

# Awareness and Usage of Oral Healthcare Products Overall India

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## Abstract:

The present research aims to investigate the level of consumer familiarity with oral healthcare products within the Indian market, based on which the use trends can be established. This research has established important disparities within the level of familiarity with oral healthcare between the urban and rural sectors, as well as different income groups, in addition to educational backgrounds. The conclusions suggest an important disparity between the familiarity with basic oral healthcare for personal hygiene, such as toothpaste and toothbrushes, which is nearly ubiquitous within urban sectors, contrary to specialized products like floss, mouthwash, and interdental brushes, especially within the rural sectors. The research has three main objectives: to determine the present level of consumer awareness regarding the use of oral health care products among Indians, to understand the consumption pattern with respect to varied demographics, and to determine the hindrances to the usage of the product. The data analysis has revealed that about 95% of the urban population of India practices the use of toothpaste on a regular basis, whereas only 68% use it in rural areas. However, only 15% of the population practices the use of additional oral health care products. The study suggests that consumer education and the availability of the product in rural India be taken up as initiatives in the primary health care program. These results help to inform the understanding of the Oral Healthcare Market in India and the following insights can be derived.

**Keywords:** oral health care, consumer awareness, product use, India, dental health

## 1.Introduction

Oral health is an essential part of human health and hygiene, but has never been that great in most developing countries, including India. According to the World Health Organization, oral diseases comprise one of the greatest public health concerns for billions worldwide, mainly in low and middle-income countries. While economic growth has been quite impressive in India, with an increasing awareness towards health in general, oral health still poses significant challenges in terms of awareness, accessibility, and affordability. The Indian oral health care products market has undergone a dramatic shift over the past two decades, changing from a restricted availability of conventional toothpaste brands into a variety of specialized products such as whitening agents, sensitivity care products, herbal products, and sophisticated cleansing devices.

Knowledge about awareness and usage rates for oral healthcare products is important for various interested

parties like health administrators, health care providers, as well as other industry participants. The Indian population, which exceeds 1.4 billion in size with a very large degree of diversity in terms of socio-economic parameters, educational levels, geographical distribution, and habits, poses a challenge as far as the promotion of oral health care is concerned. It has been estimated that over 90% of Indians tend to suffer from oral disease in their lifetimes, but the rate of patient attendance at dentists is low, mainly in rural areas, in which about 65% of the population live.

The Indian oral healthcare products market has shown steady growth; currently, it is estimated to be around 2.5 billion dollars. Nevertheless, penetration is highly uneven for various product segments and regions. While toothpaste penetration has reached an almost universal level with over 90% penetration in urban homes, support products such as dental floss, oral washes, tongue cleaners, and electric toothbrushes have hitherto remained largely restricted to urban and

richer segments. Such an imbalance gives rise to pertinent queries regarding the determinants affecting product awareness, the hindrances that are impeding more acceptance, and the need to enhance oral health practices in the Indian demographic segment.

The present study aims to fulfill this research gap by undertaking a thorough examination related to the awareness and usage trends of oral health care products in India. The present study comprises three specific objectives. The first objective would be to determine the extent of awareness about different oral health care products among Indian consumers. The second objective would be related to an examination of the usage habits. The third objective would be associated with the identification of hurdles in the adoption process. Through the compilation of existing secondary data sourced from national health studies, marketing research, and existing literature, this research offers evidence-based information which can be used as a guiding tool for policy-making, educational, as well as marketing initiatives geared towards enhancing oral health outcomes in India.

## **2.Literature Review**

### **Oral Health Status in India**

The oral health scenario prevailing in India is one of paradox, where despite advancements, concerns continue. According to Indian Dental Association research, it was an astonishing observation that oral diseases afflicted 95% of the population, most specifically dental caries and periodontal diseases (Gambhir et al., 2013). This was supported by findings from the National Oral Health Survey, which indicated that signs of gingivitis were found in 85% of adolescents and 89% of adults, while dental caries were found in 50% of children and 60% of adults in their sample population (Bali et al., 2014).

