oral hygiene instructions, including
    a. the recommended tooth brushing technique (modified Bass technique),
    b. interdental cleaning using dental floss, and
    c. mouth washing.

2.2 Validation of OHEM

The OHEM manual was validated using the e-Delphi method, which included independent review, controlled feedback, and consensus. It is developed through a collaborative effort involving oral health professionals from diverse backgrounds, including dental public health, general dental practitioners, pediatric dentistry, and dental nursing, representing both Malaysia and Pakistan. The Delphi methods showed a high score for relevance and clarity, suggesting that the content of the OHEM manual is valid and reliable with the average scale content validation index (S-CVI) = 0.97, average universal agreement (UA) = 0.83, I-CVI of each item ranges between 0.83, and the mean score of ratings for each item by all reviewers greater than 3.67.

2.3 Application and advantages of OHEM

One issue faced by oral health educators is the lack of knowledge resources to which they can refer and guidance on conducting interventions. A free, readily

available material would certainly benefit them and the target population and hasten the planning of an oral health intervention.

OHEM has been developed primarily for children living in underprivileged communities characterised by low family income, formal education, and oral health literacy, but experiencing high dental caries rates. Caries and gingivitis in children can lead to pain and discomfort that disturb daily activities, including eating, sleeping, socialising, and communication. These problems can further impact their appearance, self-esteem, confidence, and academic performance, ultimately affecting their overall physical, emotional, and social well-being and quality of life. Every child has the right to good health and deserves an education that enhances their awareness and skills for maintaining it. OHEM is directed at health educators whose primary targets are mothers and their children with mixed dentition. However, the content is also applicable to younger children capable of performing oral health care independently, as many aspects of the program are also relevant to primary dentition. Mothers are expected to play a crucial role in conveying the oral health knowledge they acquire from educators to their children. Their role is to motivate and monitor the children's daily oral health habits until a good attitude and routines are established. Because mothers can effectively transfer knowledge to their children through communication, observation, and imitation, they must have sound oral health literacy. Introducing some clinical terminology may help educators gauge the effectiveness of the topics covered. Compared to educators in

school interventions, mothers typically have more time and access to teach and monitor their children's oral hygiene behaviours daily. The interaction between mothers and children can take just a few minutes each day, but it is sustainable over a much longer period at much lower cost. Yet, it can yield significant benefits for the entire family and enhance the quality of family time together.

2.4 Oral health educators

OHEM focuses on educating and training mothers, who will then impart their knowledge and positive attitudes to their children. Oral health educators are individuals responsible for instructing mothers and other caregivers on oral health. Oral health professionals, including dental nurses, dental hygienists, dental students, and dentists, serve as formal and qualified educators in OHEM. However, those without professional qualifications can also be trained by oral health professionals to become effective oral health educators. Educators must thoroughly understand the OHEM content and be confident in delivering it. This confidence can be achieved through practice, ensuring they can present the material smoothly, clearly, and without interruptions. Additionally, the role of an educator extends beyond simply imparting oral health knowledge to mothers; therefore, this manual also includes a guide to teach mothers how to give oral hygiene instructions to their children and motivate them to maintain this behaviour.

Oral health educators using this manual can select the most suitable delivery methods for the intervention based on the community's background, the intervention venue, and available budget.

2.5 Delivering OHEM

The learning outcomes of OHEM are structured to be effectively delivered through a combination of lectures, demonstrations, and exhibitions.

2.5.1 Lecture

A lecture is a traditional method of delivering knowledge in which an educator speaks directly to an audience about a specific topic. Typically, these sessions are conducted in front of a small group of approximately 20 - 25 participants, lasting around 15 - 20 minutes. The educator may use teaching aids such as models or slide projectors, though these are not always necessary. The advantages of lectures include direct interaction between educators and audiences, access to information directly from experts rather than secondary sources, and relatively low setup costs. This method is particularly effective for audiences with limited formal education, as they benefit from a combination of visual and spoken instruction, and will significantly benefit from an educator with strong communication skills.

Alternatively, a lecture can be recorded, and the video is played to an audience in a passive intervention program. Lectures are inherently passive, as they tend

to be educator-centric and offer limited interaction. Using this approach limits the ability to gauge the audience's attention and understanding of the material presented.

2.5.2 Exhibition

An educational exhibition typically involves displaying posters, models with accompanying written descriptions, and videos, often with audio, at a designated location. This format enables individual self-learning by allowing them to access information and watch videos independently, without direct guidance from an educator. Exhibitions are particularly useful when educators are unavailable, though they require a literate audience. If an educator is present, the exhibition can be enhanced by incorporating opportunities for questions and answers, facilitating more profound engagement. Some exhibitions can be designed to promote active learning by allowing the audience to interact with the displayed material. Creatively designed exhibitions are visually appealing and can stimulate interest in the topic, enhancing unconscious learning. However, the effectiveness of this passive information delivery largely depends on the viewers' inherent interest in the subject matter.

2.5.3 Demonstration

A demonstration is the most common method used in many intervention studies, through which an educator delivers information in a "show and tell" format, using teaching aids while actively interacting with the audience. These sessions typically

involve small groups of 8-10 participants and are tailored to the audience's level of understanding. The key advantages of demonstrations include facilitating learning through listening, observation, hands-on practice, and interactive question-and-answer sessions. This approach makes learning more active and engaging, stimulates curiosity, and enhances critical thinking and reasoning abilities. However, demonstrations can be costly, require a highly motivated educator, and be time-consuming to conduct effectively.

2.5.4 Advantages and limitations of delivery methods

All three delivery methods are effective for delivering oral health education, but each has advantages and limitations, as summarised in Table 2.1. The methods differ in their focus on engagement, audience interaction levels, and the mode of knowledge transfer. Audience size, which can vary widely, also plays a role in determining the level of engagement and feedback. Educators must carefully select the most suitable method based on factors such as cost, availability of materials, human resources, time constraints, and the number of participants.

Table 2.1 Comparison of lectures, exhibitions, and demonstrations

Aspect	Lecture	Exhibition	Demonstration
Focus of engagement	Passive	Passive	Interactive
Levels of Engagement	Varies, depending on the speaker	Varies, dependingon theaudience	High mayinvolve active participation
Mode	Transfer of Knowledge	Self-learning knowledge	Hands-on learning, teaching practical skills
Format	Live/recorded oral presentation, visual aids	Static displays, e-posters, and wall-hanging posters	Live, interactive, return demo
Audience	Large groups, diverse audience. Size: 20-25	Large groups, diverse audience Size: 50-1000	Often, smaller groups, hands-on learners Size: 10-12
Feedback	Limited, generally Non-interactive	Limited, generally non-interactive	Immediate, real-time interaction
Duration	Varies, typically an hour or more	Varies; can span hours or days	Short to medium, typically an hour or less
Preparation	Requires detailed Preparation	Requires detailed planning and setup	Requires detailed planning and setup
Examples	Oral health lectures to mothers, children, and caregivers.	Oral health promotion exhibition at school and public venues.	Demonstrate toothbrushing techniques, dental flossing, and mouth rinsing at dental clinics and health promotion exhibitions.

3. ORAL AND DENTAL ANATOMY, COMMON ORAL DISEASES, AND ORAL HYGIENE CARE

3.1 Introduction

This chapter presents the foundations of oral health care. It describes the oral anatomy, functions, common diseases, and methods for maintaining oral hygiene.

3.2 The mouth

The mouth is the part of the human face comprising the lips, upper and lower jaw, tongue, cheeks, hard palate, soft palate, floor of the mouth, teeth, and gums (Figure 3.1). It serves multiple essential functions, including aesthetics, chewing, digestion, breathing, talking, interacting, and socialising. Its appearance is also necessary for maintaining self-esteem and confidence (Figure 3.2).

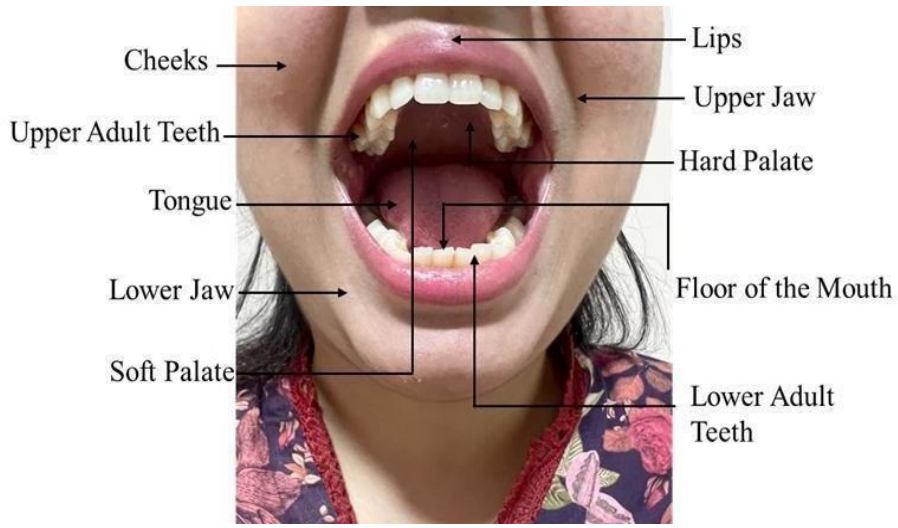

Figure 3.1 The mouth

Figure 3.2 Examples of mouth functions are communicating and smiling.

3.3 Overview of human dentition

3.3.1 The function of teeth

Teeth are essential throughout life because they play a crucial role in many daily activities. Their primary function is to chew food, breaking it into small pieces and aiding in the digestion and absorption of nutrients in the stomach and intestines. Teeth are also vital for maintaining facial height and appearance; losing all teeth will result in a less attractive, shorter face. They are needed for clear pronunciation when speaking and self-presentation during social interactions. A well-maintained set of teeth will serve individuals throughout

their lifetime just as any other organs, such as the eyes, ears, heart, liver, and kidneys.

3.3.2 Development, eruption, and types of teeth

Humans have two sets of teeth: the primary and permanent dentitions. Teeth develop as early as 14 weeks during pregnancy, and the permanent set completes after the third molar erupts in the mouth.

The first *primary* tooth erupts in the mouth at around six months, and the full dentition of 20 teeth is completed at about 2.5 years old (Figure 3.3). Each arch has a pair of central and lateral incisors, canines, and first and second molars. They start shedding around age 6, and the last one will remain in the mouth until age 13 or 14. The early loss of primary teeth due to caries or trauma can lead to malocclusion, characterised by crowding, rotation, and positional shifts of the teeth.

Figure 3.3 Primary dentition stage.

Permanent teeth develop within a growing jawbone underneath the primary dentition and erupt into the position guided by the latter. The first permanent tooth to erupt is the lower first molar at the age of 6-7 years, and the last is the third molar between the ages of 18 and 21 years. A permanent dentition has 32 teeth; each arch has a pair of central incisors, lateral incisors, canines, first and second premolars, and first, second, and third molars (Figure 3.4). Every child will experience a *mixed dentition* period, characterised by the coexistence of both primary and permanent teeth, between the ages of 6 and 14 years (Figure 3.5).

Figure 3.4 Permanent dentition stage.

Figure 3.5 Mixed dentition stage.

3.3.3 Tooth anatomy

Teeth are positioned and aligned in the upper and lower jaws according to their functions. A tooth consists of a visible crown with root(s) embedded in the alveolar bone. The incisor and canine teeth are single-rooted, premolars are single or double-rooted, and molars are two or three-rooted,

some of which may be fused; the roots of the third molars are commonly united.

All teeth have a similar basic structure. The outer part of the crown is the white *enamel* (Figure 3.6). Underneath is the dentine, which extends from the crown to the root (yellow). Inside the *dentine* is the *pulp* chamber, which is filled with blood vessels, nerves, and connective tissues.

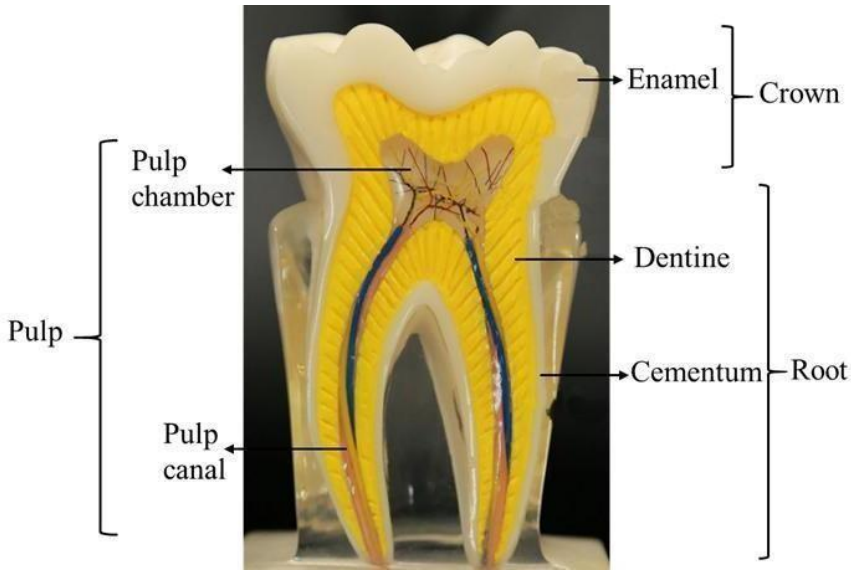

Figure 3.6 A transverse section of a tooth.

Any harm to the pulp tissues can cause tooth pain. A thin layer of cementum coats the dentine at the root of the tooth. A tooth is held in place by the periodontal fibres attached to the cementum and alveolar bone in a tooth socket.

3.3.4 Tooth surfaces

The incisors and canines have five surfaces: labial/facial, incisal, mesial, distal, and palatal/lingual (Figure 3.7). The premolars and molars also have five surfaces: labial/facial, occlusal, mesial, and distal, as well as palatal/lingual. The occlusal surface features cusps, pits, and fissures that facilitate chewing. This surface is prone to food impaction and plaque accumulation and is more susceptible to caries than other tooth surfaces. The contact surfaces between two adjacent teeth, at the mesial and distal aspects of each tooth, are the second-most-vulnerable sites for caries development. These areas are difficult to reach with a toothbrush and can only be cleaned by flossing.

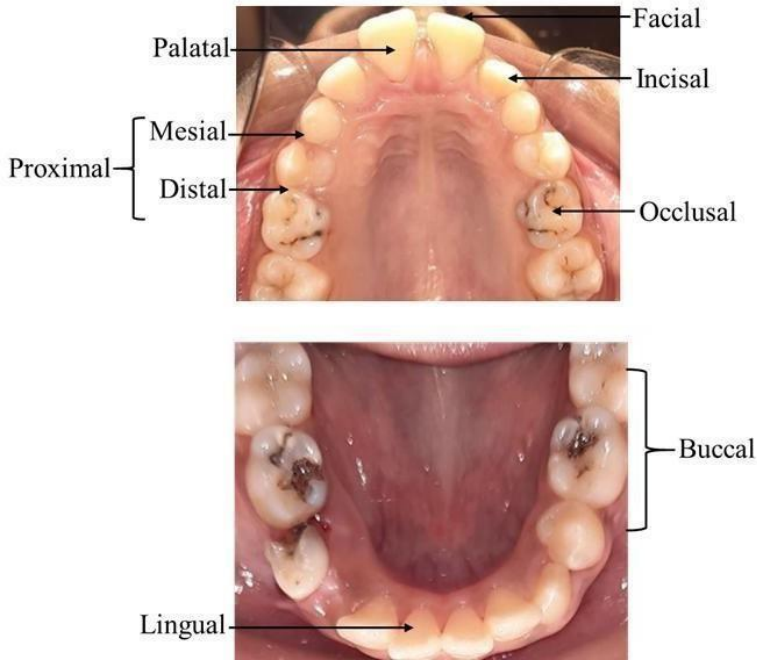

Figure 3.7 Maxillary and mandibular tooth surfaces.

3.3.5 Function of teeth

It is recommended that adults have at least 20 natural teeth to maintain and retain chewing and speaking functions. The primary function of teeth is for chewing, where foods are cut, torn, crushed, and ground into small pieces before it is swallowed. To carry out those functions efficiently, each tooth has a unique shape and a predetermined position. The incisors have flat edges for cutting food, and canines have a single-pointed cusp that helps tear food. The premolars assist the canines in tearing and partly crushing the food. Molar teeth generally have four to five cusps that crush and grind food further into fine pieces before it is swallowed (Figure 3.8).

