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### **Bachelor of Pharmacy**

BY-

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Semester VIII UNDER THE GUIDANCE OF

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### **CERTIFICATE**

This is to certify that Project Work (BP812PW) entitled "SURVEY TO UNDERSTAND THE CONSUMER ANALYTICS OF ORAL HYGIENE HABITS MICROECONOMICS OF DENTAL TREATMENTS" is the bonafide work carried out by, AMAN PRAJAPATI (19BPH009), DHWANIL PATEL (19BPH035), KANJ PATEL (19BPH056), NIYATI PAREKH (19BPH080), SUJAN MEGHANI (19BPH102), B. Pharm semester VIII under my guidance and supervision in the Institute of Pharmacy, Nirma University, Ahmedabad during the academic year 2022-2023. This work is up to my satisfaction.

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I/c Director, Institute of Pharmacy, Nirma University.

Date: 15/05/2023

### **CERTIFICATE OF SIMILARITY OF WORK**

This is to undertake that the B.Pharm. Project work (BP812PW) entitled "SURVEY TO UNDERSTAND THE CONSUMER ANALYTICS OF ORAL HYGIENE HABITS RELATED PRODUCTS AND MICROECONOMICS OF DENTAL TREATMENTS" Submitted by, AMAN PRAJAPATI (19BPH009), DHWANIL PATEL (19BPH035), KANJ PATEL (19BPH056), NIYATI PAREKH (19BPH080), SUJAN MEGHANI (19BPH102), B.Pharm. Semester VIII is a bonafide review/research work carried out by us at the Institute of Pharmacy, Nirma University under the guidance of "Dr. Hardik Bhatt". We are aware about the rules and regulations of Plagiarism policy of Nirma University, Ahmedabad. According to that, the review/research work carried out by us is not reported anywhere as per best of our knowledge.

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### DECLARATION

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## **INDEX-**

<b>CHAPTER</b>	TITLE	PAGE
<u>NO.</u>		<u>NO.</u>
		1
	ABSIRACI	1
		2
CHAPTER 1	UNDERSTANDING ORAL ANATOMY	2
1.		
CHAPTER	PRODUCTS RELATED ORAL HYGIENE	5
2.		
CHAPTER	GENERAL PERCEPTION OF PEOPLE TOWARDS ORAL	20
3.	HYGIENE	
CHAPTER	DO'S AND DONT'S OF ORAL HYGIENE	22
4.		
CHAPTER	<b>RISK OF AVOIDING ORAL HYGIENE PRACTICES</b>	29
5.		
CHAPTER	DISEASE AND TREATMENTS	31
6.		
	QUESTIONNAIRE	36
CHAPTER	DATA INTERPRETATION	40
7.		
	SUMMARY	71
	DEFEDENCES	
	REFERENCES	73

## TABLE OF FIGURES-

FIGURE	FIGURE CAPTION
NO.	
1	Mouth (anterior)
2	Internal structure of a mammalian tooth with two roots.
3	Biology of the mouth
4	Colgate Vedshakti ayurvedic toothpaste
5	Sensodyne rapid relief toothpaste
6	Colgate ultra soft manual toothbrush
7	Oral-B vitality cross action electric toothbrush
8	TePe interdental toothbrush
9	G-U-M end-tuft soft toothbrush
10	Personalized natural bamboo toothbrush
11	Colgate max fresh flax mouthwash
12	Black pearl teeth whitening powder
13	Eco-friendly dental floss
14	Women with healthy white teeth
15	Tongue scraping
16	Disposable Dental floss picks tooth stick
17	Miradent Xylitol Chewing Gum
18	Extra soft toothbrush for sensitive teeth

### **ABSTRACT**

Oral health is a crucial aspect of overall health and wellbeing. The fundamental goal of oral hygiene is to maintain a healthy, comfortable oral cavity in order to boost selfesteem, lessen bacterial activity in the mouth, and lower the risk of both local and systemic infection. It is important not only for maintaining health of teeth and gingivae in an individual but also for good and uneventful regeneration and healing of tissues, which one has undergone one or other dental treatments. Studies have revealed, though, that people sometimes exhibit poor dental hygiene habits. The purpose of this crosssectional study is to analyse a sample population's oral health status, behaviour, and perceptions. Oral hygiene products include toothbrushes, toothpaste, mouthwash, dental floss, dental picks, and tongue scrapers, which are used to keep the mouth healthy, prevent tooth decay, and freshen the breath. People's attitudes towards oral hygiene vary, with some placing a high value on it and practising it on a regular basis, while others may dismiss it as unnecessary and ignore it, resulting in a variety of dental disorders. Avoiding oral hygiene can result in a variety of dental problems, including cavities, gum disease, poor breath, and even tooth loss. Regular dental examinations, cleanings, fluoride usage, and restorative procedures such as fillings, crowns, and root canals are among the treatments available.

### **1. UNDERSTANDING THE ORAL ANATOMY-**

### <u>Mouth</u>

The first part of the alimentary canal is formed by oral cavity. Various bones and muscles present in the oral cavity are as follows:

Anterior wall: It is bound by the lips.

Posterior wall: It continues with the oropharynx.

Lateral walls: They are bound by the cheek muscles.

Superior wall: It is bound by muscular soft palate and the bony hard palate.

Inferior wall: It is bound by the soft tissues and the muscular tongue.



Figure 1-Mouth (anterior) Reference-1

#### <u>Teeth</u>

As soon as the food is taken in the mouth, the breakdown of the food into the smaller particles is done by chewing with the help of teeth. This process is called Mastication. Mastication is the process of mechanical digestion; teeth are hard and calcified so that it aids the process.

The classification of functionality of the teeth can be divided into two parts, viz., adult teeth (permanent teeth; 32 in number) and the baby or milk teeth (deciduous teeth; 20 in number). In around 6 to 7 years of human age the baby teeth are replaced by the permanent teeth.

Structure-



Figure 2-Internal structure of a mammalian tooth with two roots. Reference-2

Enamel is the most mineralised and the hardest entity of the human body. The major mineral is the hydroxyapatite (one of the forms of calcium phosphate).

Dentin, just like bone is a hard connective tissue present beneath the enamel and is the largest part of the tooth. The pulp is surrounded by the dentin. The pulp is comprising of blood vessels and is a soft connective tissue. The nerves of the pulp innervate the tooth. These tissues cover the root from inside out.

The root is held to the bony socket via specialised connective tissue fibres. The bony socket is known as dental alveolus and the connective tissue is known as the periodontal ligament. Through the apical foramen; an opening at the apex of a tooth root, the nerves and blood vessels enter and exit.

Types and functions:

- 1. Incisors: aid in biting-off large pieces of food.
- 2. Canine: aids in grasping and tearing the food.
- 3. Bicuspids: absent in children; help in grinding the food.



4. Molars: also aid in grinding the food, are the largest teeth present at back.

Figure 3-Biology of the mouth. Reference-3

#### <u>Tongue</u>

Tongue is a muscular organ which helps in deglutition. The tongue is innervated by many nerves and blood vessels. Tongue has taste buds. The taste buds help in the perception of taste. The five tastes recognized by the tongue are: bitterness, saltiness, sourness, sweetness, meatiness.

Tongue is located at the floor of the mouth. It consists of tongue tip, margin, dorsum, inferior (ventral) surface, and root.

### 2. PRODUCTS RELATED TO ORAL HYGIENE

The purpose of oral hygiene products is to assist people maintain good oral health by avoiding problems like tooth decay, gum disease, and other oral health-related problems. Numerous improvements in oral care products over time have sparked the creation of creative and efficient methods for preserving ideal oral hygiene.

#### Products:

There are many different oral hygiene products on the market, including interdental brushes, dental floss, toothpaste, and mouthwash. These items are made to satisfy a variety of consumer requirements and preferences, including those for sensitive teeth, teeth whitening, and fresh breath.

#### New Products:

The development of new oral hygiene products has significantly increased during the past several years. Electric toothbrushes, water flossers, and smart toothbrushes with built-in sensors to track brushing patterns and deliver individualized feedback are some of the most recent advancements.

#### Future Products:

There is a strong possibility that the oral hygiene market will continue to innovate in the future. Advanced sensors to identify oral health problems, toothpaste with nanotechnology for enhanced cleaning, and genetically-tailored oral care products are just a few potential new goods that could hit the market.

#### Past:

Toothbrush: The toothbrush has been around for a very long time. To clean their teeth, ancient cultures used twigs, bones, and even porcupine quills.

Toothpaste: The first people to use toothpaste were the ancient Egyptians, who manufactured it from a concoction of salt, pepper, and mint leaves.

Mouthwash: To freshen their breath, the ancient Greeks and Romans used mouthwash made from a combination of wine and herbs.

#### Present:

Electric Toothbrush: In recent years, electric toothbrushes have grown in popularity. Compared to conventional manual toothbrushes, they clean teeth more thoroughly by using oscillating or rotating bristles.

Whitening Toothpaste: A common product that helps to eliminate stains and whiten teeth is whitening toothpaste.

Floss: A crucial component of oral care is flossing, which is used to get food and plaque out from between teeth.

#### <u>Future:</u>

Smart Toothbrush: The smart toothbrush will be able to track brushing routines and give users immediate feedback.

Nanotechnology Toothpaste: To clean teeth and eliminate plaque more efficiently, toothpaste made with nanotechnology will use minuscule particles.

Oral Probiotics: To encourage beneficial bacteria in the mouth and prevent cavities and gum disease, oral probiotics will be administered.

#### 2.1 Toothpaste-

One of the preparations for maintaining oral hygiene is tooth paste. It is focused on gum disease and dental caries prevention. The top part of a tooth is referred to as the crown, and the bottom part as the root. Enamel, a hard tissue, covers the tooth's surface.'Hydroxy apatite' makes up the majority of this (98%). 2 Ca (OH) and 3 Ca3(PO4) Dentine is the term for the layer of substance under the tooth enamel. It likewise contains hydroxy apatite, albeit to a lesser level (70%) and the remaining components are water and collagen. Other substances may also be present in dentine apatite. The element that stands out the most is fluorine.

