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RESEARCH ARTICLE

EVALUATING PATIENT AWARENESS OF SMOKING - RELATED ORAL HEALTH RISKSAMONG BATHINDARESIDENTS: A SURVEY- BASED STUDY

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Abstract

Background: Smoking poses serious risks to oral health, contributing to issues like gum disease, oral cancer, and impaired healing. However, many patients are not fully aware of these dangers.

Aim and Objective: The objective of this study is to assess the level of awareness among dental patients regarding smoking & detrimental effects of smoking & to explore patients perceptions of how smoking affects their overall oral health.

Materials and Methods:A questionnaire based observational survey was carried out among 160 participants in the Bathinda district. The questionnaire was distributed through online platforms. The self-made questionnaire was used to assess the level of awareness among the patients

Results: The study assessed participants' awareness of smoking's effects on oral health, revealing varied levels of understanding. High awareness was noted for teeth staining, oral cancer risk, and decreased taste, while gaps existed regarding gum disease, second-hand smoke risks, and the role of dental visits in preventing smoking-related issues. Educational efforts are needed to address these gaps.

Conclusion: The study reveals gaps in awareness of smoking's serious oral health risks. Increased education and smoking cessation efforts are needed to improve patient outcomes.

Introduction:-

Smoking is one of the most significant preventable causes of morbidity and mortality worldwide, with well-documented adverse effects on general and oral health. The relationship between tobacco use and oral diseases is particularly concerning, as smoking has been strongly associated with an increased risk of periodontal disease, tooth loss, delayed wound healing, and oral cancer.[1,2] Smokers are also more prone to aesthetic issues such as tooth discolouration and halitosis, which can affect their quality of life and social interactions.[3] Despite these well-known risks, there remains a significant gap in public knowledge, particularly among dental patients, regarding the full scope of smoking's harmful effects on oral health.[4]

Oral diseases caused by smoking are highly prevalent. Periodontal disease, in particular, affects a large proportion of smokers, leading to tooth loss and bone destruction. Smokers are estimated to be up to six times more likely to develop periodontal disease compared to non-smokers.[5] Additionally, smoking is considered a major risk factor for

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oral cancer, with over 90% of oral cancer cases attributable to tobacco use.[4] These statistics highlight the importance of early detection and preventive strategies in mitigating smoking-related oral health issues.

Despite the severity of these risks, studies have shown that many smokers are unaware of the extent to which tobacco use impacts their oral health. A lack of awareness has been reported as a barrier to smoking cessation, particularly when it comes to understanding how quitting can improve oral health outcomes.[6]

Dental professionals are in a unique position to educate patients on these risks, yet patient knowledge remains limited.[7] Given this context, it is crucial to assess dental patients' understanding of the oral health risks associated with smoking to design targeted interventions that can raise awareness and promote better health outcomes.

The aim of this study is to evaluate dental patients' knowledge and perceptions regarding the effects of smoking on oral health. By identifying knowledge gaps and misconceptions, this research seeks to inform more effective patient education strategies within dental settings.

Objective:-

The objectives of this study are as following :

1. To assess the level of awareness among dental patients regarding smoking & detrimental effects of smoking.
2. To explore patients perceptions of how smoking affects their overall oral health, including the aesthetic aspects (e.g. tooth staining)& functional health (e.g. gum deterioration).

Materials And Methods:-

Study Design-

This was a questionnaire based observational study conducted from January 2024 to August 2024 targeting the participants of Bathinda district.The aim of this study was to evaluate dental patients' knowledge and perceptions regarding the effects of smoking on oral health.

Study Population-

In this study 160 participants were taken into consideration. For selecting the study population the selection criteria was strictly adhered. Any participant not falling under the inclusion criteriawas excluded from the study.

Selection Criteria-

a) **Inclusion Criteria** –

- Participants must be residing in Bathinda district.
- Participant must be above 18 years of age.
- Participants who provide informed consent.
- Current smokers, former smokers& non-smokers were included in this study.

b) Exclusion Criteria –

- Participants residing outside Bathinda district.
- Participants below 18 years of age.
- Participants who do not provide informed consent.
- Incomplete forms filled by participant.

Data Collection:-

A structured online questionnaire was prepared using Google forms. These forms were distributed to the targeted population through online platforms like Whatsapp or Email. Before the participants could actually answer the questionnaire, they were provided an informed consent. Only those participants who provided the informed consent were allowed to proceed further.The questionnaire (see table 1) consisted of inquiries regarding participants' knowledge and perceptions of smoking's effects on oral health.

Survey Method:-

The survey was distributed online to the public via various platforms, including WhatsApp and E-mail, to ensure broad access and participation. Participants were fully informed of the purpose of the study and assured of anonymity. The online format allowed participants to complete the survey at their own convenience using responses received via Google Forms. Reminders were sent after two weeks to encourage participants who had not yet

completed response.

