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Systematic Review on Oral Health Knowledge, Practice and Attitude in Pakistan

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Abstract

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Background: The term "oral health" describes the state of the mouth's defence against ailments that affect the oral cavity, such as tooth decay, periodontal disease, cancer of the mouth and throat, facial discomfort, and ulcers. Oral cleanliness, tobacco usage, alcohol consumption, and general diet are the main contributors to oral health issues and illnesses. The most significant advantage of maintaining proper dental hygiene is the prevention of diseases. In Pakistan, dental health is not given much priority. The aim of this systematic review is to thoroughly examine and summaries the body of research on Pakistani people's attitudes, practices, and knowledge on oral health. The study aims to identify knowledge gaps, offer a thorough review of the existing situation regarding oral health awareness, habits, and attitudes, and indicate possible areas for development. **Methods**: This thorough systematic review, which adheres closely to PRISMA principles, examines all cross-sectional studies examining the gaps in oral health knowledge, practice, and attitude in Pakistan. Several databases such as Medline, ProQuest Central, Web of Science, and Scopus were used and past and current reviews on the same subject were looked in the Cochrane Database of Systematic Reviews. Selected papers were meta-synthesized to produce results that were both statistically sound and strong. **Results**: The findings reveal that there are differences in the population's knowledge about oral health, certain groups with low socio-economic status showing less understanding of preventive and good oral hygiene habits. **Conclusion**: This review highlights the need for all-encompassing strategies that account for differences in geography, culture, and socioeconomic disparities by placing the findings in a broader literary context. To improve oral health outcomes across the country, specific public health campaigns, educational programmes, and policy measures are crucial given the knowledge gaps and practice discrepancies that have been discovered. By addressing these problems, we can improve people's general health and lessen the prevalence of oral disorders in Pakistan.

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Keywords: Oral Health; Systematic review; Oral Health; Pakistan; Knowledge; Practice; Attitude

Introduction

As a crucial component of overall health, oral health refers to a condition that protects the mouth from conditions including face discomfort, ulcers, oral and throat cancer, birth deformities like cleft lip and cleft palate, gum (periodontal) disease, tooth loss, decay, and other conditions that impact the oral cavity. The primary causes of oral health problems and disorders are oral hygiene, tobacco, alcohol, and overall diet (Scaglia and Niknamdeh, 2017). According to Zahid et al. (Zahid, et al., 2014), the primary causes of oral cancer in poorer nations are poor socioeconomic position, chewing tobacco, betel nut, tobacco, alcohol usage, smoking, inadequate healthcare infrastructure and low literacy rates. The most crucial aspect of oral hygiene is the prevention of diseases including dental caries, poor breath, periodontal disease, and plaque, which creates a sticky film of germs and food on teeth (KABIR and GUL, 2013). Oral health problems are a major global concern for both developing and industrialized nations (Baloch, Panezai and Murtaza, 2021). A study found that the prevalence of Dental Caries in Pakistan`s school-age children is 80–90% (Dawani, et al., 2012; Ali, et al., 2012), It is also found that about 90% of Pakistan's adult population is affected by periodontal disease (Basharat and Shaikh, 2016). Restricted Access to Care and lack of awareness are other factors which make the oral health a great concern in Pakistan (Basharat and Shaikh, 2016).

Karim et al. AJPHN 2024; 1 (X): - http://doi.org/10.62377/qhd8wn77

Poor dental health has a significant influence on day-to-day lifestyle due to the accompanying difficulties, and it is a significant health and financial burden in the long run (World Health Organization, 2003). Delayed interventions in younger individuals may cause problems (Wu, et al., 2000). Early childhood oral health awareness and hygienic practices are heavily impacted by carers. Mattos and colleagues (Wu, et al., 2000), suggested that pediatric dentists should urge the carers of the children to get advice and dental treatment annually. In a study it was found that sixty-two percent of teaching staff do not have the knowledge of dental decay (Dawani, Afaq and Bilal, 2013). Pakistan places less emphasis on oral health. In research conducted by Vakani F, Basaria N, et al (Vakani, Basaria and Katpar, 2011) in Karachi, it was shown that the mean of DMFT was 1.27, indicating poor oral hygiene practices (Vakani, Basaria and Katpar, 2011), leaving a major gap in oral disease care, with 90% of lesions never being treated. Oral hygiene found to be associated with population socioeconomic status and literacy levels (Iqbal, et al., 2014). The way one feels, knows, and practices oral hygiene is crucial to sustaining good oral health. Regional KAP (knowledge, attitude, and practice) analyses paint an incredibly bleak picture (Aslam, 2005).