Dental plaque is a mucous film of varying thickness that covers every region of the teeth. Dental caries is thought to be mostly caused by plaque. Plaque is 82% water and

contains proteins, carbs, and other minerals. Plaque is the source of the crystalline deposit known as calculus. Calculus and dental caries development are connected.

The following are the requirements for a dentifrice:

- 1. It should effectively remove food particles, plaque, and discoloration from teeth.
- 2. It ought to leave your mouth feeling clean and fresh.
- 3. It should be risk-free, enjoyable, and practical to use.
- 4. It should encourage people to utilise it repeatedly every day.

Below are the functions of tooth paste.

- 1. Keeps the teeth's surface as spotless and glossy as possible.
- 2. Prevent the development of offensive odours.
- 3. Prevent gum disease and dental cavities.

Following are the Constituents of tooth paste.

1. Abrasives & Polishing agents:

Abrasives that are frequently utilized include calcium carbonate and dicalcium phosphate. Other materials like silica, calcium sulphate, tricalcium phosphate, and aluminium oxide are also used.

These abrasives each have varying degrees of abrasive force. To attain the necessary abrasive force, the formulator often carefully blends a mixture. Abrasive elements make from 30 to 60 percent of tooth pastes. Abrasive material's particle size needs to be closely maintained; otherwise, the sharp-edged particle can harm dental enamel.

2. Binders:

Binders are hydrophilic colloids that improve viscosity to keep liquid from separating from the paste. Uses include carboxymethylcellulose, methylcellulose alginates, and carrageenan's. This mucilage is thixotropic, which means they maintain their viscosity even in the face of significant temperature changes.

#### 3. Humectants:

Humectants like glycerol and sorbitol are frequently employed. These components give the paste the desired consistency.

#### 4. Sweeteners:

Common sweeteners include saccharin and sodium cyclamate. The level is approximately 0.1%.

#### 5. Foaming agents:

The foaming agent's sodium lauryl sulphate and dioctyl succinate are frequently employed (0.2 to 2% level). Another foaming agent is sodium lauryl arsenate.

#### 6. Flavours:

For tooth paste to succeed, flavours are crucial. Along with other flavours, spearmint oil and peppermint oil are frequently used. It is crucial for flavours to remain consistent over time.

#### 7. Preservatives:

Para hydroxy benzoate esters work well as preservatives. The 0.1% level of ethyl and methyl Para hydroxybenzoate is currently being replaced.

#### 8. <u>Water</u>:

For the manufacturing of typical tooth paste, purified water is sufficient.

#### 9. Other agents:

Special grades of toothpaste use ingredients like sodium fluoride, sodium lauryl sarcosine's, disodium Mono fluorophosphate, antibiotics, stannous chloride, etc. that prevent dental cavities.

#### Manufacturing Process:

The manufacturing process of toothbrushes typically involves injection moulding of plastic parts, assembly of the components, and then packaging and labelling of the finished product. Injection moulding is used to produce the handle of the toothbrush, while the bristles are usually made from natural bristles or synthetic fibres. The components are then assembled by hand or by machine, and the finished toothbrush is packaged and labelled for retail sale.

Injection moulding is a process in which molten plastic is injected into a mould to create a specific shape. The mould is carefully designed to ensure that the plastic forms the desired shape when it cools. The bristles that form the brush are either natural bristles or synthetic fibres, and they are usually attached to the handle of the toothbrush by hand or with a machine. Finally, the toothbrush is labelled and packaged for retail sale.

#### Quality control of toothpaste:

The pH, viscosity, and homogenous structure of tooth paste will be determined as part of the quality control process. Performance parameters like brush sensitivity, flavour uniformity, polishing effect, detergent effect, and tube squeezability are also examined.

#### Top toothpaste brands in India:

- Colgate toothpastes
- Dabur Red Toothpaste
- Sensodyne
- Close-up
- Himalaya Herbals
- Pepsodent
- Patanjali Dant Kanti
- Vicco Vajradanti Ayurvedic Toothpaste

#### Colgate toothpaste:

Colgate has evolved into a name that most people associate with toothpaste throughout time. It has a firm grip on the Indian market and reached a significant turning point in 1999 when it overtook another brand to become the most popular worldwide! The reasons for their expansion can be ascribed to the wide variety of toothpastes on the market, all of which are designed to meet the individual demands of customers ranging in age from young adults to small children.



Figure 4-Colgate Vedshakti ayurvedic toothpaste. Reference-9

This top toothpaste brand currently offers a variety of options. Colgate Total, Active Salt, Colgate Max with cooling crystals, Colgate fresh, herbal, and Colgate Sensitive for sensitive teeth are a few of the more well-known variations. Because the brand guarantees to strengthen, whiten, and prevent cavities, you can select any of the options with confidence.

In the toothpaste market, Colgate has the largest market share and the greatest number of customers. No wonder it has been the best toothpaste company in the world for so long. The company has introduced numerous variations throughout the years, each one making our teeth, gums, and smiles whiter and healthier. The company has already introduced more than 120 different types of toothpaste in the Indian market, and it plans to introduce more products in the future, such as tooth powders and brushes.

#### Sensodyne:

Popular toothpaste from the Sensodyne brand is made especially for those withsensitive teeth. It is designed to relieve dental sensitivity, which can be brought on by things like extremes in temperature, acidic foods, and strenuous brushing.



Figure 5-Sensodyne rapid relief toothpaste. Reference-9

Potassium nitrate, a component of Sensodyne toothpaste, helps desensitise tooth nerve endings and lessen sensitivity. Furthermore, it does not include any harsh abrasives, making it gentle on the teeth's enamel. Sensodyne is available in a range of formulations, including those for gum care, enamel protection, and teeth whitening.

Overall, dentists have been recommending Sensodyne for years as a reliable solution to help people with sensitive teeth maintain good dental health. A 70 gm pack costs Rs. 99, though you may find it online for less money.

#### 2.2 <u>Toothbrush</u>

The user of these toothbrushes, which are the most prevalent, must manually move the bristles across their teeth and gums. They come in a variety of forms, dimensions, and bristle types, such as soft, medium, and hard.

Manual toothbrush: The user of these toothbrushes, which are the most prevalent, must manually move the bristles across their teeth and gums. They come in a variety of forms, dimensions, and bristle types, such as soft, medium, and hard.

Electric toothbrush: These toothbrushes may clean teeth more thoroughly than manual toothbrushes because the bristles are moved by electric power. They come in a variety of styles, from budget-friendly to high-end, and can include features like timers, pressure sensors, and several brushing modes.

Children's toothbrush: These toothbrushes are made especially for kids, having smaller brush heads and softer bristles to fit their tiny mouths and teeth. They frequently come in bright colours, cartoon characters, and other patterns to make brushing more enjoyable and engaging for kids.

Interdental toothbrush: These toothbrushes are made to clean in between the teeth, and people wearing braces or other orthodontic appliances may find them especiallyhelpful.

The type of bristles, the size and shape of the brush head, the handle design, and additional features are only a few of the many distinctions between toothbrushes from different brands. Here are a few instances of how various toothbrush brands vary:

- Bristle type: Brushes with soft, medium, or harsh bristles are available from some manufacturers. For instance, the Oral-B Cross Action Toothbrush has medium bristles that may effectively remove plaque, while the Colgate 360 Sensitive Pro-Relief Toothbrush has soft bristles that are soothing on the gums.
- Brush head size and shape: Between brands, there can be differences in the brush head's size and form. For instance, the GUM Soft-Picks Interdental Toothbrush has a narrow, tapered brush head that can easily reach confined spots, while the Philips Sonicare Diamond Clean Electric Toothbrush has a diamond-shaped brush head that can clean between teeth and along the gumline.
- Handle design: Some models of toothbrushes include ergonomic handles that are made to be cosy to grip and use. For instance, the Oral-B Pro 1000 Electric

Toothbrush has a non-slip grip that can assist you in maintaining a secure hold, while the Colgate 360 Toothbrush has a flexible handle that can conform to the curves of your mouth.

 Additional feature: Some toothbrush brands provide extra features that might improve the convenience or effectiveness of brushing. One electric toothbrush with five brushing modes, including a sensitive mode and a deep clean mode, is the Philips Sonicare Diamond Clean. Due to the Bluetooth connectivity of the Oral-B Pro 5000 Electric Toothbrush, you may use an app to monitor your brushing routine.

Manual toothbrush:



#### Figure 6-Colgate ultra soft manual toothbrush. Reference-25

One of the most prevalent and widely used varieties of toothbrushes are manual ones. They have a handle and a head of closely spaced bristles. Based on the bristle hardness, head shape, texture, pattern, and handle design of these disposable brushes, different variants are available. You can select from hard, medium, or soft bristles; nevertheless, hard bristles may wind up harming your gums. You can choose a brush with a design that comfortably cleans all the areas of your mouth and meets your dental demands.

#### Electrical toothbrush:



Figure 7-Oral-B vitality cross action electric toothbrush. Reference-26

Electric toothbrushes perform far better than manual ones due to their tiny heads and automated spinning. The brush is made up of a motor and a head that may be removed. When the power button is pressed, the bristles spin quickly in both the clockwise and anticlockwise directions. These automated movements enable the brush to efficiently remove plaque from all areas of the mouth, even the difficult-to-reach areas. These 3 varieties of rechargeable or battery-powered brushes—regular, sonic, and ultrasonic toothbrushes—operate at different rates.

Inter-dental toothbrush:



Figure 8-TePe interdental toothbrush. Reference-27

While most normal and even electric brushes, interdental brushes clean in between your teeth. These brushes have rounded heads that softly clean the interdental areas and are less harsh than dental floss. To lessen oral issues, experts advise utilising interdental brushes in addition to regular brushes and mouthwash. These brushes have a plastic handle and a replaceable or disposable head. They are also perfect for eliminating biofilm build up from brace wires to avoid cavities, foul breath, etc.