Ethical Considerations-

The questionnaire was ethically approved by higher authorities & competent body prior conducting the survey.The participation was entirely voluntary,the participants were able to withdraw the survey at any point before submitting the response. Participants demographic informationlike name , age , gender , whether they are smoker /non-smoker/former smoker)was kept confidential.

Table 1:- Complete Questionnaire subjected to all participants.

1. Are you aware that smoking causes stained teeth and affects the color of your gums?	a) Yes b) No
2. Do you know that smoking can cause gum disease, which leads to receding gums, tooth mobility, and eventual tooth loss?	a) Yes b) No
3. Are you familiar with the fact that smoking decreases the ability of oral tissues to heal after dental procedures or injuries?	a) Yes b) No
4. Do you know that smoking can mask symptoms of gum disease, making it harder for dentists to diagnose and treat problems early?	a) Yes b) No
5. Are you aware that smoking increases the risk of oral cancers, especially of the lips, tongue, cheeks, and throat?	a) Yes b) No
6. Do you understand that smoking affects saliva production, contributing to dry mouth, bad breath, and increased tooth decay?	a) Yes b) No
7. Have you heard that smoking decreases your sense of taste and smell, potentially making food less enjoyable?	a) Yes b) No
8. Do you know that second-hand smoke also affects the oral health of children and family members?	a) Yes b) No
9. Are you aware that smoking can cause persistent bad breath (halitosis), even with regular brushing and flossing?	a) Yes b) No
10. Do you believe that regular visits to the dentist could help detect and prevent smoking-related oral health problems before they become severe?	a) Yes b) No

Results:-

This study aimed to assess the awareness of participants regarding the effects of smoking on oral health. The results demonstrate a varied level of understanding of how smoking can negatively impact different aspects of oral health, as detailed below (see table 2) :

Awareness of Teeth Staining and Gum Discoloration:

The vast majority of respondents, 94% (150 out of 160), were aware that smoking leads to visible discoloration of teeth and gums. This finding suggests that the cosmetic impact of smoking, particularly teeth staining, is well-known

among the population. Smoking-related tooth discoloration is often one of the earliest and most noticeable effects, making it unsurprising that so many respondents were aware of it. However, 6% (10 respondents) were not aware of this effect, indicating a small gap in awareness even regarding this commonly recognized outcome of smoking.

Awareness of Smoking's Contribution to Gum Disease:
A total of 78% (125 out of 160) of the participants recognized that smoking could cause gum disease, which could lead to serious issues such as receding gums, tooth mobility, and eventual tooth loss. The fact that nearly one-fifth of the participants (22%, 35 respondents) were unaware of this risk highlights a significant gap in understanding. This result is concerning, as gum disease is one of the leading causes of tooth loss in adults, and smoking is a major contributing factor. Increased education and awareness programs may be necessary to address this lack of knowledge.

Smoking's Negative Impact on Healing after Dental Procedures:
A total of 76% (121 out of 160) of the participants understood that smoking reduces the ability of oral tissues to heal after dental procedures or injuries. This level of awareness reflects a decent understanding of the biological impacts of smoking on oral health, particularly regarding delayed wound healing. Nonetheless, 24% (39 participants) were not aware of this important consequence of smoking, which is crucial for both patients and dentists to consider, especially when planning or recovering from dental surgeries or treatments.

Smoking's Ability to Mask Symptoms of Gum Disease:
The survey revealed that 78% (125 out of 160) of participants were aware that smoking could mask symptoms of gum disease, making it harder for dentists to diagnose and treat these issues early. Smokers are known to have reduced signs of gum inflammation despite the presence of disease, which may delay diagnosis and treatment. However, 22% (35 participants) were not aware of this phenomenon, underlining the need for more public education about how smoking can obscure early warning signs of oral health problems.

Increased Risk of Oral Cancer:
An overwhelming 94% (150 out of 160) of participants were aware that smoking increases the risk of developing oral cancers, especially in areas like the lips, tongue, cheeks, and throat. This high level of awareness suggests that the link between smoking and cancer is well understood by the general public. However, 6% (10 participants) were still unaware of this risk, indicating that while awareness is high, there is still room for improvement, especially given the serious and often fatal nature of oral cancers.

Effects on Saliva Production and Oral Health:
Only 69% (111 out of 160) of participants were aware that smoking affects saliva production, which can contribute to dry mouth, bad breath, and an increased risk of tooth decay. The remaining 31% (49 participants) did not understand this connection. The lack of awareness surrounding this issue is notable because reduced saliva production can lead to a number of oral health problems. Saliva plays a critical role in neutralizing acids and washing away food particles, and without sufficient saliva, smokers are more prone to cavities and other dental issues.