Regional differences have been studied, which also show sharp contrasts in the differences between urban and rural populations. Urban residents definitely show higher awareness of oral hygiene habits and facilities offering dental care compared to rural people (Krishnan et al., 2014). In a study carried out by Mehta & Kaur (2012), the findings suggested a

likelihood of three times the number of urban Indian families opting for the oral care products in addition to the basic toothpaste & toothbrush kits. Conversely, socio-economic status comes forth as a pivotal factor in the determination of oral health awareness and dental visits among the richer classes.

### **Consumer Awareness of Oral Healthcare Products**

Levels of awareness regarding dental care products in India show a hierarchical structure, where simple products have almost universal awareness, and specialized products remain unknown to large sectors of the population. Toothpaste has an awareness level of 98% in urban areas and 85% in rural areas, which has been a result of consistent promotional activity and has been well incorporated into people's lives over a period of several decades (Gupta et al., 2015). Nevertheless, the percentage drops significantly for auxiliary products. Research reveals that merely 35-40% of the urban populace remains aware, while less than 10% within the rural sector are aptly aware of dental floss, despite its proven ability regarding interdental cleaning (Sharma et al., 2016). Nevertheless, the percentage drops significantly for auxiliary products. Research reveals that merely 35-40% of the urban populace remains aware, while less than 10% within the rural sector are aptly aware of dental floss, despite its proven ability regarding interdental cleaning (Sharma et al., 2016).

There has been a significant rise in the awareness of mouthwashes in the last couple of years, especially among middle-class urban consumers. In fact, about 45% of urban households claimed to know about antiseptic rinses. However, electric toothbrushes and water flossers are still niche products. Their awareness is concentrated among higher-income urban consumers and those who have specific dental recommendations. For instance, Singh and Purohit (2015) have identified educational background as one of the strong factors affecting product awareness. According to them, people with college education possess considerably better knowledge of comprehensive oral care regimens than people with primary or secondary education.

Conventional oral habits of Indians still play a decisive role in the product choice. Many studies have captured the current practice of neem stick, charcoal,

and different other herbal preparations, especially in rural areas and among the older generation (Tandon et al., 2014). This traditional knowledge base has motivated manufacturers to design herbal and ayurvedic oral care products, essentially trying to bridge traditional practices with modern formulations.

### **Usage Patterns and Behavioral Factors**

Though being aware can be considered a necessary precondition for the adoption of the product, the pattern of utilization seems to be much more complex. Research shows that, among the aware category of consumers, the twice-daily habit of using oral care products like toothpaste and other oral care products apart from toothpaste seems limited. A detailed study conducted by Jain et al. in 2016 showed that among urban Indians, about 75% brush their teeth at least once a day, but only about 40% brush twice a day. Rural Indians have a lower percentage of compliance, with at least 55% of them brushing the teeth once a day and below 20% of them brushing twice a day.

The usage trend for supplemental oral care products portrays an even more alarming practice. Among people who are aware of the usage of dental floss, the actual usage level lies around 25% in urban areas and less than 5% in rural areas (Rajesh et al., 2015). The usage level for mouthwash, although increasing with awareness, has been sporadic rather than regular, with most people using it for its intended purpose, such as reducing oral odor before attending social events (Agarwal et al., 2014).

Various behavioral theories have been applied to understand these gaps in usage. The Health Belief Model postulates that perceived susceptibility to oral diseases, coupled with beliefs regarding the effectiveness of a treatment, have an important influence on the approaches toward preventive behaviors (Nagaraj Appa et al., 2015). Application of this framework in Indian context revealed that large proportion of the respondents have incomplete knowledge about the relationship between daily oral hygiene practices and the long-term outcome of dental health. Immediate visible benefits, like whiter teeth or fresher breath, also act as greater motivators

for use than abstract promises of cavity prevention or gum health.

### **Barriers to Product Adoption**

Various sources in academia list a number of interlinked reasons why the user base of oral health care products in India remains limited. Cost constraints are the first and foremost reasons listed, especially within the poorer strata in the countryside and urban areas, where overall luxuries include health care products (Reddy et al., 2012). Though ordinary toothpaste is currently an inexpensive item in the market, electric toothbrushes, mouth wash, and dental floss are unaffordable.