The most common dental problem in children was dental caries (Kwan, et al., 2005). The discomfort from tooth decay made it difficult to do basic everyday tasks including eating, sleeping, speaking, learning, playing, and going to school. Various studies on the prevalence of caries in children across the world have been carried out, and practically all of them have found significant prevalence of caries (Farooqi, et al., 2015). Schools are a great setting for promoting oral health since there are more than 1 billion students enrolled worldwide (Kwan, et al., 2005). Childhood is the most formative time in a person's life and is when beliefs, attitudes, and practice are formed that last a lifetime, oral health message may be reinforced during this time.

Pakistan is a developing nation with various oral health issues. Most dentists are employed by the government, which also serves as the population's primary source of access to low-cost oral healthcare (Basharat and Shaikh, 2016). Early in childhood, oral health practices are developed. The development of healthy habits in pupils can be greatly aided by the schoolteachers (Perry, Mullis and Maile, 1985). The teachers themselves must be knowledgeable about oral health and have a positive attitude towards it to develop healthy preventative dental practices. There have been studies on the preventive knowledge and attitudes of intermediate and high school teachers, but there have been few studies on the incidence of dental caries and the prevention knowledge, attitudes, and practices of schoolteachers in Pakistan's Northwest.

To date, no systematic study has been carried out to summarize the findings that can be used to better advice health measures by focusing on parts of Pakistan's impoverished nation. This review is being undertaken to effectively generate information on Pakistan's oral health concepts, practice, and behaviours. By pointing out existing knowledge gaps, it may emphasize the need for more research to focus on specific intervention areas. It's true that this is an emerging public health concern in low- and middle-income nations like Pakistan.

Rationale

A systematic assessment of oral health knowledge, practice, and attitudes in Pakistan accomplishes numerous key goals.

- The review's findings can help in the design and execution of oral health education programs.
- Systematic evaluations can aid in identifying discrepancies in oral health knowledge among Pakistan's various demographic groups.
- The review can identify practices that are successful in improving oral health and preventing oral illnesses by analyzing the available literature on oral health practices in Pakistan. This data can help health care providers and policymakers recommend evidence-based practices.

Aim and Objective

The systematic review is aimed and proposed to examine current knowledge, practices, and attitudes on oral health in Pakistan. The goal is to identify trends, gaps, and viable interventions to promote oral health knowledge and care across the country by synthesizing existing research.

Method

This review included qualitative, quantitative and cross-sectional observational studies conducted in Pakistan. The Preferred reporting items for systematic reviews and meta-analysis (PRISMA) guideline 2020 (Page, et al., 2021), was used as the foundation for reporting the findings in this systematic review, which was carried out with the construction of a protocol, followed by an electronic literature search. (Table 1)

Karim et al. AJPHN 2024; 1 (X): - http://doi.org/10.62377/qhd8wn77

Research Question: SPIDER
Sample (S): Sample is different professionals
Phenomenon of interest (PI): phenomenon of interest PI is oral health
Design (D): is questionnaire survey, interview, and Focus groups
Evaluation (E): knowledge, practice and attitude
Research type(R): either qualitative, quantitative or mix methods

Database	Search terms/Boolean Operators
ProQuest	*Oral health* OR *Dental Health* OR *Oral Hygiene* OR *Dental Hygiene* OR *Oral Care* AND *Pakistan* AND *Knowledge* OR *Practice* OR *Belief* OR *Understanding*
Medline	*Oral health* OR *Dental Health* OR *Oral Hygiene* OR *Dental Hygiene* OR *Oral Care* AND *Pakistan* AND *Knowledge* OR *Practice* OR *Belief* OR *Understanding*
PubMed	*Oral health* OR *Dental Health* OR *Oral Hygiene* OR *Dental Hygiene* OR *Oral Care* AND *Pakistan* AND *Knowledge* OR *Practice* OR *Belief* OR *Understanding*