Decreased Sense of Taste and Smell:
A large proportion of participants, 91% (145 out of 160), recognized that smoking decreases the sense of taste and smell, potentially making food less enjoyable. Only 9% (15 participants) were unaware of this particular side effect. Smoking can damage the olfactory and taste receptors, leading to a diminished ability to enjoy food and beverages. Given that this side effect is more immediately noticeable compared to long-term health consequences, it is likely one of the reasons why awareness is so high in this area.

Awareness of the Impact of Secondhand Smoke on Oral Health:
The data showed that 84% (135 out of 160) of participants understood that secondhand smoke could also affect the oral health of children and family members. This indicates a good level of awareness about the broader implications of smoking, beyond the immediate smoker's health. However, 16% (25 participants) were not aware of this risk. Secondhand smoke has been shown to contribute to oral health problems in nonsmokers, particularly children, who may experience increased rates of cavities and gum disease as a result of exposure.

Association Between Smoking and Persistent Bad Breath:
Only 66% (105 out of 160) of participants were aware that smoking could cause persistent bad breath, even with regular brushing and flossing. This means that 34% (55 participants) were unaware of this link, despite the fact that bad breath (halitosis) is one of the most common oral side effects of smoking. Halitosis results from the accumulation of smoke particles in the mouth and the reduction in saliva flow, which allows odor-producing bacteria to thrive. This relatively low level of awareness suggests that more educational efforts should focus on the link between smoking and everyday quality-of-life issues, such as bad breath.

Role of Regular Dental Visits in Preventing Smoking-Related Oral Health Problems:
A total of 63% (101 out of 160) of participants believed that regular visits to the dentist could help detect and prevent smoking-related oral health problems before they become severe. On the other hand, 37% (59 participants) were unaware of this preventive measure. This relatively low level of awareness is concerning, as routine dental check-ups are critical for early detection of oral cancers, gum disease, and other smoking-related issues. This highlights the need for dental professionals to emphasize the importance of regular visits to at-risk patients, particularly smokers, as a means of preventive care.

Discussion:-

This study provides critical insights into patients' knowledge and perceptions of the effects of smoking on oral health, revealing both strengths and significant gaps in awareness. The findings align with existing literature, suggesting that while patients are generally aware of the superficial impacts of smoking, such as tooth discoloration and halitosis, there remains a substantial lack of understanding about the more severe and potentially life-threatening oral health consequences. This discussion will elaborate on the key findings in relation to existing research, focusing on the implications for dental health education and public health strategies.

General Awareness of Smoking's Effects on Oral Health
One of the most significant findings of the survey was the strong awareness among participants regarding smoking's cosmetic effects, such as tooth staining and bad breath. These results align with previous studies which indicate that aesthetic issues are commonly recognized by smokers and non-smokers alike.[8] However, this widespread awareness of cosmetic outcomes contrasts sharply with the relatively low understanding of the more severe, long-term effects of smoking on oral health, including periodontal disease and oral cancer. This disparity reflects a broader issue in public health messaging, where visible and short-term consequences are more frequently emphasized than serious, but less immediately obvious, conditions.

This superficial understanding of smoking's effects on oral health may contribute to complacency among smokers, who might view cosmetic issues as manageable or reversible while remaining unaware of the irreversible damage caused by periodontal disease or the increased risk of oral cancer. As a result, many smokers may be less motivated to quit smoking based solely on concerns about their oral health, despite the severe implications of continued smoking for overall health and quality of life.

Awareness of Periodontal Disease
Despite the well-established link between smoking and periodontal disease, the study found that a significant portion of respondents were unaware of this connection. Periodontal disease, a serious infection of the gums that can lead to tooth loss, is one of the most prevalent oral health conditions associated with smoking. Research shows that smoking is a key risk factor for both the development and progression of periodontal disease, with smokers being up to six times more likely to suffer from severe periodontitis compared to non-smokers.[9] Smoking reduces blood flow to the gums, impairs the immune response, and decreases the effectiveness of periodontal treatment, making smokers particularly vulnerable to this condition.[3]

The lack of awareness identified in this study is consistent with findings from previous research that suggests patients often underestimate the severity of smoking's impact on their gums.[5] This under appreciation of periodontal risks is particularly concerning given the long-term consequences of untreated gum disease, including tooth loss, reduced chewing function, and systemic health problems like cardiovascular disease. Furthermore, many of the early symptoms of periodontal disease—such as gum bleeding and inflammation—are masked in smokers due to the vasoconstrictive effects of nicotine, potentially leading to delayed diagnosis and treatment.[10] This underscores the importance of proactive dental education that not only informs patients about the risks but also encourages regular dental visits and screenings for early signs of periodontal disease.

