

ORIGINAL ARTICLE

GROWTH STUNTING PREVENTION IN CHILDREN: KNOWLEDGE AND PERCEPTION OF ORAL HEALTH PRACTITIONERS AT BAQAI DENTAL COLLEGE; KARACHI

Nauman Sheikh¹, Sana Farrukh², Qasim Saleem^{3*}, Sharjeel Basheer⁴,
Tanzeela Shaikh⁵, Aimen Zahid⁶, Samara Khan⁷

ABSTRACT

Objectives: The study aimed to assess the knowledge and perceptions of oral health practitioners at Baqai Dental College regarding growth stunting and its prevention.

Methods: This cross-sectional descriptive study was conducted at Baqai Medical University, involving 70 dentists with over two years of professional experience. Dentists who did not provide valid informed consent were excluded. Data were collected using a questionnaire assessing two dimensions: (1) knowledge of nutrition, growth, development, and health behavior categorized as good (76–100%), sufficient (56–75%), or poor (<56%); and (2) perceptions of growth stunting and its prevention—classified as positive or negative based on the mean score. Data were analyzed using SPSS version 20.

Results: The analysis revealed that 83.3% of participants demonstrated good knowledge of growth stunting and its prevention, 13.9% had moderate knowledge, and 2.8% exhibited poor knowledge. Regarding perception, 40.28% of participants had positive perceptions, while 59.72% had negative perceptions of their role in stunting prevention.

Conclusion: These findings highlight a strong foundational knowledge base among dentists but indicate the need for improvement in enhancing their perceptions and confidence in addressing stunting prevention in Pakistan.

Keywords: Knowledge, perception, dentists, growth stunting

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^{1-4, 6,7} Oral Pathology, Baqai Medical University

²United Medical Dental College, Karachi

INTRODUCTION

Growth stunting, characterized by impaired physical and cognitive development, is a significant public health issue affecting children under five years of

age globally [1]. According to the World Health Organization (WHO), growth stunting also known as nutritional stunting is a condition in which a child's height-for-age is significantly below the expected standard for their age and sex. Growth stunting is a major public health concern in Pakistan and is closely linked to nutritional deficiencies and oral health. Dentists, as key health professionals, have an essential role in addressing this issue. In Pakistan, approximately 38% of children are stunted, primarily due to prolonged nutritional deficiencies during critical developmental periods [2]. This

*Corresponding Author:

Lecturer of Oral Pathology, Baqai Medical University, Karachi. Email: qasimsaleem@baqai.edu.pk

condition results in long-term consequences on health, productivity, and economic potential, with Sindh province in particular facing alarming stunting rates, where nearly 50% of children are affected. Similarly, in Indonesia, growth stunting remains a major concern, with 30.8% of children less than five years of age affected, surpassing the WHO threshold of 20%. This high prevalence places Indonesia among the top countries with a significant burden of stunting, highlighting the urgent need for targeted interventions [3]. The condition is closely linked to malnutrition, which not only affects physical growth but also impairs cognitive development, ultimately impacting children's productivity and intellectual abilities.

One of the major health concerns associated with growth stunting is its effect on oral health. Malnutrition can lead to dental problems, particularly dental caries, which are common among stunted children. Dental caries, a disease that begins with demineralization of the dental tissue, can interfere with a child's nutritional intake, leading to digestive issues and difficulty eating. Additionally, stunting can reduce the salivary function that is crucial for oral health, making children more susceptible to cavities and other oral diseases. Moreover, oral health problems can exacerbate growth deficiencies by further limiting nutrient intake and impairing digestion, creating a vicious cycle of poor growth and health [4,5].

There is also a significant correlation between the oral health of mothers and children, influenced by factors such as maternal education and socioeconomic status. In Indonesia, the relationship between growth stunting and oral health issues further emphasizes the role of dentists in addressing this public health challenge [6]. Despite the clear connection, dentists' involvement in stunting prevention remains insufficient, particularly in countries like Pakistan and Indonesia. Dentists, as key healthcare providers, are in a unique position to contribute to stunting prevention by promoting oral health and providing dietary guidance [7,8].

