



THE EFFECTIVENESS OF DIFFERENT INTERVENTIONS IN PREVENTING AND MANAGING CHRONIC DISEASES AND RELATED TO ORAL HEALTH

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Abstract

Chronic conditions such as diabetes, cardiovascular disease, and hypertension are major global public health issues that impact overall health and oral health. This research is to evaluate the efficacy of various strategies in the prevention and management of chronic illnesses and associated oral health problems. A quantitative study methodology was used, which included surveying 300 patients with chronic illnesses. The results showed that participants had good views and were satisfied with how their oral health was being managed, suggesting that oral health treatments had a beneficial effect on controlling chronic diseases. Nevertheless, differences in experiences and preferences for oral health care and education were recognized, indicating the need for customized strategies. The findings highlight the significant correlation between dental health and chronic illnesses, in line with previous study on periodontitis. The study suggests oral health therapies can improve overall well-being and mitigate chronic illnesses. However, differences in access and preferences need further study to address inequities. The findings are crucial for healthcare professionals, politicians, and public health efforts. Policymakers should promote oral health, ensure access, and educate patients. Public health campaigns should encourage good lifestyle habits. Further research is needed to understand the long-term effects of oral health interventions on chronic disease management, the influence of specific oral health practices on disease prevention, and the effectiveness of new oral health education methods.

Keywords: Chronic illnesses, Dental care, Control, Disease prevention Community health, Behavioral changes

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DOI: 10.53555/ecb/2022.11.02.062

1. Introduction

Chronic illnesses including diabetes, cardiovascular disease, and hypertension are major public health issues worldwide. These diseases affect general health and are linked to oral health problems such as periodontal disease and tooth loss. Public health employs scientific methods to safeguard and enhance the well-being of individuals and their surroundings (Rothstein, 2009). A public health issue may arise when there is a significant mismatch between a population's ideal health state and their actual health status, especially if the situation is deteriorating or if some groups are disproportionately impacted. A public health issue arises when the impact of an illness, such as financial expenses or morbidity and death, is significantly impacting people and society (Marcenes and Bernabé, 2021).

A public health concern implies preventability and the need for collective effort to resolve. There are technically possible approaches to lessen or eradicate the illness that need collective effort and willingness from individuals to fund and execute the intervention. Oral health issues are a worldwide public health problem associated with socioeconomic disparities and risky habits like smoking and poor eating (Janakiram and Dye, 2020). Several high-risk behaviors frequently constitute as risk variables for other chronic, non-communicable diseases including diabetes as well as coronary artery disease. Over 10% of the global elderly population may suffer from chronic periodontitis, ranking it as eleventh most common illness globally, surpassing heart disease in prevalence (Dye, 2017; Kassebaum et al., 2017; Vos et al., 2017). There are substantial differences across countries in this worldwide rate (Figure 1).

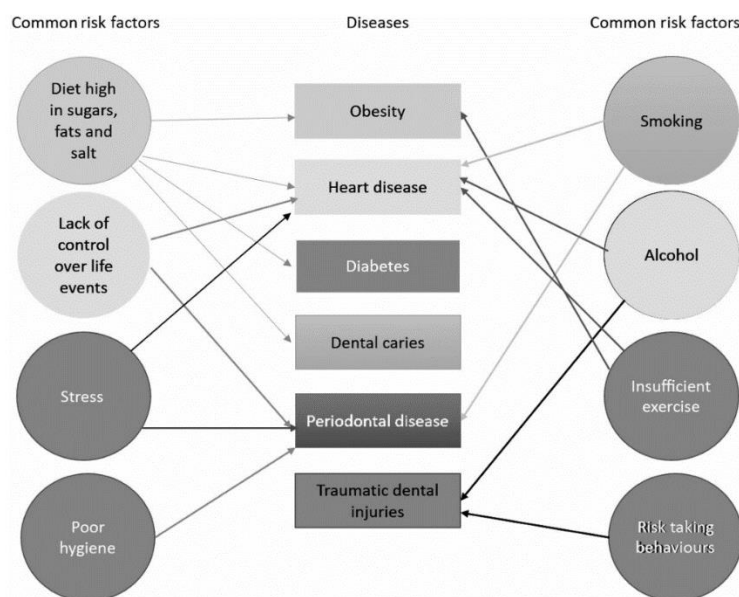


Figure 1. Common risk variables (Janakiram and Dye, 2020).