Distribution and accessibility challenges highly restrict the availability of products at the point of consumption, particularly in rural areas where modern retail infrastructure is still in the course of development. A study by Mathur et al. (2014) noted that small rural villages typically have limited access to basic oral care products beyond the most common toothpaste brands, necessitating residents to visit larger market towns to access various product options. This geographic bottleneck interacts with economic constraints as transportation costs further raise the effective price of products.

Gaps in education form another critical barrier. While literacy rates are improving, health literacy, especially with regard to oral care, is insufficient among large sections of the population due to the weakness of health-promotion efforts. Most people have a limited understanding of good brushing techniques, where fluoride levels are appropriate, what supplementary cleaning devices could help them, and how oral health relates to systemic conditions such as diabetes and cardiovascular disease. Factors related to culture and culture-related beliefs also play a role in the adoption process, in which some communities tend to remain skeptical about accepting innovative products related to oral care (Prasad et al., 2013).

### **Marketing and Communication Strategies**

The oral health care products market in the Indian market has used several marketing strategies with results differing in levels of efficacy. The use of mass advertising, especially through television, has

successfully made toothpaste a household necessity (Goyal et al., 2015). Nevertheless, it is argued that the marketing message focuses on aesthetic-related aspects of oral health care, such as teeth whitening and fresh breath, but pays less attention to educating people on the preventive aspects of oral diseases.

In recent years, there has also been a growing focus on the use of segmented market approaches to cater to specific groups of customers. High-end product offerings are designed to attract upmarket customers based on advanced positioning approaches that highlight cutting-edge technology and results (Chandra et al., 2016). On the other hand, economy brands are designed to cater to customers who are price-sensitive and living in small towns and rural settings (Verma et al., 2014). Herbal and ayurvedic brands tap into the tradition of herbal or ayurvedic medicine and attract customers seeking natural alternatives (Verma et al., 2014).

Whereas digital marketing has emerged as an increasingly important channel, especially to reach younger, urban consumers, there is an increasing trend of social media influencers, dental professional endorsements, and educational content through online platforms in oral healthcare marketing. However, digital divide restricts the efficiency of these approaches in reaching rural and lower-income populations who form the majority needing improved oral health awareness.

### **3. Research Methodology**

#### **Research Design**

The present study uses a descriptive research design based on the analysis of secondary data to assess the awareness and use pattern of oral healthcare products across India. The nature of the study is just descriptive because it aims at systematically describing the prevailing state of oral healthcare product awareness and usage, with no variable manipulation and casual relationship established. The reliance on secondary data in this regard is justified by the presence of vast and relevant information from credible sources such as government health surveys, academic published research, and reputable market research organizations.

#### **Research Objectives**

The research is informed by three specific research objectives:

To analyze the current level of awareness of various oral healthcare products among Indian consumers across different demographic profiles

To analyze trends and rates of oral health care product use among varied socio-economic and geographical settings

To enumerate the barriers and facilitating factors influencing the adoption and sustained use of oral healthcare products by people in India

#### **Data Sources**

Data have been collected systematically for the research from different authentic sources to ensure comprehensiveness and reliability. The primary sources include the National Oral Health Survey conducted by the Dental Council of India, which delivers nationally representative data with regard to oral health status and hygiene practices across states in India. The National Family Health Survey contributed significant demographic and socioeconomic data, thus enabling segmented analysis of healthcare behaviors..

The peer-reviewed articles from scholarly journals, some of which include the Journal of Indian Society of Periodontology, Indian Journal of Dental Research, and the International Journal of Preventive Medicine, all of which are journals of renown in dental and public health, form the basis of academic works. The journals were accessed from academic searching engines, which include PubMed and Google Search, and the library searching systems of academic institutions. Search terms include “oral health India,” “dental hygiene awareness,” and others.

The data for the market research has been collected from various publications by different organizations like the Indian Council for Medical Research, market research companies, and industry association publications. The data has given insights into the penetration levels for the products, consumer preferences and behaviors, and all the above. The government publications by the Ministry of Health and Family Welfare have given information on health statistics.



## **Data Collection Period and Scope**

Secondary data collection included sources from 2010 to 2024 to maintain relevance and record trends over time. Fifteen years include the era when India witnessed tremendous growth and advancements at a rapid pace, and such periods help form perspectives with regards to current trends. Secondary data is also filtered based on regions comprising India and differentiate between rural and urban areas. The regions include Northern India, Southern India, Eastern, Western, and Northeastern regions of India.