Table 1 Literature Search

To identify distinct articles, thorough research of the available studies was undertaken using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards for systematic reviews. To prevent missing key research and to reduce bias, the literature search was conducted using several databases. Digital databases (Medline, ProQuest Central, Web of Science, Scopus, and Google Scholar (first 5 pages)) were searched between January 2013 and December 2022 for publications on Pakistan's oral health. Because of their applicability, the SPIDER search strategy tools (Sample, Phenomenon of Interest, Design, Evaluation, and Research type) were utilized to find the keywords. Boolean operators were used to get more specified results, and articles were indexed using the MeSH browser.

Inclusion/Exclusion Criteria

Review includes primary research conducted in Pakistan`s children and teenagers between the ages of 12 and 18. The research ought to have investigated at least one or more aspects of oral health-related knowledge, practices, behaviours, attitudes, beliefs, or understandings. The design of study was not the constraint so Studies that had both quantitative and qualitative elements, such as mixed studies, were also acceptable. Elderly people and pregnant women were not included in this review. Also, those studies, publications or journals are not considered that have been published in language other than English.

The search limits were applied and the publications that surfaced were initially examined for research. In the next step, the further screening was done based on title of the review. These were restricted to information gathered through questionnaires, surveys, focus groups, and interviews. Fourteen (14) publications were initially chosen for the fourth step after their full-text articles had been scanned for participant data on oral health knowledge, practice, and attitude in Pakistan.

Articles about oral health that offered minimal or unfocused information were eliminated. Eight research were chosen for the critical appraisal stage following the application of the inclusion and exclusion criteria.

Karim et al. AJPHN 2024; 1 (X): - http://doi.org/10.62377/qhd8wn77

Prisma Flow Diagram:

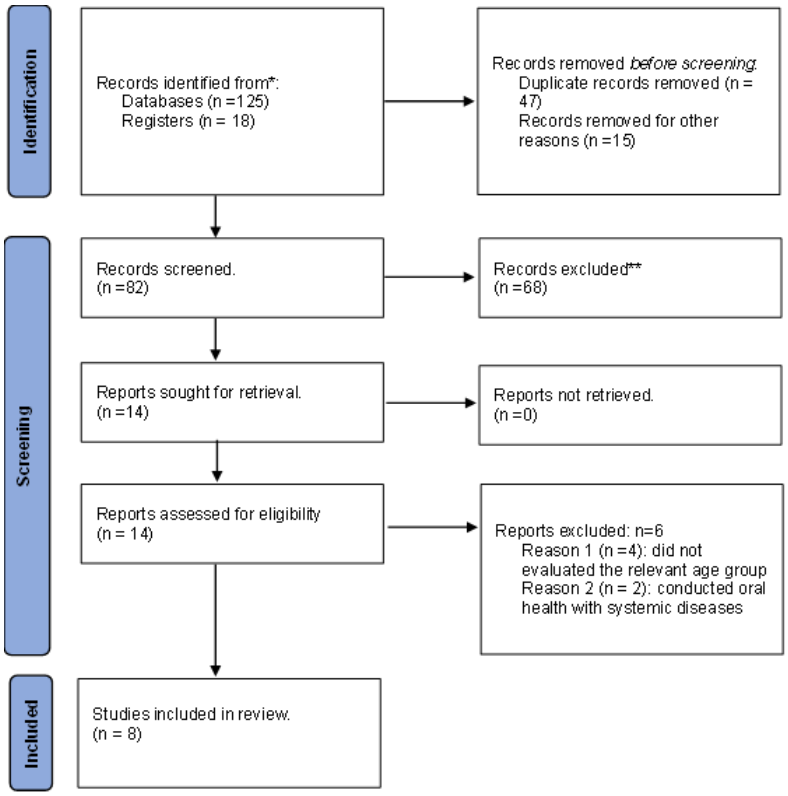

Figure 1 : Prisma 2020 Flow Diagram

Retrieval of data

The data was retrieved from all the included papers. The following information was taken from each study: name of author, the year of publication, type of study (qualitative or quantitative), study population, country of study, and information about the participants, research methods, and results for the Pakistan study. Meta synthesis was done in this review because the data included from mix method studies so the meta-analysis was not possible.