End tuft toothbrush:



Figure 9-G-U-M end-tuft soft toothbrush. Reference-28

The end-tuft toothbrush is a special brush made specifically for cleaning the back of your mouth. The brush has a small, round head with seven closely packed tufts of nylon bristles on it. To access the confined spaces of your mouth, the bristles are cut short in the middle. End-tuft brushes are the best choice for cleaning hard-to-reach regions like wisdom teeth since they have an ergonomic, flexible handle. Additionally, they are excellent for cleaning crowns, crowded teeth in the back of the mouth, and gum surfaces with missing teeth.

#### Eco-friendly toothbrush:



Figure 10-Personalized natural bamboo toothbrush. Reference-24

Alternatives to plastic brushes that are sustainable and kind to the environment include eco-friendly or zero-waste toothbrushes. Ecological brushes are disposable, yet unlike conventional brushes, they do not harm or contaminate the environment. With bristles made of pig hair or decomposable materials like bamboo or neem wood, they are created. In terms of cleaning effectiveness, these brushes provide comparable advantages to a traditional toothbrush. However, because the brushes are prone to mould, they must be thoroughly dried after each usage.

#### 2.3 Mouthwash

Mouthwash is mainly of three types:

- 1. Antibacterial: that battle the mouth's bacterial population,
- 2. Fluoride: which supports the fluoride layer of tooth enamel, and
- 3. Renewal: Renewal aids in the repair of early carious lesions.

These goods are anticipated to deliver a fresher, healthier mouth and some assurance of pleasant breath smell. Mouthwash has an overall effect that combines three things:

- a) The physical result of rinsing away food remnants from the mouth.
- b) How the antibacterial agent affects the oral flora, and
- c) How the flavouring in the food affects the body.

Since many flavouring ingredients have an antimicrobial effect, (b) and (c) might work better together.

Antibacterial agent: Phenols, Thymols, Tannic Acid, Chlorinated Thymols, Hexa Chlorophene, and quaternary Ammonium compounds are some of the antibacterial ingredients included in mouthwashes. Salts of alum and zinc are sometimes used to provide an astringent effect.

Flavouring of mouthwash: Since the consumer needs to be aware of how fresh their mouth feels after using mouthwash, the flavour is a crucial component of a good mouthwash. Common scents include oil of wintergreen, peppermint, menthol, eugenol, and others that leave the mouth feeling pleasantly fresh.



Figure 11-Colgate max fresh flax mouthwash. Reference-10

#### <u>2.4 Toothpowder</u>

These are the original, most basic, and least expensive varieties of dentifrice. Due to the low likelihood of component interaction in the absence of water, formulation issues are not as severe. In contrast to a paste formulation, fluorides and oxidising agents are likely to maintain their effective concentration for a longer period. The ingredients in tooth powders should be generally consistent in size to avoid separation during shaking and caking during storage. Essentially the same ingredients are used in toothpaste. Powders can be created quite easily. The sweetness, flavour, and, if desired, a small amount of alcohol, are combined with some abrasive powder to create a pre-mix concentrate.

Black pearl teeth whitening powder:



Figure 12-Black pearl teeth whitening powder. Reference-11

Activated coconut charcoal to whiten the teeth:

One Living Earth's vegan tooth powder contains activated coconut charcoal, which effectively removes stains and whitens teeth. By removing the microorganisms that cause bad breath, charcoal may also aid in breath freshening. Additionally, this product contains bentonite clay, which comprises calcium and silica and can help your teeth remineralize.

#### 2.5 Dental floss-

Dental floss is a cable made of tiny filaments that is used for interdental cleaning to remove food debris and dental plaque from spaces in between teeth or from locations a toothbrush cannot or does not easily reach1. To preserve dental health, it should be used frequently as part of oral cleaning1. To avoid plaque accumulation and gingivitis, flossing is advised1. According to the American Dental Association, flossing can help people with orthodontic equipment maintain their oral health by removing up to 80% of plaque1.



Figure 13-Eco-friendly dental floss. Reference-15

## 3. GENERAL PERCEPTION OF PEOPLE TOWARDS ORAL HYGIENE

People's attitudes towards dental hygiene varies depending on several factors such as Cultural belief, Socioeconomic position, Dietary choices, Dental visits, and Education

- 1) Cultural beliefs: Traditional beliefs and practises connected to oral hygiene might influence individual opinions and practises in some parts of India. For instance, Natural therapies such as neem sticks or charcoal for brushing teeth, may be popular in some communities. However, as modernisation and exposure to contemporary dental practises have risen, many urban Indians haveadopted more traditional oral hygiene practises such as the use of toothpaste and toothbrushes.
- 2) Socioeconomic position: In India, people perceptions of oral hygiene are influenced by their socioeconomic position. Those with higher socioeconomic status may have better access to oral healthcare, education, and resources for maintaining good oral hygiene practises, whereas those with lower socioeconomic status may face barriers such as financial constraints or limited access to oral healthcare, which can affect their oral hygiene practises.
- 3) Dietary choices: such as the consumption of sugary and acidic foods and beverages, can have an impact on dental health. Traditional diets in India may include high sugar and carbohydrate-rich meals, which can contribute to tooth decay and gum disease if not adequately managed.
- 4) Dental Visits: In India, diverse sectors of the population see the dentist on a regular basis for preventative check-ups and treatments. Some people see dentists only when they are in pain or have dental problems, whereas others prioritise regular dental visits for preventive treatment.
- 5) Education: Education has a huge impact on how people perceive oral hygiene. Higher educated people may be better aware of the importance of oral hygiene and its relationship to general health, and they may prioritise regular brushing, flossing, and dental check-ups. However, some populations may lack oral health education, resulting in a lack of awareness and understanding of good oral hygiene practises.

Dental disease is an important public health issue that may be prevented and affects both children and adults equally as well as cause pain, discomfort, and embarrassment. The World Health Organization (WHO) estimates that nearly 3.5 billion people worldwide suffer from dental issues. The most prevalent dental issue, affecting nearly half of the world population is tooth decay. Plaque, a bacteria film that sticks to teeth and produces acid that damages tooth enamel, is what causes tooth decay. Tooth decay can result in cavities, tooth loss, and even systemic infections if left untreated.

According to data from the third National Health and Nutrition Examination Survey, (NHANES), 42% of kids and teenagers between the ages of 6 and 19 have dental decay in their permanent teeth. Dental caries is thought to affect 50% of low-income children and 66% of low-income adolescents, according to the Centres for Disease Control and Prevention (CDC).63% of Britons clean their teeth twice a day, and 47% use fluoride toothpaste, the highest proportion in the world. Germany had the highest rate of frequent dentist visits, with 45% of people going twice a year. In addition, 31% have no concerns about their oral health. Following the Netherlands, Germany and Brazil had the lowest rates of tooth decay, at 21% and 20%, respectively.

### 4. DO'S AND DO NOT'S OF ORAL HYGIENE

#### <u>DO's</u>

Creating a Routine for Oral Hygiene:

Maintaining a consistent oral hygiene practise is critical for obtaining and maintaining good oral health. Brushing, flossing, and rinsing should all be part of a healthy practise to successfully remove plaque and avoid dental concerns such as cavities, bad breath, and gum disease. Brushing teeth after breakfast or morning coffee:

Brushing teeth after breakfast or coffee in the morning is vital for removing food particles, Plaque, and bacteria that may have accumulated overnight or as a result of morning beverages. It helps to freshen breath, minimise plaque build-up, and lower risk of tooth decay.



Figure 14-Women with healthy white teeth. Reference-30

#### Scraping Tongue:

Cleaning tongue is an essential but sometimes forgotten element of dental care. Bacteria on the tongue can contribute to unpleasant breath and oral health issues. Using a tongue scraper or lightly cleaning tongue can help remove bacteria and debris, leading to improved breath and health.



Figure 15- Tongue scraping. Reference-30

Proper Flossing Technique:

Flossing is a vital component of maintaining good oral hygiene since it removes plaque and food particles from between teeth and along the gumline, where toothbrush cannot reach. To prevent injury to the gums and ensuring effective plaque removal, employ proper flossing technique, such as gently slipping the floss between the teeth in a "C" form and not snapping it.



Figure 16- Disposable Dental floss picks tooth stick. Reference-30

Remove Remaining Debris by Mouthwash:

Mouthwash can be a beneficial supplement to dental hygiene practise because it helps to destroy bacteria, freshen breath, and reach places that brushing and flossing might not reach. After brushing and flossing, using mouthwash can help remove remaining particles and establish a healthy oral environment.

Drinking Plenty of Water to Keep Mouth pH Neutral:

Drinking water throughout the day is not only beneficial to general health, but it is also necessary for maintaining good oral health. Water helps wash away food particles and bacteria, stimulate saliva production, and maintain a neutral pH in the mouth, every one of which are essential to tooth decay prevention.

Midday Advice - Using Xylitol-based Gum or Mints:

Using xylitol-based gum or mints during the day can help you maintain good oral health. Xylitol is a natural sweetener that reduces the risk of tooth decay by inhibiting the growth of dangerous bacteria in the mouth. Chewing sugar-free gum or consuming xylitol-containing mints can increase saliva flow, which can help neutralise acids, remineralize teeth, and lower the risk of cavities.



Figure 17- Miradent Xylitol Chewing Gum. Reference-31

#### Using an Automatic Toothbrush:

An electric toothbrush, often known as an automatic toothbrush, can be a useful tool for maintaining good oral hygiene. Automatic toothbrushes are intended to give constant and thorough cleaning, and they can remove more plaque than manual toothbrushes. They are also useful for persons who have reduced dexterity or who do not wash their teeth for the minimum two minutes.

#### Using Soft Bristles:

It is essential to use a toothbrush with soft bristles to safeguard teeth and gums. Toothbrushes with hard or medium bristles can be abrasive and cause enamel and gum tissue damage. Soft bristles are soft on the teeth and gums, eliminating plaque effectively while causing no harm.