Despite the recognized impact of oral health on stunting, the role of dentists in stunting prevention remains underutilized in many regions. There is a lack of research on the knowledge and perceptions of dentists regarding stunting prevention, which hinders the development of effective interventions [9,10]. Assessing the knowledge and perceptions of dentists is crucial to enhancing their contribution to this public health issue. As frontline healthcare providers, dentists have the potential to play a pivotal role in preventing growth stunting by addressing oral health issues and promoting proper nutrition [11]. Understanding dentists' current knowledge and perceptions will help design more effective strategies for stunting prevention, particularly in areas with high stunting rates. By incorporating oral health education and dietary counseling into their practice, dentists can contribute significantly to improving children's overall health and growth outcomes.

This study aims to evaluate the knowledge and perceptions of growth stunting prevention among oral health practitioners at Baqai Dental College, Karachi. By assessing the current awareness and attitudes of dentists, this research will contribute to designing targeted interventions that can enhance stunting prevention efforts, ultimately improving the quality of life for children affected by stunting.

METHODOLOGY

This descriptive study was approved by the Ethical Review Board of Baqai Dental College and aimed to assess the knowledge and perceptions of growth stunting prevention among oral health practitioners. A cross-sectional design was employed, conducted over a three-month period at Baqai Medical University. The primary data collection tool was a structured questionnaire.

A total of 70 dentists were included in the study, selected through convenience sampling. Participants were required to have more than two years of professional experience in dentistry, and those who did not provide valid informed consent were excluded. The questionnaire used for data collection consisted of two sections. The first section assessed

knowledge through multiple-choice questions, covering topics such as the definition of growth stunting, its causes, and preventive measures, with a focus on its relationship to oral health. The second section evaluated perceptions using statements on a 5-point Likert scale, examining the dentists' attitudes toward their role in stunting prevention. The perception questions were categorized into four dimensions: awareness, adoption, implementation, and maintenance of stunting prevention practices. The questionnaire consisted of two parts. The first part focused on knowledge related to nutrition, growth, and development, while the second part evaluated the participants' perceptions regarding stunting prevention. This method allowed for a comprehensive evaluation of both knowledge and perceptions of growth stunting and its prevention.

Data were analyzed using statistical packages for social sciences (SPSS) version 20. Descriptive statistics were used to summarize the demographic characteristics of the participants. Knowledge levels were categorized into three groups: "good knowledge" (76-100%), "sufficient knowledge" (56-75%), and "poor knowledge" (<56%). Perceptions were classified as either positive or negative based on whether the total score exceeded or fell below

the mean score, respectively. Quantitative data were expressed as mean \pm SD, while qualitative data were reported as frequencies and percentages.

RESULTS

The study aimed to evaluate the knowledge and perceptions of dentists in Pakistan regarding their role in stunting prevention. A total of 72 participants were surveyed, with data collected on demographics, knowledge indicators, and perceptions (table 1).

The study gathered data from 72 participants, with the average age being 34.76 years (ranging from 22 to 69). Participants were almost evenly split by gender: 48.6% male (n = 35) and 51.4% female (n = 37). Regarding qualifications, 56.9% (n = 41) were general dentists (GD) (Completed a Doctor of Dental Surgery (DDS) or Doctor of Dental Medicine (DMD) degree) while 43.1% (n = 31) were specialist dentists (SD) (Along with DDS or DDM, pursue additional formal education and training in a specialty area such as Orthodontics (braces and alignment), Periodontics (gums and supporting structures), Endodontics (root canals), Oral and Maxillofacial Surgery etc. Most participants had been practicing dentistry for 5 to 10 years (47.2%), while a smaller fraction had less than 5 years (23.6%) or more than 10 years (29.2%) of experience.