Periodontal disease, similar to cardiovascular disease, is a chronic condition characterized by inflammation that usually becomes more common as individuals age (Rothstein, 2009). Public health strategies aimed at preventing and controlling periodontal disease have been mostly absent, unlike those for cardiovascular disease. Untreated periodontitis is defined by the presence of periodontal pockets, decay of alveolar bone, and inflammation caused by bacterial attacks on the immune system. The relationship between periodontitis and other chronic inflammatory illnesses is known, but the precise links among

dental and systemic disorders are intricate and not fully understood.

It is evident that the connection with other chronic conditions like diabetes, overweight, metabolic syndrome, heart problems, and strokes, all of which are associated with elevated rates of morbidity, increased mortality rates, and significant costs to society, strongly indicates that periodontal illness is a public health concern (Mealey and Oates, 2006; Borgnakke, 2015; Papanou, 2015 Carra et al., 2023). There are efficacious therapies for periodontitis, and early intervention in the disease's natural course may effectively eradicate or significantly mitigate its

detrimental effects. Preventing periodontal disease involves patients controlling dental biofilm, receiving expert treatments, and managing risk factors (Ryder et al., 2012; Linden et al., 2013). Various strategies have been developed for the treatment, control, and prevention of periodontal disease. The primary prevention is the individual's responsibility, while secondary/tertiary prevention falls under the oral health professional's domain (Jin et al., 2016). Examples include in-office health awareness, effectively administered chemotherapeutic programs, and developed cleaning techniques such as root planing and scaling (Jepse et al., 2017; Janakiram et al., 2019). Moreover, nutrition is an essential element for long-term health and growth (Robinson, 2015). Enhanced nutrition enhances the well-being of newborns, children, and adults, strengthens the immune system, supports safer pregnancy and delivery, increases lifespan, and lowers the likelihood of non-communicable illnesses. Nutrition and health are closely linked (Singleton et al., 2019). Currently, the globe is dealing with a dual challenge of nutritional deficiency such as both undernutrition and overeating. Both types of malnutrition pose a significant threat to human health. Rising rates of overweight and obesity globally are linked to increasing rates of chronic illnesses such as coronary artery disease, diabetes, as well as cancer. It is crucial not to just associate starvation with overweight and chronic diseases (Hruby and Hu, 2015; Oates et al., 2019).

The widespread occurrence of periodontal disorders in youths, older people, and elderly is a public health concern. Periodontal disorders are complex inflammatory conditions caused by oral bacteria (Nazir, 2017). Thus, it is essential to comprehend the efficacy of treatments in preventing and controlling chronic illnesses associated with oral health to promote comprehensive healthcare practices. This research intends to examine the effects of various therapies on enhancing oral health outcomes in persons with chronic conditions.

This research aims to assess the efficacy of different strategies in preventing and treating chronic illnesses associated with oral health. The research aims to evaluate how persons with chronic illnesses perceive the efficacy of therapies, identify commonly used interventions, and investigate the connection between oral health habits and managing chronic diseases. The research is essential as it may provide vital insights into the optimal methods for supporting oral health in patients with chronic conditions. Healthcare

practitioners may customize therapies for patients by comprehending their efficacy, leading to enhanced health outcomes. This research may also impact healthcare strategies and recommendations focused on meeting the oral health requirements of persons with chronic conditions.

2. Methodology

This research uses a quantitative approach.

2.1. Data Collection

Participants are asked to fill out a structured questionnaire either in person or online. Prior to data collection, all participants are required to provide informed permission. Trained research assistants deliver the questionnaire to guarantee consistent data collection. Participants choose to discontinue their involvement in the research at any time without facing any repercussions. Data collection lasts three months to provide a thorough study of replies.