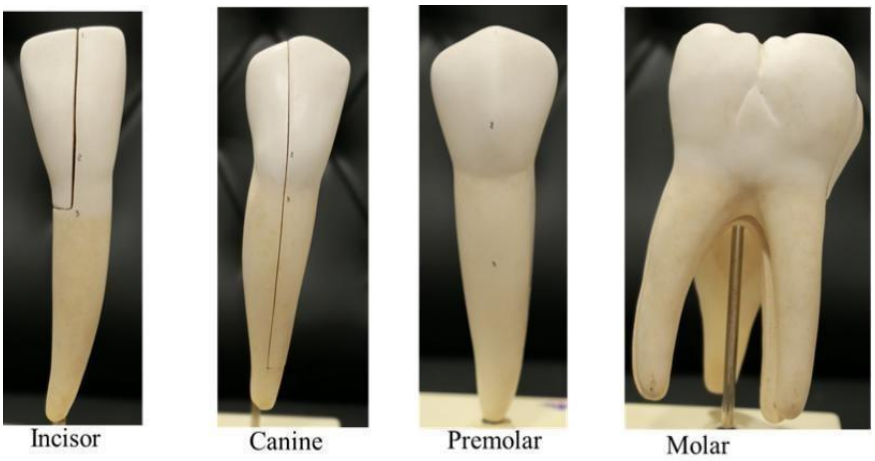

Figure 3.8 Pictures of incisors, canines, premolars, and molars.

In addition to chewing, teeth help produce clear enunciations during speech and contribute to good self-presentation during social interactions. A set of teeth that does not function properly can lead to poor digestion and

malnutrition, which can impact an individual's overall health both physically and psychologically.

3.4 Common oral conditions

Plaque and tartar accumulation are common oral conditions that can lead to halitosis and oral diseases.

3.4.1 Dental plaque

Dental plaque is a soft substance that adheres to tooth surfaces, gingiva, and sometimes the tongue (Figure 3.9). It can also be found in oral appliances such as dentures, restorations, and orthodontic wires and brackets. Depending on its maturity, dental plaque can range from white and yellow to greyish and have a soft, firm, or resilient texture; it cannot be removed by rinsing with water and must be removed through physical action, such as brushing and flossing.

Plaque starts to form shortly after the teeth are cleaned and can become visible after 4 to 8 hours. Plaque formation requires bacteria, sugar from sweets and starchy foods (such as cakes, cookies, candies, chocolates, fruit juices, pasta, and bread), and sweetened drinks (including carbonated and fizzy beverages) (Figure 3.10). Reducing the amount and frequency of sugary food consumption lowers the risk and slows down the formation of plaque.

Bacteria in the mouth use sugar as a food source and produce acidic by-products that can damage the enamel, leading to dental caries. Dental plaque also causes inflammation of the gums, known as gingivitis, and, if left for an extended period, it can harden into dental calculus.

Figure 3.9 Dental Plaque.

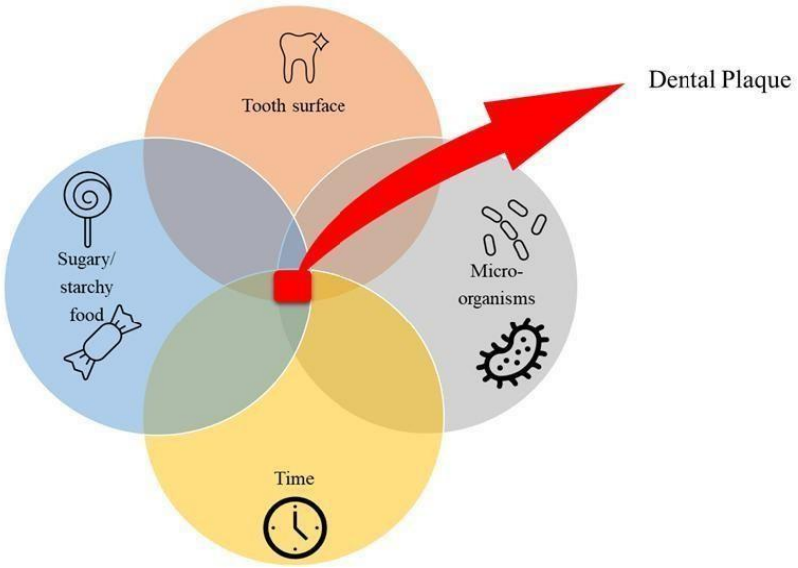

Figure 3.10 The relationship of dental plaque with essential factors facilitating plaque build-up.

3.4.2 Tartar or calculus

Tartar or dental calculus (Figure 3.11) is a hard deposit that attaches firmly to tooth surfaces and can extend above or below the gingival margin. The colour changes as it matures and hardens, progressing from whitish to yellow to a blackish-brown. It cannot be removed by brushing or flossing.

Figure 3.11 Dental calculus.

Because self-removal is difficult, it can only be removed in the dental clinic by a procedure known as scaling (professional teeth cleaning). Both plaque and calculus can harbour toxins that accelerate the destruction of periodontal tissues.

3.4.3 Halitosis

Halitosis is a foul or offensive odour originating from the oral cavity (Figure 3.12). Common causes include gross plaque accumulation, food

debris trapped between teeth and in dental caries cavities, periodontitis, and dirty dentures. Halitosis caused by poor oral hygiene can be treated by brushing the teeth and dentures, as well as visiting the dentist for scaling. However, dry mouth, tobacco use, respiratory and sinus infections, and some medical conditions such as diabetes and cancers can also cause halitosis.

Figure 3.12 Halitosis.

3.5 Common oral diseases

Dental caries, gingivitis, and periodontitis are the most common oral diseases. The common cause of these diseases is the accumulation of dental plaque due to poor oral hygiene (Figure 3.13). Periodontitis is not common in

children, but they are likely to develop periodontitis in adulthood if they continue to neglect their oral hygiene.

Figure 3.13 Dental plaque-associated common oral diseases: caries, gingivitis, and periodontitis

3.5.1 Dental caries

Dental caries is the destruction and loss of enamel and dentine structures caused by acid from dental plaque. The process begins with plaque formation and attachment to the tooth surface. After prolonged, continuous exposure, the acid begins to dissolve the enamel. Constant exposure to plaque can lead to the development of a white, decalcified spot on the enamel surface, which gradually enlarges before breaking down into a cavity. A carious tooth is black due to the accumulation of bacterial and food debris, pigments released by bacteria, and food colours such as tea and coffee (Figure 3.14-A).

Dental caries progresses slowly from enamel to dentine and then to the pulp. Progress is faster in children due to their thinner enamel and dentine. The process can take just a few months in children with very poor oral hygiene and approximately three years if oral hygiene is moderately maintained. The

initial process is slow because the enamel is the hardest, most mineralised, and most resistant to acid attack of any other body part. Once caries approaches the dentine, the cavitation process becomes quicker, and the teeth become more sensitive to cold and hot drinks (Figure 3.14-B). If left untreated, dental caries will progress towards the pulp and become very sensitive. Pulpitis is a condition in which bacteria infect the pulp, causing a toothache.

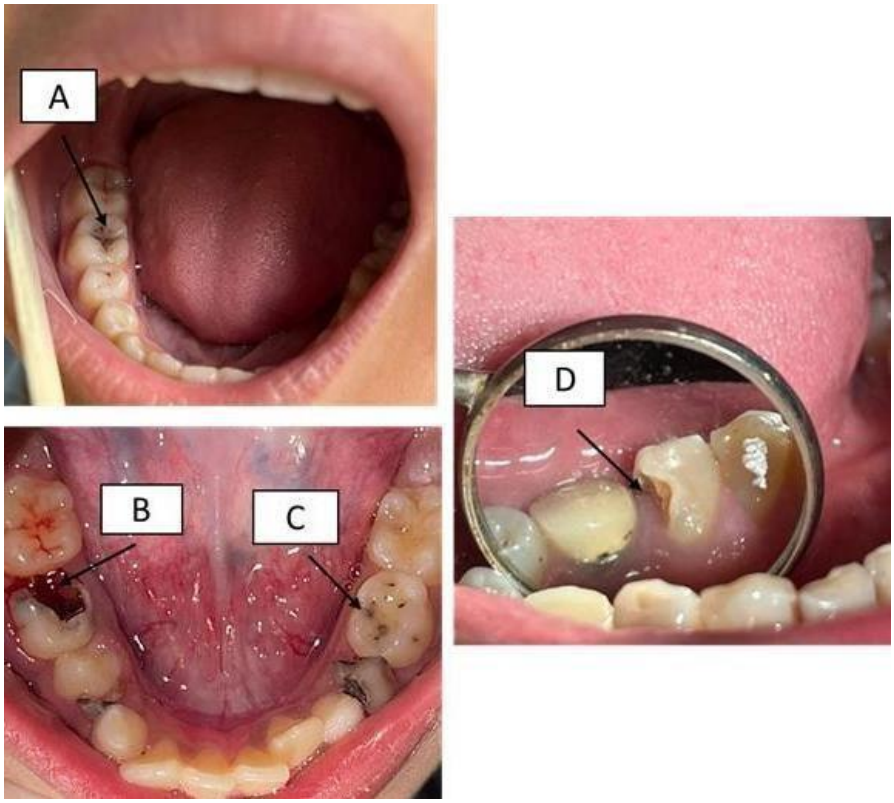

Figure 3.14 A: initial caries lesion on the occlusal surface. B: advanced caries with a lot of tooth structure loss.

As caries progresses further, more tooth structure is lost, ultimately leading to the death of the pulp tissue. This process is typically accompanied by repeated toothaches, swelling, and abscess formation, which can sometimes lead to facial swelling. When tooth structure is badly damaged, it loses its function and can only be restored with restorative materials.

However, the early stages of caries, gingivitis, and periodontitis can be reversed and controlled by maintaining good oral hygiene practices.

3.5.2 Gingivitis

Gingivitis is the inflammation of the gums. The inflamed gums appear red and swollen, with mild to moderate pain and discomfort, and bleed when touched or during tooth brushing (Figure 3.15). The early signs of gingivitis can be seen within four days of continuous plaque accumulation on the gums. Complete dental plaque-induced gingivitis typically develops within two to three weeks; in this case, the redness and swelling become more noticeable, accompanied by spontaneous bleeding, bad breath, and ulcers that cause irritation and pain. If gingivitis is not treated promptly, it can progress to a more severe gum infection, known as periodontitis.

Other conditions, such as malnutrition, hormonal changes or imbalance, epileptic drugs, systemic medical conditions, genetic factors, fungal or viral infections, traumatic lesions, and impacted food or foreign objects, may also cause gingivitis.

3.5.3 Periodontitis

Periodontitis is the inflammation of the periodontal tissues (Figure 3.15). This condition involves the destruction of the tissues supporting the teeth. Apart from gingivitis, it also destroys the attachment of the gums to the bone, the periodontal fibres that hold the teeth in the socket, and the alveolar bones of the tooth socket. Continuous damage to the supporting tissues will lead to tooth loosening and, eventually, tooth loss.

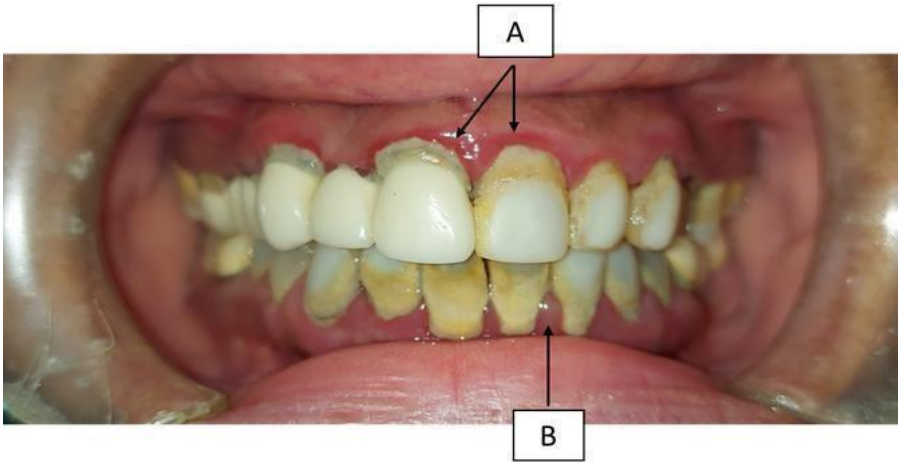

Figure 3.15 A. Gingivitis B. Periodontitis

3.6 Oral hygiene care

Keeping the teeth and mouth clean is the most effective, simplest, and cheapest method of preventing poor oral conditions, halitosis, and oral diseases. Additionally, the most effective, simplest, and least expensive method of maintaining a clean mouth and teeth is by rinsing the mouth after every meal and brushing the teeth daily.

3.6.1 Toothbrushing

Toothbrushing is the most common and effective method of tooth cleaning, requiring only a toothbrush and toothpaste.

All toothbrushes are similarly effective. The two main types of toothbrushes on the market are the regular manual toothbrushes and the more expensive battery-powered toothbrushes (Figure 3.16). A toothbrush has a handle and head with nylon bristles, which come in varying shapes, sizes, thicknesses, textures, and colours (Figure 3.17). A toothbrush should be selected based on the size of the head; a smaller size is recommended for a more petite mouth. As a rough guide, the length of the head should extend to cover about two molar teeth. The bristles' texture should be soft to medium to avoid gum irritation and should be replaced every 3 months (Figure 3.18).

Figure 3.16 Different types of toothbrushes: A. Manual, B. Battery-operated

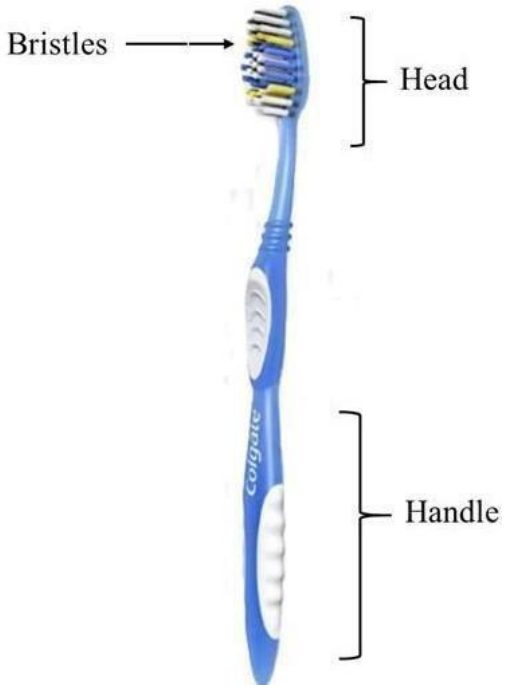

Figure 3.17 Parts of a toothbrush.

Soft Medium Hard

Figure 3.18 Manual toothbrushes and their types.

Toothpaste is used when brushing teeth to make the practice more pleasant and leave a fresh after-brush feeling (Figure 3.19). Modern toothpaste contains additives for various purposes, including mint flavours to enhance the sensation and taste, fluoride and antibacterial agents for enhanced caries prevention, and agents that help relieve tooth sensitivity and prevent calculus development. Toothpaste also contains mild abrasives and detergents to clean and polish the teeth. Toothpaste should be selected primarily based on its ability to control plaque and prevent caries; hence, it should contain antibacterial agents and fluoride, with other additives optional. Only a small amount of toothpaste is needed, approximately the size of a peanut for more minor children and a chickpea for adults. Using toothpaste on children requires supervision to prevent them from swallowing it.

Figure 3.19 Toothpaste and its ingredients, make sure it has fluoride (sodium monofluorophosphate).

The basic principle of toothbrushing is to gently scrub the bristles against dental plaque to loosen and remove it from tooth surfaces. The recommended toothbrushing technique is the Modified Bass technique (Figure 3.20). The bristles are positioned at the gingival margin and in the space between the gum and teeth at a 45-degree angle to the tooth, and then gently pressed and moved in small circular motions. Then, vertical strokes sweep the bristles away from the gum line towards the incisal/cuspal edges. Make seven to ten strokes at each area before moving to the next. Ensure that all tooth surfaces are cleaned. The entire process typically takes between 2 and 3 minutes.

Maintain a consistent pressure with the bristles during brushing and avoid pressing too hard. As a guide, the pressure is approximately the force needed to press the bristles against the gum using the thumb and index finger without tilting the brush handle; the pressure is exceeded if the gum blanches. Remember to brush your teeth twice daily, before bedtime and after breakfast.