Table 1: Participant Baseline Characteristics

Characteristic	N %
Gender	
Male	35(48.6)
Female	37(51.4)
Qualification	
General Dentist (GD)	41(56.9)
Specialist Dentist (SD)	31(43.1)
Years of Practice	
Less than 5 years	17(23.6)
5 to 10 years	34(47.2)
More than 10 years	21(29.2)

The knowledge levels were assessed using eight indicators, with responses classified as "Correct," "Wrong," or "Not certain." The table 2 below outlines the response distribution for each indicator. The study assessed dentists' knowledge regarding stunting, examining several indicators of understanding labeled K1 through K8. The findings showed a range of correct answers, with the highest accuracy in understanding basic definitions and the relationship with nutrition, and lower accuracy in more specific topics like the influence of maternal oral health on stunting. For K1, concerning the general awareness and definition of stunting, 83.3% responded correctly. K2, which measured knowledge of the correlation between stunting and nutrition,

had 79.2% correct responses. The impact of oral health on stunting (K3) saw 66.7% correctness, while awareness of the connection between maternal oral health and stunting (K4) was lower, with 59.7% correct. Indicators covering specific preventive and risk factors (K5–K8) showed correct responses ranging from 56.9% to 66.6%. These results suggest that dentists are most knowledgeable about foundational aspects of stunting but demonstrate gaps in understanding specific risk factors and maternal health impacts. The overall trend indicates that basic definitions and general nutrition are well understood, while more nuanced aspects, such as the influence of maternal oral health, present opportunities for targeted education.

Table 2: Assessment of Dentists' Knowledge Regarding Stunting

Indicator	Correct (%)	Wrong (%)	Not Certan (%)
Definition of stunting	60 (83.3%)	2 (2.8%)	10 (13.9%)
Correlation with nutrition	57 (79.2%)	5 (6.9%)	10 (13.9%)
Impact of oral health on stunting	48 (66.7%)	4 (5.6%)	20 (27.8%)
Maternal oral health's effect	43 (59.7%)	5 (6.9%)	24 (33.3%)
Preventive measures	44 (66.7%)	8 (11.1%)	20 (27.8%)
Risk factors	42 (58.3%)	5 (6.9%)	25 (34.7%)
Connection with child development	41 (56.9%)	8 (11.1%)	23 (31.9%)
Preventive strategies	48 (66.6%)	3 (4.2%)	21 (29.2%)

Perceptions of dentists regarding their role in stunting prevention were also examined. Responses were categorized by levels of agreement with key statements related to stunting prevention can be seen in table 3. It outlines the levels of agreement for perceptions about the role of dentists in stunting prevention, indicating that while there is general agreement on the importance of involvement, significant portions of participants remain uncertain about specific aspects, such as dietary education and ANC.

Regarding the statement about the importance of dentists' involvement in reducing stunting, 25% of participants "totally agreed," while 31.9% agreed, and 22.2% were unsure. This highlights some

ambiguity about the dentist's role in stunting prevention. For the perception that providing dietary education is essential for preventing stunting, 20.8% of participants "totally agreed," while 30.6% agreed; however, 22.2% were unsure, suggesting that some dentists may not fully recognize the connection between nutrition and stunting prevention. Active participation in antenatal care (ANC) received less agreement, with only 19.4% "totally agreeing" and 25% uncertain about their role in this area. Additionally, 31.9% "totally agreed" that stunting in children is related to maternal oral health behaviors, but 13.9% were unsure. These findings point to varying degrees of confidence and clarity regarding dentists' roles in stunting prevention, particularly in areas like antenatal care.