The eight studies were evaluated critically to determine their methodological merits, weaknesses, and findings' dependability. It was also checked to determine if the studies were well-planned, carried out, and published as well as if they addressed the problem raised by the systematic review. The Appraisal Instrument for Cross-Sectional Studies (AXIS), which was developed specifically for the evaluation of this type of design, was used to assess the studies (Downes, et al., 2016). By removing publications with ethical problems, the review's ethical and methodological quality was strengthened. This review also contains an ethical evaluation.

The inclusion of ethical assessment in this review aimed to enhance ethical standards by filtering out articles that displayed clear ethical shortcomings and steering clear of them. Six papers were included in the evaluation because of the critical and ethical assessment. Two papers were removed from this systematic review due to low internal validity, which impacts the dependability of the results.

Results

The systematic review includes six studies conducted primarily in different areas of Pakistan. These include Sheikhupura, Mardan, Abbottabad, Azad jamu Kashmir, Mastang district Balochistan and Northwest of Pakistan. Mostly the studies are conducted in low-middle income population and the targeted population were schools or other educational institutes. The sample size varies from 300 to 1000 and it includes children and teenagers. All the conducted primary studies were cross sectional, where data was gathered using a self-administered questionnaire, a face-to-face interview, or audio computer-assisted self-interviews. The data retrieved from the research was self-reported by the study`s participants and is presented in Table 2.

References	Study design and Methodology	Context	Sample Size	Aim is specific	Aim of Study	Source of Information	Key findings	Limitations
(Chand and Hadyait, 2014)	Cross-sectional, stratified random sampling	Rural and urban areas of District Sheikhupura, Pakistan	400 Students	Yes	Access the KAP among 6th and 8th grade students.	The students which were present on the day of survey	Primary reason for using dental services was to relieve discomfort. Significant gender disparities were discovered where girls outperformed boys.	Inability to generalise this study's findings to the general population.
(Mehmood, Rasheed and Ijaz, 2018)	Cross-sectional, random sampling methods	Azad Kashmir, Pakistan	Out of 1000 questionnaire 400 returned.	Yes	Determine the KAP of secondary school going children.	Participants of secondary school.	The Independence of teenagers should increase by reducing their dependency on their parents.	
(Baloch, Panezai and Murtaza, 2021)	Cross-sectional	Mastang district, Balochistan	400 students of 9th and 10th grade	yes	To access the KAP among the local schools students in Mastang	9th and 10th grade students of schools	The survey discovered that overall, students had insufficient information, with female students having lower understanding of oral health than male students.	Generalising the conclusions with caution. As there are lack of oral health services in rural Balochistan.
(Bhatti and Malik, 2019)	Cross-sectional study, random sampling	North West of Pakistan	1800 children of 12 schools of urban area randomly selected	yes	To measure the rate of dental caries in children based in Pakistan's northwest region and attitudes towards dental care.	The participants of the school.	The DMFT of the participants was only 1.75 which is less than the international data.	The use of the DMFT index instead of the SIC and other Indices.
(Noor, et al., 2022)	Cross-sectional, random sampling	Abbottabad, Pakistan	375 children	Yes	It aimed to compare oral health behaviours among medical students, gender disparities, and cultural variations.	The students of medical college	87.3% of participants did not see the dentist unless they had a dental problem, which was significantly high.	
(Iqbal, et al., 2014)	Cross-sectional	Mardan, Pakistan	80 students of 6th grade	yes	Access the KAP among the children of age11 to 13 years old		75% never seen a dentist, 18% did not feel it important, and 12% self-medicate. 58% of those polled in the survey washed their teeth once daily.	Financial restriction, which eventually leads to a restricted number of sample size.

Table 2: Data Extraction

Oral Health Knowledge

The analysed review revealed a wide variety of oral health knowledge levels among Pakistan`s community. While some people had a strong understanding of fundamental oral hygiene, there were major gaps in knowledge about the necessity of frequent dental check-ups, the use of fluoride, and the relationship between oral health and overall health. One study depicts that the 97% of the sample size are aware of the brushing while only 13% students have the knowledge that soft drinks are harmful for the teeth (Mehmood, Rasheed and Ijaz, 2018).