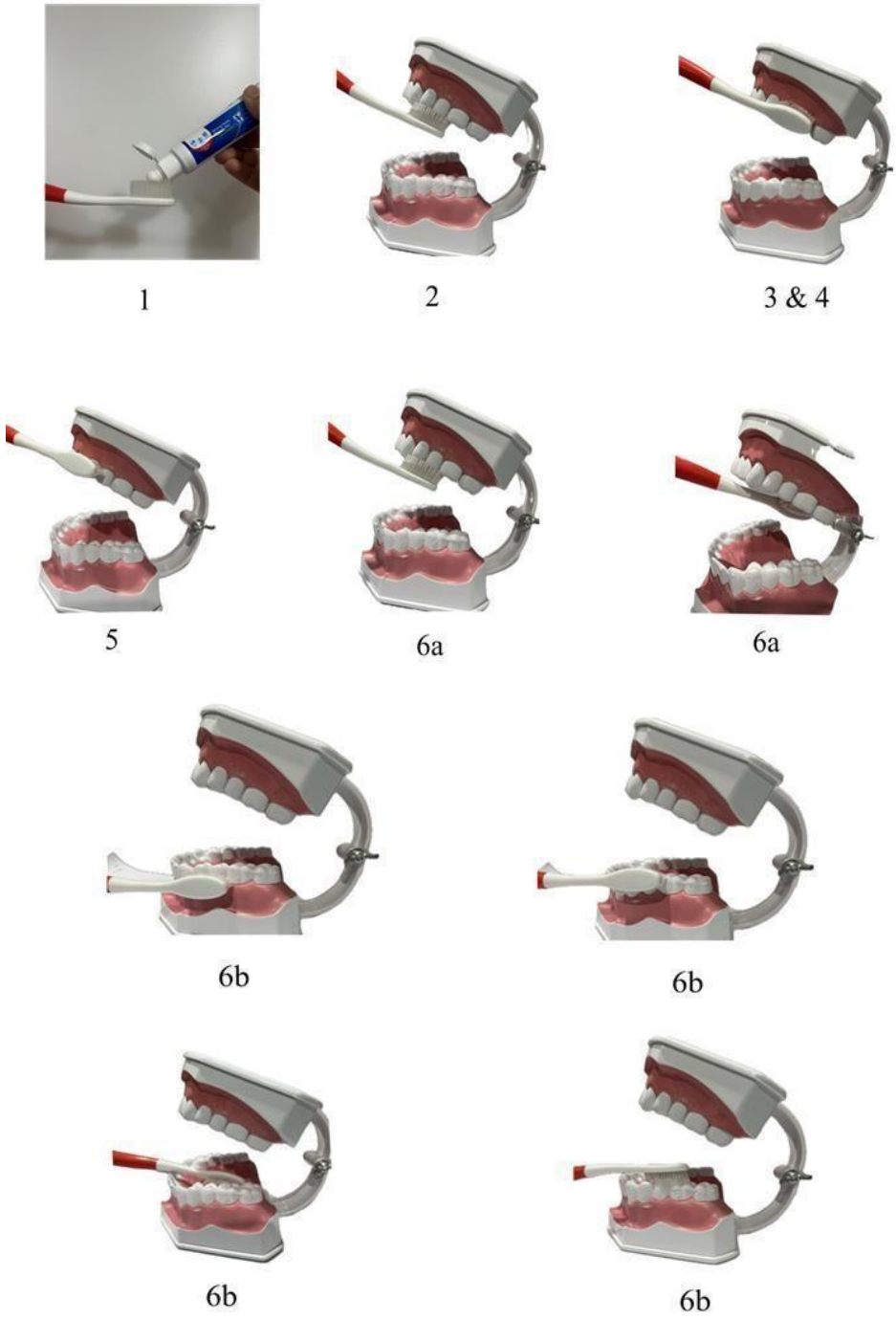

Figure 3.20 Steps of the modified bass technique.

3.6.2 Flossing

Dental floss is a special thread or tape used to clean interdental spaces (Figure 3.21). It is made of nylon and available in varying thicknesses, colours, and flavours. Flossing is more effective than toothbrushing in areas where teeth are in contact, and its use is strongly recommended.

Figure 3.21 Dental floss.

The principle of effective flossing is to keep the floss in contact with the tooth surface to be cleaned in the interdental area (Figure 3.22). To floss, take about 12- 18 inches of floss and wrap it around the middle fingers of both hands. Hold the floss tight between the thumbs and forefingers with about

one inch of free floss between them. Gently guide the floss between teeth with a back-and-forth motion, pushing it toward the gums. Avoid forcing the floss into the gums; one can accidentally cut the gums and cause bleeding. At the gum line, gently pull or push the floss against the contact surfaces of a tooth to form a C-shape. Move the floss up and down against a single-tooth surface. Once finished on one surface, glide the floss out, unroll it from one finger, and roll it onto another, keeping one inch of free floss. Repeat the same process on another surface.

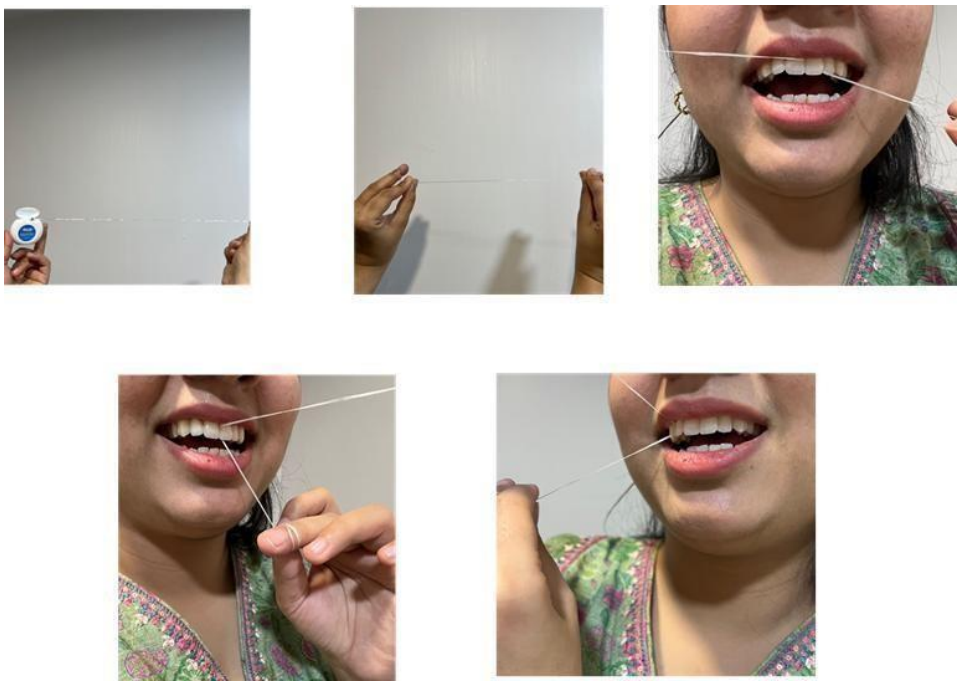

Figure 3.22 Steps of dental flossing.

3.6.3 Mouth rinsing

Mouth rinsing or gargling involves swishing a liquid in the mouth for about 30 seconds to loosen and dislodge food debris and particles, then spitting them out (Figure 3.23). It is recommended that the mouth be rinsed with water after meals, snacks, or the consumption of sweet foods and drinks.

After brushing your teeth, it is recommended to rinse with liquid mouthwash. Different types of mouthwash liquids are available in the market, and some contain antiplaque, anti-inflammatory agents, or antiseptics to control dental plaque, gingivitis, and halitosis.

Figure 3.23 Steps of mouth rinsing.

3.6.4 Additional oral hygiene care and aids

Additional aids can be used to maintain oral hygiene. Miswak sticks can serve as an alternative to toothbrushes (Figure 3.24). Careful use of toothpicks can remove food debris stuck between teeth after meals (Figure 3.25). Rubber interdental aids feature pointed elastomeric fingers that can be used for cleaning the gums, as they cause less gingival abrasion (Figure 3.26). There are dental floss picks for cleaning interdental spaces (Figure 3.27). A tongue scraper is also used to remove plaque from the surface of the tongue (Figure 3.28).

Figure 3.24 Miswak.

Figure 3.25 Toothpicks

Figure 3.26 Rubber bristle interdental aid

Figure 3.27 Dental floss pick

Figure 3.28 Tongue scraper.

Several tooth-whitening products available on the market can help remove discoloration and stains caused by factors such as food, drinks, and smoking (Figure 3.29). Whitening agents are available in toothpaste, strips, and gel kits for self-application.

Mouthwashes with and without alcohol, as well as those containing phenols and essential oils, are also available as anti-inflammatory agents.

Antibacterial toothpastes and mouthwashes include those with Triclosan, Chlorhexidine, and Cetylpyridinium Chloride.

Herbal-based toothpaste and mouthwash are also available for the same purpose (Figures 3.30 and 3.31)

Figure 3.29 Teeth whitening paste and gel.

Figure 3.30 Anti-inflammatory, anti-sensitive, and herbal toothpaste.

Figure 3.31 Anti-inflammatory, anti-sensitive, anti-septic, and herbal mouthwash.

4. DELIVERING OHEM IN A LECTURE/TALK

4.1 Preparation of OHEM lecture/talk slides

The general outline for delivering OHEM in a lecture is summarized in Figure 4.1. Educators who wish to create new lecture slides should follow the steps outlined in the following section. Educators may also use the lecture slides set that comes together with this e-book and is accessible at: http://eprints.usm.my/62593/

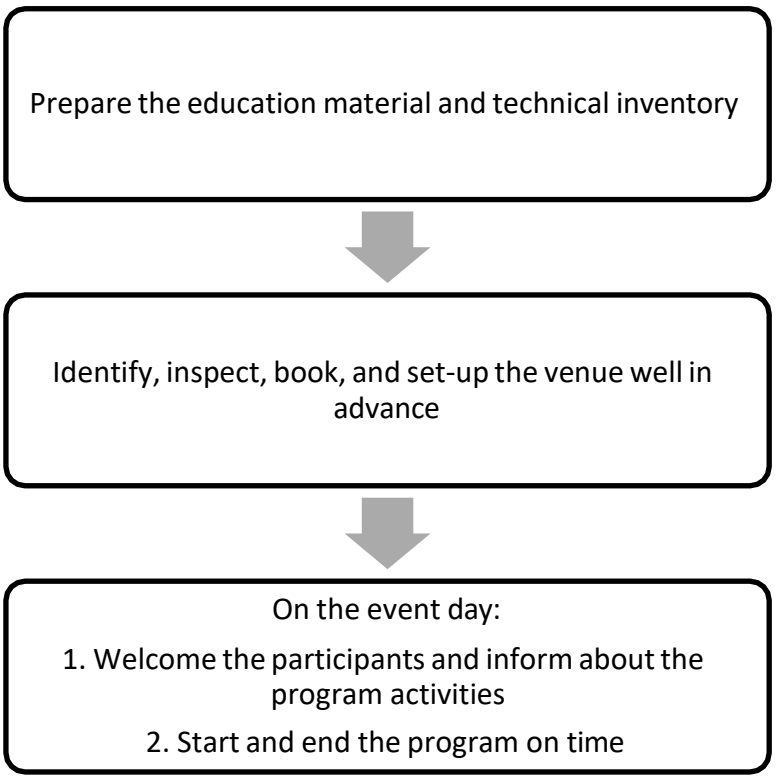

Figure 4.1 Summary of workflow for delivering oral health lecture/talk.

4.1.1 Slides for the anatomy and function of the mouth and teeth

The following pictures in Table 4.1 are needed to prepare the slideshow. The slideshow includes pictures for oral health professionals, educators, and general readers.

Table 4.1 List of pictures to explain the anatomy and function of the mouth and teeth.

Details of pictures	Slide #
Photo of mouth showing lips, upper and lower jaw, tongue, cheek, hard palate, soft palate, floor of the mouth, teeth, and gums.	2
Pictures showing the functions of teeth.	3
Pictures of the anatomy of a tooth showing enamel, dentine, pulp, cementum, crown, and root.	5
Pictures of incisors, canines, premolars, and molars.	6
Pictures of the teeth showing facial/buccal, lingual/palatal, proximal, incisal, and occlusal surfaces.	7
Pictures of primary, mixed, and permanent teeth	8-10

4.1.2 Slides for common oral conditions and diseases

The following pictures in Table 4.2 are needed to prepare the slideshow. The photos are also in the slideshow for oral health professionals and educators.

Table 4.2 Clinical pictures demonstrating common oral conditions and dise ases.

Details of Pictures	Slide #
1. Clinical pictures of dental plaque, dental calculus, and the relationship of dental plaque with common oral diseases	12-14
2. Clinical pictures of dental caries, gingivitis, periodontitis, and halitosis (bad breath)	15-18

4.1.3 Slides for oral hygiene care

Table 4.3 lists the pictures needed to explain the inventories for oral hygiene care. The pictures can be chosen based on their relevance to the target population, budget, and availability. Prepare and take a picture of each item. Emphasise the key points in Table 4.4 when explaining the actions in oral hygiene care.

Tables 4.3 Inventories for oral hygiene care.

Oral Hygiene Care	**Slide #**
Toothbrush variations 1. Manual and powered toothbrushes 2. Soft, medium, hard bristle stiffness 3. Small, medium, and large head sizes 4. Varying lengths and diameters of handle sizes	21-23
Toothpaste: Fluoridated toothpaste, including a photo that focuses on the fluoride content	24
Dental floss	27
Preventive: Fluoride and its derivatives	29
Oral hygiene aids 1. Miswak sticks 2. Toothpicks 3. Dental floss picks or powered dental floss 4. Rubber bristle interdental aid 5. Toothpaste a. Anti-inflammatory b. Antibacterial c. Anti-sensitive d. Herbal 6. Mouthwash with additives a. Antibacterial, e.g., Triclosan, Chlorhexidine b. Herbal c. Charcoal 7. Tongue scrapers 8. Teeth whitening kits, strips, or gel	31-36

Table 4.4: Points to highlight when explaining toothbrushing, flossing, and mouth rinsing to the participants.

	Explanation	**Slide #**
Tooth brushing	A set of pictures showing the instructions for a modified BASS toothbrushing technique. The instructions are as follows: 1. Applying toothpaste to a toothbrush. 2. Smearing toothpaste on teeth. 3. Start at the upper right/left molar teeth. From one corner, the brush held 45^0 bristles, pointing towards the gums. 4. Vibrate the head of the toothbrush in a circular motion, as well as up and down. 5. Move to the next tooth. 6. Follow the order to cover all tooth surfaces: a. Start brushing at the outer surface of the upper right last molar tooth and gradually move to the left side. Then, following the same order, brush the occlusal/chewing and the palatal surfaces. b. Repeat the same order for the lower teeth, starting with the outer, occlusal/chewing, and palatal surfaces.	25-26

Flossing	A set of pictures showing flossing instructions. The instructions are as follows: 1. Take 12-18 inches of the dental floss. 2. Roll it around the middle of both hands. 3. Hold the floss firmly between the thumbs and index fingers. 4. Pass the floss between two teeth using a gentle sliding motion. Gently move the floss up and down on the tooth surface while avoiding the gum line. 5. When the floss reaches the gums, bend it against your teeth in a C shape. This shape helps the floss slide gently between the tooth and gum, cleaning effectively without causing injury. 6. Repeat the above steps for other interdental areas, unrolling and rolling the floss on one finger and then another to ensure a new and clean portion is used each time.	28
Mouth rinsing	A set of pictures showing how to perform mouth rinsing 1. Pictures showing the correct amount of mouthwash to use. 2. Pictures show the act of swishing the mouthwash in the mouth. 3. Pictures showing spitting out the mouthwash.	30

4.1.4 Preparing the slides

The slides for the lecture session should be prepared by copying and pasting all the pictures used in Chapter 3. Then, the pictures should be labelled. The content describing the photo should also be selected and pasted into the slideshow notes. The slides should follow the same content sequence as mentioned in Chapter 3. The basic design of the lecture hall arrangement is shown in Appendix I.

4.2 Preparing the venue

The venue should be prepared well in advance to ensure the educational session runs smoothly and uninterrupted.

4.2.1 Inventory of technical props for delivering a lecture/talk

The following items are required for the presentation.

1. Electrical extension points.
2. A white screen and a multimedia projector connectable to a laptop or mobile device.
3. A suitable-sized digital TV is connectable to a computer or mobile device.
4. Chairs for participants.
5. Microphone and speakers, if required.

4.2.2 The venue

The following are guides for setting up the venue:

1. Book the venue well in advance and ensure it is not overbooked. It should be located near the participants' residences and within walking distance. The size should be able to accommodate approximately 20–25 individuals comfortably. The seating arrangement should resemble a classroom with space for technical props.
2. Check the availability and usability of electrical sources for presentation devices.
3. Verify the venue size to ensure it can comfortably accommodate the number of participants. The talk will last 20 to 25 minutes, so it may not be comfortable for the participants to stand. The number of rows should be limited to three or four to ensure they are not too far from the educator, allowing participants to listen clearly. Chairs should be arranged to avoid blocking the participants' view.
4. Arrive early at the venue to prepare the layout and set up the chairs and presentation devices. Test-run the device and presentation to ensure they are working.
5. Be ready to receive and welcome the participants and invite them to take their seats.
6. Start the program at the scheduled time or when all participants have arrived.

4.3 Delivering the OHEM lecture/talk

The following steps are suggested to start the lecture. The time is only a guide.

