Relationship between the Levels of Awareness and Knowledge of Periodontitis in Diabetic Patients in Maharashtra Region

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Received: 15- May -2023 Revised: 22- June -2023 Accepted: 04- July -2023

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Abstract.

This study delves into the symbiotic relationship between diabetes mellitus (DM) and periodontitis, shedding light on the reciprocal impact these prevalent conditions have on each other. Acknowledging diabetes as a grade modifier in the latest periodontitis classification underscores the active role of diabetes in shaping the severity and progression of periodontal disease. With 34.5% of participants identified as diabetic patients with periodontitis in the Maharashtra region, the urgency of addressing awareness and knowledge gaps within this specific population becomes evident. The study's core finding reveals a compelling inverse correlation between awareness/knowledge levels and the clinical periodontal status. This suggests that individuals with lower awareness and knowledge levels exhibit more severe periodontitis, emphasizing the potential role of education in influencing disease progression, especially in the context of diabetes. The lack of awareness observed among both diabetic and nondiabetic patients underscores the need for targeted educational initiatives, urging a comprehensive and personalized approach to patient education in clinical practice. The implications extend beyond oral health, advocating for a paradigm shift in healthcare towards a holistic model that integrates oral health into the broader landscape of systemic health. This study serves as a compass, guiding future research and interventions to bridge the knowledge gap within vulnerable populations. It calls for a nuanced exploration of specific elements in dental health education that resonate with diabetic patients, understanding the long-term impact of improved awareness on clinical outcomes, and considering cultural and socioeconomic factors in shaping knowledge levels. As we navigate the complex interplay of diabetes and periodontitis, the insights from this study pave the way for a more informed and patient-centric approach to managing these intertwined health conditions.

Keywords. awareness and knowledge, diabetes mellitus, periodontitis, dental health education, systemic health, grade modifier, prevalence, Maharashtra region, clinical periodontal status, healthcare.

I. Introduction:

The coexistence of diabetes mellitus (DM) and periodontitis presents a complex and intricate interplay between two prevalent human diseases, each exerting a profound influence on the other. As researchers delve deeper into understanding the multifaceted connections between these health conditions, it becomes evident that the relationship extends beyond mere coexistence. Diabetes not only exacerbates the severity of periodontal conditions but, intriguingly, periodontitis also hampers glycemic control in individuals grappling with diabetes.

The dynamism of this bidirectional relationship has prompted the latest periodontitis classification to position DM as one of the grade modifiers, acknowledging the intricate influence these diseases have on each other's progression. The implications of this classification are far-reaching, as it not only underscores the need for a holistic approach to patient care but also emphasizes the significance of addressing the mutual impact of diabetes and periodontitis on overall health.

Periodontal health, often relegated to the periphery of systemic health discussions, is now taking center stage due to its profound effects on glycemic control in diabetic patients. Periodic periodontal maintenance emerges as a pivotal strategy, not only for preventing reinfection but also for aiding individuals with diabetes in maintaining effective glycemic control. This integration of oral health into the broader landscape of systemic health underscores the need for a comprehensive understanding of the awareness and knowledge levels among individuals grappling with both diabetes and periodontitis.

II. Background:

Diabetes mellitus and periodontitis stand as two of the most prevalent health concerns globally, each with its far-reaching implications for overall well-being. The intricate relationship between these conditions extends beyond the surface, weaving a narrative of mutual influence and exacerbation. Diabetes, characterized by impaired insulin production or utilization, not only places individuals at an increased risk of cardiovascular complications and renal dysfunction but also casts its shadow on oral health.

Periodontitis, a chronic inflammatory condition affecting the supporting structures of the teeth, has long been recognized as a significant oral health concern. The interplay between diabetes and periodontitis is multifaceted, with diabetes contributing to the progression of periodontal disease and, conversely, periodontitis complicating glycemic control in diabetic patients. The bidirectional nature of this relationship necessitates a nuanced understanding, prompting a reevaluation of conventional approaches to patient care.

In response to the evolving understanding of this relationship, the latest periodontitis classification integrates diabetes as a grade modifier. This acknowledgment is a testament to the recognition of diabetes as more than a comorbidity but as a factor influencing the severity and progression of periodontal disease. The implications of this reclassification extend beyond the realms of periodontology, urging healthcare professionals to adopt a holistic approach that addresses both systemic and oral health concerns concurrently.