Higher education and income levels were associated with improved oral health awareness, indicating socioeconomic differences. One of the studies conducted in Sheikhupura shows that less than 50% students have knowledge about the oral health while, parental education and family income were found statistically significant factors in this report (Chand and Hadyait, 2014). The Mardan student's statistical findings show that 60% of the students have no knowledge about the oral health (Iqbal, et al., 2014). In another study conducted in schools of Northwest of Pakistan, the overall prevalence of DMFT was found 1.75 which is very less. Cultural norms also found significant, and this is found in areas where traditional values are still practiced. For example, the study conducted in Mastang showed that the percentage of knowledge in male students is 30% more than the female students which is probably because of their socializing factor (Baloch, Panezai and Murtaza, 2021).

Attitude

Cultural views, financial level, and access to healthcare all had an impact on attitudes towards oral health. When compared to other health concerns, some people ranked oral health as a low priority. Dental visits were generally regarded as a last choice, particularly when enduring pain or discomfort. Stigmatization of dental disorders and a lack of understanding about preventive treatments were cited as barriers to obtaining early dental care (Barker and Horton, 2008). By inquiring in one of the studies conducted in Kashmir about their ratio of visiting the dentist it is found that only 51% of students visits the dentist at the time of tooth ache while only 3% students' regular visits the dentist (Mehmood, Rasheed and Ijaz, 2018). The same percentage was observed in the students of Mastang, where almost 52% of sample size visits the doctor only in case of pain and more than 50% brush once in a day (Baloch, Panezai and Murtaza, 2021).

This percentage is better than the students of Northwest of Pakistan where 82% of the sample size never visited the doctor while, their brushing habits are like the study conducted in Mustang (Bhatti and Malik, 2019). The

Karim et al. AJPHN 2024; 1 (X): - http://doi.org/10.62377/qhd8wn77

statistical data of the students of Mardan shows that 75% never visited the doctor and 13 % of students didn't find it worthy to visit a dentist (Iqbal, et al., 2014). The cultural norms and traditional values also impact a lot in visiting the dentist. From the results it is found that the trend of visiting the dentist is less where the old traditions are still followed.

Practice

Oral hygiene practices vary greatly across demographic groupings. While a sizable number of the population found to use brush on their teeth regularly, the frequency and manner were frequently inconsistent with prescribed norms. Misconceptions regarding how to use dental floss, mouthwash, and toothpaste were common. Furthermore, restricted access to dental care services in some areas prevented people from seeking treatment for oral health problems on time.

Tooth brushing and its frequency have been documented in five researches (Baloch, Panezai and Murtaza, 2021; Mehmood, Rasheed and Ijaz, 2018; Chand and Hadyait, 2014; Bhatti and Malik, 2019; Noor, et al., 2022, three of which revealed tooth brushing as a common practice among students (Baloch, Panezai and Murtaza, 2021; Mehmood, Rasheed and Ijaz, 2018; Chand and Hadyait, 2014). However, the frequency with which teeth were brushed varied. In one study, a larger proportion of female students reported not cleaning their teeth (Iqbal, et al., 2014). Those who were in secondary school were more likely to wash their teeth on a regular basis, but those in the primary section did not, probably due to lack of knowledge and awareness (Noor, et al., 2022).

In addition to brushing, flossing was mentioned in two studies (Baloch, Panezai and Murtaza, 2021; Mehmood, Rasheed and Ijaz, 2018.) In one study, nearly 80% of the sample size reported flossing (Baloch, Panezai and Murtaza, 2021), while 20% reported never flossing. Most studies show a decrease in dental visits. Given that most studies found that seeing a dentist in the absence of symptoms was unusual, parental education was identified as a factor of dental care.

Discussion

The systematic review of primary research undertaken in Pakistan throws light on the complex landscape of oral health knowledge, practice, and attitude among various sectors of the population. The review situates the findings within the larger literature, highlighting regional differences and suggesting major policy and practice implications.

Oral hygiene is one of the most important health factors in underdeveloped countries, according to convincing evidence (Kandelman, Petersen and Ueda, 2008). Repeated KAP studies are therefore strongly advised to monitor trends; nevertheless, a reliable and culturally appropriate questionnaire is one of the major prerequisites.