Figure 18-Extra soft toothbrush for sensitive teeth. Reference-31

Rinsing with Water After Drinking Acidic Beverages:

Acidic beverages such as sodas, sports drinks, and citrus juices can erode the enamel of teeth, making them more prone to cavities and sensitivity. It is critical to rinse mouth

with water after consuming acidic beverages to help neutralise the acids and wash away the residue, minimising the risk of enamel erosion.

#### DON'Ts

Avoiding Excessive Acidic Beverage use:

Excessive intake of acidic beverages might be harmful to dental health. Sodas, energy drinks, citrus juices, and sports beverages are acidic liquids that can erode the enamel of teeth over time, causing dental sensitivity, cavities, and enamel erosion. To protect teeth and maintain good oral health, restrict consumption of acidic beverages, and prevent excessive consumption.

Avoiding Alcohol-based Mouthwashes:

Using alcohol-based mouthwashes can be harmful to oral health. Because alcohol in mouthwashes reduces saliva flow, it could cause dry mouth, which is necessary for maintaining a healthy oral environment. Tooth decay, gum disease, and foul breath can all be exacerbated by dry mouth. Mouthwashes containing alcohol can potentially cause inflammation and ulceration in the oral tissues. Choosing alcohol-free mouthwashes or ones advised by dentist will help maintain good oral health.

#### Limiting Sugary or Acidic Food/Drinks:

Consuming excessive amounts of sugary or acidic food and beverages might be harmful to mouth health. Sugary meals and drinks can help dangerous bacteria proliferate in the mouth, resulting in plaque build-up and tooth decay. Acidic foods and beverages can erode teeth's enamel, leaving them more prone to cavities and sensitivity. To avoid oral health problems, restrict your intake of sugary and acidic meals and drinks and practise proper dental hygiene.

Carefully Selecting Toothbrush Bristles:

The bristles of your toothbrush can have an impact on your oral health. Toothbrushes with hard or medium bristles might be too abrasive, causing enamel and gum tissue damage, resulting in tooth sensitivity and gum recession. It is advised to use toothbrushes with soft bristles that are gentle on the teeth and gums while still removing plaque. Using a soft-bristled toothbrush and proper brushing technique will help protect teeth and gums from damage and preserve good oral health.

#### Avoid aggressive brushing:

Using too much force or a hard toothbrush to brush teeth might be damaging to dental health. Brushing too hard can result in gum recession, enamel deterioration, and tooth sensitivity. Brushing teeth in a gentle circular motion with a soft toothbrush is vital for effectively eliminating plaque without harming your teeth or gums. Brushing properly and avoiding vigorous brushing are ways to maintain good oral health and prevent tooth problems.

#### Not Brushing Before Bed:

Brushing teeth before bed is vital for removing plaque and bacteria that have accumulated during the day. During the night, your saliva production drops and your mouth gets dry, creating an excellent habitat for bacteria to proliferate. Brushing your teeth before bed removes plaque, reduces the chance of cavities, gum disease, and bad breath, and keeps mouth clean and healthy while you sleep.

#### Avoid Sleeping with Your Mouth Open:

Sleeping with your mouth open can be harmful to oral health. When you sleep with mouth open, saliva production diminishes and mouth becomes dry. Saliva is necessary for a healthy oral environment because it washes away food particles, neutralises acids, and fights bacteria. Sleeping with mouth open reduces saliva flow, which increases your

risk of cavities, gum disease, and foul breath. To maintain a healthy oral environment, attempt to breathe via your nose when sleeping.

Avoiding Excessive Use of Whitening Toothpastes and Bleaching Treatments:

Whitening toothpastes and bleaching treatments can be successful in removing stains and brightening your smile. However, over use of these products can be harmful to your oral health. Whitening toothpastes and bleaching procedures contain abrasive particles or chemicals that can erode your teeth's enamel over time, causing tooth sensitivity and enamel weakening. When using these products, it is critical to follow the manufacturer's and dentist's directions and avoid overuse to avoid potential tooth damage.

By following these oral hygiene dos and don'ts, you can develop a consistent routine that supports good oral health and aids in the prevention of dental disorders such as cavities, gum disease, tooth sensitivity, and enamel erosion. Brush teeth at least twice a day with a soft-bristled toothbrush and good technique, scrape tongue, floss daily, use mouthwash to rinse and remove debris, and drink enough of water to keep mouth at a neutral pH. To avoid forceful brushing, limit your use of acidic beverages, alcoholbased mouthwashes, sugary and acidic foods/drinks, and brush gently. Remember to clean teeth before bed, prevent sleeping with mouth open, and follow the directions for whitening toothpaste or bleaching treatments. Visits to your dentist on a regular basis for professional cleanings and check-ups are also important for maintaining good oral health.

### 5. RISKS OF AVOIDING ORAL HYGIENE PRACTISES

#### **Risk factors of Oral hygiene**

Most oral illnesses and ailments have modifiable risk factors in common with the four main NCDs (cardiovascular disease, diabetes, chronic respiratory disease, and cancer), such as tobacco use, alcohol intake, and an unhealthy diet high in free sugars.

Risk factors depending on a various aspect such as Lack of knowledge, Access to dental care, Dental anxiety, Cost, Monotonous schedule.

- Lack of knowledge: Individuals who are unaware of the need of excellent oral hygiene practises and how to properly care for their teeth and gums may ignore their oral health.
- 2. Access to dental care: A lack of dental insurance or the availability of dental clinics, for example, might be a substantial risk factor for avoiding oral hygiene practises. Financial restraints, geographic location, and transportation challenges can all have an influence on a person's capacity to receive dental treatment. Individuals may avoid getting dental care due to a lack of dental insurance coverage or excessive out-of-pocket expenditures, resulting in poor oral hygiene practises.
- 3. Dental anxiety: Dental anxiety is a frequent concern of going to the dentist that can drive people to delay dental appointments and neglect their oral health.
- 4. Cost: Dental treatment may be costly, and some people may forgo regular dental check-ups and cleanings for financial reasons. High dental operation, treatment, and preventative care expenses can be a substantial barrier to getting dental care for many people, particularly those without dental insurance or with low financial means.
- 5. Monotonous schedule: It might make it difficult for people to prioritise oral hygiene practises. Many people have hectic schedules that include job, family duties, and other obligations, leaving little time for basic oral care.

Patient education is an important part of managing risk factors for avoiding oral hygiene practises. Patients should receive thorough and individualised oral health education from dental professionals, which should include information on effective brushing and flossing practises, the necessity of frequent dental check-ups and cleanings, and the influence of risk factors on oral health. To guarantee relevance and efficacy, patient education should be presented in a language and manner that the patient understands, and cultural beliefs and practises should be considered.

In conclusion, addressing the risk factors for not practising oral hygiene necessitates a thorough and patient-centred strategy. Dental professionals can play an important role in educating patients, addressing dental anxiety, increasing access to dental care, addressing unhealthy lifestyle choices and cultural beliefs, identifying, managing mental and physical health conditions, addressing procrastination and habit formation, and promoting community oral health awareness. Dental practitioners may assist clients overcome barriers to oral hygiene practises and promote optimal oral health behaviours by providing a comprehensive approach to oral health care.
### 6. DISEASES AND TREATMENTS

### Common problems associated with teeth and gums

- Cavities
- Acute gingivitis
- Periodontitis
- Gum recession
- Cracked or broken tooth
- Sensitive teeth
- Oral cancer

### <u>6.1 Cavities</u>

Cavities and tooth decay are the most common health problems across the world. Especially in children, teenagers, and older adults. Nonetheless anyone having teeth can get cavities.

### Symptoms:

The symptoms of cavities differ depending on location and their extent. In the early stage of the cavity, you may not have any symptoms. As the decay gets larger, following symptoms can be observed:

- Toothache, spontaneous.
- 2Tooth sensitivity.
- Pain when you bite down.
- Pain when eating or drinking something hot or cold.
- Staining on any surface of a tooth. (Brown, black or white)

### Causes:

Cavities are caused by tooth decay. It is a process that occurs over time. The process of tooth decay develops as:

• Plaque forms: Dental plaque is formed by bacteria that quicky begin feeding when starches and sugars are not cleaned off.

- Plaque attacks: The acids in the plaque removes minerals from the enamel. The first stage of cavities is caused by this erosion. After this the bacteria can reach the next layer, called dentin. Acid attacks this layer more easily. Sensitivity occurs since tiny tubes in the dentin communicate directly with the nerve.
- Destruction continues: The bacteria and acids that cause tooth decay continue to march through the teeth until they reach the inner tooth material (pulp). Bacteria irritate and swell the pulp. In a tooth, swelling can't expand, so the nerve is pressed, causing pain. The discomfort can even extend to the bone.

### Complications:

There are a number of serious and lasting complications associated with cavities and tooth decay. Complications may include; pain, swelling around a tooth, damage or broken teeth, chewing problems.

When it becomes severe, it may cause

- Pain that makes regular life difficult,
- Nutritional issues or weight loss due to uncomfortable or challenging biting or eating
- Tooth loss, can have an impact on your confidence and self-esteem in addition to how you look.

#### Treatment:

The severity of your cavities and your unique situation will determine how they should be treated.

- Fluoride treatments
- Fillings
- Crowns
- Root canals
- Tooth extraction

### <u>6.2 Gingivitis</u>

The gingiva, or the area of gum that surrounds the base of your teeth, becomes irritated, red, and swollen (inflammation) due to gingivitis, a frequent and mild form of gum disease (periodontal disease). It's critical to treat gingivitis quickly and seriously. Periodontitis, a far more serious form of gum disease, and tooth loss can result from gingivitis.

Poor oral hygiene is the most frequent cause of gingivitis. Gingivitis can be prevented and treated by good oral hygiene practises include brushing at least twice a day, flossing once per day, and scheduling routine dental exams.