1.	Are you aware that smoking causes stained teeth and affects the color of your gums?	Yes 150 (94%)	No 10 (6%)
2.	Do you know that smoking can cause gum disease, which leads to receding gums, tooth mobility, and eventual tooth loss?	Yes 125 (78%)	No 35 (22%)
3.	Are you familiar with the fact that smoking decreases the ability of oral tissues to heal after dental procedures or injuries?	Yes 121 (76%)	No 39 (26%)
4.	Do you know that smoking can mask symptoms of gum disease, making it harder for dentists to diagnose and treat problems early?	Yes 125 (78%)	No 35 (22%)
5.	Are you aware that smoking increases the risk of oral cancers, especially of the lips, tongue, cheeks, and throat?	Yes 150 (94%)	No 10 (6%)
6.	Do you understand that smoking affects saliva production, contributing to dry mouth, bad breath, and increased tooth decay?	Yes 111 (69%)	No 49 (31%)
7.	Have you heard that smoking decreases your sense of taste and smell, potentially making food less enjoyable?	Yes 145 (91%)	No 15 (9%)
8.	Do you know that second-hand smoke also affects the oral health of children and family members?	Yes 135 (84%)	No 25 (16%)
9.	Are you aware that smoking can cause persistent bad breath (halitosis), even with regular brushing and flossing?	Yes 105 (66%)	No 55 (34%)
10.	Do you believe that regular visits to the dentist could help detect and prevent smoking-related oral health problems before they become severe?	Yes 101 (63%)	No 59 (37%)

Table 2:-Study participants awareness of the effects of smoking on oral health.

Oral Cancer and Smoking

One of the most striking findings of the survey was the low level of awareness regarding the link between smoking and oral cancer. Despite substantial evidence showing that smoking is the leading cause of oral cancer, many respondents either underestimated or were unaware of this association. Smoking contributes to approximately 75% of oral cancer cases, with the risk increasing with the duration and intensity of smoking.[8] Moreover, smokers are not only at higher risk for developing oral cancer, but their prognosis following diagnosis is also generally poorer due to the delayed healing processes and immune suppression caused by smoking.

Previous studies have also shown that the public's awareness of oral cancer risks remains low compared to other cancers, such as lung or throat cancer, even though the mortality rate for oral cancer can be similarly high if diagnosed at a late stage.[11] The findings of this study align with research showing that while smokers are generally aware of the increased risk of lung cancer, they may not recognize oral cancer as a significant consequence of their habit.[12] This gap in awareness represents a major opportunity for public health campaigns to refocus and broaden their messaging to include oral cancer risks, particularly given that early detection of oral cancer can significantly improve survival rates.

Impact of Smoking on Wound Healing and Dental Treatments

Another area where the survey revealed a significant gap in knowledge was the effect of smoking on wound healing, particularly following dental surgeries such as extractions, implants, and periodontal treatments. Smoking impairs the healing process by reducing blood flow and oxygenation to tissues, which is crucial for recovery post-surgery.[2] Furthermore, smoking can increase the risk of postoperative complications such as infections, dry socket, and implant failure.[13] This is particularly concerning for smokers undergoing periodontal treatment or dental implants, as their outcomes are often significantly worse compared to non-smokers.

The findings align with existing literature showing that many patients are unaware of the negative impact of smoking on surgical outcomes in dentistry.[14] This lack of understanding may result in poor treatment adherence and suboptimal results for smokers undergoing dental procedures. Dental professionals should emphasize the critical importance of smoking cessation before and after dental surgeries to improve healing and reduce the risk of complications. Incorporating this information into preoperative consultations and providing tailored smoking cessation support may improve patient outcomes.

Implications for Dental Practice and Public Health

The results of this study highlight the pivotal role that dental professionals play in educating patients about the oral health risks of smoking. While general health campaigns focus on the systemic effects of smoking, dental practitioners are uniquely positioned to emphasize the oral health risks that smokers face. Providing personalized education, showing patients the early signs of smoking-related damage, and offering resources for smoking cessation are all critical components of comprehensive oral health care.

Moreover, public health campaigns need to evolve beyond simply highlighting the cosmetic consequences of smoking. While discolored teeth and bad breath are important concerns for many patients, more emphasis should be placed on the severe risks such as periodontal disease, oral cancer, and compromised dental treatments. By combining public health efforts with individualized patient education in dental offices, there is a greater likelihood of reducing smoking rates and preventing smoking-related oral diseases.

Conclusion:-

In conclusion, this study reveals substantial gaps in patient knowledge regarding the effects of smoking on oral health, particularly concerning periodontal disease, oral cancer, and delayed wound healing. While there is considerable awareness of cosmetic consequences, many patients remain uninformed about the long-term, serious health risks. Dental professionals must take an active role in patient education, integrating smoking cessation counselling into routine care, and public health initiatives should focus more on the severe consequences of smoking on oral health. Closing these knowledge gaps through targeted education could improve patient outcomes and encourage smoking cessation, ultimately reducing the prevalence of smoking-related oral diseases.

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