Disparities in Oral Health Knowledge

The review's integration of studies completed throughout Pakistan sheds light on the ongoing discrepancies in oral health knowledge between urban and rural communities. Urban areas, in line with worldwide trends, have higher levels of oral health awareness due to increased access to education and healthcare facilities (Chand and Hadyait, 2014). Variations in oral health knowledge among various areas of Pakistan parallel global tendencies. The current review's findings from Baluchistan, Mardan, Abbotabad, Azad Kashmir, and the northwest are consistent with larger research that shows that metropolitan areas have higher oral health knowledge due to better access to educational resources and healthcare facilities (Iqbal, et al., 2014; Mehmood, Rasheed and Ijaz, 2018; Noor, et al., 2022). Rural areas, on the other hand, have lower levels of knowledge, owing to difficulties in communicating oral health information to isolated and neglected people (Baloch, Panezai and Murtaza, 2021).

However, it is critical to emphasize that, while metropolitan regions may have higher levels of knowledge, this does not imply universal understanding. Efforts to eliminate rural-urban gaps should continue to be a top priority, with targeted interventions ensuring equitable access to oral health education and information (Rahman, et al., 2011).

Above all, the cultural and traditional norms act as integral pillar for shaping up the practices around oral health needs. Moreover, in one of the studies male students were found more well-informed than female students, because in Pakistan the girls are not allowed to socialize more frequently (Baloch, Panezai and Murtaza, 2021). In parallel teachers' role can't be denied, in one study the teachers answered all questions correctly (Bhatti and Malik, 2019). This depicts that a teacher`s guidance to its pupils is very crucial about the importance of oral health and can yield better results.

Karim et al. AJPHN 2024; 1 (X): - http://doi.org/10.62377/qhd8wn77

Cultural Factors and the Practice Gap

The review reveals a significant gap between oral health knowledge and practice, demonstrating a complex interaction of factors that impedes translation of awareness into action. This phenomenon is not specific to Pakistan, but it is felt globally, highlighting the complex task of creating behavioral change.

Cultural norms and socioeconomic restrictions play a key role in this disparity, as evidenced by results from various primary studies conducted in Pakistan. Lessons from various global contexts demonstrate that effective interventions must go beyond simply disseminating knowledge. Instead, they should concentrate on targeted approaches that overcome contextual barriers, use social influence, and encourage individuals to adopt long-term oral health practices. The cultural variables affecting this gap are especially notable in areas such as Azad Kashmir and the northwest, where traditional practices and societal norms may influence oral health behaviors (Mehmood, Rasheed and Ijaz, 2018; Bhatti and Malik, 2019).

Although most of the Pakistan`s population recognize the value of dental hygiene practices such as brushing and flossing but adherence to these practices varies. Individuals are more likely to follow prescribed oral hygiene habits in metropolitan regions and among educated groups. Traditional practices, on the other hand, may be more widespread in rural and less educated areas (Chand and Hadyait, 2014). Other studies (Honkala, et al., 2002; Salwa, 2003) have revealed that girls clean their teeth more regularly and spend more time brushing their teeth than boys. This might be owing to the reason that girls consume sugary food more than boys. According to the studies, girls prefer sweet foods, whereas boys prefer quick foods and snacks with higher fat and salt content (Oogarah-Pratap, 2007). Other than 3 sweets, carbonated beverages were reported to be the most popular among respondents, with the majority claiming to drink them and 49% doing so at least once per day (Mehmood, Rasheed and Ijaz, 2018).

Lack of Preventive Care

Many people in Pakistan do not receive preventive dental care, such as regular check-ups and cleanings. Dental checkups are frequently made in response to a specific condition rather than as part of routine care. Traditional treatments for dental problems are still used in some locations. This could be due to a lack of contemporary dental care or cultural preferences. However, while some traditional cures may provide temporary comfort, they may not address the underlying cause of tooth problems (Baloch, Panezai and Murtaza, 2021).

Attitude

The data found that checkup visits to dentists were rated as significant. They also stated that dental appointments are only necessary when teeth pain occurs, and that scary injections, pain, infection, long queue time, cost, and a lack of a clinic nearby were the main reasons they were hesitant to attend dentists (Noor, et al., 2022).