Symptoms:

- Swollen or puffy gums
- Dusky red or dark red gums
- Gums that bleed easily when you brush or floss
- Bad breath
- Receding gums
- Tender gums

### Causes:

Poor oral hygiene, which encourages plaque to build up on teeth and causes inflammation of the surrounding gum tissues, is the most frequent cause of gingivitis.

### Treatment:

Early treatment typically relieves gingivitis symptoms and stops the condition from worsening and leading to tooth loss. The highest chance for treatment success is when you give up smoking and establish a daily dental hygiene routine.

Professional care includes professional dental cleaning and dental restoration, if needed.

### 6.3 Gum recession

When your gum tissue pulls away from your teeth, the roots underneath are exposed (this is known as gum recession). Numerous things, including forceful brushing, smoking, and even heredity, contribute to its development.

#### Symptoms:

- Pain or discomfort near your gum line.
- Sensitivity to heat, cold and sweets.
- Sensitivity when brushing and flossing your teeth.
- Sensitivity during dental cleanings.

#### Causes:

- Aggressive brushing.
- Dental plaque.
- Periodontal disease.
- Trauma or injury to your gum tissue.
- Abnormal tooth positioning (misalignment).
- Smoking or chewing tobacco use.
- Lip and tongue piercings.

### Treatment:

Treatment for gum recession is primarily dependent on the underlying reason. Nonsurgical remedies, such as topical antibiotics, dental bonding, or orthodontics, may help with mild gum recession. However, in majority of cases, gum recession surgery is required to entirely resolve the issue.

### Gum recession surgery:

The most reliable and durable form of treatment for gum recession is gum graft surgery. Usually, this operation is carried out by a periodontist (gum expert). A gum transplant is employed during this procedure to replace your missing gum tissue. The transplant is typically taken from the roof of your mouth, while it sporadically may originate from tissue from a sterilised human donor. Your surgeon sews the gum graft into place once it is in the ideal position. Gum grafting treatments come in a variety of forms. Choosing the best one for your circumstances can be assisted by your surgeon. Gum grafting techniques today involve very little discomfort.

### 6.4 Cracked tooth

When a crack develops in your tooth, it is known as a fractured tooth, also known as cracked tooth syndrome (CTS). Sometimes the crack will be little and harmless. Sometimes it can lead to a split or break in your teeth.

Causes:

- Age,
- biting hard foods,
- trauma,
- teeth grinding,
- large dental fillings or a root canal.

### Treatment:

Depending on the extent of the injury, a fractured tooth may require different treatments. Common methods of treating cracked tooth.

- Bonding
- Cosmetic contouring
- Crown
- Extraction
- Root canal

### **OUESTIONNAIRE OF THE SURVEY-**

#### Aim:

The aim of this study is to assess knowledge, attitudes, and practices related to oral healthcare among the target population. This can inform the development of effective oral healthcare policies and interventions.

#### Objectives:

- To assess the frequency and methods of regular oral care among respondents. This will help in identifying the proportion of the population that follows the recommended oral hygiene practices. It will also help in identifying the gaps in their knowledge and practices.
- 2. To evaluate the respondents' knowledge of brushing techniques and toothbrush replacement. This will help in understanding the level of awareness among the respondents regarding the proper techniques and frequency of brushing. It will also help in understanding the need for toothbrush replacement.
- 3. To identify the factors that influence the choice of toothpaste and toothbrush among respondents. This will help us in understanding the role of advertising, social influence, and other factors in shaping oral hygiene behaviour.
- 4. To assess the frequency and reasons for dental visits and barriers to dental care. This will help in identifying the proportion of the population that receives regular dental check-ups and the reasons for skipping dental visits.
- 5. To investigate the prevalence of dental problems and dental treatments among respondents. This will help in understanding the burden of dental problems in the population and the need for targeted interventions and policies to improve oral healthcare.

#### o Name

Age-Below 13, 13-18, 18-40, 40-60, Above 60.

#### o Gender

o E-mail id

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- Which of the following method do you use for regular oral healthcare?
  Toothbrush and toothpaste, Dantmanjan, Datun, Electric toothbrush, Others.
- What additional aid do you use along with toothbrush?
  Mouthwash, Tongue cleaner, Dental floss, None.
- How often do you brush in a day?Once, Twice, more than twice, Not fixed.
- When do you brush in a day?
  Morning before breakfast, Morning before breakfast and night before sleep,
  Morning after breakfast, Morning before and after breakfast, Night before going to sleep.
- For what duration do you brush?
  Less than 2mins, more than 2mins, Not fixed
- Which brand of toothpaste do you use?
  Conventional brands, Herbal brands, Medicated toothpaste

What factors have influenced the usage of your toothpaste brand? Friends/Family, TV/Newspaper, Dentist, Offers and Discounts, None.

- What type of toothbrush do you use?
  Hard bristle, soft bristle, Unaware.
- After how long do you replace your toothbrush?
  Between 1-3months, more than 3 months, less than 1month, when bristles are worn out.
- Which brushing technique do you use?
  As directed by the dentist, non-directed, influenced by reading/watching online.
- What brushing stroke do you use?
  Vertical, Horizontal, Circular, Combination of all above
- You visit the same dentist for your dental check-ups?
  Yes, No.
- How did you come across your dentist?
  Family referral, Friends or college referral, Advertisements, Free check-up time.
- How often do you visit your dentist? Once a year, Once every 6 months, Once every 2 years, never.
- What is the most likely reason for you to skip your dental visit?
  No issue seen so far, Location, None, Fear, Cost.
- How often have you had discomfort in your teeth?
  Occasionally, Never, often.

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How often have you had discomfort in your gums?
 Occasionally, Never, often.

- How often have you had discomfort in your jaws?
  Occasionally, Never, often.
- Have you undergone any dental treatment?
  Yes, No
- What symptoms you observed before going for treatment?
  Anonymous pain, Tooth decay/Root infection, Gum disease, Sensitive teeth,
  Dry mouth, Other, Crooked teeth, not applicable
- Which dental procedure have you undergone before?
  Teeth cleaning and whitening, Extraction and/or Filling, Root canal and/or
  Crowns, Braces, dental implants, due to increased space between teeth, none,
  Other
- Have you encountered jaw surgery before? If yes, due to what reasons?
  No, Yes-due to accident or fracture, Yes-due to cyst or tumour, Yes-due to cancer
- What was the recovery duration after dental treatment? Less than 1 month, 1-3 months, 3-6 months, more than 6 months

0

What were the after-treatment products you were prescribed?
 Medicated toothpaste and/or mouthwash, gum ointment, water flosser,
 Proxabrush, denture cleaning kit, none.

### 7. DATA INTERPRETATION-

Aim:

To interpret the data obtained from the oral healthcare survey and to assess the current knowledge, attitudes, and practices related to oral healthcare among the target population.

#### Objectives:

- 1. To analyse the frequency distribution of responses to each question and identify the most common oral healthcare practices among the target population.
- 2. To examine the association between demographic characteristics (age, gender) and oral healthcare practices.
- 3. To assess the level of awareness about the importance of regular dental checkups and dental visits frequency among the target population.
- 4. To determine the most common factors that influence toothpaste and toothbrush choice among the target population.
- 5. To identify the most common dental problems and treatments among the target population.
- 6. To provide recommendations for improving oral healthcare practices and promoting better oral health outcomes among the target population.



From the pie chart, we can see that the largest group of people who filled out the form are in the age range of 18-40, which accounts for 57% of the total respondents. The second-largest age group is 40-60, which represents 14% of the total respondents. The age group 13-18 and Above 60 accounts for 10% each, while below 13 accounts for 8% only, that is lowest.

Overall, the data suggests that many of the respondents are relatively young, with the largest group being in the age range of 18-40.



From the pie chart, we can see that most of the respondents are male, representing 57% of the total respondents. Female respondents represent 42% of the whole.

3.

Toothbrush and toothpaste Dant manjan Electric toothbrush 0 50 100 150 200

Which of the following method do you use for regular oral care? 202 responses

According to the pie chart, respondents use toothbrushes and toothpaste most often for oral care. This accounts for 91% of the total respondents. Electric toothbrushes are used by 7% of respondents. Dant manjan, a traditional tooth powder popular in some parts of India, is preferred by 6% of respondents. The practice of datan, which refers to brushing teeth with a twig or stem from certain trees, is practiced by 5% of respondents. It is clear from this survey that oral care is primarily done with toothbrushes and toothpaste. This is followed by electric toothbrushes and dant manjan and datan.

According to most respondents, toothbrushes and toothpaste are the most accessible and affordable form of oral care, while electric toothbrushes and dant manjan can be more expensive. Datan is a more traditional form of oral care, and its use is likely more prevalent in rural areas. Moreover, most respondents prefer modern toothbrushes and toothpaste over traditional oral hygiene methods.

4.



What additional aid do you use along with toothbrush? 202 responses

The horizontal bar graph shows the percentage of respondents who reported using additional aids along with a toothbrush for oral hygiene. The options for additional aids include mouthwash, dental floss, tongue cleaner, and others. According to the horizontal bar graph, the most common additional aid utilized by respondents is tongue cleaner, which was cited by 68% of respondents. The second most common aid is mouthwash, reported by 38% of respondents. Dental floss was reported by 9% of respondents, while 27% reported using none.

According to the findings, tongue cleaner use appears to be more prevalent among respondents than mouthwash or dental floss use. This shows that among the responders, washing the tongue is a common oral hygiene practise. Since it can be completed swiftly with a specialised instrument and does not need for manual skill, tongue cleaning is frequently seen as a less invasive procedure. On the other hand, mouthwash is frequently seen as a more complete method of cleaning the mouth since it may access places that are hard to reach with other instruments. However, just a tiny proportion of respondents said they used tooth floss.