Table 3: Perception of Dentists on Stunting Prevention

Statement	Totally Agree (%)	Agree (%)	Enough Agree (%)	Not Sure (%)	Absolutely Not Agree (%)
Dentists' role in reducing stunting	18 (25.0%)	23(31.9%)	9(12.5%)	16(22.2%)	6 (8.3%)
Need for active role in stunting prevention	16(22.2%)	20(27.8%)	17(23.6%)	12(16.7%)	7 (9.7%)
Contribution to antenatal care (ANC)	14(19.4%)	21(29.2%)	12(16.7%)	18(25.0%)	7 (9.7%)
Diet education for oral health & stunting	15(20.8%)	22(30.6%)	11(15.3%)	16(22.2%)	8 (11.1%)
Healthy teeth and mouth behavior prevent stunting	29(40.3%)	14(19.4%)	16(22.2%)	9(12.5%)	4 (5.6%)
Stunting relates to child's oral health through maternal behavior	23 (31.9%)	18 (25.0%)	17 (23.6%)	10 (13.9%)	4 (5.6%)
Prevention of early childhood caries and stunting support each other	27 (37.5%)	13 (18.1%)	14 (19.4%)	14 (19.4%)	4 (5.6%)

Finally, dentists' views on preventive actions to combat stunting were assessed, revealing supportive attitudes toward providing nutritional advice and promoting healthy eating habits. However, some responses indicated uncertainty about the relevance of these interventions as shown in table 4. For instance, 41.7% "totally agreed" that providing nutritional advice is crucial for stunting prevention and 19.4% agreed, yet 12.5% were unsure. Promoting healthy food was similarly viewed positively, with 40.3% "totally agreeing" and 22.2%

agreeing, though 11.1% expressed uncertainty. Support for promoting clean and healthy lifestyles as a preventive measure received similar levels of agreement, with 36.1% "totally agreeing" and 29.2% agreeing. It suggest that while dentists are generally supportive of preventive actions against stunting, there remains variability in confidence and understanding about specific strategies, underscoring the potential benefit of further education and training focused on the dentist's role in preventive care related to stunting.

Table 4: Preventive Actions to Combat Stunting

Statement	Totally Agree (%)	Agree (%)	Enough Agree (%)	Not Sure (%)	Absolutely Not Agree (%)
Providing nutritional advice for stunting prevention	30 (41.7%)	14 (19.4%)	13 (18.1%)	9 (12.5%)	6 (8.3%)
Active promotion of healthy food importance for stunting prevention	29 (40.3%)	16 (22.2%)	15 (20.8%)	8 (11.1%)	4 (5.6%)
Stunting prevention by adopting a clean and healthy lifestyle	26 (36.1%)	21 (29.2%)	9 (12.5%)	12 (16.7%)	4 (5.6%)

DISCUSSION

Growth stunting, characterized by impaired growth and development, remains a pressing public health challenge globally. The findings of this study provide insight into the knowledge and perceptions of oral health practitioners regarding growth stunting and its prevention, particularly in the context of its implications for oral health and overall child development. The discussion centers on the implications of the results, comparisons with existing literature, and recommendations for integrating oral health into stunting prevention strategies.

The study revealed that a majority of dentists exhibited good knowledge of growth stunting and its prevention, with 76–100% scoring within the "good knowledge" category [13]. This aligns with global trends indicating that healthcare professionals are increasingly aware of stunting as a multifaceted issue affecting child health. However, knowledge gaps were observed in specific areas, such as the correlation between maternal oral health and growth stunting, where correct responses were notably lower [14]. These findings resonate with previous studies, such as Nugraha et al., which highlighted limited awareness among health workers about the impact of maternal oral health on fetal and child development. The observed gaps underscore the need for targeted educational interventions. Stunting is influenced by maternal health during pregnancy, including oral health status. Poor oral health, particularly periodontitis, has been associated with adverse pregnancy outcomes, such as preeclampsia and low birth weight, both of which are precursors to stunting. Addressing these knowledge gaps could empower dentists to play a proactive role in prenatal care and maternal health counseling [15,16].