Early oral education in children reduced dental anxiety and improved long-term dental follow-up (Nicolas, et al., 2007). A study conducted in one of the primary schools of California found that carers had a significant influence on their children's dental health and early access to dental clinics. The results can be justified by the fact that the teenagers when became independent then they do not want anyone to intervene in their routine. Dentists play an important role in raising and distributing knowledge about oral disease prevention. However, because to the restricted number of dentists available to serve patients, the quality time which can be spent by the dentists with each patient is a constraint. As a result, dentists should not be solely responsible for educating patients about oral health. Delays in seeking dental care could be linked to a variety of circumstances, including a lack of financial resources and access to dental services (Barker and Horton, 2008).

The systematic review emphasizes the importance of schools as important platforms for oral health education. Across areas, data consistently show that school-based programs have a significant impact on improving oral health knowledge and nurturing positive attitudes. This is consistent with global policies that urge for the addition of oral health education in the syllabus. Policymakers as well as the educators in Pakistan can learn from successful efforts in other countries that use schools to promote health. Engaging teachers and parents in raising awareness and enforcing oral health practices can also increase the reach and effectiveness of school-based programs.

Strengths and Limitations

The Strengths of this review include**: Comprehensive Synthesis:** The systematic review presents a comprehensive synthesis of primary research undertaken in several regions of Pakistan, including Baluchistan, Mardan, Abbotabad, Azad Kashmir, and the northwest. This depth of coverage increases the generalizability of

the findings and provides a more comprehensive view of the country's oral health environment. **Evidence-Based Insights**: The review presents evidence-based insights about oral health knowledge, practice, and attitude among various sectors of the population by systematically analyzing and synthesizing a varied range of primary research papers. This empirical basis reinforces the review's conclusions and recommendations. **Contextualization:** The review effectively contextualizes its findings within the larger body of oral health literature. The review improves our understanding of how oral health behaviors and attitudes in Pakistan fit into the larger global picture by comparing the results from Pakistan with global trends and similar studies in other countries. **Regional variances**: By including studies from several regions of Pakistan, the review can highlight regional nuances and variances in oral health knowledge, practice, and attitude. This granularity allows for more targeted actions and policy development that can address the individual needs of diverse places. **Implications for Policy and Practice**: In addition to summarizing research findings, the study draws practical implications for policy and practice. The research gives actionable recommendations that might guide future endeavors to promote oral health in Pakistan by recognizing the role of schools, the influence of cultural norms, and the necessity for targeted interventions.

The limitations of this review includes**: Publication Bias**: Because studies with favorable or statistically significant results are more likely to be published, the review's findings may be influenced by publication bias. This bias may have an impact on the overall portrayal of the oral health landscape in Pakistan, potentially leading to an overestimation of intervention effectiveness. **Heterogeneity of Studies**: The original research studies included in the review may have used varied techniques, sample sizes, and measurement instruments. This variety may make direct comparison and synthesis of the results difficult, thereby impacting the robustness of the review's conclusions. **Access to Research**: The review's breadth may be limited due to difficulties in obtaining all relevant original research studies. Language difficulties, limited access to databases, and differences in research dissemination may result in the omission of valuable studies, potentially impacting the comprehensiveness of the review. **Cultural Context:** While the evaluation acknowledges the importance of cultural norms on oral health knowledge and practices, it may not fully represent the depth and complexity of these cultural elements. Cultural effects may be interpreted differently, and a more in-depth qualitative investigation may be required to completely comprehend their impact. **Temporal Dynamics**: The review's findings may reflect the oral health landscape prior to the inclusion of the original research studies. Given the ever-changing nature of healthcare and socioeconomic issues, the review may not fully reflect recent changes in oral health knowledge, practice, and attitude.

Conclusion

The systematic evaluation of primary research undertaken in Pakistan emphasizes the complexities of oral health knowledge, practice, and attitude. This discussion emphasizes the necessity for comprehensive solutions that recognize geographical variances, cultural effects, and socioeconomic inequities by contextualizing the findings within the broader literature. The review's findings can help policymakers, stakeholders, educators, healthcare professionals, and researchers work together to create evidence-based strategies that bridge gaps, raise awareness, and empower people to prioritize and maintain optimal oral health throughout their lives.

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