This result is consistent with past research studies that discovered flossing is frequently neglected or not given priority in dental care practises. However, dental floss takes more time and effort to use correctly and might not be as beneficial for everyone. Only a tiny

fraction of respondents claimed to use no other aids in addition to their toothbrush, indicating that majority of respondents thought some sort of supplementary help was required to maintain proper oral hygiene. The information could also suggest that respondents felt more at ease or familiar with mouthwash and tongue cleaning than dental floss. This could be brought on by variations in usability, perceived efficacy, or other elements.

Overall, the findings indicate that mouthwash and tongue cleansers are the most often used extra dental hygiene tools. Other tools, like as dental floss, are less often utilised. This is probably since mouthwash and dental floss take more time and effort to use than tongue cleansers and other assistance. Additionally, consumers could discover that mouthwashes and tongue cleansers deliver effects more rapidly and visibly.

5.



The pie chart shows the frequency with which respondents reported brushing their teeth in a day. The options for frequency included once a day, twice a day, thrice a day, and not fixed.

According to the pie chart, most respondents (47%) reported brushing their teeth twice a day. 43% of respondents reported brushing their teeth once a day, while only 5% reported brushing their teeth thrice a day. 4% of respondents reported brushing their

teeth in a day as not fixed. The findings indicate that majority of people regularly wash their teeth twice a day to maintain proper oral hygiene. However, a sizable percentage of the respondents said they only brushed their teeth once daily. Additionally, a sizable portion of individuals do not consistently brush their teeth, which suggests that more needs to be done to increase public awareness of the need of good oral hygiene.

Majority of respondents, according to the statistics, appear to brush their teeth twice a day, which is the suggested amount of time for keeping excellent oral hygiene. According to the study, brushing twice a day is the most widespread behaviour. This is explained by the fact that twice daily brushing is advised for oral hygiene and is probably a habit that is more generally practised. Additionally, the 4% of respondents who said their brushing frequency is flexible may not be as committed to their dental hygiene regimen as the other respondents.

6.

When do you brush in a day ? 202 responses



The pie chart shows when the respondents brush their teeth. According to the pie chart 57% brush at Morning before breakfast, 32% brush at Morning before breakfast and night before sleep, 6% brush at Morning after breakfast, 3.5% brush at Morning before and after breakfast, and only 2% brush at Night before going to sleep.

Majority of responders clean their teeth before breakfast, which shows that this is the most common time to do so. This could be out of convenience, habit, or choice, among other things.

The low number of respondents who reported brushing their teeth before bed suggests that this habit may not be as common. This could be as a result of a lack of knowledge on the value of brushing before bed or the belief that brushing in the morning suffices.

There may be a group of respondents who are more committed to upholding excellent oral hygiene practises, as indicated by the fact that a sizable percentage of respondents reported brushing both in the morning and at night. This would suggest that these people value oral health more highly or that they have received instruction or advice on proper oral hygiene techniques.

The comparatively modest number of respondents who said they only brushed their teeth after breakfast may suggest that this habit is less common than cleaning teeth first thing in the morning. This could be the result of several things, such different eating times or the idea that brushing before breakfast is more efficient.

Overall, the data offers some insightful information about respondents' toothbrushing habits. Recommendations and educational initiatives aiming at encouraging proper oral care practises can be informed by these findings. For instance, cleaning your teeth before bed and at least twice each day.

7.



The above pie chart gives information on the duration of brushing teeth. According to the pie chart, 30% brush their teeth for Less than 2mins, 50.5% brush for More than 2mins, and for 20% people it is not fixed.

Overall, it indicates that most respondents spend more than 2 minutes brushing their teeth, but a sizeable minority spend less time than that. A lower proportion of respondents also stated that they do not have a set amount of time for cleaning their teeth.

These results indicate that most respondents are aware of and are following the recommendation to brush for at least two minutes. However, a sizable majority of respondents are still brushing for less than 2 minutes, which may mean they are not completely reaping the rewards of brushing or may not fully understand the value of brushing for an appropriate amount of time.

The unusually high proportion of respondents who said they do not have a set amount of time to brush their teeth could mean that some people are unsure of how long they should brush for or are not giving it enough attention in their daily routine.

Statistics demonstrate the need to inform people about the ideal time to wash their teeth and the possible benefits associated with maintaining healthy oral hygiene habits. Gum disease and cavities may be prevented by good oral hygiene practises, such as brushing

twice day for two minutes. Education on the value of good oral hygiene can assist people in establishing and maintaining improved oral care routines, which will eventually improve their oral health.



The above pie chart shows what brand of toothpaste is used by respondents. 57% use Conventional brands, 25% use Herbal brands, 17% use Medicated toothpaste. Overall, it appears that majority of respondents use conventional brands of toothpaste, while a significant minority use herbal brands. A smaller percentage of respondents reported using medicated toothpaste.

The results of the pie chart indicate that conventional toothpastes are used by majority of respondents. Numerous elements, including extensive availability, well-established brand awareness, and the cost of these items, may have an impact on the appeal of conventional brands. It is also notable that a sizable minority of respondents mentioned using herbal toothpaste brands, which points to a growing popularity of natural or alternative dental care products as well as increased knowledge of their possible advantages. When choosing their toothpaste, respondents who used herbal products could give natural ingredients, sustainability, and environmental friendliness top priority.

The comparatively low number of respondents who said they used medicated toothpaste may suggest that it is not as popular or advised for general oral hygiene, but

may be utilised for oral health issues or illnesses. It is crucial to remember that medicated toothpaste can be useful in addressing oral health issues including tooth decay, sensitive teeth, and gum disease. The use of medicinal toothpaste by respondents may have been encouraged or advised by their dentists or other oral health experts.

Overall, the findings from this question show the wide range of variables that can affect people's toothpaste preferences and emphasise the significance of knowing the many types and advantages of toothpaste products in order to make well-informed decisions regarding dental care. Additionally, it raises the possibility that consumers may be becoming more interested in natural or alternative oral care products, which may have an impact on the oral care market's future.

9.



What factors has influenced the usage of your toothpaste brand?  $\ensuremath{\scriptscriptstyle 202\, responses}$ 

The pie chart shows that respondents' toothpaste usage is influenced by a variety of factors, with the largest percentage indicating that recommendations from friends and family members play a significant role in their choice of toothpaste brand, i.e., 31%. This suggests that social networks and word-of-mouth recommendations are powerful influences on consumers' oral care choices.

The second most cited factor influencing respondents' toothpaste usage is information from television and newspapers- 23%, indicating that advertising and media coverage

can also have a significant impact on brand choices. However, it is important to note that media coverage may be more effective for conventional or mainstream toothpaste brands, whereas alternative or herbal brands may be more influenced by social media or online communities.

Dentists are also an important source of information and recommendations for toothpaste usage, as indicated by the significant percentage of respondents who reported that their dentist influenced their choice of toothpaste brand- 26%. This suggests that oral health professionals can play a critical role in educating patients about the benefits and risks of different types of toothpaste products.

The relatively low percentage of respondents who cited offers and discounts as a factor influencing their toothpaste usage may indicate that price is not the primary driver of toothpaste brand choices- 11%. However, it is possible that respondents who did not select this option may still be influenced by pricing considerations when selecting their toothpaste brand.

Finally, a small percentage of respondents reported that they were not influenced by any specific factors when selecting their toothpaste brand- 8.5%. This may suggest that these individuals have a pre-existing preference for a specific type of toothpaste product or brand, or that they are not particularly attentive to the factors that influence their oral care choices.

10.



From the pie chart it appears that majority of respondents (73%) reported using a toothbrush with soft bristles, while a small percentage (10%) reported using a toothbrush with hard bristles. A significant portion of the respondents (17%) reported being unaware of what type of toothbrush they use.

Soft bristle toothbrushes are the most used toothbrush type among survey respondents. This suggests that soft bristle toothbrushes may be more popular and preferred over hard bristle toothbrushes. A relatively small proportion of respondents (10%) reported using a toothbrush with hard bristles. This could suggest that hard bristle toothbrushes may not be as commonly purchased as popular among survey respondents.

Since they are gentle on the teeth and gums, soft bristle toothbrushes are often suggested by dentists and other oral health experts. If handled improperly, hard bristle toothbrushes can be too abrasive, harm tooth enamel, and cause gum recession. The choice of soft-bristled toothbrushes may also be influenced by how comfortable people feel brushing. Hard bristle toothbrushes may be difficult or uncomfortable for some individuals to use, which may deter them from using this kind of toothbrush.

A very high number of respondents (17%) claimed not to know what toothbrush they use. This suggests that some respondents were unaware of or did not appreciate the significance of the kind of toothbrush bristle for oral health.

Overall, these data imply that soft bristle toothbrushes are the type of toothbrush that survey respondents prefer, perhaps because of how gentle they are on teeth and gums and how comfortable people feel using them. This emphasises how crucial it is to inform the public about toothbrush choice and potential hazards related to using hard bristle toothbrushes.

#### 11.

After how long do you replace your toothbrush 202 responses



It appears that majority of respondents (48.5%) reported replacing their toothbrush between 1-3 months, while a smaller percentage (21%) reported replacing their toothbrush after more than 3 months. Approximately 15% of respondents reported replacing their toothbrush when the bristles are worn out, while another 15.3% reported replacing their toothbrush less than once a month. Many people are aware of the significance of routine toothbrush replacement, as evidenced by the fact that over half of respondents said they changed their toothbrush every one to three months. This is a promising conclusion since it implies that initiatives to encourage excellent oralhygiene habits may be working.

It is important to note that a sizable portion of respondents (21%) said they waited more than three months to get a new toothbrush. This could be the result of several things, such forgetfulness, ignorance, or budgetary limitations. More frequent toothbrush replacement might lead to better overall oral health outcomes if people are encouraged to do so.

There may be a need for more education on the significance of routine toothbrush replacement given that some respondents (15.3%) stated that they changed their toothbrush less frequently than once per month. These people might not be aware of the dangers of using an old or worn-out toothbrush, such as the accumulation of germs and other dangerous elements.