1. The educator self-introduces themselves to the participants. Thank the participants for their attendance. (1-2 minutes)
2. Please inform us about the importance of the talk. (1 minute)
3. Start delivering the OHEM content. The notes in the presentation slides provide details of the presentation, including suggested scripts. Present 20 - 25 minutes of the lecture session with a 1-2-minute break midway. Ask the participants whether they can follow the lecture.
4. Thank the participants for their time and attention. Invite questions during the Q&A session. (5-10 minutes)
5. End the session and distribute the leaflets (if available).
6. Invite feedback for the presentation, arrangement, and usefulness of the session. (5 minutes)

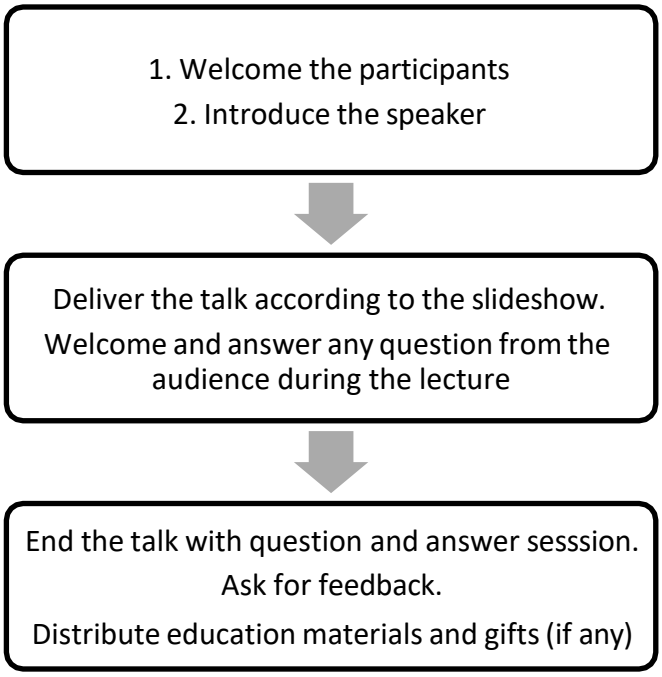

Figure 4.2 Summary of the OHEM lecture session.

5. DELIVERING OHEM IN AN EXHIBITION

5.1 Preparation of OHEM exhibition material

The general outline for preparing to deliver OHEM at an exhibition is similar to Figure 4.1. Educators who wish to create new exhibition materials can follow the steps outlined in the following sections. Educators may also use the lecture slides as a guide.

5.1.1 Preparation of OHEM exhibition posters

The exhibition is designed to present the same content as the OHEM lecture and will utilise the same materials. The products listed in Table 4.3 should be produced as exhibits whenever available. When not, slides #2-10, #12-18, #24, #27, and #28 can be printed as posters. The slides explaining the OHEM exhibition process should be printed as posters with a brief description. The following steps can help prepare the posters.

1. Open the slide presentation file from the link http://eprints.usm.my/62593/ or CD. (The PDF of the slide presentation is attached in Appendix II.)
2. Save as a new JPEG or PowerPoint picture presentation file.
3. Decide which content will be exhibited as actual items and which will be presented as posters. (Use file: OHEM E-posters and exhibits layout Appendix III)
    a. Select, save, and print the slides for posters.
    b. Obtain or purchase the actual items for display as exhibits.

4. Please refer to the notes for designing posters below if ones intend to modify or create new slides.
5. Print the posters. Depending on the budget, display arrangement, and exhibition area size, the sizes can be A3, A2, or A1. The quality of the print will determine the cost. Learn how to keep the posters in good condition for reuse.
6. Determine the average time it takes for a normal person to view all the exhibits and complete them.
7. Design the layout of the exhibit. An example of the basic exhibition hall station layout, as presented in Table 5.1, can be used for designing the arrangement, as shown in Appendix IV.
    a. Prepare the layout in advance of the exhibition day.
    b. Make the design simple and according to the flow of information. It should not create a bottleneck area.
    c. Label the posters with numbers or print out arrows to indicate the flow of the exhibition, helping participants know where to go next.
    d. Consider the lighting and position of the exhibition to maximise its visibility.
    e. Consider the average height of the exhibition visitor.

Table 5.1 Basic layout of the exhibition hall stations

Station	**Topic**	**Slide # / exhibits**
1	The mouth and the function of teeth	Slide # 2, # 3
2	Anatomy of teeth	Slide #5,
3	Types of teeth (incisors, canines, premolars, and molars)	Slide #6
4	Surfaces of teeth	Slide #7
5	Types of dentitions (primary, mixed, permanent)	Slide #8,9,10
6	Common oral problems	Slides #12 – 18
7	Oral hygiene care – toothbrushes	Actual exhibits from Table 4.3
8	Oral hygiene care – toothpaste	Actual exhibits from Table 4.3
9	Oral hygiene care – toothbrushing technique	Slide #25&26
10	Oral hygiene care – dental floss	Actual exhibits from Table 4.3
11	Oral hygiene care – dental flossing technique	Slide #28
12	Oral hygiene care – mouthwash	Actual exhibits from Table 4.3
13	Oral hygiene care – mouth washing technique	Slide #30
14	Additional oral hygiene care	Actual exhibits from Table 4.3

5.1.2 Notes on poster design

Educators who plan to modify and design posters for an exhibition could consider the following points:

1. The font size of the poster should be easily readable from 3-4 feet (1 meter); the recommended font sizes are 24 points for text and 32 points for titles.
2. Experiment with colour combinations (e.g., yellow on black shows up well; yellow on white is not good; red is eye-catching, but too much red may be overpowering).
3. Write clearly and in a font large enough for the information to be easily readable (thick felt-tip pens work well).
4. Vary the colour and size of the text for extra emphasis.
5. Do not write too much; concentrate on the main message(s) and leave sufficient white space to help make your messages clear.
6. More detailed information can be provided through leaflets or flyers.
7. The posters should be numbered according to the lecture to facilitate arrangement during the exhibition, as they should follow the flow of the presentation.

5.2 Preparing the venue

The venue should be prepared to ensure that the exhibits are displayed in chronological order according to the number and presented in a visually appealing manner, creating an educational and enjoyable experience.

5.2.1 Inventory of technical props for an exhibition

The following items are needed for the presentation.

1. Posters and actual items.
2. Poster boards (if necessary) or room walls may also be used as alternatives.
3. Double-sided tape.
4. Tables to place the actual exhibit items and the registration desk.
5. Additional lighting (if necessary).

5.2.2 The venue

The following are guides for setting up the venue:

1. Please refer to Section 4.2.2 for details on booking and location. The venue should be large enough to accommodate the exhibits, be able to accommodate between 20 and 25 participants at a time, and have good lighting. When an a m p l e enough space is not available, the educator should consider setting a longer time gap between participants to avoid bottlenecks.
2. If possible, visit the venue and design the layout in advance to ensure a smooth setup. Determine whether to put the posters on a wall or poster board stands. Arrange the exhibits according to the order of presentation. The arrangement of the posters should be carefully designed to avoid crowding at one exhibit. Maintaining a space of approximately 2 meters between exhibits may help.
3. Arrive early at the venue to set up the exhibits. Test-run the layout and ensure it flows well.

5.3 Delivering the OHEM exhibition

The following steps are suggested for starting the exhibition session. The exhibition will begin once the setup and trial run are complete.

1. Educators should always be prepared to welcome each participant as they arrive, introduce themselves, and assist with registration and attendance. They should thank them for attending upon arrival and departure. (1-2 minutes)
2. Inform the participants about the aims and importance of the session, as well as what to do and what not to do at the exhibition, and emphasise the need to follow the order of presentation according to the number of exhibits and avoid skipping or jumping them. Allow a time gap between participants to avoid crowding. Usher the participants to the starting point and direct them to the next location using the exhibit number or arrows. (1 -2 minutes)
3. Educators may walk around to discuss and explain the information on the posters whenever possible.
4. Invite the participants to a Q&A session after viewing the exhibits. Invite feedback for the exhibition. (2-3 minutes).
5. Distribute leaflets (if available) to participants before they leave.

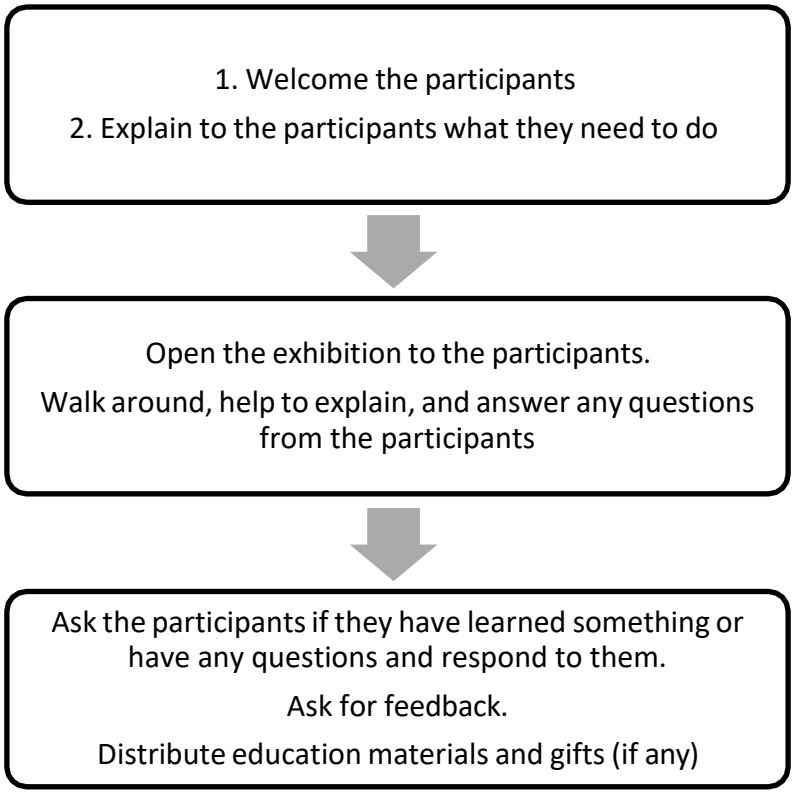

Figure 5.1 Summary of the OHEM exhibition session.

6. DELIVERING OHEM IN A DEMONSTRATION

6.1 Preparation of OHEM demonstration material

The general outline for preparing to deliver OHEM in a demonstration is similar to Figure 4.1. Educators who wish to create new demonstration materials can follow the steps outlined in the following sections. Educators may also use the lecture slides as a guide.

6.1.1 Preparation of OHEM demonstration items

The same OHEM content presented in the lecture may also be delivered through a demonstration. For this purpose, it is recommended that slides #2-10, #12-18, #24, #27, and #28 from the lecture slide show be printed as posters to help explain the knowledge about the mouth and oral diseases. The products listed in Table 4.3 can be purchased, displayed as exhibits, and arranged on a demo table according to the slide numbers. The educator should present them in chronological order. Using the show-and-tell method, the educator should demonstrate toothbrushing, dental flossing, and mouth-rinsing techniques to the participants. The steps for preparing the demonstration materials 1are as follows.

1. Open the slide presentation file from the link http://eprints.usm.my/62593/ or the CD. (The PDF of the slide presentation is attached in Appendix II.)
2. Save as a new JPEG or PowerPoint picture presentation file.

3. Decide which content will be presented as posters and which will be exhibited as actual items.
4. Select, save, and print the slides for posters.
    a. The posters can be presented as printed posters on a flipchart board. Print the posters. Depending on the budget, display arrangement, or table size on which they will be kept, the size can be A3, A2, or A1.
    b. TV projection. The poster slides will be projected on the TV.
5. Purchase the actual items listed in Table 4.3 for display.
6. Determine the average time for an educator to deliver the demonstration content by practising it.
7. Design the layout of the demonstration room or hall, as well as the arrangement of the exhibits.
8. The room or hall should be large enough to accommodate 11 individuals comfortably, and the tables for the exhibits should be well-ventilated and have adequate lighting.
9. Arrange the table in the centre of the room and the chairs in a U shape around three sides of the demo table to allow a clear view of the educator, who takes one side.
    a. Appendix V shows an example of the basic demonstration setup in a room. The flipchart board or LCD TV should be placed next to the educator, and the exhibits in Table 6.1 should be laid on the table in the order of presentation from left to right or vice versa.

Table 6.1 Basic layout of the demonstration desk.

Topic	Arrangement of material and actual products on the desk
The mouth and the function of teeth	Slide # 2,3 Posters
Anatomy of teeth	Slide # 5 Poster/models
Types of teeth: incisors, canines, premolars, and molars	Slide # 6 Poster/models
Surfaces of teeth	Slides # 7 Posters /models
Types of dentitions: primary, mixed, permanent	Slides # 8,9,10 Posters/ models
Common oral problems	Slides # 12-18 Posters/models
Oral hygiene care toothbrushes	Actual products such as those mentioned in Table 4.3
Oral hygiene care – toothpaste	Actual products such as those mentioned in Table 4.3
Oral hygiene care – toothbrushing technique	The educator will show and tell.
Oral hygiene care – dental floss	Actual products, such as those mentioned in Table 4.3
Oral hygiene care – dental flossing technique	The educator will show and tell.
Oral hygiene care – mouthwash	Actual products such as those mentioned in Table 4.3
Oral hygiene care – mouth washing technique	The educator will show and tell.
Additional oral hygiene care	Actual products such as those mentioned in Table 4.3

6.2 Preparing the venue

6.2.1 Inventory of technical props for a demonstration session

1. Table to place the exhibits – the size of the table is preferably 8'-10' in length and 3'6" – 4'6" in width. It is also possible to combine small tables.
2. A green or white sheet table cover.
3. Chairs for the educator and participants
4. A flip chart board or a 40-inch or larger LED TV that is connectable to a laptop.

6.2.2 The venue

The following are guides for setting up the venue.

1. Please refer to Section 4.2.2 for booking and location information. The venue should be large enough to accommodate the exhibits, comfortable for up to 10 participants, and have good lighting and ventilation.
2. If possible, visit the venue and design the layout in advance to ensure a smooth setup. Arrange the actual exhibit on the table in the order presented in the slide show. The arrangement of the actual items should be neat and not cause overcrowding. Place the flipchart board in a clear view of the participants.
3. Arrive early at the venue to set up the exhibits on the table according to the slide presentation as explained above.

6.3 Delivering the OHEM demonstration

The following steps are recommended for starting the demonstration session. This manual outlines a demonstration session conducted by a single educator or demonstrator for seated participants. Educators may adjust the settings according to their preferences.

1. Educators should always be prepared to receive, greet, and thank each participant for attending, and welcome them upon arrival. The educator(s) should introduce themselves, inform participants of the importance of the session, and register their attendance. Start the session when all participants have arrived. (3 minutes)
2. The educator shall start the demo according to the slide show. The educator will present the demo using the printed posters on the flipchart board, digital posters on the TV, and the exhibited items on the table. (30-45 minutes)
3. The educator can take the following steps to make the demonstration session successful:
    a. Practice the demonstration to ensure it is smoothly executed, fluent, and confident.
    b. Use simple and easy language that is comprehensible to the participants.
    c. Create a harmonious environment that allows participants to feel comfortable, focus the educator's attention, and share their thoughts or questions.
    d. Engage with the participants by asking whether they can follow the presentation and compliment the participants when they answer questions correctly.
    e. Ensure that the demo is easily visible to participants.

f. Allocate time for participants to ask their questions and discuss them with the educator.

4. Invite participants for a Q&A session. (10-15 minutes)
5. Distribute the leaflets after the session ends (if available).
6. Invite feedback on the demonstration, arrangement, and usefulness of the session. (3-5 minutes)

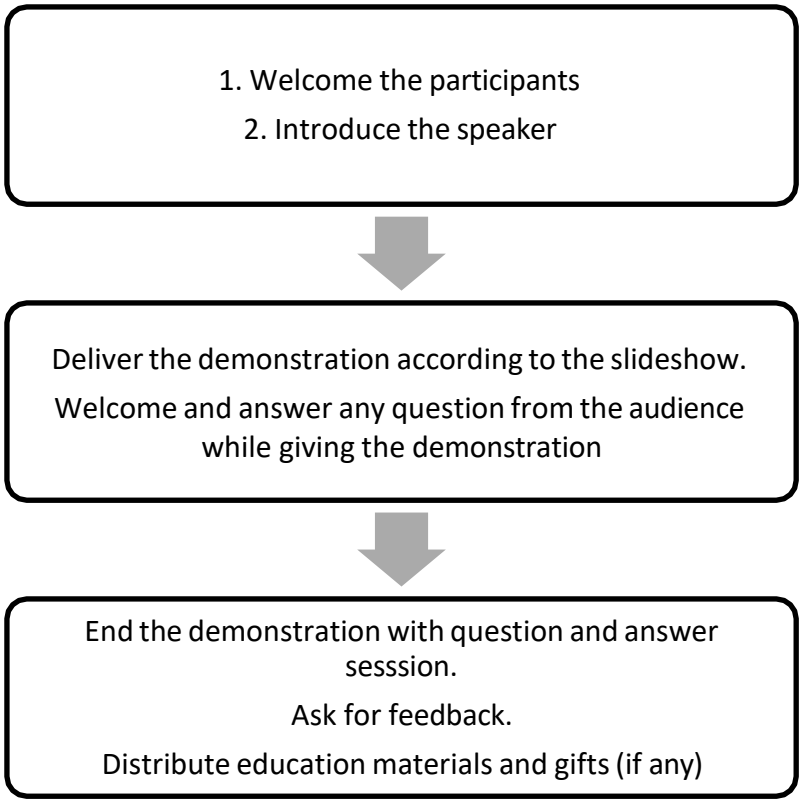

Figure 6.1 Summary of the OHEM demonstration session.