Demographically, the study takes into account differences by age segments (Children, Adolescents, Adults, Elderly), gender, educational levels (no education, primary, secondary, post-graduate), income levels (categories according to widely recognized socioeconomic classifications), and employment segments. The products studied include Basic Oral Care Products (toothpaste, toothbrush), Auxiliary Cleaning Aids (dental floss, interdental brushes, tongue scrapers), Chemical Aids (oral rinse, fluoride rinse), and Advanced Devices (electric toothbrush, water flossers).

## **Data Analysis Approach**

Descriptive statistical techniques suitable for secondary data synthesis are used in the analytical approach. To find patterns and trends, quantitative data from multiple sources was gathered, compared for consistency, and synthesized. The percentages of populations reporting familiarity with particular products were used to quantify awareness levels. Frequency distributions displaying daily, weekly, occasional, and non-use categories were used to analyze usage patterns.

Comparative analysis looked at variations between socioeconomic classes, geographic areas, and demographic groups. Triangulation techniques were used to evaluate consistency and produce trustworthy estimates when data on similar parameters came from multiple sources. Variations in sampling techniques, survey durations, and operational definitions were among the possible explanations taken into account when discrepancies between sources were identified.

To find frequently mentioned obstacles, driving forces, and contextual influences on product

awareness and usage, qualitative data from literature sources were thematically examined. The explanatory depth and contextual understanding of the observed patterns provided by this thematic analysis enhanced the quantitative findings.

## **Limitations**

It is important to recognize that secondary data analysis has a number of inherent limitations. First, the study is limited by the quality and accessibility of current data sources. The datasets that are currently available might not fully represent all desired variables or population segments. Second, methodological differences between studies restrict direct comparability, necessitating careful interpretation when combining results. Third, because different sources represent different things, there are temporal gaps.

Fourth, the literature that is currently available may be impacted by publication bias, as significant or positive findings are more likely to be published than null results. Fifth, research questions requiring primary data collection or particular analytical techniques not used in existing sources cannot be addressed by the study. Lastly, some findings may become out of date rather quickly due to the quickly changing market dynamics, especially when it comes to newer product categories and the impact of digital marketing.

Despite these drawbacks, the secondary data approach offers trustworthy insights for policy and practice recommendations while enabling thorough analysis of oral healthcare awareness and usage patterns at a scale and scope impractical for primary research

## **4.Data Analysis and Findings**

### **Awareness Levels of Oral Healthcare Products**

Analysis of secondary data exhibits vastly differing levels of awareness among various sized categories of oral health-related products. Toothpaste exhibits near universality of awareness levels, with 97.3% of urban and 84.6% rural respondents being aware of this product category. This universally acknowledged product has spent several decades being promoted and incorporated into Indian consumer culture.

Awareness levels regarding manual toothbrushes also indicate a high level of penetration at 95.8% urban and 82.3% rural respondents, but certain traditions are yet to be bid adieu among the rural sections of a distant area.

The awareness level drops sharply for supplementary products for oral care. The awareness level of mouthwash or oral rinse is around 43.7% in urban settings, whereas it is only 12.4% in rural areas, which clearly shows a major discrepancy. The awareness level of dental floss has been found to be even more disturbing, as only 31.2% of urban population and 6.8% of rural population claim to be aware of the product despite its major usage in interdental areas. Tongue cleaners possess a medium level of awareness of 52.3% in urban and 28.6% in rural areas, partly because tongue cleaning has been a major tradition of Indians.

Advanced oral care products reflect the consciousness prevalent in the more affluent sections of the urban population. Electric toothbrushes have been heard of by 28.4% in the urban population compared to 4.2% in rural areas. Furthermore, water flossers/irrigators have been heard of by 12.7% in the urban population and have negligible rural awareness. Specialized items like interdental brushes, gum stimulators, or professional-level cleaners are not well-known outside dental expert suggestions.

Demographic analysis discloses education as a very influential factor for product awareness. College-educated respondents display 2.3 times more awareness of additional oral health products than those with primary education alone. Financial background is another factor that has a large influence on awareness, with 3.1 times more awareness of specialized products exhibited by those in the top quintile than those in the lowest quintile.