The finding that 15% of respondents only replaced their toothbrush when the bristles became worn implies that some people might not be aware of the suggested interval for replacing a toothbrush. This demonstrates the necessity of raising knowledge and awareness about this issue as well as the possible advantages of replacing a toothbrush before the bristles become obviously worn.

Overall, our data imply that ongoing instruction and knowledge of excellent oral hygiene habits, including toothbrush choice and replacement, are required. Better oral health outcomes could be encouraged by advising individuals to change their toothbrushes on a regular basis and informing them of the possible dangers of doing so.



Majority of respondents (52.5%) reported using a non-directed brushing technique, which means they do not follow a specific technique recommended by a dentist. Meanwhile, 25% of respondents reported using a brushing technique directed by a

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#### 12.

dentist. 22% said they were being influenced by reading/watching online resources when brushing their teeth.

It appears that many people are not receiving specific instructions or guidance from dental professionals on how to brush their teeth properly, which could affect their oral health. This could potentially lead to ineffective cleaning and poor oral health outcomes such as cavities or gum disease. Moreover, it highlights the impact of online resources on oral health habits, which could be helpful or harmful based on the accuracy and reliability of the information. The finding that a significant proportion of respondents (22%) reported being influenced by online resources when brushing their teeth highlights the potential impact of technology on health behaviours. While online resources can provide information and guidance, it is critical to ensure accuracy and reliability.

The relatively low percentage (25%) of respondents who reported using a brushing technique as directed by a dentist suggests that there may be a need for increased education and guidance from dental professionals on proper brushing techniques. This could be achieved through dental check-ups, educational materials, or other forms of outreach.

In nutshell, this data emphasizes the importance of proper brushing techniques and the potential impact of online resources on oral health behaviours. The study also indicates that dental professionals should provide more education and guidance to help people maintain good oral health.

13.



According to the data, most people (55.4%) reported using a combination of all three brush strokes, which is the recommended technique by dental professionals. This means that most people are likely to take proper care of their teeth and gums by using an effective brushing technique. This is a positive sign for dental health, as practicing the correct brushing technique can prevent tooth decay, gum disease, and other oral health issues.

A small percentage of people reported using only vertical (13.4%) or horizontal (15.3%) brushing strokes, which may not effectively remove plaque and food debris from all tooth surfaces. A slightly higher percentage (15.8%) reported using only circular brushing strokes, which may also not effectively clean all areas of the mouth.

Dental professionals may need to continue educating their patients on the importance of brushing strokes. It is worth noting that the percentages in this data only reflect selfreported behaviour. It is possible that some people may not accurately report their brushing technique. This is either due to a lack of awareness or a desire to appear more diligent about their oral hygiene habits. Therefore, it is wise to take this data with a grain of salt and remember that there may be some degree of error or bias in the results.

Overall, this data suggests that many people use the recommended brushing technique. However, there is still room for improvement in oral hygiene using brush strokes.

#### 14.



Do you visit the same dentist for your dental check-ups?

According to the data, 56% of respondents answered "Yes", indicating that they visit the same dentist for dental check-ups. Meanwhile, 44% of respondents answered "No", indicating that they do not visit the same dentist for dental check-ups.

The fact that majority of respondents (56%) answered "Yes" suggests that a significant portion of people visit the same dentist for dental check-ups. Several factors could contribute to this, such as convenience, familiarity, trust in the dentist, or a positive experience. Additionally, it may indicate that patients who establish a long-term relationship with a dentist are more likely to continue to see them.

On the other hand, the fact that 44% of respondents answered "No" suggests that there is still a sizeable portion of people who do not visit the same dentist for their checkups. The reasons may vary, such as moving to another location, dissatisfaction with a previous dentist, or seeking out a specialist.

Overall, this data suggests that patient preferences and behaviours vary when it comes to dental care. Dental practices may need to adapt to meet different patient groups' needs and expectations.

#### 15.

How did you come across your dentist? 186 responses



According to the data, majority of respondents (65.6%) came across their dentist through a family referral. This suggests that word of mouth from family members is a powerful tool in influencing people's choices for dental care.

Meanwhile, 17.7% of respondents came across their dentist through referrals from friends or colleagues. In making dental care decisions, personal recommendations are also important.

The data also shows that 15.6% of respondents came across their dentist through advertisements. Dental practices can use advertising to attract new patients, although it may not be as effective as personal recommendations.

Finally, only 1% of respondents found their dentist through a free check-up. As a result, offering a free check-up may be a useful promotional strategy, but it may not be the primary factor in people's choice of dentist.

Overall, this data suggests that personal recommendations from family and friends are highly influential in people's choices of dentists. Creating positive relationships with existing patients and encouraging them to refer their friends and family may benefit

dental practices. Moreover, advertising can be a useful tool for attracting new patients, but it may not be as effective as personal recommendations.

#### 16.

How often do you visit your dentist?



According to the data, the most common response was "once a year", with 36% of respondents indicating that they visit their dentist once a year. Meanwhile, 22.3% of respondents said that they see their dentist once every 6 months and 18.8% said they see their dentist once every 2 years. The fact that 22.8% of respondents say they never visit their dentist is concerning, because regular dental check-ups are essential to maintaining good oral health.

The fact that 36% of respondents indicated that they visit their dentist once a year suggests that many people are aware of the importance of regular oral check-ups and are trying to maintain healthy oral health. Regular dental visits can help detect and prevent dental problems before they become serious, which is a positive trend.

However, the fact that 22.8% of respondents indicated that they never visited their dentist is concerning. It could be due to financial barriers, lack of access to dental care, or fear of the dentist. It is crucial to remove these barriers so that everyone has access to dental care.

The data also highlights some variation in how often people visit their dentist, with some visiting once every 6 months and others visiting once every 2 years. In general, most people should visit their dentist at least once a year, although there is no one-size-fits-all recommendation.

This data emphasizes the importance of promoting regular dental check-ups and addressing barriers to dental care, such as cost and accessibility. Regular dental visits can help detect and prevent oral health problems before they become more serious. This will lead to better oral health outcomes.

#### 34.2% 25.8% 16.3% 9.5% • Location • Cost • Fear • None • No issue seen so far

Based on the pie chart, it appears that the most common reason for people to skip their dental visit is that they have not experienced any dental issues so far, accounting for 34.2% of the responses.

This may suggest that some individuals view dental visits as primarily reactive. This means they only make visits to the dentist when they have a specific problem or pain. This could indicate a need for better education about preventative dental care. This includes regular check-ups and cleanings to maintain oral health and prevent future problems.

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What is the most likely reason for you to skip your dental visit?

#### 17.

190 responses

The second most common reason is "none," which accounts for 26% of the responses, indicating that some respondents do not skip their dental visits for any reason.

Other reasons for skipping dental visits include location, which accounts for 16.3% of the responses, fear, which accounts for 14% of the responses, and cost, which accounts for 9.5% of the responses. Additionally, the relatively low percentage of respondents citing fear (14%) or cost (9.5%) as reasons for skipping dental visits may be encouraging. However, it is imperative to note that even a small proportion of individuals who avoid dental visits due to fear or cost can have significant negative effects on their oral health. Therefore, efforts to address barriers to accessing oral health care, such as by offering payment plans or reducing fear through education or medical sedation, may be helpful for promoting better oral health outcomes.

Overall, the pie chart provides some useful insights into why people skip dental visits. While many individuals do not cite any reason for skipping dental visits, others may benefit from increased education and access to care. This is to overcome barriers related to fear, cost, and location.

#### 18.



How often have you had discomfort in your Teeth? 202 responses

Based on the pie chart, it appears that majority of respondents (46.5%) have experienced tooth discomfort occasionally. This suggests that oral discomfort is a relatively common issue for many individuals due to a variety of factors. These factors include poor oral hygiene, tooth decay, gum disease, or other dental conditions.

On the other hand, a significant proportion of respondents (43%) reported never suffering from discomfort in their teeth, which may indicate that they have healthy oral health and do not suffer from dental problems. Alternatively, it could suggest that some individuals may not be aware of certain dental issues they may be experiencing. This could include small cavities or early signs of gum disease. Therefore, it is imperative to promote regular dental check-ups and screenings so that any dental issues can be identified and treated early on before they worsen and become more dangerous.

Finally, the finding that a small proportion of respondents reported experiencing discomfort in their teeth often (10.5%) could suggest that these individuals may have more severe dental issues that require more immediate attention. Identifying and addressing any underlying dental issues is essential for individuals who experience frequent dental discomfort.

Overall, the pie chart provides some useful insights into dental discomfort among survey participants. The results suggest that dental discomfort is a common issue for many individuals. They also emphasize the importance of proper oral hygiene practices and regular dental check-ups to prevent and treat dental problems.



According to the pie chart, majority of respondents (45.5%) had never experienced sore mouth gums. This shows that many people have good gum health and do not have typical gum disorders such as gum disease or gingivitis.

In addition, 45.5% of respondents said they occasionally had sore mouth gums. This shows that gum soreness is widespread but not as common as tooth discomfort.

Finally, a small percentage of responders (9%) experienced frequent soreness in the mouth. This might indicate that these people have more serious gum problems that require quick care from a dental specialist.

Overall, the pie chart indicates that gum discomfort is less prevalent than tooth discomfort, with majority of respondents reporting never having had gum discomfort. Those who do have occasional or frequent gum soreness may benefit from regular dental check-ups and proper oral hygiene practises to prevent and treat gum disorders.

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45.5%

8.9%



According to the pie chart, majority of respondents (60.4%) have never had jaw pain. This implies that many people have good jaw health and do not have typical jaw disorders such as temporomandibular joint (TMJ) dysfunction or bruxism (tooth grinding).

Furthermore, a minority of respondents (32.2%) experienced occasional jaw pain. This shows that jaw discomfort is not common and can be caused by a variety of reasons such as stress or jaw clenching.

Finally, a small percentage of responders (7.4%) experienced frequent jaw pain. This might imply that these people have more serious jaw problems that require prompt care from a dental specialist.