7. GUIDELINES FOR MOTHERS TO EDUCATE THEIR CHILDREN

7.1 Introduction

This brief guide provides general recommendations for educators to teach mothers during the program. It focuses on two key areas: teaching children the fundamentals of toothbrushing and integrating essential knowledge about teeth and oral diseases into their daily routines. By prioritising these key areas, mothers can equip their children with the skills and understanding necessary to maintain a healthy mouth and teeth.

The guide is divided into three sections based on the age of children to ensure the advice can be well understood.

7.2 Teaching babies (0 to 1 year)

Babies cannot care for their own teeth; therefore, parents are responsible for taking care of their oral hygiene and training them to feel comfortable with mouth cleaning activities from a young age. Parents can use the following guide to clean their baby's mouth and teeth.

1. Start early. Begin cleaning the baby's mouth even before the first tooth appears. Gently wipe the gums with a clean, soft, damp cloth after each feeding.
2. When the teeth erupt, use a clean, damptowel andgentlyrub aroundthem twiceaday.

3. As more teeth erupt, introduce a baby toothbrush with soft bristles with no toothpaste or very little of it. Gradually familiarise the babies with the toothbrush by letting them hold it and try brushing their teeth independently. Also, start the toothbrushing routines in the morning and before bedtime.

7.3 Teaching toddlers & preschoolers (1 to 5 years)

Toddlers typically develop a complete primary dentition by around 2½ years old and should be able to learn and appreciate the responsibilities of taking care of their teeth. The following guidelines can be gradually introduced to toddlers and preschoolers and may also be applied to older children.

1. Introduce toothbrushing activities at an early age by brushing your own teeth in front of the children.
2. Demonstrate and guide proper toothbrushing using the "show and tell" method, whereby you demonstrate the brushing technique while explaining each step. A helpful approach is to let children watch their parents brush their teeth, setting a positive example.
3. Routinely remind them to practice regular toothbrushing in the morning and at bedtime, and be consistent with this habit.
4. Supervise their toothbrushing practice, especially during the initial phase, until they can brush their teeth independently and effectively.
5. Encourage the child to brush for at least two minutes; use a timer if necessary to help them stay on track.
6. Observe the techniques and correct them.

7. Emphasise applying gentle pressure and let them know brushing too vigorously might injure their gums.
8. Ensure the child brushes all tooth surfaces by observing the activity and correcting them if necessary.
9. Use fluoridated toothpaste. Supervise the amount used and remind children not to swallow it.
10. Make toothbrushing a fun activity.
    a. Brushing teeth together with the children also teaches and motivates them.
    b. Play toothbrushing sing-alongs or online games.
    c. Make the practice enjoyable for your child and refrain from using harsh words when they become lazy or disobedient; instead, use persuasion, such as letting them choose their next toothbrush and toothpaste flavour.
    d. Reward the children by praising them for brushing their teeth well and having nice, clean teeth, or present them with charts or stickers to track their progress.
11. Interacting with children during brushing activities can strengthen parent-child ties. Parents can take the opportunity to discuss oral health topics while brushing their teeth. They can also encourage the children to ask questions about oral health topics and provide feedback on their brushing skills, knowledge, and progress.
12. Having a mirror can help a child see what they are doing.
13. Take the children for regular dental check-ups. Schedule your child's first dental visit by their first birthday or within six months after their first tooth comes in.

7.4 Teaching six-year-old and older children

Children aged six years and older can perform oral hygiene care independently. Nevertheless, monitoring and encouragement should be continued. In addition to using the guidelines for toddlers and preschoolers, the following guide can be helpful for older children.

1. Continue supervising their brushing times, behaviours, and techniques until they are competent. Continue correcting them if necessary. Check on them occasionally, even after they can brush their teeth independently. Ask if they have any issues with their mouth and teeth from time to time.
2. Begin introducing the terms and scientific words when discussing oral health topics, such as dental plaque, caries, enamel, and the Bass technique.
3. Teach tongue cleaning and gum care.
4. By following these steps, mothers can effectively teach their children how to brush their teeth properly and instill good oral hygiene habits that will benefit them throughout their lives.

8. OHEM KAP INSTRUMENT FOR MOTHERS AND CHILDREN

8.1 Introduction

The OHEM KAP instrument for mothers and children is a tool for assessing oral health knowledge, attitude, and practice. The instrument for mothers has been tested on adult females; therefore, it applies to the general adult population. Similarly, the instrument for children has been tested on a population of children aged 12 to 15 years old and thus can be used on children of a similar age range. In general, the questions on knowledge cover the basic understanding that every individual should know to appreciate the reasons for and, hence, motivate self-oral health maintenance. The questions on attitude assess the perceived importance of oral health and oral health behaviours. The questions on the practice assessment evaluate how closely the current oral hygiene routines align with recommended professional guidelines. The following sections describe the validation process for the OHEM KAP instruments, guiding their use.

8.2 OHEM KAP Instrument

The OHEM KAP instrument for mothers and children has been developed in English and consists of 48 and 51 items, respectively. The knowledge component covers oral and dental anatomy, teeth function, common oral problems and their causes, and oral hygiene care.

The OHEM KAP instrument underwent a rigorous content validation analysis to ensure its clarity and relevance to the OHEM manual. It has been reviewed by the same oral health professionals who reviewed the OHEM manual to ensure relevance, comprehensiveness, and reliability between the two. The reviewed and content validation process revealed that the final versions of the OHEM KAP instruments had an average content validation index (S-CVI) of 0.99 and 0.98, an average universal agreement of 0.94 and 0.90, and each item showed an I-CVI of greater than 0.83 for both mothers and children. Hence, the OHEM KAP instruments demonstrate clarity and relevance to the OHEM manual. The validated English version of the OHEM KAP for mothers and children is presented in Appendices VI and VII, respectively. There is also an Urdu version that is undergoing validation and will be made available later.

8.3 OHEM KAP Scores

The instruments can be self-administered to the participants. After they have completed the questionnaire, three OHEM KAP scores can be calculated.

1. ***Percentage of knowledge score***

   The knowledge component in the OHEM KAP of the mothers and children instruments consists of 25 items, yielding a total of 86 correct answers (certain items have more than one correct response).

One (1) mark will be given for a correct, and zero (0) for incorrect, 'I don't know' responses or missing (unanswered) answers. The percentage score is based on the total correct answers (a) and given by $\frac{a}{86} \times 100$; the greater percentage indicates better oral health knowledge.

2. Attitude score

The attitude component in the OHEM KAP of the mothers and children instruments consists of ten items with five Likert scale responses, ranging from 1 (strongly disagree) to 2 (disagree), 3 (uncertain), 4 (agree), and 5 (strongly agree). The OHEM KAP attitude score is calculated by summing the scores of the ten items, which range from 10 to 50 units; a higher score indicates a greater (positive) attitude towards oral health.

3. Percentage of oral health practice score

There are 13 and 14 items in the practice components of the OHEM KAP instrument for mothers and children, respectively. Each item has multiple responses; the best response, which is based on the recommendation in the OHEM e-book, is allocated the highest mark, followed by acceptable practice with a lesser value, and a zero (0) mark for an incorrect or missing answer. The highest scores for the mothers and children are 19 and 20 units,

respectively. The percentage score is based on the total correct answers (a) and calculated using the formula $\frac{a}{19} \times 100$ for mothers and $\frac{a}{20} \times 100$ for children. The greater the percentage score, the better the oral health practice in a mother or child.

The instrument also included two questions to assess whether mothers monitor their children's toothbrushing at home. The information can be used for assessing (1) compliance with instruction by oral health educators, and (2) consistencies between the mothers' and children's responses by cross-checking the responses.

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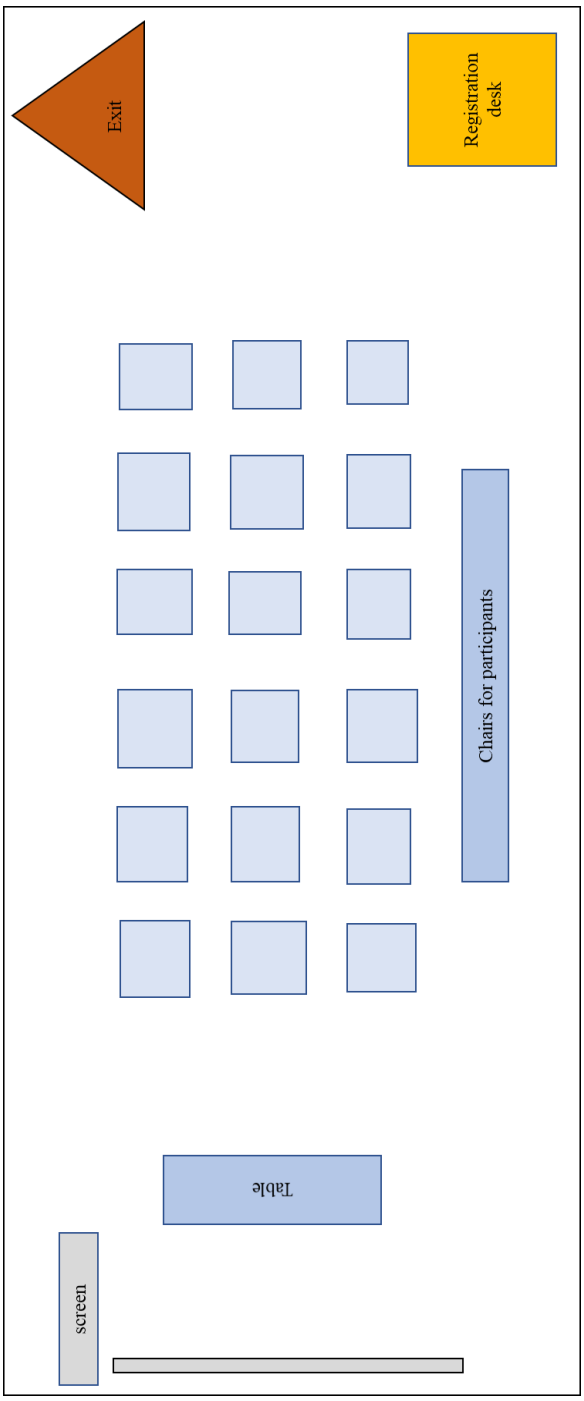
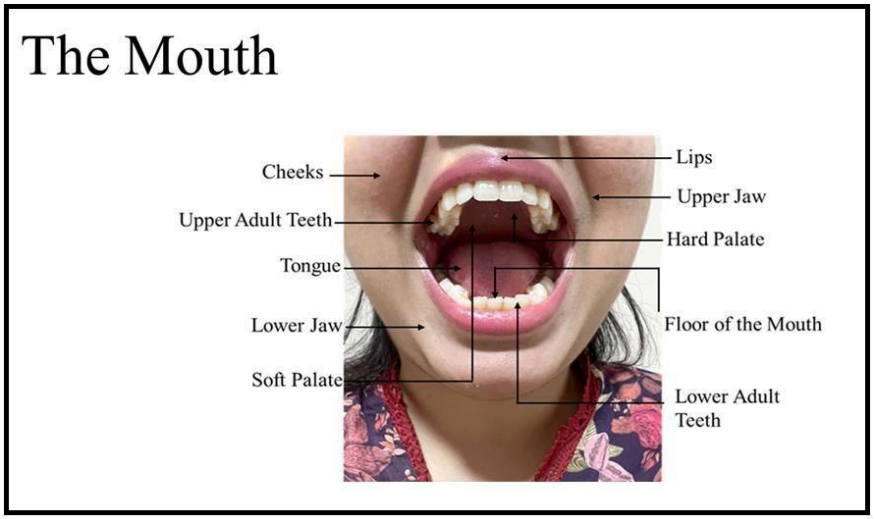
Appendix I: Basic Arrangement Design for Lecture Hall



Appendix II: OHEM Lecture Slide Show Presentation

OHEM LECTURE/TALK SLIDE SHOW

Prepared by:
Dr. Sidra Mohiuddin
Dr. Basaruddin Ahmad

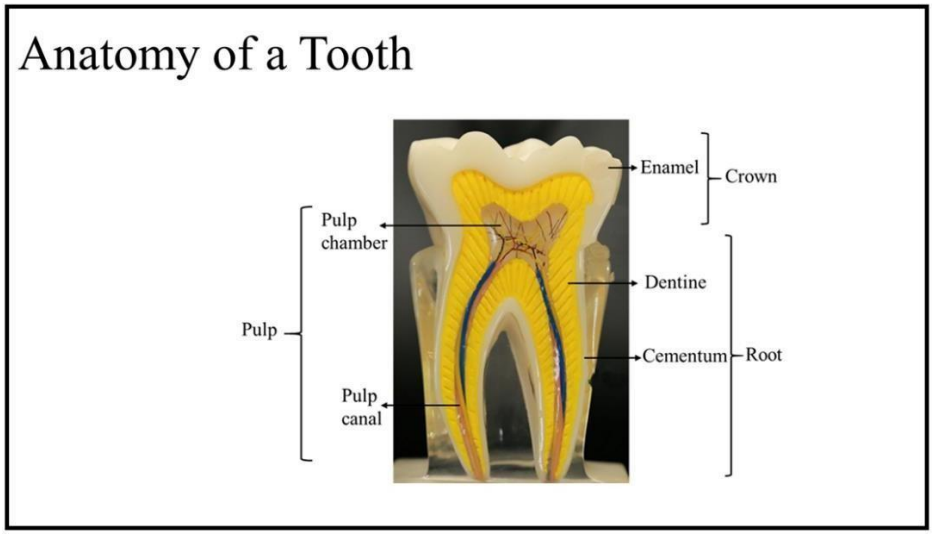


- The mouth is a structure on the human face comprising the lips, upper and lower jaw, tongue, cheek, hard palate, soft palate, floor of the mouth, teeth, and gums.
- It serves multiple essential functions: appearance, eating and digestion, breathing, talking, interacting, and socialising. Its presentation is also necessary for maintaining self-esteem and confidence.

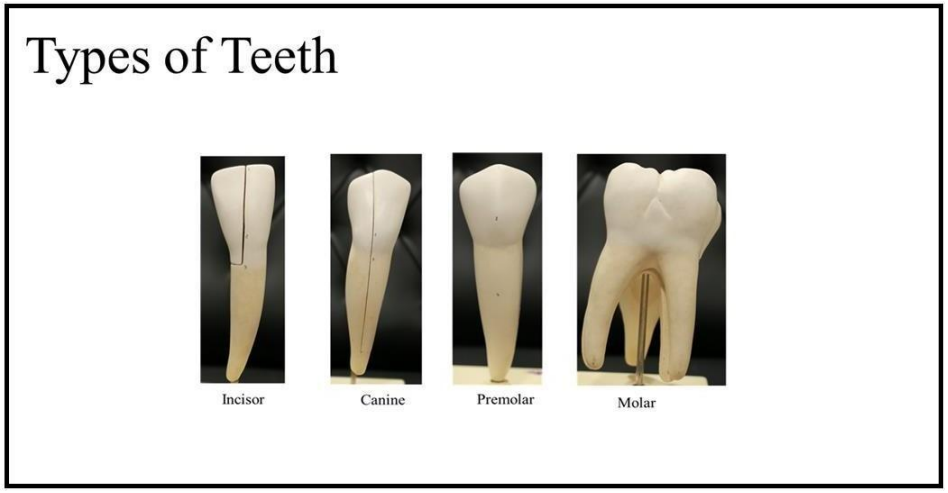
The Function of Teeth

- The teeth are essential throughout life because they are involved in many daily activities. The primary function is to chew food and aid in digestion.
- Teeth are also essential for speaking clearly and for presenting oneself effectively during social interactions.
- A well-taken care of set of teeth can serve a lifetime, just like any other organ, such as the eye, ear, heart, liver, and kidney.