Perception analysis indicated a positive inclination among dentists toward their role in stunting prevention, with most participants recognizing the importance of oral health in addressing nutritional deficiencies. However, uncertainty was evident in areas such as dietary counseling and contributions to antenatal care. This aligns with findings from studies in Egypt, where health workers demonstrated

good knowledge but less confidence in their roles in integrated health strategies. The relatively lower confidence in participating in antenatal care may reflect a lack of interdisciplinary collaboration and insufficient training in non-dental health aspects [17].

The study reinforces the critical interplay between oral health and stunting. Dental caries, enamel hypoplasia, and salivary dysfunction commonly seen in malnourished children compromise nutritional intake, exacerbating stunting. Similarly, stunting-related nutritional deficiencies impair oral health, creating a cyclical relationship. These findings emphasize the need for dentists to incorporate nutritional assessments into routine oral health evaluations, particularly for children in high-risk populations [18].

Dentists, as key frontline healthcare professionals, play an essential role in public health, particularly in the prevention of childhood stunting. Their position allows them to contribute significantly to early detection and intervention efforts. One critical area is dietary counseling, where dentists can provide mothers and children with vital guidance on nutrition and oral hygiene addressing both immediate dietary issues and long-term nutritional deficiencies. Additionally, integrating dental care with primary healthcare services enhances the overall impact of stunting prevention. Collaboration between dentists, pediatricians, nutritionists, and other health professionals helps develop and implement comprehensive strategies tailored to the needs of vulnerable populations. Community outreach is another avenue where dentists can make a substantial impact. Public health campaigns that highlight the connection between oral health and stunting can raise awareness and promote preventive behaviors within communities at risk. The Government of Indonesia's policy under Permenkes RI no. 39 of 2016 is a commendable example, where dentists are actively involved in stunting prevention through early screening and intervention during the crucial first 1,000 days of a child's life. This integrated approach offers a valuable model that can be adapted

and implemented in Pakistan and other countries facing similar public health challenges [19]. To ensure the impact of this study reaches beyond academic circles, it is essential to disseminate the findings to both the oral health community and public health policymakers. This can be achieved through workshops, seminars, and continued professional education programs for dental practitioners. Additionally, presenting the results to health authorities and policymakers can help advocate for the inclusion of oral health in national nutrition and child health policies. Collaborations with professional dental associations, health ministries, and public health organizations will be critical to translating these insights into practical, community-level interventions that support child growth and development [20].

The findings of this study suggest a need for continuous professional development programs to address identified knowledge gaps. Workshops and training sessions focused on maternal and child oral health, as well as interdisciplinary collaboration, could enhance the capacity of dentists to contribute to stunting prevention. Further research is needed to explore the impact of these interventions on stunting rates and child health outcomes. Additionally, expanding the scope of research to include diverse geographical regions and healthcare settings could provide a more comprehensive understanding of dentists' roles in stunting prevention.

Limitations

While this study provides valuable insights, its findings are limited by the relatively small sample size and geographical scope. Future studies should aim to include a larger and more diverse population to enhance generalizability. Moreover, qualitative research exploring the perspectives of dentists could provide deeper insights into the barriers and facilitators to their involvement in stunting prevention.

CONCLUSION

Dentists show strong knowledge of basic stunting concepts and nutrition links, but have notable gaps

in understanding specific risk factors and the impact of maternal oral health. By bridging knowledge gaps and enhancing interdisciplinary collaboration, dentists can significantly contribute to reducing stunting prevalence and improving child health outcomes. Continued efforts to integrate oral health into public health frameworks will be essential in combating this complex and multifaceted issue.

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Authors' Contribution

NS, SF: Concept, design, interpretation of data, final approval of manuscript and responsible for integrity of research

QS, SB, TS, & AZ: Collected and managed the data, wrote and edited the manuscript

TS: Tabulated the data, wrote the manuscript and finalizing the draft

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