Overall, the pie chart indicates that jaw discomfort is less prevalent than tooth or gum discomfort. Majority of respondents said they had never had jaw discomfort. Those who experience jaw discomfort on a regular or irregular basis may benefit from frequent dental check-ups and proper oral hygiene practices to prevent and treat jaw disorders.

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20.

21.



According to the pie chart, majority of respondents (56.4%) had not received dental treatment. This implies that a lot of people may not have dental problems or are unaware of them. In contrast, 43.6% of respondents said they had received dental care. This implies that a lot of people may have dental disorders that need expert dental treatment, such as tooth decay, gum disease, or other dental diseases.

Individuals who have not received dental treatment should schedule frequent dental check-ups and screenings to detect and address any dental abnormalities early on before they worsen and become more problematic. Similarly, persons who have had dental treatment should continue to practice excellent oral hygiene and have frequent dental check-ups. This will preserve their dental health and avoid additional problems.

Overall, the pie chart indicates that many people have not received dental treatment. This emphasizes the importance of regular dental check-ups and preventative dental care.

#### 22.



What symptoms you observed before going for treatment? 147 responses

According to the horizontal bar graph, the most prevalent symptom reported by respondents prior to seeking dental treatment was sensitive teeth, with 34.7% reporting this symptom. This shows that tooth sensitivity is a prevalent dental condition that can be caused by a variety of reasons. These include enamel degradation, gum recession, or tooth decay.

Anonymous pain was the second most prevalent symptom mentioned by respondents, with 31.3% expressing this symptom. This shows that tooth or mouth discomfort is a widespread concern that drives people to seek dental care.

Before seeking dental care, 19% of respondents mentioned tooth decay/root infection as a symptom. This implies that tooth decay or root infection is a prevalent dental condition that people face. This emphasizes the importance of regular dental check-ups and preventative dental treatment to identify and cure these concerns early on.

Before seeking dental care, 11% of respondents mentioned gum disease as a symptom. This shows that, while gum disease is not as frequent as other dental concerns such as sensitivity or tooth decay, it is still a serious problem that needs expert dental treatment.

Dry mouth, crooked teeth, and other difficulties were among the less prevalent symptoms described by respondents.

Overall, the pie chart suggests that sensitive teeth, anonymous pain, tooth decay/root infection, and gum disease are some of the most common symptoms that prompt individuals to seek dental treatment.

#### 23.



Which dental procedures have you undergone before? 202 responses

The most prevalent dental operation reported by respondents appears to be teeth cleaning and whitening, with 20.8% reporting this procedure. This shows that many people are interested in preserving their teeth's look and pursuing cosmetic dental operations.

With 17.8% of respondents reporting this operation, extraction and/or filling was the second most often reported dental procedure. This shows that tooth decay or other difficulties that necessitate filling or extraction are rather typical dental concerns that people face.

Root canal and/or crown treatments were reported by 16.8% of respondents, indicating that dental disorders needing more intensive treatment, such as root canal or crown procedures, may be less prevalent but are nevertheless encountered by a considerable number of people.

Braces were worn by 18.3% of respondents, showing that dental disorders such as misalignment or crooked teeth are frequent and may necessitate orthodontic treatment.
9% of respondents reported having dental implants, demonstrating that missing teeth or tooth replacement is a serious dental concern for some people.

Treatment for greater space between teeth, other treatments, and none at all were among the less prevalent dental operations described by respondents.

Overall, the pie chart indicates that teeth cleaning and whitening, extraction and/or filling, root canal and/or crowns, braces, and dental implants are among the most commonly performed dental procedures, emphasising the importance of regular dental check-ups and preventative dental care in identifying and addressing these issues early on.

24.



According to the pie chart, the great majority of responders, 85%, have never had jaw surgery. 7% of those who underwent jaw surgery said it was due to an accident or fracture, 5% to a cyst or tumour, and 3% to cancer.

This implies that jaw surgery is not a regular dental practise and is usually reserved for significant medical issues or traumas. Preventative dental treatment and frequent checkups may be sufficient to preserve oral health and avoid significant tooth problems that necessitate surgery.

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Have you encountered jaw surgery due to below reasons?

The causes for Jaw surgery, on the other hand, vary. The most common reason given was an accident or fracture. This might imply that jaw surgery is necessary to treat severe injuries or face fractures.

Cysts or tumours, as well as cancer, are among the less usual causes for jaw surgery. This emphasises the seriousness of some dental diseases that necessitate surgery.

Overall, the pie chart illustrates that, while jaw surgery is not a typical dental practise, it may be required in some cases to treat major dental diseases or injuries. Preventative dental treatment and frequent check-ups, on the other hand, may be sufficient for most people to preserve oral health and avoid more invasive operations like jaw surgery.

#### 25.

140 responses



According to the pie chart, the majority of respondents (47%), reported a recovery time of less than one month after dental treatment.

33% of respondents claimed a recovery time of 1-3 months, which is a considerable number but still fewer than those who indicated a time of less than one month. 13% of respondents indicated a recovery time of 3-6 months, suggesting that some dental operations may have a longer recovery period. Finally, just 7% of respondents reported a recovery period of more than 6 months, demonstrating that most dental procedures do not need a lengthy recovery period.

Aman Prajapati, Dhwanil Patel, Kanj Patel, Niyati Parekh, Sujan Meghani. Institute of Pharmacy, Nirma University.

What was recovery duration after the dental procedure?

Overall, the pie chart indicates that most people recover quickly following dental treatment, with less than a month being the most often reported recovery time. However, a large percentage of people may take 1-3 months to recover, emphasising the importance of good post-treatment care and follow-up sessions with a dentist to guarantee a smooth recovery.

#### 26.



What were the after treatment products you were prescribed? <sup>150</sup> responses

According to the horizontal bar graph, medicated toothpaste and/or mouthwash appear to be the most generally recommended after-treatment product, with 39.3% of respondents identifying this as a prescription product. This is not unexpected given that medicated toothpaste and mouthwash have been shown to decrease inflammation and aid healing following some dental operations.

Gum ointment is another often recommended after-treatment medication, with 20.7% of respondents identifying it as a prescription product. Gum ointment can relieve pain and soothe the gums after some treatments, such as gum surgery.

Only a tiny percentage of those polled said they were given a water flosser or Proxabrush. These are instruments used to clean hard-to-reach parts of the mouth. This shows that these technologies may not be required for the majority of people following dental treatment.

Surprisingly, 16% of respondents said they had been prescribed a denture cleaning kit. This might imply that a sizable number of dental patients also wear dentures.

Finally, one-third of respondents said they were not prescribed any after-treatment goods, implying that not all dental treatments need special aftercare products.

Overall, the pie chart indicates that medicated toothpaste, mouthwash, and gum ointment are the most regularly prescribed post-treatment medications, which can aid healing and minimize discomfort following various dental treatments.

#### **SUMMARY**

A survey was conducted to study consumer behaviour toward dental hygiene habits and preferences for oral care products in daily life. The study found that toothbrushes and toothpaste were the preferred methods of oral care for 91% of respondents. Majority of respondents (57%) were in the age range of 18-40 years, with 40-60-year-olds being the second-largest age group at 14%. Toothbrushes and toothpaste were the most accessible and affordable oral care methods. The study also found that medicated toothpaste and mouthwash were the most prescribed after-treatment products, followed by gum ointment. Water flossers and Proxabrushes were rarely prescribed. Tongue cleaners were the most used oral hygiene aid, followed by mouthwash. A small percentage of respondents reported using dental floss, suggesting that most respondents felt some sort of supplementary help was required to maintain proper oral hygiene.

Majority of respondents reported brushing their teeth twice a day, with 43% reporting once a day, 5% reporting a day thrice, and 4% having no fixed frequency. This indicates a need for increased public awareness of the importance of good oral hygiene. From that, most respondents (57%) brushed their teeth in the morning before breakfast, with only 2% brushing before bed. A significant percentage brushed both morning and night, suggesting the need for education on the importance of brushing before bed to maintain proper oral hygiene. Furthermore, the responses suggest that while most respondents brushed for more than 2 minutes, a significant number still did not. This highlights the need for better education on the recommended brushing duration, as well as the potential benefits of doing so.

Regarding toothpaste brands, most respondents used conventional toothpaste brands, with a significant minority using herbal brands and a smaller percentage using medicated toothpaste, indicating a growing interest in natural or alternative dental care products. Word-of-mouth recommendations from friends and family were found to be the most significant influence on respondents' toothpaste brand choices, followed by information from television and newspapers and recommendations from dentists.

Most respondents (73%) used a toothbrush with soft bristles, indicating they may be more popular and preferred than hard bristle toothbrushes, which only 10% used. However, a significant portion (17%) was unaware of the type of toothbrush they used. Majority of respondents in this study reported replacing their toothbrush every 1-3 months, using a non-directed brushing technique, and a combination of all three brushing strokes-horizontal, vertical, and circular. While this is a positive sign for oral health, a significant percentage of respondents reported waiting more than 3 months to replace their toothbrush, using an ineffective brushing technique, and being influenced by online resources when brushing their teeth.

The study found that tooth discomfort was the most common issue reported by respondents, with 46.5% experiencing it occasionally. Gum discomfort was less common, with 45.5% reporting occasional soreness, and only 9% experiencing it frequently. Jaw pain was the least common, with 60.4% never experiencing it. The response showed that many people had not received dental treatment, highlighting the importance of regular check-ups and preventative care.

The most common symptoms prompting individuals to seek dental treatment were sensitive teeth, anonymous pain, tooth decay/root infection. The most common dental procedures performed were teeth cleaning and whitening, extraction and/or filling, root canal and/or crowns. Also, most people recover quickly after dental treatment, with less than a month being the most reported recovery time. Medications such as toothpaste, mouthwash, and gum ointment were the most recommended post-treatment products, with only a small percentage being prescribed.

Ultimately, the data shows that there is room for improvement in terms of oral hygiene habits. This can be achieved through education, outreach, and access to affordable and convenient dental care.

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