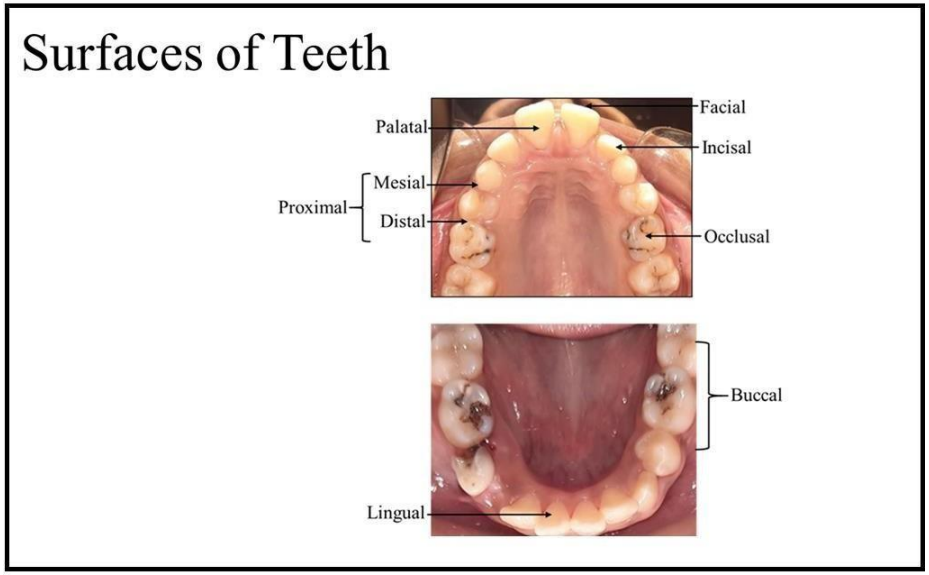
Tooth Anatomy, Types, Surfaces, and Stage



- All teeth have a similar basic structure.
- The outer part of the crown is the enamel (White in the picture).
- Underneath is the dentine, which extends from the crown to the root (Yellow).
- Inside the dentine is the pulp chamber, filled with blood vessels, nerves, and embryonic and connective tissues. A thin layer of cementum covers the dentine in a tooth root.
- A tooth is held in place by the periodontal fibers attached to the cementum and alveolar bone in a tooth socket.



- The incisors have flat edges for cutting the food.
- The canines have a single pointed cusp that helps in tearing food.
- The premolars assist the canines in tearing and partly grinding the food.
- The molars generally have five cusps that break food into fine pieces before it is swallowed.



- The incisors and canines have five surfaces: labial/facial, incisal, mesial, and distal, as well as palatal/lingual.
- The premolars and molars also have five surfaces: labial/facial, occlusal, mesial, and distal, as well as palatal/lingual. The occlusal surface features cusps, pits, and fissures that facilitate chewing.
- This surface is prone to food impaction and plaque accumulation and is more susceptible to caries than other tooth surfaces.

- The contact surfaces between two adjacent teeth, at the mesial and distal aspects of a tooth, are the second most vulnerable sites for caries development.
- These areas are difficult to reach with a toothbrush and can only be cleaned by flossing.

Primary Dentition

- The first primary tooth erupts in the mouth at around six months, and the full dentition of 20 teeth is completed at about age 2.5 years.
- Each arch has a pair of central and lateral incisors, canines, and first and second molars. They start to fall off around age six, and the last will remain in the mouth until age 13-14.

- Every child will experience a mixed dentition period between the ages of 6 and 14, during which both primary and permanent teeth are present in the mouth.

Permanent Dentition

- Permanent teeth continue to develop underneath after the primary dentition has erupted in the mouth.
- The first permanent tooth to erupt is the lower first molar, typically between the ages of 6 and 7 years, and the last is the third molar, which usually erupts between the ages of 18 and 21.
- A permanent dentition has 32 teeth; each arch has a pair of central incisors, lateral incisors, canines, first and second premolars, and first, second, and third molars.

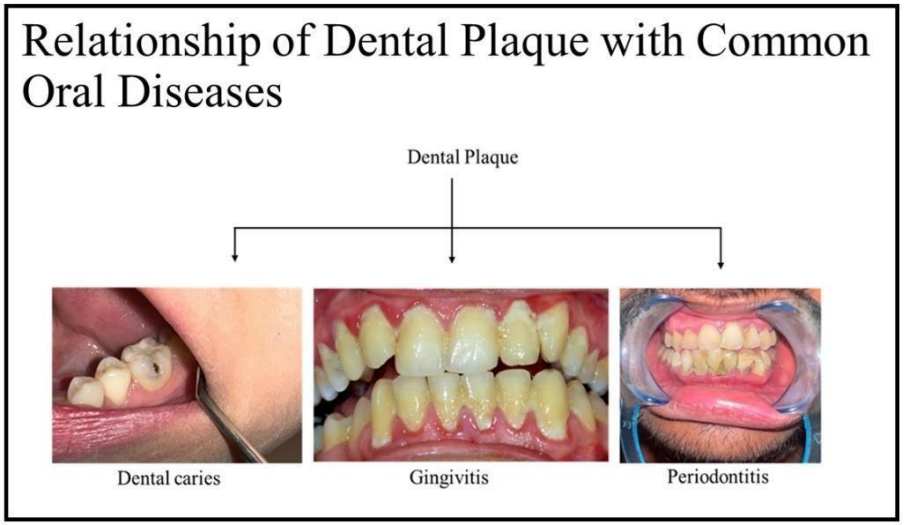
Common Oral Problems

Dental Plaque

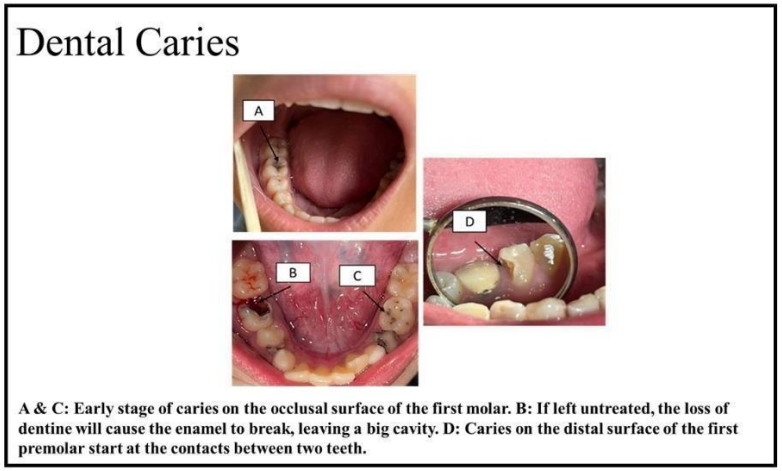
- Dental plaque is a soft substance that adheres to the tooth surfaces and the gingiva, and sometimes to the tongue. It can also be found on oral appliances such as dentures, restorations, and orthodontic wires and brackets.
- The colour ranges between white and yellow-greyish with a soft to firm to resilient texture, depending on maturity, and it is not readily removed by rinsing with water.
- Plaque formation requires bacteria that are already present in the mouth, as well as sugar from sweets, starchy foods (such as cakes, cookies, candies, chocolates, fruit juices, pasta, and bread), and sweetened drinks (including carbonated and fizzy beverages). Plaque formation restarts shortly after the teeth are cleaned, and visible plaque can appear within 6 to 8 hours.

Tartar or Dental Calculus

- Tartar or dental calculus is a hard deposit that attaches firmly to tooth surfaces and can extend above or below the gingival margin.
- The colour changes as it matures and hardens, from whitish to yellow to blackish-brown.
- It cannot be removed by brushing or flossing, and because self-removal is difficult, it must be removed in the clinic by a procedure known as scaling (professional teeth cleaning).
- Both plaque and calculus harbour toxins that aggravate the destruction of periodontal tissues.



- Dental caries and gingivitis are the most common oral diseases in children.
- Children who neglect their oral hygiene will likely develop periodontitis in adulthood.
- The most common cause of these diseases is the accumulation of dental plaque due to poor oral hygiene.

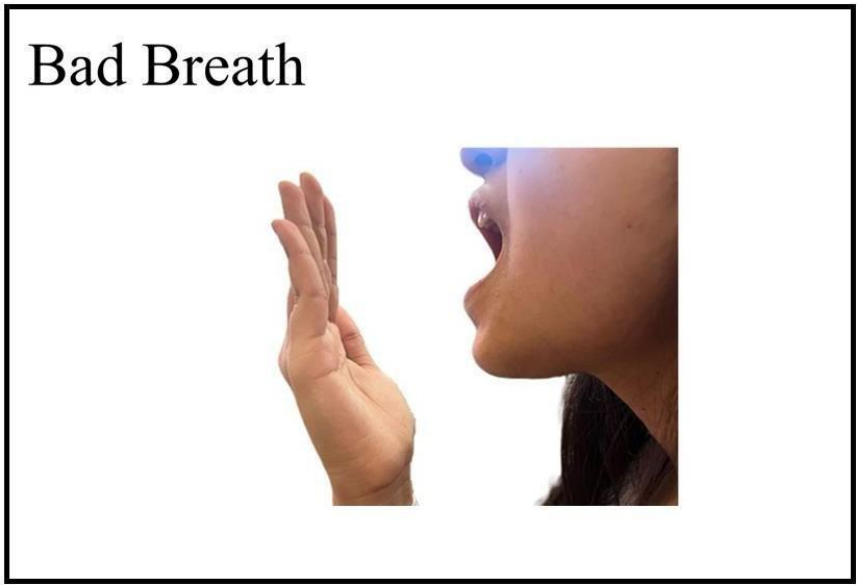


- A broken tooth crown characterises dental caries due to the loss of enamel and dentine structures.
- The development of dental caries is caused by the acids produced by bacteria in dental plaque, which attack and dissolve the enamel and dentin.
- The process begins with the development of a white spot on the enamel surface, which gradually enlarges before breaking through to form a cavity. The black colour in the tooth cavity is the accumulation of bacterial debris, food debris, pigments released by bacteria, and food colours such as those found in tea and coffee. It takes around three years before the enamel and dentine break down into a cavity, but further destruction progresses more quickly.
- Once caries approaches the dentine, the tooth gets more sensitive to hot or cold drinks.
- If left untreated, dental caries will progress toward the pulp, causing an infection known as pulpitis and resulting in a toothache. Further caries progression leads to the loss of more tooth structure and the death of the pulp tissue; the process is usually accompanied by repeated toothache, swelling, and abscess, and may sometimes cause facial swelling.

Gingivitis

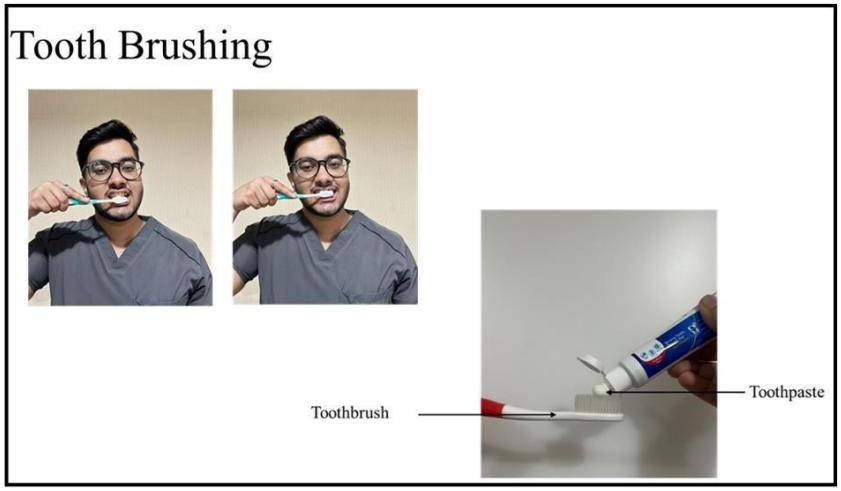
- Gingivitis is the inflammation of the gums.
- The inflamed gums will appear red and swollen, with mild to moderate pain and discomfort, and bleed easily when touched or during tooth brushing.
- Early signs of gingivitis will develop within four days of continuous plaque accumulation on the gums.
- A full dental plaque-induced gingivitis usually develops within two to three weeks. During this time, the redness and swelling become more notable, accompanied by spontaneous bleeding, bad breath, and ulcers that cause irritation and pain.

- Periodontitis is the inflammation of the periodontal tissues.
- The condition involves the destruction of tissues that support the teeth.
- Apart from gingivitis, it also destroys the attachment of the gum to the bone, the periodontal fibers holding the teeth in the socket, and the alveolar bones of the tooth socket. Continuous damage to the supporting tissues will lead to loosening of the teeth and tooth loss.



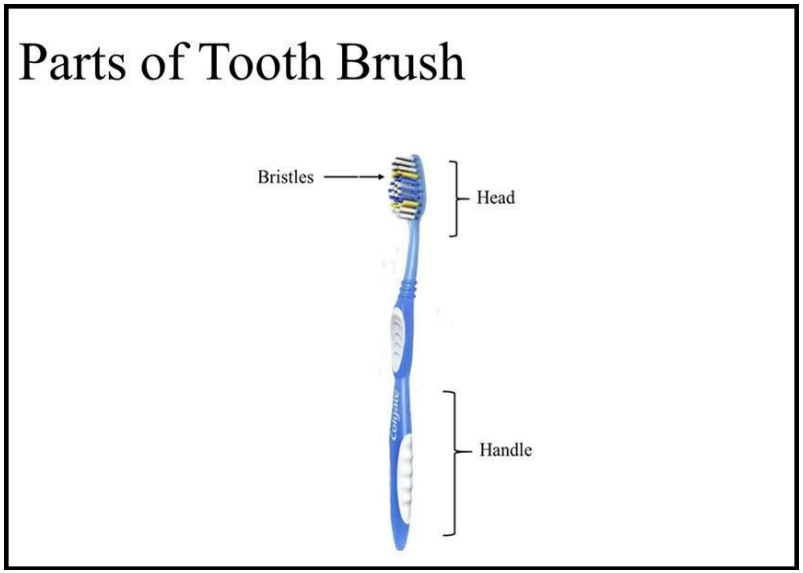
- Halitosis is a foul or offensive odour originating from the oral cavity.
- The common causes include poor oral hygiene related to plaque and food debris, as well as pieces stuck between teeth, dental caries, periodontitis, and dirty dentures.
- However, dry mouth, tobacco use, respiratory and sinus infections, and some medical conditions such as diabetes and cancers may also cause halitosis.

Oral Hygiene Care



- Toothbrushing is the most common and effective method of tooth cleaning, requiring only a toothbrush and toothpaste.

- The two main types of toothbrushes on the market are the regular manual (A) and the more expensive battery-powered.
- (B) A toothbrush should be selected based on the size of the head; a smaller size is recommended for a more petite mouth.
- As a rough guide, the bristles should extend to about the length of two molar teeth.



- A basic toothbrush has a handle and head with nylon bristles, which come in varying shapes, sizes, and colours.

Types of Tooth Brushes

Soft

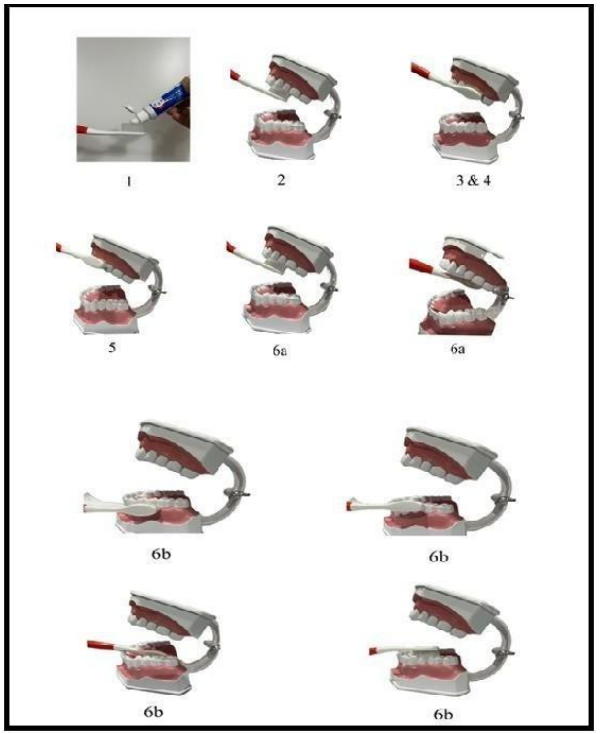
Medium

Hard

- Toothpaste is used when brushing teeth to avoid post-brushing unpleasant sensations.
- Modern toothpaste contains additives for various purposes, including mint flavors to enhance the sensation and taste, fluoride and antibacterial agents for additional caries prevention, and agents that help alleviate tooth sensitivity and prevent calculus development.
- Toothpaste should be selected primarily based on its ability to control plaque and prevent caries, and hence should contain antibacterial agents and fluoride; other additives are optional preferences.
- Using toothpaste on children requires supervision to prevent them from swallowing it.