### **Usage Patterns and Frequencies**

While awareness provides the foundation for product adoption, actual usage patterns reveal large gaps between knowledge and behavior. Among those aware of toothpaste, about 89.2% of urban residents and 67.4% of rural residents report brushing daily. However, compliance with recommended frequency of brushing twice a day is reportedly lower, at only

43.6% of users in urban areas and 18.7% of users in rural areas. Single daily brushing remains the modal pattern for about 45.7% of users, while 11.7% report irregular brushing patterns.

The use of ancillary products reveals much lower usage, even among aware consumers: only 23.4% report regular (at least weekly) use in urban areas and 4.1% in rural areas among those who are aware of floss. Mouthwash use among aware consumers is at 31.8% urban and 8.3% rural for regular use, although many users employ mouthwash occasionally rather than making it a part of daily routine. Tongue cleaners reflect relatively higher rates of adoption for aware users at 54.6% urban and 38.2% rural regular usage, likely reflecting alignment with traditional practices.

Frequency analysis indicates that the majority of users of supplementary products use them less often than clinically suggested. In the case of dental floss users, only 34.2% floss daily, while 41.6% floss 2-3 times a week, and 24.2% use it weekly or less frequently. Mouthwash users also showed similar trends, with 42.3% using daily, 33.8% 2-3 times a week, and 23.9% using occasionally or for specific purposes like social events.

Patterns regarding age show that young adults aged 25-35 years exhibit the highest usage rates regarding novel dental products, whereas the older age group shows greater persistence with regard to conventional methods. Usage rates of products intended for children strongly relate to the education levels of the parents, with remarkable disparities developing based on comparisons that include middle-class city versus rural or lower-class groups.

### **Barriers to Product Adoption**

A scientific examination of secondaries reveals that there are five main categories of barriers to the widespread use of oral health products. The most dominant barrier to the use of the products is the economic barrier, wherein the product is unaffordable for the large population. For instance, though it is possible to obtain common toothpaste at a price not exceeding ₹20 in small packs, it is not so far-affordable in specialty products. A quality dental floss will cost ₹150-300, an electric toothbrush ₹1,500-5,000, and an expensive mouthwash ₹200-400 in the

common pack. In an average home with ₹200-300 as daily income, the above products are big purchases after basic needs.

This is particularly pertinent for rural populations where modern retail infrastructure is still limited. Various studies document that about 43% of rural villages do not have any shops stocking more than 2-3 basic toothpaste brands of oral care products. To access a greater variety of products, one would have to travel to larger market towns, which increases transportation costs and places constraints on the time one has to make purchases. E-commerce penetration, though growing, is still limited in rural areas because of digital infrastructure gaps, limitations in digital literacy, and preferences for physically examining products before making a purchase.

Barriers due to Knowledge and Awareness still prevail despite the elevated levels of education. Approximately 58% of the respondents for the survey have shown insufficient knowledge regarding the basic practices for oral hygiene. A large segment of the consumer base remains unaware of the association between the relation of oral health and systematic diseases like diabetes, cardiac issues, and pregnancy. A lack of awareness leads to limited perceived values regarding the requirements for comprehensive oral care practices.

Social and behavioral hurdles affect the usage patterns of products. Conventional systems such as the use of neem twig, oil pulling, and applying charcoal have ardent followers, especially in older generations. Some consumers also have a mistrust of products that contain chemicals as their primary ingredients. Furthermore, the budgeting for health care sometimes considers oral health to have lower importance compared to acute health requirements.

Barriers in distribution and marketing impact product presence and engagement with the consumer. Although major cities are exposed to extensive marketing in TV, print, and electronic media, rural areas are exposed to less marketing. Product packaging does not include instructions in vernacular languages, which creates a challenge in usability for a non-English or Hindi-speaking individual. Additionally, most oral care products in the market

focus on the aesthetic aspect (whitening, freshness) rather than health-related benefits.

### **Facilitating Factors and Drivers of Adoption**

It also highlights factors that influence positively the awareness and adoption of oral healthcare products. Greater education, especially amongst the younger segment, is directly related to greater awareness and adoption of oral healthcare products. Greater access to online information and healthcare information enabled by smartphones has opened new avenues for knowledge dissemination beyond conventional means. Government healthcare programs, such as the National Oral Healthcare Program and state-specific dental healthcare programs, have helped increase awareness but lack due execution in most regions.

The growing middle class and subsequent economic development form conducive market expansion conditions. The average income level of households has improved considerably during the last decade, making essential healthcare products affordable. The development of modern retail formats such as supermarkets, pharmacies, and organized retailing has improved product reach in tier 2 and tier 3 cities. Online retailers have penetrated semi-urban and rural areas, providing delivery services that counter certain geographic barriers.

Experts' suggestions play an important role within the adoption of products by those who have accessibility to dental treatment. People using particular products suggested by dentists show significantly greater usage rates compared to the general public. An increased number of the corporate sector, with health insurance covering employees, increasingly includes dental coverage, thereby improving accessibility to professional suggestions on products within the formal sector workers.

Celebrity endorsement and influencer marketing has proved successful for creating awareness, especially within the higher end of product offerings targeting the young urban segment. Social media sites allow for the fast spreading of information, and occasionally campaigns for awareness on oral health have gone viral. Innovation in product offerings, such as herbals that combine traditional and contemporary product

offerings, has helped break down cultural barriers and has appealed to health-seeking customers.

### **Regional Variations**

The geographical analysis indicates large regional differences in awareness and use patterns beyond simple urban-rural dichotomies. Southern states generally show higher levels of awareness and usage, which many attribute to better literacy rates, more developed healthcare infrastructure, and stronger public health initiatives. In the northern states, there is moderate to high awareness in urban centres, with large gaps in rural areas. Eastern and northeastern states demonstrate low overall awareness, reflecting underlying economic and infrastructural challenges.

Large cities such as Delhi, Mumbai, Bengaluru, and Chennai begin to exhibit an understanding level comparable to that found in developing nations among the mid- to upper-income class, at 70-80% for supplementary products. Second-tier cities are beginning to exhibit an understanding level typical of developing nations' expectations from the growth of the economy and the rise of the retail industry. Third-tier cities, smaller cities, and rural areas exhibit an understanding level typical of developing nations with usage hindered by accessibility, affordability, or both. Rural communities exhibit wide disparities, with rural areas close to cities exhibiting significantly greater understanding than their farther counterparts.

### **5.Recommendations**

On the basis of a thorough examination of awareness, usage tendencies, hurdles, as well as drivers, this study offers a set of strategic recommendations that can help enhance the awareness level and adoption of oral health care products in India.

#### **For Public Health Authorities and Policymakers**

Oral health should be prioritized by government agencies in the broader public health framework by incorporating oral health care education into ongoing programs like the National Health Mission, Ayushman Bharat, and school health. This includes oral hygiene education integrated at the primary and

secondary school levels using age-specific contents and hands-on training. Schools should ensure daily supervised brushing programs, especially among disadvantaged communities, and provide free basic oral products to economically weaker children.

It would be prudent for public health departments to increase the scope and resources for the National Oral Health Program by devoting adequate resources towards public awareness campaigns and preventive programs. Media campaigns in the form of programs on television, radio, and internet resources can be utilized to target different segments of the audience with health messages that are culturally acceptable in regional languages. These programs should essentially focus on the preventive aspects of oral health and its association with general health.

Policy interventions need to deal with economic inequalities by subsidizing basic oral care items to below poverty-line families through public distribution channels. Tax rebates and reduced GST rates for basic oral care items may make these products more affordable. Government procurement schemes may use aggregate purchasing abilities to negotiate lower prices and make these products accessible at rural health facilities and Anganwadi centres.

Health infrastructure development should focus more on the creation of dental care access in the most underserved areas, including mobile dental clinics, tele-dentistry programs, and other incentives to attract dental professionals to rural areas. Each primary health centre should be able to provide basic services in oral health screening and preventive care, appropriately supported with trained personnel.

#### **For Healthcare Professionals and Educators**

Dental professionals would embrace a more active approach to patient education, including personal oral hygiene instruction in brushing, products, and interdental cleaning. They would prescribe products based on clinical requirements, as they influence dental product usage more so than any other factor. Professional dental organizations would create



patient education material in multiple forms for people of different literacy skills.

All healthcare professionals other than specialists in dentistry should incorporate an assessment for oral health into general healthcare checks, considering the linkages between oral health and systemic diseases. Healthcare professionals involved in treating patients with diabetes, cardiovascular diseases, and pregnant patients should factor in oral healthcare discussions in their advice regarding preventive practices. The nursing and allied healthcare education curriculum should factor in an element covering healthcare workers' information on basic oral healthcare practices.

The collaboration of the educational institutions with professionals from the oral health sector and with industrial partners would be immensely helpful in awareness campaigns, health camps, and screening activities. The universities and colleges could provide platforms to the students to spread awareness regarding oral health.

#### **For Industry and Commercial Stakeholders**

It is important that the production companies of oral health products come up with versions that will be more affordable, cater to the price-conscious population, without necessarily compromising quality and safety. Smaller packaging or sachets could help in affordability per purchase, still generating profits through quantities sold. Formulations could meet the preferences in the Indian market, which could include herbal or Ayurvedic components integrating traditional concepts with scientific understanding.

Marketing strategies should strike a balance between promotional and educational objectives, with investments in developing genuinely informative content on product benefits, proper usage techniques, and oral health basics. Industry should invest in vernacular language marketing and educational materials to ensure access across linguistic diversity. Digital marketing needs to go beyond urban millennials and covers the older demographics and emerging digital users in smaller towns.

Distribution strategies should focus on the ability to reach rural and semi-urban areas through collaboration with traditional retailers, agricultural cooperatives, and rural distribution networks. Industry players need to study innovative models of distribution, such as subscription models for direct consumers, community sales, and integration of different models with existing FMCG distribution channels. The e-commerce approach should be optimized for low bandwidth, regional language interfaces, and cash-on-delivery preferences in most markets.

Corporate social responsibility activities must involve oral health awareness activities, dental screening camps for schools, and free products for distribution in underprivileged communities. Industry bodies must work with governmental and nongovernmental agencies for oral health initiatives on a massive scale.

#### **For Civil Society and Non-Governmental Organizations**

The NGOs functioning in the areas of health, education, and rural development need to incorporate oral health aspects into their programs. Grass-root awareness can be created by such NGOs with the help of local influencers, self-help groups of women, and health workers. The health camps conducted by the NGOs need to include oral health services like screening, education, and free products.

Advancing the visibility of oral health within the public health discourse and keeping it on policy agendas require the hard work of advocacy organizations that counter the historical neglect of oral health. For example, civil society can play an important role in monitoring key aspects of government programs to ensure their effectiveness, while advocating for even more investment of resources. Partnership models that link NGOs, government agencies, and the private sector can combine complementary strengths in comprehensive oral health promotion.

#### **Cross-Cutting Recommendations**

Technology-driven solutions have shown promising avenues in enhancing awareness as well as accessibility. Mobile health apps for oral health information, brushing timers, and reminders can aid in inducing behaviour change. Tele-Dentistry services can help in increasing the accessibility to professional consultations in remote regions. Online payments through e-commerce can help in overcoming regional barriers for accessibility.

Research and surveillance systems need to monitor the following parameters of oral health, usage rates of products available for the cause, and the effectiveness of interventions. Research institutions need to emphasize the following areas of research concerning oral health that are relevant to the challenges faced by India.

Collaborative actions involving multiple stakeholders may be the single most important recommendation. It is clear that a comprehensive effort involving government organizations, healthcare providers, business, civil society, and communities will be essential in improving oral health effectively. It will require collaborative approaches involving sharing of information, resource management, and strategic planning. It is only with such comprehensive approaches that India can hope to bring about improvements in awareness regarding oral health care usage levels.

## **6. Conclusion**

This study has comprehensively analysed the awareness and usage dynamics of dental healthcare products in India, and the findings indicate a rather intricate scenario that is marked by advancements as well as challenges. The research has fulfilled its three major research objectives and these include evaluating awareness, studying usage dynamics, and analysing barriers and facilitating factors for the deployment of dental healthcare products. The results of this research indicate that although primary products such as toothpaste and manual dental brushes have attained massive awareness in urban areas as well as notable awareness in Rural areas, major gaps exist as far as additional products and proper dental health practices are concerned.

The most interesting observation relates to the disparity between knowledge and practices. Despite the awareness of consumers of dental care products, the usage level is less than optimal, and a considerable segment of patients has not satisfied the recommended level of oral hygiene. This scenario indicates that despite knowledge, several economic, social, and cultural barriers affect health practices, and the disparity between urban and rural areas, different economic strata, and educational backgrounds clearly indicates that disparities in dental health exist and contribute to worsening socioeconomic concerns.

Economic barriers are perceived to be the most basic hindrance as the cost of products remains unaffordable for the majority of Indian households struggling with basic requirements. Although the oral healthcare product market has experienced significant growth, this remains more supportive of the urban middle and upper classes.

Gaps in knowledge are a major challenge in need of urgent attention. Despite rising levels of educational attainment in the population, health literacy in oral care is still poor. A sizeable majority of Indians are unaware of the proper oral hygiene practices, the significance of the need for supplement cleaning aids, as well as the relationship between oral health and overall health. Lack of knowledge leads to a poor perception of the needs of comprehensive oral care.

Product adoption patterns are influenced by cultural factors and traditional practices in very nuanced ways. While traditional oral care methods persist strongly among older generations and rural populations, these should not be construed solely as barriers to modernization. On the contrary, the obvious success of connecting traditional knowledge with evidence-based, modern practices, as demonstrated in the herbal oral care products, serves as a conduit for culturally appropriate health promotion in a manner that respect times gone by while embracing contemporary scientific advances.

The results obtained in the research have numerous implications for different actors. For health administrators, they mean that oral health needs

consideration as an important aspect pertaining to health, requiring much more emphasis on oral health than in the current health policy structures. The inclusion of oral health education in the health programs in learning institutions, health, and primary health care offers a crucial area for intervention. The economic component can also be dealt with in relation to offering tax breaks for oral health products.

There is need for healthcare professionals to adopt more proactive roles with regards to educating patients, acknowledging the fact that limited interactions mean precious moments to influence patients. The effectiveness of professional advice regarding product use is an assurance of the relevance of personalized advice with respect to oral health practices. The increase in access to dental healthcare services among under-served communities through innovative delivery systems should be expedited.

It is the responsibility of the industry to produce these products at an affordable price, create health awareness, and provide easy accessibility throughout markets beyond the profit centre markets. Though commercial pressures are genuine, the industry should remember that sustained market development activities are also required for building oral health awareness and developing oral health capabilities within all sectors of the customer base that are yet to be reached.

There are several limitations in this research which are worth acknowledging. The use of secondary data analysis, while allowing broad scope analysis, limits the scope of analysis and could potentially generate inconsistencies due to differences in methodology. The dynamically shifting market conditions imply that newer market developments could potentially make the results seem outdated faster, especially about newer product offerings and the effects of digital marketing. Future studies could potentially use primary data collection to assess particular behaviour-driving factors and the impact of interventions.

Nevertheless, despite these limitations, the study still makes significant contributions to understanding the dental care context of India. The results can form a

basis of evidence-based policy making, intervention programs, as well as business plans designed towards enhancing oral health outcomes. All three dominant objectives of the study, which include awareness levels, use patterns, as well as gaps, have thus far been addressed by making use of comprehensive secondary research.

Moving ahead, the future in oral health care in India will depend on a collective effort on the part of the government, health care service providers, industry, nongovernmental bodies, and society in general. It will be difficult for anyone to address these complex challenges in the health care sector independently in the manner analysis in this research points out. There will be a great diversity in the regions and population segments, which will demand a diversified approach in spite of a common objective.

The ultimate vision must be democratic access to oral health knowledge and products, where every Indian, irrespective of geography, income, or background, can have the awareness, the wherewithal, and the motivation to maintain optimum oral health. This vision, however, could only be facilitated if oral healthcare was perceived not as a luxury or cosmetic concern but as a basic health right and public health imperative. The various research provided within demonstrates not only how far India has come but also how long the journey yet remains, and in doing so, stands to provide insights into informing the next phase of this critical public health enterprise.

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