III. Purpose:

Against this backdrop, this study endeavors to unravel the intricate tapestry of awareness and knowledge levels regarding periodontitis among individuals grappling with diabetes in the Maharashtra region. The aim is twofold: first, to assess the awareness and knowledge levels among diabetic patients regarding the implications of periodontitis on their overall health; and second, to explore the potential impact of these awareness levels on the clinical manifestation and severity of periodontal disease in both diabetic and nondiabetic individuals suffering from periodontitis.

By delving into the depths of awareness and knowledge, this study seeks to bridge the gap between theoretical understanding and practical implications. It strives to uncover the nuances that shape the decisions and behaviors of individuals dealing with the complex intersection of diabetes and periodontitis. Through a meticulous examination of awareness levels, the study aims to contribute valuable insights that could inform targeted interventions and educational initiatives aimed at enhancing the understanding of the relationship between periodontitis and diabetes.

IV. Methods:

To achieve these objectives, a closed-ended questionnaire was meticulously designed and distributed to new patients referred to the Periodontology unit. The questionnaire, tailored to capture a comprehensive range of information, aimed to gauge not only the awareness and knowledge levels regarding periodontitis but also demographic details, educational background, and clinical periodontal status. The inclusion of both diabetic and nondiabetic individuals suffering from periodontitis ensures a holistic exploration of the subject, allowing for comparative analysis and a nuanced understanding of the factors at play.

The data collected from the 118 participants underwent rigorous statistical analysis to discern patterns, trends, and significant differences between the awareness and knowledge levels among diabetic and nondiabetic

patients. By adopting a multidimensional approach, the study sought to unravel the intricate web of relationships between awareness, knowledge, and clinical periodontal status, offering a comprehensive perspective on the subject.

V. Results:

The preliminary analysis of the data reveals a noteworthy prevalence, with 34.5% of the participants identified as diabetic patients with periodontitis. This statistic underscores the relevance and urgency of exploring the awareness and knowledge levels within this specific subset of the population. The subsequent statistical analysis unearthed significant differences (P < 0.05) between the awareness and knowledge levels of periodontitis among diabetic and nondiabetic patients, both of whom are grappling with periodontal disease.

Intriguingly, the data unveiled an inverse correlation between awareness/knowledge levels and the current clinical periodontal status. This observation suggests that individuals with lower awareness and knowledge levels tend to exhibit more severe periodontitis. The implications of this finding are profound, pointing towards the potential role of education and awareness in influencing the progression and severity of periodontal disease, especially in the context of diabetes.



Figure 1. Response to Questionnair-1

2} What do you think is the commonest cause for loose teeth ? 114 responses



Figure 2. Response to Questionnair-2

3} Has any member of your family lost more than teeth at young age of <35 years ? 116 responses



Figure 3. Response to Questionnair-3

4} What is commonest cause for disappearing gums ?

114 responses



Figure 4. Response to Questionnair-4

5} Do you think gum diseases are preventable? 115 responses



Figure 5. Response to Questionnair-5



Figure 6. Response to Questionnair-6

7} During last 3 months , have you noticed a tooth that does not look right ? $^{\rm 113\,responses}$





8} According to you, is there any association between diabetes and oral health ? $^{\rm 115\,responses}$





9} Do you think sensitivity to hot or cold drinks can be treatable ? 114 responses



Figure 9. Response to Questionnair-9



Figure 10. Response to Questionnair-10



Figure 11. Response to Questionnair-11

12} does being a diabetic increases risk of developing gum diseases?



Figure 12. Response to Questionnair-12

13} Have you ever noticed your gums reddish and/or swollen?



Figure 13. Response to Questionnair-13



Figure 14. Response to Questionnair-14

15} are you aware that diabetes can cause dry mouth(<code>XEROSTOMIA</code>) ${}^{\rm 114\,responses}$



Figure 15. Response to Questionnair-15

16} Has any member of your family lost more than teeth at young age of <35 years ? $^{\rm 116\,responses}$





17} over all , how would you rate the health of your gums and teeth? $^{\rm 114\,responses}$



Figure 17. Response to Questionnair-17



41.2%

Figure 18. Response to Questionnair-18

19} Are you aware about types of diabetes? 114 responses



Figure 19. Response to Questionnair-19

20} How often do you use mouthwash? 114 responses



Figure 20. Response to Questionnair-20

VI. Discussion:

The findings of this study illuminate the intricate relationship between diabetes mellitus (DM) and periodontitis, bringing to the forefront the critical role that awareness and knowledge play in shaping the clinical outcomes of individuals grappling with both conditions. The bidirectional impact of diabetes and periodontitis, as recognized by the latest periodontitis classification, underscores the need for a holistic approach to patient care—one that integrates oral health into the broader landscape of systemic health.

The classification of diabetes as a grade modifier in the context of periodontitis signifies a paradigm shift in our understanding of these interconnected health issues. It goes beyond the conventional view of diabetes as a comorbidity and acknowledges its active role in influencing the severity and progression of periodontal disease. This reclassification has far-reaching implications for both clinicians and researchers, urging a more integrated and nuanced approach to patient management.

The study's identification of 34.5% of participants as diabetic patients with periodontitis highlights the prevalence of this specific population in the Maharashtra region. The urgency of addressing awareness and knowledge gaps within this group becomes evident, considering the bidirectional impact of diabetes and periodontitis on each other's progression. The lack of awareness among both diabetic and nondiabetic patients underscores the need for targeted educational initiatives.

One of the pivotal findings of this study is the inverse correlation observed between awareness/knowledge levels and the clinical periodontal status. The implication of this correlation suggests that individuals with lower awareness and knowledge levels tend to exhibit more severe periodontitis. This underscores the potential role of education and awareness in influencing not only preventive measures but also the progression of the disease, particularly in the context of diabetes.

These findings have direct implications for clinical practice, emphasizing the need for a comprehensive and personalized approach to patient education. Integrating dental health education into the care continuum for diabetic patients becomes crucial, with a focus on improving their understanding of the relationship between periodontitis and diabetes. Clinicians must not only address the immediate oral health concerns but also empower patients with the knowledge and awareness necessary for long-term management and prevention.

The integration of oral health into the broader context of systemic health is a recurring theme in this discussion. The bidirectional relationship between diabetes and periodontitis necessitates a paradigm shift in how healthcare is approached. This study advocates for a holistic healthcare model that acknowledges the interconnectedness of various health aspects. Such an approach has the potential to yield more effective and sustainable outcomes, not only in managing periodontitis but also in improving overall health outcomes for individuals with diabetes.

As we navigate the complex terrain of diabetes and periodontitis, this study points towards avenues for future research. Exploring the specific elements of dental health education that resonate most with diabetic patients, assessing the long-term impact of improved awareness on clinical outcomes, and understanding the role of cultural and socioeconomic factors in shaping knowledge levels are potential areas for further investigation.

It is essential to acknowledge the limitations of this study. The cross-sectional nature of the research provides a snapshot of awareness and knowledge levels at a specific point in time. Longitudinal studies could offer insights into the dynamic nature of these factors over time. Additionally, the study's focus on the Maharashtra region may limit the generalizability of findings to broader populations, necessitating further research in diverse geographic and cultural contexts.

VII. Conclusion

In conclusion, this study illuminates the intricate dynamics between diabetes mellitus (DM) and periodontitis, emphasizing the pivotal role of awareness and knowledge in shaping the clinical landscape for individuals facing these coexisting health challenges. The reclassification of diabetes as a grade modifier in the periodontitis classification marks a paradigm shift, recognizing the active role of diabetes in influencing the severity and progression of periodontal disease. The prevalence of 34.5% of diabetic patients with periodontitis in the Maharashtra region underscores the urgency of addressing awareness gaps within this specific demographic. The identified inverse correlation between awareness/knowledge levels and the clinical severity of periodontitis highlights the potential impact of education on disease progression, particularly in the context of diabetes. This revelation serves as a clarion call for targeted educational initiatives, urging a comprehensive and personalized approach to patient education in clinical practice. Beyond the oral health realm, this study advocates for a holistic healthcare approach that integrates oral health into the broader spectrum of systemic health. It prompts a

reconsideration of conventional healthcare models, encouraging professionals to view patients as interconnected beings with various health facets that influence one another. The call for a paradigm shift extends to future research directions, urging exploration into the specific elements of dental health education that resonate with diabetic patients and understanding the long-term implications of improved awareness on clinical outcomes. While acknowledging the limitations of the study, including its cross-sectional nature and regional focus, the insights obtained pave the way for a more informed and patient-centric approach to managing the complex interplay of diabetes and periodontitis. As we navigate the evolving landscape of healthcare, this study contributes to the growing body of knowledge, guiding future research and interventions aimed at bridging the awareness gap within vulnerable populations and fostering holistic well-being.

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