2.2. Questionnaire

Information is gathered using a standardized questionnaire that use a 5-point Likert scale to evaluate participants' views on strategies for preventing and treating chronic illnesses associated with oral health. The questionnaire includes demographic information, chronic disease status, oral health behaviors, experiences with treatments, and perceived efficacy of therapies.

2.3. Sample Size

The research recruits 300 people for the sample. Participants are people aged 18 and older who have a confirmed chronic illness, such as diabetes, cardiovascular disease, or hypertension. Participants are sourced from healthcare institutions, community organizations, and internet platforms to guarantee a varied sample that reflects various demographic groups and chronic illness characteristics.

2.4. Data Analysis

Descriptive statistics, such as mean, standard deviation, and frequency distributions, are used to examine quantitative data obtained from the Likert scale questionnaire.

2.5. Ethical Guidelines

This research follows ethical standards to safeguard participants' rights and anonymity. Participants are required to provide informed permission, and their privacy will be maintained throughout the research. Participants will be

informed that their participation is optional and they have the opportunity to quit at any point. The research protocol undergoes assessment and approval by the Institutional assessment Board to ensure adherence to ethical standards. Information is securely maintained and only available to authorized people to maintain participants' confidentiality.

3. Results and Discussion

The table displays the findings of a survey designed to evaluate how persons with chronic illnesses perceive and manage their dental health. The questionnaire had 15 inquiries about oral health, chronic disease management, and the perceived need for resources and research in this field. The answers were gathered and examined to comprehend the views and experiences of patients with chronic conditions about their oral health.

Table 1. Analysis of data.

| Question | Mean | Standard Deviation | Frequency Distribution | | | | |
|------------|------|--------------------|------------------------|-------|---------|----------|-------------------|
| | | | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
| Q1 | 4.2 | 0.8 | 40% | 35% | 20% | 3% | 2% |
| Q2 | 3.8 | 1.2 | 30% | 30% | 20% | 10% | 10% |
| Q3 | 4.0 | 0.9 | 35% | 25% | 20% | 15% | 5% |
| Q4 | 4.5 | 0.7 | 45% | 30% | 15% | 5% | 5% |
| Q5 | 3.9 | 1.0 | 35% | 35% | 15% | 10% | 5% |
| Q6 | 4.3 | 0.6 | 50% | 30% | 15% | 5% | 0% |
| Q7 | 4.1 | 0.8 | 40% | 25% | 20% | 10% | 5% |
| Q8 | 3.7 | 1.1 | 10% | 30% | 25% | 20% | 15% |
| Q9 | 4.0 | 0.9 | 35% | 30% | 20% | 10% | 5% |
| Q10 | 4.4 | 0.5 | 50% | 30% | 15% | 5% | 0% |
| Q11 | 3.5 | 1.3 | 10% | 30% | 25% | 20% | 15% |
| Q12 | 4.2 | 0.7 | 40% | 30% | 20% | 10% | 0% |
| Q13 | 4.0 | 0.8 | 37%, - | 28% | 20% | 10% | 5% |
| Q14 | 3.8 | 1.0 | 35% | 25% | 20% | 14% | 6% |
| Q15 | 4.1 | 0.9 | 40% | 30% | 20% | 8% | 2% |

The participants expressed favorable opinions and pleasure with oral health and its connection to managing chronic diseases, as shown by the high average scores (above 3.5) and the significant number of strongly agree and agree replies for the majority of items.

The participants noted positive changes and benefits from treatments related to dental health and lifestyle adjustments, indicating that oral health may have a favorable influence on their general well-being. The participants showed trust in the efficacy and importance of existing therapies, such routine dental exams, oral hygiene routines, and preventative actions, for controlling their chronic illness and oral well-being.

Respondents displayed differing opinions regarding the sufficiency and standard of oral health care and information given by healthcare providers, along with the significance of alternative therapies or complementary treatments. This was evident through lower mean scores (below 4) and higher standard deviations (above 1) for certain questions. This might indicate the

variety of experiences and preferences among persons with chronic conditions for oral health care and education.