Modified Bass Technique

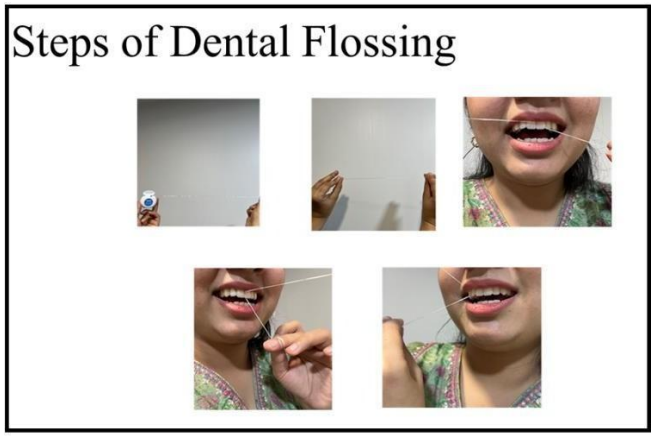
Tooth Brushing Method



- The basic principle of toothbrushing is to brush the bristles of a toothbrush against the dental plaque to loosen and detach it from tooth surfaces.
- The recommended technique for toothbrushing is the Modified Bass technique. The instructions are as follows:
    1. Apply toothpaste
    2. Smear toothpaste
    3. Start at the upper right/left molar teeth
    4. Move the head of the toothbrush in a circle and up and down
    5. Move to the next tooth.
    6. Follow the order to cover all surfaces:
        a. Upper Right to Left outer surface, occlusal/chewing surface, palatal surface
        b. Lower Right to Left outer surface, occlusal/chewing surface, palatal surface

Dental Floss

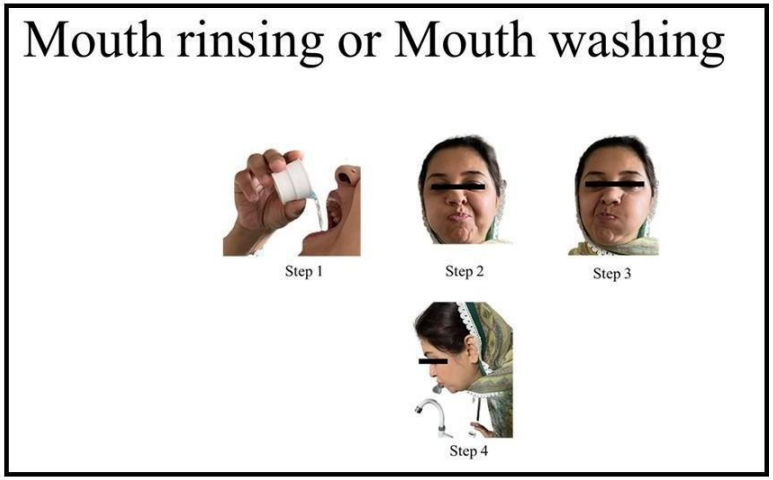
- Dental floss is a special thread or tape to clean the interdental spaces.
- It is made of nylon and is available in varying thicknesses, colours, and flavours.
- Flossing is more effective than toothbrushing in areas where teeth are in contact, and it is strongly recommended.



- A set of photos showing flossing instructions. The instructions are as follows:
- Take 12-18 inches of the dental floss. Roll it around the middle of both hands.
- Hold the floss firmly between the thumbs and index fingers.
- Pass the floss between two teeth using a gentle sliding motion. Gently move the floss up and down on the tooth surface, avoiding the gum line.
- When the floss reaches the gums, bend it against your teeth to form a C shape. By doing this, floss will enter the space between the teeth and gums.
- Repeat the above steps for other interdental areas, unrolling and rolling the floss on one finger and then another, respectively, to ensure a new and clean portion is used each time.

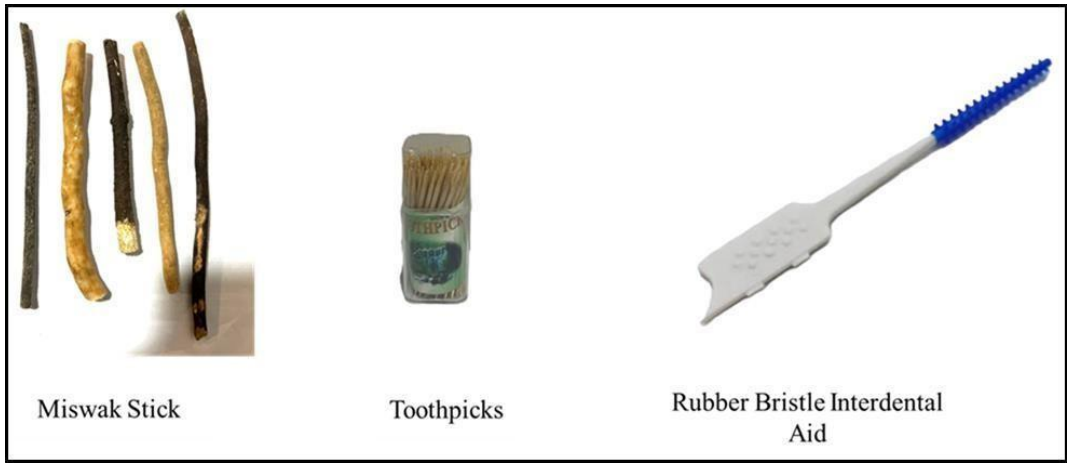
Mouthwash

- Mouth rinsing with liquid mouthwash is recommended after brushing your teeth.
- Different types of mouthwash liquids are available on the market, and some contain antiplaque or anti-inflammatory agents, as well as antiseptics, for additional control of dental plaque, gingivitis, and halitosis.

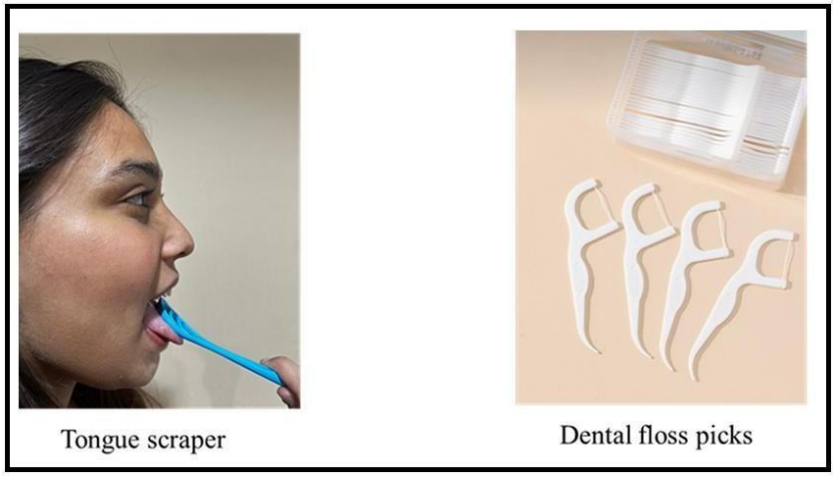


- Mouth rinsing or gargling involves swishing liquid in the mouth for about 30 seconds to loosen and dislodge food debris and particles, then spitting them out.
- It is recommended to rinse the mouth with water after meals, snacking, or consuming sweet foods and drinks, and to use the recommended amount of mouthwash. The act of swishing the mouthwash in the mouth and spitting it out.

Additional Oral Care



- There are additional aids that can be used to maintain oral hygiene. Miswak sticks can be used as an alternative to toothbrushes.
- Careful use of toothpicks can remove food debris that is stuck between teeth after meals.
- A rubber bristle interdental aid is a pointed, elastomeric finger that can be used for cleaning the gums, as it causes less gingival abrasion.



- A tongue scraper is used for removing plaque from the tongue surface. There are dental floss picks or powered dental floss for cleaning interdental spaces.

Teeth whitening paste and gel

- Some toothpastes contain whitening agents, and there are also special teeth whitening products, such as kits, strips, or gels, to lighten tooth discolouration and stains.

Anti-inflammatory, anti-sensitivity, anti-septic, and herbal toothpaste

Anti-inflammatory, anti-sensitivity, anti-septic mouthwashes

- There is also mouthwash available with and without alcohol, as well as options with phenols and essential oils as anti-inflammatory agents.
- Anti-bacterial mouthwash includes those with triclosan, Chlorhexidine, and Cetylpyridinium Chloride. Herbal-based mouthwashes are also available in the market for the same purpose.

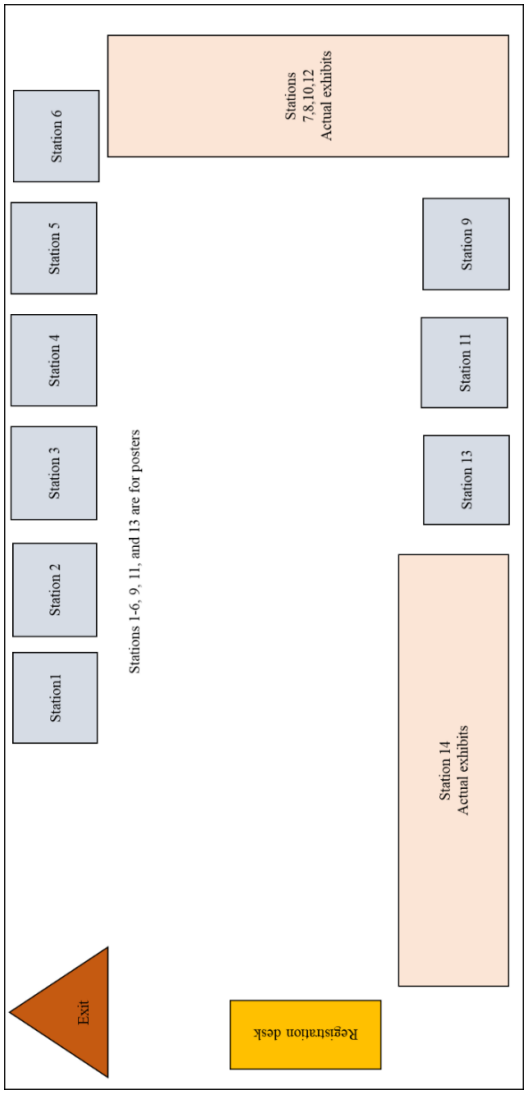
Thank you for listening

Appendix III: Slide number-wise OHEM Poster and Exhibits Layout

Slide number	Exhibits	Posters
1		✓
2	-	✓
3	-	✓
4	-	✓
5	✓	✓
6	✓	✓
7	✓	✓
8	✓	✓
9	✓	✓
10	✓	✓
11	-	✓
12	✓	✓
13	✓	✓
14	-	✓
15	✓	✓
16	✓	✓
17	✓	✓
18	✓	✓
19	-	✓
20	✓	✓
21	✓	-
22	✓	-
23	✓	-
24	✓	-
25	✓	-

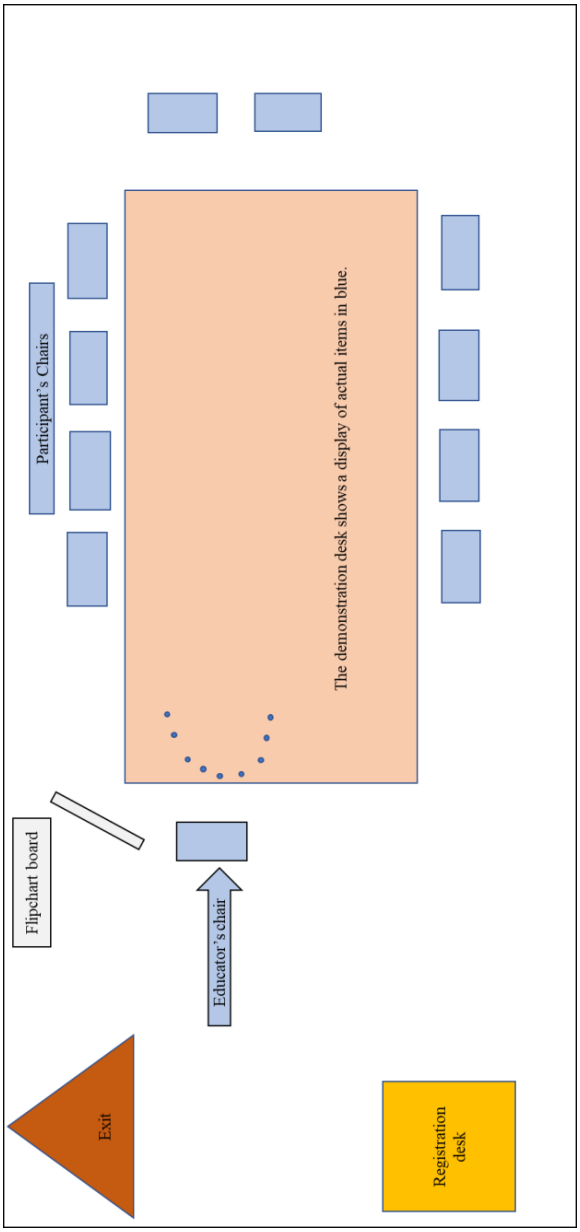
26	✓	-
27	✓	-
28	-	-
29	✓	-
30	-	-
31	-	✓
32	✓	-
33	✓	-
34	✓	-
35	✓	-
36	✓	-

Appendix IV Basic Arrangement Design for the Exhibits



Appendix V

Basic Arrangement Design for the Demonstration



Appendix VI

OHEM KAP FOR MOTHERS

This instrument is designed to assess the knowledge, attitudes, and practices of mothers based on the OHEM for Mothers e-book. It has three (3) sections: knowledge, attitude, and practice. Please read the instructions in each item and respond to all items in the three sections. Tick only one box in a row.

Section I: Oral Health Knowledge

Questions relating to the human mouth.

1. Tick (✓) the function of the human mouth.

	Yes	No	Don't know
a) Talking	☐	☐	☐
b) Socialisation	☐	☐	☐
c) Eating	☐	☐	☐
d) Digestion	☐	☐	☐
e) Circulation of blood	☐	☐	☐
f) Breathing	☐	☐	☐
g) Smell	☐	☐	☐

2. Tick (✓) the structure of the human mouth.

	Yes	No	Don't know
a) Eyes	☐	☐	☐
b) Lips	☐	☐	☐
c) Teeth & Gums	☐	☐	☐
d) Hard palate and soft palate	☐	☐	☐
e) Tongue	☐	☐	☐
f) Ears	☐	☐	☐
g) Nose	☐	☐	☐

Questions relating to the primary function and importance of adult teeth.

3. Tick (✓) the basic function of teeth is for.

	Yes	**No**	**Don't know**
a) Chewing food	☐	☐	☐
b) Digestion of food	☐	☐	☐
c) Swallowing food	☐	☐	☐
d) Appearance	☐	☐	☐
e) Communication	☐	☐	☐

4. Can teeth last for a lifetime? (Section 3.3.1, pg # 19)

☐ Yes	☐ No	☐ Don't know

Questions about primary/milk teeth.

5. How many primary/milk teeth are there?

☐ 10	☐ 20	☐ 28	☐ 32

6. Primary/milk teeth remain in the mouth until age.

☐ 9-10 years	☐ 11-12 years	☐ 12-13 years	☐ Don't know

Questions pertaining to adult teeth.

7. How many teeth does an adult have?

☐ 10	☐ 20	☐ 28	☐ 32

8. Which adult tooth erupts in the mouth first?

☐ Upper 1st molar	☐ Lower 1st molar	☐ Upper central incisor	☐ Lower central incisor	☐ Don't know

9. Draw a line to match the tooth structures.

☐ crown

☐ root

☐ gingiva

☐ periodontal ligaments

☐ bone

10. Draw a line to match the type of teeth.

Incisor

Canine

Premolars

Molars

11. Tick (✓) the tooth surfaces that are difficult to clean.

	Yes	**No**	**Don't know**
a) Facial/buccal	☐	☐	☐
b) Mesial	☐	☐	☐
c) Occlusal (pits and fissures)	☐	☐	☐
d) Lingual/palatal	☐	☐	☐
e) Distal	☐	☐	☐

Questions relating to oral conditions and diseases.

12. Tick (✓) the effects of not brushing teeth.

	Yes	**No**	**Don't know**
Dental plaque	☐	☐	☐
Tartar/ calculus	☐	☐	☐
Dental caries	☐	☐	☐
Gingivitis	☐	☐	☐
Periodontitis	☐	☐	☐
Bad breath	☐	☐	☐

13. Tick (✓) the area where dental plaque can be found.

	Yes	**No**	**Don't know**
a) Teeth	☐	☐	☐
b) In between teeth	☐	☐	☐
c) Tongue	☐	☐	☐
d) Gum margins	☐	☐	☐
e) Dentures	☐	☐	☐
f) Fillings	☐	☐	☐

14. Tick (✓) the causes of dental plaque accumulation.

	Yes	**No**	**Don't know**
a) Not brushing teeth (poor oral hygiene)	☐	☐	☐
b) Frequently eating sugary food.	☐	☐	☐
c) Frequently drinking fizzy drinks.	☐	☐	☐

15. Hardened dental plaque is referred to as calculus or tartar.

☐ **Yes**	☐ **No**	☐ **I don't know**

16. Tick (✓) the signs of gingivitis.

	Yes	**No**	**Don't know**
a) Redness of gums	☐	☐	☐
b) Swelling of gums	☐	☐	☐

c) Bleeding from the gums	☐	☐	☐
d) Bad breath	☐	☐	☐
e) Ulcers	☐	☐	☐
f) Pain	☐	☐	☐

17. Tick (✓) the signs of periodontitis.

	Yes	**No**	**Don't know**
a) Red/Bleeding Gums	☐	☐	☐
b) Bad breath	☐	☐	☐
c) Sensitive teeth	☐	☐	☐
d) Loosen teeth	☐	☐	☐
e) Painful Chewing	☐	☐	☐

Questions relating to dental caries.

18. Dental caries can cause.

	Yes	**No**	**Don't know**
a) Pain in the tooth	☐	☐	☐
b) Sensitivity in the tooth	☐	☐	☐
c) Discolouration of the tooth	☐	☐	☐
d) Difficulty in chewing food	☐	☐	☐
e) Hole in tooth	☐	☐	☐

Questions relating to oral hygiene care.

19. Tick (✓) the method of cleaning teeth.

	Yes	**No**	**Don't know**
a) Toothbrush	☐	☐	☐
b) Toothpaste	☐	☐	☐
c) Mouth wash	☐	☐	☐
d) Dental floss	☐	☐	☐
e) Toothpicks	☐	☐	☐

20. The recommended type of toothbrush is.

☐ Hard	☐ Medium	☐ Soft	☐ Ultra-soft	☐ Don't know

21. The recommended daily toothbrushing frequency is.

a) Once a day, after a meal	☐
b) Twice a day, after a meal	☐
c) Thrice a day, after a meal	☐
d) Occasionally	☐
e) I don't know.	☐

22. Below are the different types of toothpaste. Please select the type that you are familiar with.

	Yes	**No**
a) Regular with fluoride	☐	☐
b) Regular without fluoride	☐	☐
c) Sensitive teeth	☐	☐
d) Bleeding gums	☐	☐
e) Teeth whitening	☐	☐
f) Herbal toothpaste	☐	☐

23. Which toothpaste content helps prevent caries?

☐ Herbal	☐ Fluoride	☐ Mint	☐ Don't know

24. Dental floss is used for.

	Yes	**No**	**I don't know**
cleaning the surfaces between two teeth	□	□	□

25. Mouthwash is used for.

	Yes	**No**	**I don't know**
removing food debris	□	□	□

Section II: Questions Related to Oral Health Attitude

Tick (✓) the box if you Strongly agree/Disagree/Uncertain/Agree/Strongly Agree with the statement.

Attitude Questions	**Strongly disagree**	**Disagree**	**Uncertain**	**Agree**	**Strongly Agree**
26. Maintaining my oral health is just as essential as maintaining my overall health.					
27. Poor oral hygiene can impact my communication, eating habits, and facial appearance.					
28. Brushing my teeth twice a day improves my oral hygiene and overall appearance.					
29. Rinsing with water or mouthwash after meals is essential in keeping my teeth and mouth clean.					
30. Flossing is effective in cleaning the areas between the teeth that a toothbrush cannot reach.					
31. Scraping my tongue while brushing helps to reduce bad breath.					
32. Discussing oral health and oral diseases with my children is important.					

Attitude Questions	**Strongly disagree**	**Disagree**	**Uncertain**	**Agree**	**Strongly Agree**
33. The correct toothbrushing technique cleans my teeth and mouth more effectively.					
34. I am concerned about my own and my family's oral and general health.					
35. Teaching my children essential oral hygiene practices, such as brushing their teeth, rinsing their mouths, and using dental floss, is crucial to improving their oral health and overall well-being.					

Section III: Practices

Questions about oral hygiene care practices. Please tick (✓) ONE answer only for each question.

36. How many times do you brush your teeth daily?

☐ I don't brush or brush only occasionally	☐ Once	☐ Twice or more

37. When do you brush/clean your teeth?

a) After breakfast	☐
b) Before breakfast	☐
c) After breakfast and before sleep	☐

38. How do you clean your teeth? I use.

a) Toothbrush or miswak only	☐
b) Toothbrush+ Toothpaste	☐
c) Toothbrush + Toothpaste + Mouth wash + Dental Floss	☐

39. What type of toothbrush bristles do you use?

a) I don't know what bristles are	☐
b) Hard	☐
c) Soft	☐
d) Medium	☐

40. How often do you change your toothbrush?

a) Every year	☐
b) Six monthlies	☐
c) Three monthlies	☐
d) When bristles flare out	☐

41. Which toothbrushing method do you apply?

a) I don't know	☐
b) Horizontal (right and left) or Vertical (up and down) movement	☐
c) Circular (round) movement	☐

42. I ensure that I clean all tooth surfaces.

☐ No	☐ Yes

43. Do you use fluoridated toothpaste?

☐ No	☐ Yes

44. Do you use dental floss?

☐ No	☐ Yes

45. How often do you use dental floss?

I don't use	☐
When necessary	☐
Daily	☐

46. Do you use mouthwash?

☐ No	☐ Yes

47. Do you use toothpicks after meals to clean your teeth?

☐ No	☐ Yes

48. Do you rinse your mouth with plain water after meals?

☐ No	☐ Yes

Thank you for your time

OHEM KAP FOR CHILDREN

This instrument is designed to assess the knowledge, attitudes, and practices of children based on the OHEM for Mothers e-book. It has three (3) sections: knowledge, attitude, and practice. Please read the instructions in each item and respond to all items in the three sections. Tick only one box in a row.

Section I: Oral Health Knowledge

Questions relating to the human mouth.

1. Tick (✓) the function of the human mouth.

	Yes	No	Don't know
h) Talking	☐	☐	☐
i) Socialisation	☐	☐	☐
j) Eating	☐	☐	☐
k) Digestion	☐	☐	☐
l) Circulation of blood	☐	☐	☐
m) Breathing	☐	☐	☐
n) Smell	☐	☐	☐

2. Tick (✓) the structure of the human mouth.

	Yes	No	Don't know
h) Eyes	☐	☐	☐
i) Lips	☐	☐	☐
j) Teeth & Gums	☐	☐	☐
k) Hard palate and soft palate	☐	☐	☐
l) Tongue	☐	☐	☐
m) Ears	☐	☐	☐
n) Nose	☐	☐	☐

Questions relating to the primary function and importance of adult teeth.

3. Tick (✓) the basic function of teeth is for.

	Yes	**No**	**Don't know**
f) Chewing food	☐	☐	☐
g) Digestion of food	☐	☐	☐
h) Swallowing food	☐	☐	☐
i) Appearance	☐	☐	☐
j) Communication	☐	☐	☐

4. Can teeth last for a lifetime?

☐ Yes	☐ No	☐ Don't know

Questions about primary/milk teeth.

5. How many primary/milk teeth are there?

☐ 10	☐ 20	☐ 28	☐ 32

6. Primary/milk teeth remain in the mouth until age.

☐ 9-10 years	☐ 11-12 years	☐ 12-13 years	☐ Don't know

Questions pertaining to adult teeth.

7. How many teeth does an adult have?

☐ 10	☐ 20	☐ 28	☐ 32

8. Which adult tooth erupts in the mouth first?

☐ Upper 1st molar	☐ Lower 1st molar	☐ Upper central incisor	☐ Lower central incisor	☐ Don't know

9. Draw a line to match the tooth structures.

☐ crown

☐ root

☐ gingiva

☐ periodontal ligaments

☐ bone

10. Draw a line to match the type of teeth.

Incisor

Canine

Premolars

Molars

11. Tick (✓) the tooth surfaces that are difficult to clean.

	Yes	**No**	**Don't know**
f) Facial/buccal	☐	☐	☐
g) Mesial	☐	☐	☐
h) Occlusal (pits and fissures)	☐	☐	☐
i) Lingual/palatal	☐	☐	☐
j) Distal	☐	☐	☐

Questions relating to oral conditions and diseases.

12. Tick (✓) the effects of not brushing teeth.

	Yes	**No**	**Don't know**
Dental plaque	☐	☐	☐
Tartar/ calculus	☐	☐	☐
Dental caries	☐	☐	☐
Gingivitis	☐	☐	☐
Periodontitis	☐	☐	☐
Bad breath	☐	☐	☐

13. Tick (✓) the area where dental plaque can be found.

	Yes	**No**	**Don't know**
g) Teeth	☐	☐	☐
h) In between teeth	☐	☐	☐
i) Tongue	☐	☐	☐
j) Gum margins	☐	☐	☐
k) Dentures	☐	☐	☐
l) Fillings	☐	☐	☐

14. Tick (✓) the causes of dental plaque accumulation.

	Yes	**No**	**Don't know**
d) Not brushing teeth (poor oral hygiene)	☐	☐	☐
e) Frequently eating sugary food.	☐	☐	☐
f) Frequently drinking fizzy drinks.	☐	☐	☐

15. Hardened dental plaque is referred to as calculus or tartar.

☐ **Yes**	☐ **No**	☐ **I don't know**

16. Tick (✓) the signs of gingivitis.

	Yes	**No**	**Don't know**
g) Redness of gums	☐	☐	☐
h) Swelling of gums	☐	☐	☐
i) Bleeding from the gums	☐	☐	☐
j) Bad breath	☐	☐	☐

k) Ulcers	☐	☐	☐
l) Pain	☐	☐	☐

17. Tick (✓) the signs of periodontitis.

	Yes	**No**	**Don't know**
f) Red/Bleeding Gums	☐	☐	☐
g) Bad breath	☐	☐	☐
h) Sensitive teeth	☐	☐	☐
i) Loosen teeth	☐	☐	☐
j) Painful Chewing	☐	☐	☐

Questions relating to dental caries.

18. Dental caries can cause.

	Yes	**No**	**Don't know**
f) Pain in the tooth	☐	☐	☐
g) Sensitivity in the tooth	☐	☐	☐
h) Discolouration of the tooth	☐	☐	☐
i) Difficulty in chewing food	☐	☐	☐
j) Hole in tooth	☐	☐	☐

Questions relating to oral hygiene care.

19. Tick (✓) the method of cleaning teeth.

	Yes	**No**	**Don't know**
f) Toothbrush	☐	☐	☐
g) Toothpaste	☐	☐	☐
h) Mouthwash	☐	☐	☐
i) Dental floss	☐	☐	☐
j) Toothpicks	☐	☐	☐

20. The recommended type of toothbrush is.

☐ Hard	☐ Medium	☐ Soft	☐ Ultra soft	☐ Don't know

21. The recommended daily toothbrushing frequency is.

f) Once a day, after a meal	☐
g) Twice a day, after a meal	☐
h) Thrice a day, after a meal	☐
i) Occasionally	☐
j) I don't know.	☐

22. Below are the different types of toothpaste. Please select the type that you are familiar with.

	Yes	**No**
g) Regular with fluoride	☐	☐
h) Regular without fluoride	☐	☐
i) Sensitive teeth	☐	☐
j) Bleeding gums	☐	☐
k) Teeth whitening	☐	☐
l) Herbal toothpaste	☐	☐

23. Which toothpaste content helps prevent caries?

☐ Herbal	☐ Fluoride	☐ Mint	☐ Don't know

24. Dental floss is used for.

	Yes	**No**	**I don't know**
cleaning the surfaces between two teeth	□	□	□

25. Mouthwash is used for.

	Yes	**No**	**I don't know**
removing food debris	□	□	□

Section II: Questions Related to Oral Health Attitude

Tick (✓) the box if you Strongly agree/Disagree/Uncertain/Agree/Strongly Agree with the statement.

Attitude Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly Agree
26. Maintaining my oral health is just as essential as maintaining my overall health.					
27. Poor oral hygiene can impact my communication, eating habits, and facial appearance.					
28. Brushing my teeth twice a day improves my oral hygiene and overall appearance.					
29. Rinsing with water or mouthwash after meals is essential in keeping my teeth and mouth clean.					
30. Flossing is effective in cleaning the areas between the teeth that a toothbrush cannot reach.					
31. Scraping my tongue while brushing helps reduce bad breath.					
32. Teeth are important, just like my nose, eyes, ears, and other body parts.					

Attitude Questions	**Strongly disagree**	**Disagree**	**Uncertain**	**Agree**	**Strongly Agree**
33. A clean mouth improves my appearance when I smile or talk.					
34. Brushing my teeth saves my mouth from common oral diseases, such as tooth decay and gum disease.					
35. Correct tooth brushing technique cleans my teeth and mouth more effectively.					

Section III: Practices

Questions about oral hygiene care practices. Please tick (✓) ONE answer only for each question.

36. How many times do you brush your teeth daily?

☐ I don't brush or brush only occasionally	☐ Once	☐ Twice or more

37. When do you brush/clean your teeth?

d) After breakfast	☐
e) Before breakfast	☐
f) After breakfast and before sleep	☐

38. What do you use to clean your teeth?

d) Toothbrush or miswak only	☐
e) Toothbrush+ Toothpaste	☐
f) Toothbrush + Toothpaste + Mouth wash + Dental Floss	☐

39. What type of toothbrush bristles do you use?

e) I don't know what bristles are	☐
f) Hard	☐
g) Soft	☐
h) Medium	☐

40. How often do you change your toothbrush?

e) Every year	☐
f) Six monthlies	☐
g) Three monthlies	☐
h) When bristles are damaged/flare out	☐

41. Which toothbrushing method do you apply?

d) I don't know	☐
e) Horizontal (right and left) or Vertical (up and down) movement	☐
f) Circular (round) movement	☐

42. I ensure that I clean all tooth surfaces.

☐ No	☐ Yes

43. Do you use fluoridated toothpaste?

☐ No	☐ Yes

44. Do you use dental floss?

☐ No	☐ Yes

45. How often do you use dental floss?

I don't use	☐
When necessary	☐
Daily	☐

46. Do you use mouthwash?

☐ No	☐ Yes

47. Do you use toothpicks after meals to clean your teeth?

☐ Yes	☐ No

48. Do you rinse your mouth with plain water after meals?

☐ No	☐ Yes

49. Do you have your own toothbrush?

☐ No	☐ Yes

Questions pertaining to parental guidance.

50. Do your parents instruct you to brush your teeth twice daily?

☐ No	☐ Yes

51. Do your parents monitor your toothbrushing practices?

☐ No	☐ Yes

Thank you for your time

GLOSSARY

Dental plaque is the soft, tenacious material found on tooth surfaces that cannot be removed by rinsing with water. (Janakiram *et al.*, 2020) It is observable on the smooth surfaces of the teeth, at the gingival margin, and interdentally, as well as on oral surfaces, including restorations and oral appliances. (Fischman, 1986)

Dental plaque is clinically defined as a structured, resilient, yellow-greyish substance that adheres tenaciously to the intraoral hard surfaces, including both removable and fixed restorations. (Newman *et al.*, 2018) The tough extracellular matrix makes it impossible to remove plaque by rinsing or using sprays. Plaque can thus be differentiated from other deposits found on the tooth surface, such as materia alba and dental calculus. (Newman *et al.*, 2018)

Dental Calculus is a hard deposit that forms when dental plaque mineralizes; a layer of unmineralized plaque generally covers it. (Newman *et al.*, 2018)

Debris is soft foreign matter loosely attached to the teeth, consisting of mucin, bacteria, and food. (Fischman, 1986)

An educator is a professionally prepared individual who serves in various roles and is specifically trained to use appropriate educational strategies and methods to facilitate the development of policies, procedures, interventions, and systems conducive to the health of individuals, groups, and communities, a subject expert who will be delivering the OHEM module to the study participants.

Flyers are single, unfolded, typically printer-size paper; the most cost-effective size is "81/2 by 11", usually flat and rectangular.

Gingivitis is an inflammatory lesion confined to the tissues of free and attached gingiva and does not extend beyond the mucogingival junction. (Murakami *et al.*, 2018). The clinical features of gingivitis can be characterised by the following clinical signs: redness and sponginess of the gingival tissue, bleeding on provocation, changes in contour, and the presence of calculus or plaque, with no radiographic evidence of crestal bone loss. (Newman *et al.*, 2018)

Leaflets are a powerful strategy for educating target groups. They tend to be folded to create multiple pages or sides.

Oral Hygiene Instruction motivates and encourages patients to perform mechanical and chemical cleaning of teeth and interproximal areas. In addition, it focuses on the advantages of the topical effect of fluoride, removal of plaque from tooth surfaces, awareness about gingivitis and its associated clinical signs and symptoms, demonstration of oral hygiene aids and their use, halitosis, i.e., bad breath, mouth rinsing after meals, the importance of dental visits, etc. (Harrison, 2017)

Posters: Posters are visual aids used as independent sources of information. By design, the message displayed is concise, consistent, and engaging with the viewer. Guidelines for developing a poster include:

a. Careful delineation of content

b. Knowledge of audience needs

c. The environment or setting for the poster.

Oral Health Educational Module for Mothers

The Oral Health Educational Module (OHEM) for Mothers is a simple, practical, and one-stop teaching resource for educators working with underserved communities. This mini e-book combines essential oral health knowledge, step-by-step teaching guides, and easy-to-use assessment tools to help educators teach mothers about oral health and to care for their children.

The module includes clear knowledge chapters supported by locally relevant photos, instructions on delivering lectures, exhibitions, and demonstrations, separate assessment instruments for mothers and children, educator tips for daily oral care guidance, and a ready-to-use, modifiable slideshow.

Written in easy English and validated for clarity and content, the OHEM is designed for real-world outreach programmes where access to oral healthcare is limited. Published as a free and downloadable e-book by School of Dental Sciences, USM, it is an essential cost-effective tool for community workers, health educators, and oral health promotion teams.

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