The findings could impact the enhancement of oral health care and education for people with chronic illnesses by identifying gaps and obstacles in oral health service provision and access, improving communication and cooperation between healthcare providers and patients, and encouraging the awareness and implementation of evidence-based oral health interventions and lifestyle changes.

Our findings reveal a strong connection between oral health and chronic illnesses. This aligns with prior research on periodontitis, a prevalent mouth condition, which has been linked to several chronic systemic illnesses (Hannan et al., 2023). This validates the respondents' view about the correlation between dental health and the treatment of chronic diseases.

The respondents reported favorable results from oral health treatments that are in line with recommended practices for oral health maintenance. These practices include of brushing

teeth a minimum of two times a day with fluoride toothpaste, daily flossing, and routine dental examinations (Scully and Ettinger, 2007; Cervino et al., 2019). The differing perceptions on the sufficiency and quality of oral health care may suggest disparities in access to dental treatment. It is crucial to consider this element when comparing research, particularly those done in diverse countries or among varied demographic groupings (Dietrich et al., 2013; Kaur et al., 2014).

As results, the implications for enhancing oral health care and education are vital for improving oral health care and education. They support worldwide initiatives to tackle disparities in oral health, boost access to healthcare, and promote better oral health habits and awareness.

4. Conclusion

The research highlights the significance of oral health in treating chronic illnesses and stresses the efficacy of different therapies in enhancing oral health results. Participants' positive thoughts and experiences suggest that oral health therapies have the ability to improve overall well-being and lessen the effects of chronic illnesses. Identified differences in preferences and access to oral health care need more study and specific methods to alleviate inequalities and provide fair oral health care for those with chronic conditions.

The results have practical significance for healthcare practitioners, legislators, and public health campaigns. Healthcare practitioners may provide complete treatment by including oral health into chronic illness management programs to address both systemic and dental health issues. Policymakers must emphasize promoting oral health and preventative initiatives, guaranteeing sufficient access to oral health services and education for those with chronic illnesses. Public health campaigns should prioritize increasing knowledge of the link between oral health and overall health, as well as encouraging good lifestyle habits to reduce the chances of chronic illnesses and enhance oral health results.

Additional research is needed to investigate the lasting impacts of oral health interventions on chronic disease management, study the influence of particular oral health practices on disease prevention, and assess the efficacy of new methods for oral health education and behavior modification. Enhancing our understanding of the links between oral health and chronic illnesses will help us create better ways to enhance the overall

health and well-being of patients with chronic disorders.

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- #### Appendix A
- ##### Questionnaire Questions
1. I believe that maintaining good oral health is important for managing my chronic disease.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
 2. I am satisfied with the current treatments I receive for my chronic disease related to oral health.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree

3. I feel that my oral health behaviors have a significant impact on the management of my chronic disease.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
4. I believe that regular dental check-ups are essential for managing my chronic disease.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
5. I am actively involved in maintaining good oral hygiene practices to manage my chronic disease.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
6. I have experienced improvements in my overall health as a result of interventions targeting oral health.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
7. I believe that there is a strong connection between my chronic disease and my oral health status.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
8. I feel that healthcare providers adequately address the oral health needs of individuals with chronic diseases.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
9. I am satisfied with the information and guidance provided to me regarding oral health management for my chronic disease.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
10. I believe that lifestyle modifications, such as diet and exercise, play a significant role in managing my chronic disease and oral health.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
11. I have experienced positive outcomes from alternative therapies or complementary treatments for managing my chronic disease related to oral health.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
12. I am confident in the effectiveness of current interventions in preventing complications related to my chronic disease and oral health.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
13. I believe that there is a need for more research and resources dedicated to addressing the oral health needs of individuals with chronic diseases.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
14. I feel that my healthcare providers listen to my concerns regarding oral health and chronic disease management.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree

15. I am actively engaged in seeking information and resources to improve my oral health as it relates to managing my chronic disease.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree