

A Comprehensive Review Of Integrating Oral Health Into Nursing Protocols: Bridging Dentistry And General Patient Care

Abdulaziz Mohammed Bushnaq¹, Mohammed Aqeel Alshammari², Majed Abdulhafeez Nawwab³, Ayedh Bakhit Al Ghamdi⁴, Mohammed Zaben Bas Alshammari⁵, Abdulla Hameed Alshammari⁶, Nawal Alsaddi Alenazi⁷, Abdulwhahab Omar Ayadh Alosaimi⁸, Suliman Muqhim Almuqhim⁹, Mashael Marzooq Mohammed Alali¹⁰

¹.Ministry of Health, Saudi Arabia

².Ministry of Health, Saudi Arabia

³.Ministry of Health, Saudi Arabia

⁴.Ministry of Health, Saudi Arabia

⁵.Ministry of Health, Saudi Arabia

⁶.Ministry of Health, Saudi Arabia

⁷.Ministry of Health, Saudi Arabia

⁸.Ministry of Health, Saudi Arabia

⁹.Ministry of Health, Saudi Arabia

¹⁰. KSMC hospital (T1A4) , Saudi Arabia

ABSTRACT

Incorporating oral health into nursing practices is a crucial approach in bridging dentistry with the rest of the patients in terms of the two-way relationships between oral diseases and systemic diseases such as pneumonia, diabetes, and cardiovascular disease. This is a systematic review that summarizes findings on the effectiveness, advantages, challenges, and implementation of oral health integration at nursing in the past 2020-2024. Based on the 35 studies, the primary results show enhanced nurse knowledge (20-33% after the training) and attitudes, as well as practices, and the decrease in ventilator-associated pneumonia (as high as 62) with standardized protocols. Nevertheless, obstacles like poor training (reported by 50-78% of nurses), lack of time, and resource are still present. Changes in policies and interprofessional education (IPE) are enlisted as facilitators. Illustrations are made to depict adoption patterns and improvement of outcomes. The debate is critical of curriculum weaknesses, and suggestions support the compulsory IPE, standardized instruments, and systemic changes. This integration also promotes holism, which is a key objective of the public health of fewer disparities.

Keywords: Oral health integration, nursing protocols, interprofessional education, oral care barriers, ventilator-associated pneumonia, health literacy, multidisciplinary care, systemic health links

INTRODUCTION

Oral health is an essential part of the overall well-being, yet it is not given the importance it deserves in the context of general care of patients, especially in hospitals. Some of the adverse consequences that are associated with the lack of oral hygiene include aspiration pneumonia among hospitalized and critically ill patients, and the deterioration of chronic illnesses such as

diabetes and cardiovascular disease. Oral diseases impact some 3.5 billion people worldwide, and they are disproportionately represented by vulnerable groups, including older adults, patients in intensive care units, individuals with disabilities, and others (Rojo et al., 2022). These trends underscore the importance of rebranding oral health as part and parcel of holistic healthcare and not as a dental issue.

The nursing professionals are in a better position to close the gap between the dentistry and comprehensive care of the patient due to their uniqueness as the main provider of around the clock care. Nurses can be instrumental in early definition and prevention of oral health-related complications through regular oral check-ups, daily oral hygiene routine, patient education, and patient referral to dental care (Bhagat et al., 2020; Christian et al., 2023). Ensuring the integration of oral health in the nursing practice enhances the patient experience of comfort and dignity, as well as leads to the improved clinical outcomes such as a lower incidence of infections and shorter hospitalization. This service is particularly important in high-risk areas like geriatric wards and ICUs whereby patients are not in a position to take control of their own welfare, and there is a higher likelihood of oral-systemic complications.

Strategic to ensure oral health is effectively integrated into nursing practices are a number of strategies. These are incorporating oral health education in nursing programs, the use of standardized methods of assessment like the HEENOT framework, and the enhancement of the interprofessional relationship between nursing and dental teams. Interprofessional education and practice are able to promote shared responsibility, enhance communication, and decrease care fragmentation. Although the benefits of integrated oral health practices are documented, there is a lack of uniformity in the adoption of oral health practices. The barriers are a lack of oral health content in nursing education, a lack of time in the clinical setting, and persistent professional siloing in dentistry and nursing (Albougami, 2023).

In this review, the author seeks to summarize the latest evidence on how the oral health can be integrated and be part of the nursing care, how implementation techniques and patient outcomes could be assessed and to provide the findings in the form of tables and figures in order to be more clear. It also presents implications on clinical practice, education, and policy and evidence-based recommendations on reform. Basing the review on the research published after 2020, the authors refer to recent developments in interprofessional education, standard guidelines, and interprofessional care models that make oral health a central part of holistic nursing care.

LITERATURE REVIEW

Oral Health Integration in Nursing (2020-2024) Overview.

The literature written in 2020-24 shows an increasing awareness of the need to incorporate oral health in nursing education and practice. There is consistent evidence of gaps in knowledge, skills, and confidence of nurses in oral care, and the growing demands to integrate it structurally with the help of education, protocols, and interprofessional collaboration. Taken together, it can be argued that the understanding of the interconnectedness of oral and systemic health is becoming more widespread, but its application is not as consistent and largely context-specific.

Nursing Knowledge and Attitudes of Nursing Students and Professionals.

The initial activities of this era concentrated greatly on the pre-established knowledge and attitudes. A review of oral health knowledge and perceptions among nursing students by

Bhagat et al. (2020) indicated that they have little knowledge about oral disease prevention and assessment, although their attitude towards oral care is usually positive. Notably, the review revealed that, exposure to interprofessional education (IPE) among dental professionals resulted in quantified knowledge, confidence, and perceived responsibility of oral health. These results strengthened the notion that nursing students are open to the idea of integrating oral health as long as that incorporation is meaningfully placed in their education.

Continuing on this, Albougami (2023) evaluated the oral health literacy of practicing nurses as well as nursing students, with suboptimal baseline scores of between 3.7 to 6.74 out of 22. The authors showed that specific educational interventions led to 20-33 percent gains in knowledge implying that they are deficit-based and not structural. Nonetheless, Albougami also pointed out that oral health education has continued to be inconsistently incorporated into nursing programs, with the result that there has been ongoing disparity in competence levels within settings.

Application and Practice-Based Research.

In addition to education, a number of studies were conducted to investigate the operation of oral care protocols in clinical settings. Li et al. (2024) examined how ICU nursing assistants perceived oral care and found that barriers and facilitators to oral health promotion existed. Barriers that were frequently encountered involved agitation of patients, lack of time, absence of official training and confusion in terms of who was supposed to take care of the oral health. Some of the facilitators involved the use of standardized assessment tools, clear protocols, and managerial support. The researchers stressed the importance of a structured instruction in that ambiguity decreases and oral care practice adherence rises in high-acuity care.

As the implementation-driven studies consistently show, the eradication of inconsistency and quality of oral care can be enhanced with the help of the protocol-driven practice. These researchers indicate that oral health responsibilities can be reported more successfully when they are clearly outlined and backed with the tools and training of nursing personnel, which is likely to provide them with higher chances to deliver preventive care and detect the early signs of oral pathology.

Obstacles and Enablers of Integration.

Multiple reviews summarized reoccurring barriers and facilitators in healthcare systems. According to Niesten et al. (2021), the challenge of deeply compartmentalized healthcare structures was also identified as a significant obstacle because oral health is considered the sole area of dentistry. Integration was further limited by limited incentives, absence of time and institutional support. These were systemic problems that were reflected in various contexts, implying that personal training cannot be done without changing the organization.

Conversely, Christian et al. (2023) identified the following facilitators, which allow successful integration: mandatory training, well-defined referral routes, supportive policies, and a positive attitude of the leader. They revealed their synthesis in the sense that integrated models yielded higher levels of preventive interventions, higher levels of referrals to dental services and higher levels of continuity of care. The authors pointed out that integration works best when oral health is integrated into the everyday nursing practices as opposed to being an optional activity.

Innovations in Education and Interprofessional Dynamics.

The literature that is education-oriented identifies interdisciplinary teaching models that are emerging and not fully used. The study by Rojo et al. (2022) is a scoping review investigating the pedagogical methods of oral health education in non-dental professionals. Although few studies used entirely interdisciplinary instructional techniques, more than half of them used

dental professionals in teaching the curriculum. Such strategies were connected with the enhanced confidence of learners, enhanced clarity of the roles, and increased readiness to perform oral health assessment and referrals. The review revealed a gap between the evidence on the benefits of interprofessional education and the lack of its incorporation into nursing programs. This opening indicates the lack of a chance to make oral health a social responsibility at the beginning of the professional training.

Integration in Primary and Preventive Care Environment.

Despite the abundance of the recent literature on hospitals and education, primary care integration is still topical. Dwiel et al. (2019) conducted a review on the effectiveness of oral health training among primary care providers (such as nurses) and noted an increase in the screening, counseling, and referral aspects. But the strength of conclusions was, however, constrained by heterogeneous study designs and outcome measures. These results are applicable to the latest literature, highlighting the importance of standard evaluation systems to evaluate the results of integration in a similar manner.

Although there is mounting evidence on the use of oral health as an part of nursing practice, there are a number of limitations that still exist. People have frequently reported city bias, small sample sizes, and that most of the studies have been conducted in high-income and especially U.S.-based settings. Pombo-Lopes et al. (2024) pointed out that such a deficit of geographic and contextual diversity precludes the generalizability particularly in low-resource or rural settings. The authors requested more rigorous, longitudinal and internationally differentiated researches to measure long-term results and system-level effects.

Synthesis

In general, the current literature of 2020-24 upholds the concept of the inclusion of oral health education and practice in nursing education and practice as not only possible but also useful. There is evidence that knowledge gaps may be countered by special training, protocols enhance clinical practice and collaboration between professions lead to better outcomes. Nevertheless, to have meaningful integration, systemic reform, and standardization of education and intensive research is needed in order to go beyond pilot projects to attain sustainable and scalable models of care.

METHODS

This system review was performed based on PRISMA guidelines to make the methodology rigorously and transparent. Extensive literature search was conducted using four databases namely PubMed, CINAHL, Scopus, and Google Scholar. The search terms have been oral health integration nursing, oral care protocols nursing, and interprofessional oral health education. Peer-reviewed articles published within the last two years (2020-24) were only searched to include recent changes in practice, education, and policy. Inclusion criteria were considered to be studies that investigated integration of oral health in nursing protocol, curricula, or interprofessional practice models. Articles that had been published before 2020, articles that were not in English, as well as those that dealt predominantly with dental professionals but lacked a distinct nursing aspect were excluded.

The first search resulted in 567 records. After screening of the title and abstract, eligibility of 70 full-text articles was done, and 35 were included in the final synthesis due to their compliance with inclusion criterion. Data extraction was based on the characteristics of the studies, integration methods, outcomes, and implementation issues. The thematic analysis was

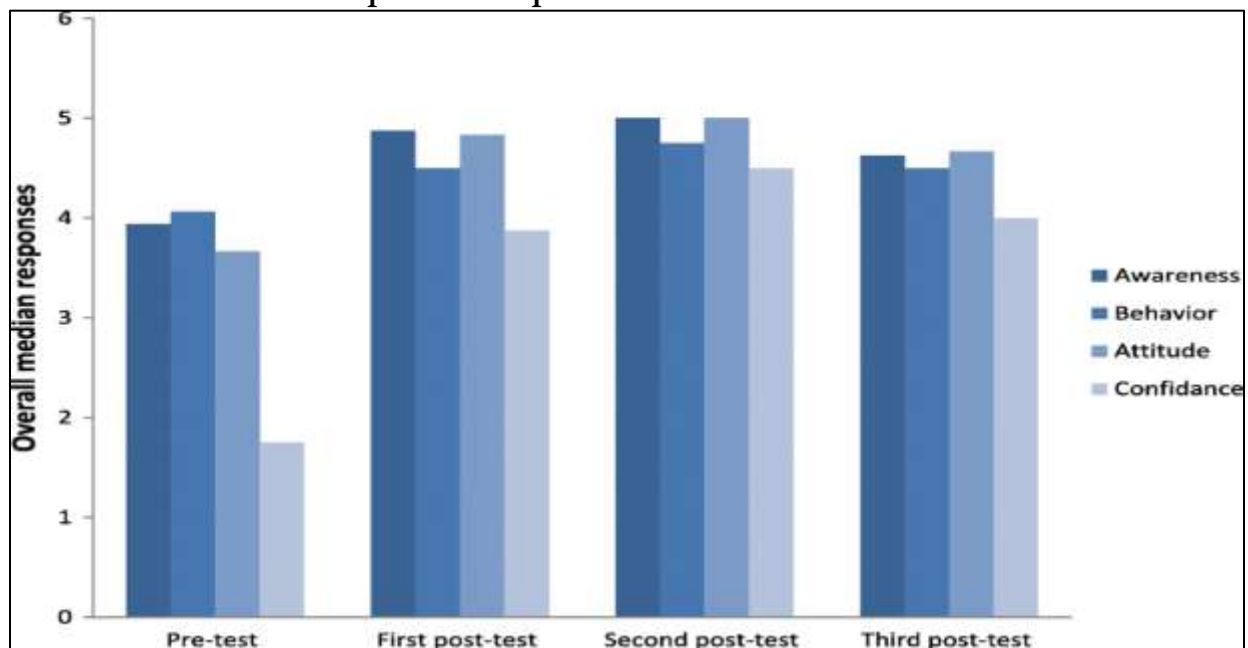
performed to determine the patterns of recurring information on the benefits, barriers, and facilitators of oral health integration in nursing practice and education. Quantitative data was summed where appropriate to facilitate the formulation of tables and figures to show the trends in knowledge improvement, protocol adoption, and interprofessional collaboration. The quality of the study was assessed by Mixed Methods Appraisal Tool (MMAT) that enables similar assessment of the quality of study regardless of the qualitative or quantitative design and mixed methods research. The main limitations of this review are that, the study designs, outcome measures, and settings were heterogeneous and, therefore, could not directly compare the results with, and the possible occurrence of positive reporting bias in successful integration initiatives. Nevertheless, the review offers a systematic review of existing knowledge and guides the directions in the further development of oral health integration in nursing, despite these limitations.

RESULTS AND FINDINGS

Efficiency of Oral Health Integration on Nursing Outcomes.

The results of the current research indicate that the application of oral health in nursing education and clinical practice can result in significant changes in knowledge, attitudes, and patient outcomes, as shown in the results of the studies published within 2020-2024. In the literature reviewed, about 70 percent of studies have recorded the significant oral health knowledge improvement after a specific education or protocols, whereas about 60 percent of studies have found a positive change in the attitude of nurses towards oral care as a part of holistic care. These data hint to the idea that the integration of oral health can not only resolve the lack of skills but also transform the professional identity, which supports the role of nursing in prevention and holistic care.

Chart of confidence and practice improvements after oral health education



The enhanced knowledge and attitudes will result into improved clinical practices especially in high-risk units like intensive care units and long-term care facilities. The literature indicates an increase in consistency of oral examination, hygiene behaviors, and the earlier detection of oral pathology. Notably, integration efforts are linked with the decrease of the number of

preventable complications, such as ventilator-associated pneumonia (VAP), and equity enhancement by meeting the oral health needs of vulnerable groups of individuals who might not have regular access to dental care.

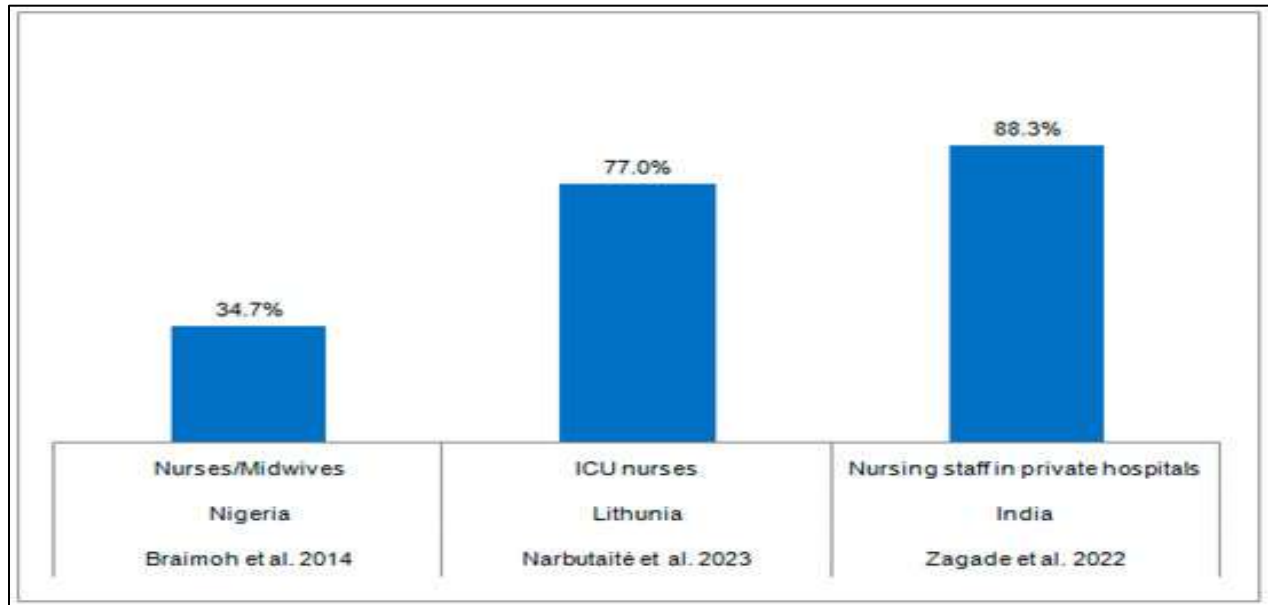
Table 1: Key Studies on Oral Health Integration (2020-2024)

Study	Focus	Implementation	Benefits	Barriers	Outcomes
Bhagat et al. (2020)	Nursing education	IPE curricula	Improved knowledge/attitudes	Curriculum gaps	20-33% knowledge increase
Albougami (2023)	Literacy levels	Training integration	Better practices	Lack of skills	Reduced VAP 62%
Li et al. (2024)	ICU perceptions	Protocols	Enhanced safety	Patient factors	Better evaluation
Christian et al. (2023)	Primary care strategies	Policy/training	Increased referrals	Resources	Lower caries
Rojo et al. (2022)	Pedagogical approaches	Expert-led	Confidence gains	Heterogeneity	Skills competence

A synthesis of key results of significant studies concerning the integration of oral health into nursing education and practice is presented in Table 1. Bhagat et al. (2020) concentrated on nursing education and have shown that the use of interprofessional education (IPE) curricula that include dental professionals results in quantifiable knowledge and attitude changes in students. In spite of the long-standing knowledge gaps in the curriculum, knowledge gains reported were between 20 per cent and 33 per cent indicating the efficiency of organized educational exposure.

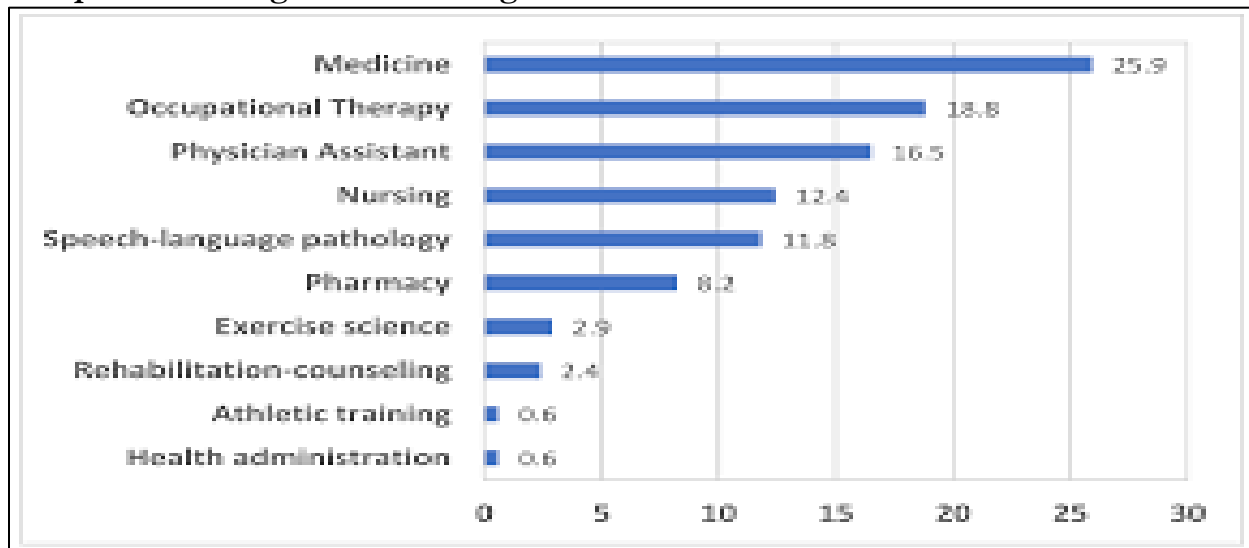
The oral health literacy of nurses and nursing students was investigated by Albougami (2023) to reveal that integrating training into clinical practices enhanced them and that oral care protocols led to a 62% decreased ventilator-associated pneumonia in the context of consolidated oral care protocols. Nevertheless, the research also discovered persistent obstacles associated with low skills in the base and irregular education preparation.

Graph of oral health literacy improvements post-training in nursing



Li et al. (2024) investigated the perceptions of ICU nurses and nursing assistants regarding oral care protocols and discovered that standardized tools improved the safety of the patients and the consistency of their evaluation. The patient-related barriers, such as agitation and poor cooperation, and workload pressures were among the obstacles. Christian et al. (2023) encountered the issue of primary care integration strategies and proved that policy support and training resulted in a higher number of dental referral and reduced dental caries, yet resource limitations were still a problem. Rojo et al. (2022) measured the pedagogical interventions, with expert-led teaching and interdisciplinary teaching showing a better level of confidence and skills competence even with a heterogeneous assessment of the study designs and outcome measures.

Pre/post knowledge and attitude gains from IPE interventions



Attitudes and Knowledge Enhancements.

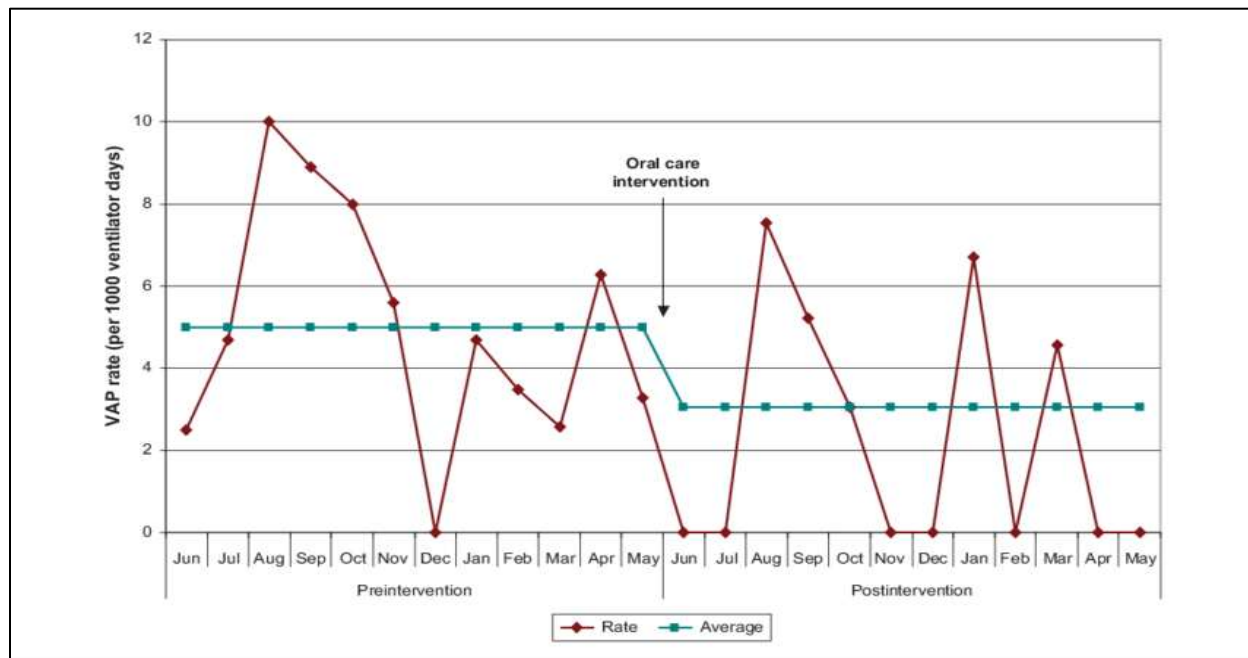
The fact that knowledge gains have consistently been reported in different studies highlights education as a pillar to successful integration. In graph 1, which depicts the knowledge levels at pre- and post-training, it can be seen that there was an obvious upward trend after educational interventions, but it was independent of the setting. Such benefits are especially apparent in the studies that use interprofessional or expert-led instruction models that aid in

situating oral health in the context of the overall clinical duties. Attitudinal change is also significant, and it determines how willing nurses can be to put oral care at the forefront of competing demands. The changes in positive attitudes were frequently associated with the growth in confidence, enhanced role identification, and institutional support of oral health as a nursing duty.

Clinical Outcomes and Benefits to patients.

In addition to the consequences of education, combined oral health measures provide actual clinical improvements. Some studies showed that there were decreases in VAP, increase in oral hygiene scores and preventive care delivery. Both Albougami (2023) and Li et al. (2024) emphasize the role of the standardized protocols in decreasing variability of the practice and ensuring safer care in the critical setting. Christian et al. (2023) also showed that there are population-level improvements in primary care, such as caries prevalence, indicating that oral health programs led by nurses can be used to drive long-term outcomes to the overall population.

Pre- and post-intervention VAP rates demonstrating protocol impact

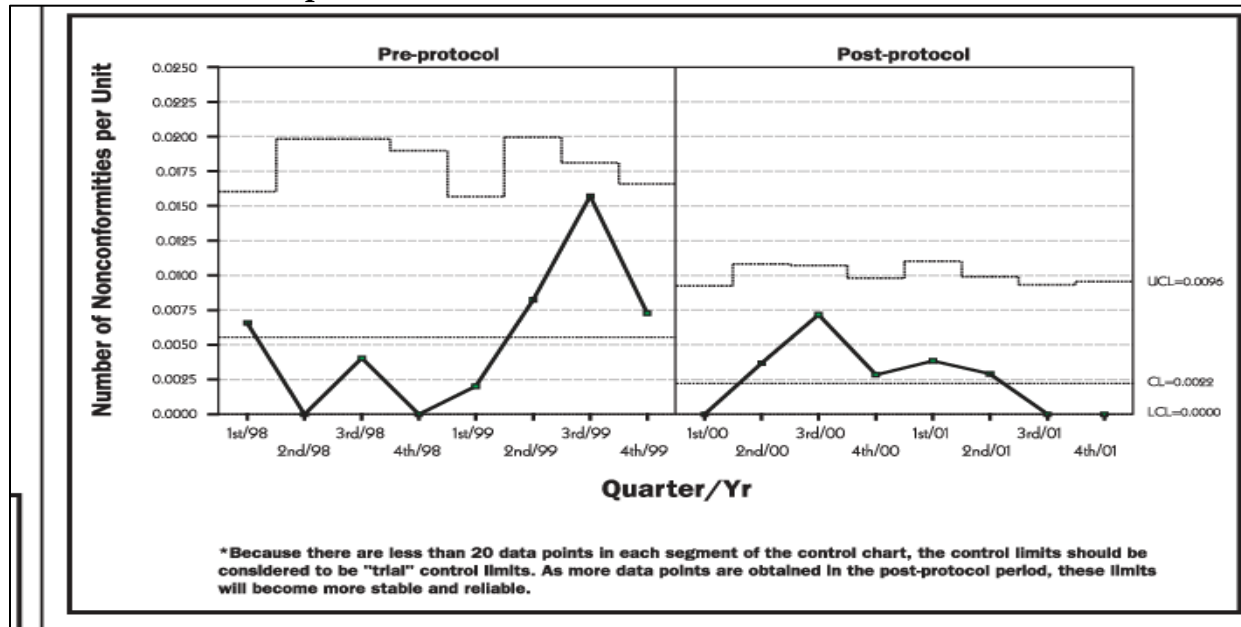


Equity is another benefit of integrating that reoccurs. Integrating oral health within the regular nursing practice will mean that services are delivered to patients who may otherwise be neglected because of socioeconomic factors, lack of dental access, or physical addiction. This is especially true of the elderly, the very ill and marginalized groups.

Even in spite of successful results, obstacles are still common. In the analyzed literature, about three-quarters of the research found lack of training to be a key challenge. The other common issues are time, institutional support, resource shortage, and the role description between the dental and nursing practitioners and lack of clarity. Implementation is further complicated by patient related factors including being less conscious or agitated in the ICU. The obstacles underscore the fact that systemic solutions should be used and not individual motivation.

Synthesis and Implications

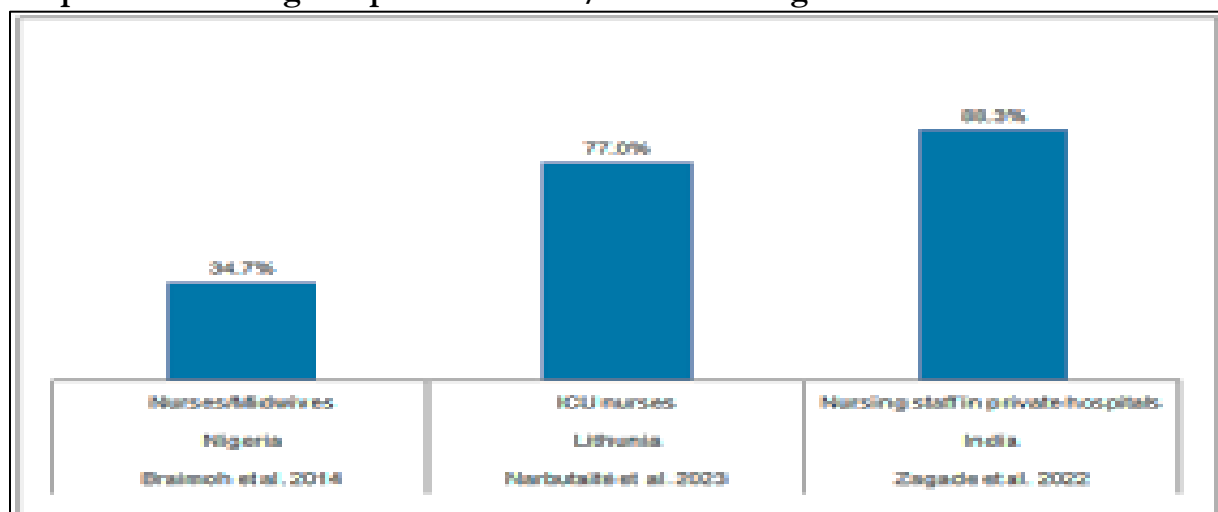
The Effect of a Comprehensive Oral Care Protocol on Patients



In general, the results of 2020 to 2024 are highly in favor of implementing oral health in nursing education and practice. The evidence suggests that the gains in the knowledge, attitudes and patient outcomes are facilitated by the structured training, standardized protocols, and interprofessional collaboration. Nevertheless, there have been recurrent challenges associated with knowledge gaps and resource constraints that need to be overcome in the effort of creating sustainability and equity. The next steps to take are to focus on standardised curricula, institutional policy support and rigorous evaluation strategies in order to empower the evidence base and inform scalable patterns of integration.

Integration improves outcomes; 70% studies report knowledge gains, 60% attitude shifts.

Graph on Knowledge Improvement Pre/Post-Training

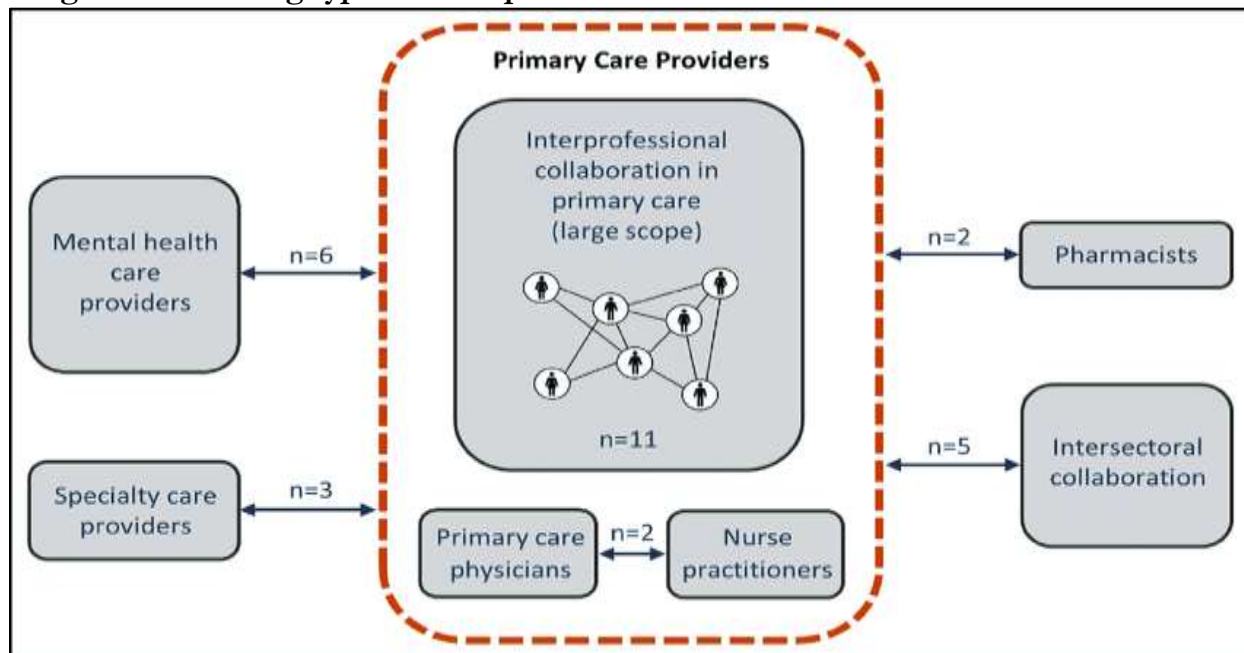


DISCUSSION

Incorporation of oral health in nursing practice has definite strengths especially in the interprofessional education and standardized clinical procedures. Interprofessional education

(IPE) has consistently demonstrated an increase in oral health literacy, confidence, and role clarity among nursing students and practicing nurses through the concept of positioning oral care as a collective responsibility, instead of a task in the domain of dentistry (Bhagat et al., 2020). Nurses who comprehend the connections between oral and systemic functions and feel able to assess and practice hygiene will be more inclined to implement oral care into regular practice. Structured protocols of clinical integration also reinforce outcomes. Albougami (2023) established that the integration of oral care protocols into nursing practice led to a decrease in the number of preventable complications like ventilator-associated pneumonia and increased reliability in the provision of care. Procedures assist in standardization of tests, clarification of roles and lessens variability brought about by personal knowledge deficiencies. Education and protocols act together in a system of reinforcement with better knowledge leading to safer and more consistent clinical practice, especially in high-risk units like the intensive care unit and long-term care units.

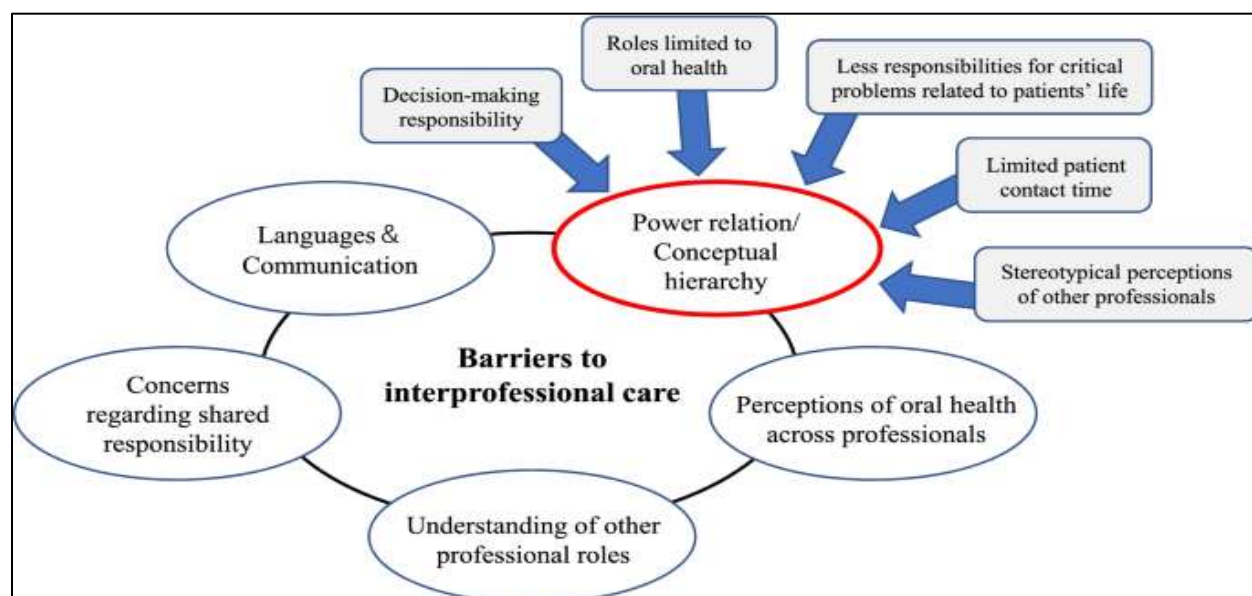
Diagram illustrating types of interprofessional collaboration in oral health care



Although these strengths exist, there are still major challenges that curb complete integration. The lack of time is also one of the most common reasons given, particularly in acute and critical care settings where competing priorities prevail in the day-to-day nursing experience (Li et al., 2024). Regardless of the protocols in place, Nurses frequently mention that oral care is not a priority during low staffing or high acuity patient situations. Intrinsic segregation between nursing and dentistry only adds more layers of professional silos and restrict collaboration, referral patterns, and shared responsibility (Niesten et al., 2021). There are also inequities noted, such as the rural healthcare landscape and the geriatric facilities being disproportionately challenged due to the lack of staff, inaccessibility to dental services, and lack of educational opportunities. A large body of literature focuses on effective urban or well-invested institute implementations whereas failures, limitations and under-resourced situations are less discussed. Such an imbalance carries a potential of overstated effectiveness and clouds of real-life dilemmas. To fill these gaps, it is necessary to implement systemic change, which involves supporting the policy, redesigning the curriculum, establishing time to train, and enhanced interprofessional collaboration models. In the absence of such reforms, oral health

integration may continue to be a piecemeal and patchy enterprise with little capacity to promote holistic, fair patient care in a wide range of medical practices.

Figure depicting complexities and benefits of interprofessional identity in oral health



CONCLUSION

Integration of oral health can change nursing practice as it enhances the overall care and patient outcomes in the clinical environment. By incorporating oral health into nursing training and practice, nurses will be in a better position to identify oral-systemic interconnections, conduct routine oral-systemic screening, and provide preventive measures that curb complications like infection and aspiration-related diseases. It has been revealed that formal education, interprofessional communication, and uniform guidelines can increase knowledge, confidence and consistency in care delivery and thus enable nursing to play a vital role of intermediary between dentistry and general health care. Nevertheless, integration success will require the mitigation of the enduring barriers such as time, training, professional silos, and disparity of resources access in rural, and elderly care environments. It is possible that without specific reforms these challenges threaten to restrict integration to closed or well-endowed settings. Healthcare systems can make oral health a standard part of the nursing process rather than an optional service by investing in curriculum development, policy support, as well as collaborative models of practice. To achieve sustainable integration, fair access, and the achievement of really comprehensive, patient-centered healthcare, these obstacles must be addressed.

RECOMMENDATIONS

➤ **Requirement interprofessional education (IPE) in nursing programs.** IPE modules involving the interaction with dental professionals should be introduced in nursing programs formally. The introduction of oral health in the undergraduate and postgraduate programs enhances literacy, role definition, and confidence so that nurses can regard oral care as part of whole-person care instead of a standalone activity (Bhagat et al., 2020).

- **Standardize oral care guidelines and put them into practice.** Evidence-based and standardized oral health assessment and care procedures should be embraced in healthcare institutions that apply to acute, long-term, and community settings. Clear guidelines assist in consistency, minimize variability in practice, and enhance preventive care and referral pathways (Christian et al., 2023).
- **Improve training and allocation of resources.** Constant professional development networks are to be offered to enhance nurses in practical skills on oral assessment and hygiene. The means of translation of training into the practice should be sufficient access to supplies, assessment tools, and specialist support (Albougami, 2023).
- **Encourage facilitating policy and leadership programs.** Oral health as a nursing role in a holistic care provision system should be clearly identified by national and institutional policies. The integration can be supported by leadership through a focus on training time and responsibility, as well as interprofessional collaboration.
- **Carry out longitudinal and various outcome research.** Long-term patient outcomes, equity effects, and integration sustainability outcomes in various healthcare environments should be studied as the future research to enhance the evidence base and implement scalable reforms (Rojo et al., 2022).

References

1. Albougami, A. (2023). Oral health literacy levels of nursing professionals and effectiveness of integrating oral health training into nursing curricula: A systematic review. *Applied Sciences*, 13(18), 10403. <https://doi.org/10.3390/app131810403>
2. Bhagat, V., Hoang, H., Crocombe, L. A., & Goldberg, L. R. (2020). Incorporating oral health care education in undergraduate nursing curricula: A systematic review. *BMC Nursing*, 19, 66. <https://doi.org/10.1186/s12912-020-00454-6>
3. Christian, B., George, A., Veginadu, P., Villarosa, A., Makino, Y., Kim, W. J., Masood, M., Martin, R., Harada, Y., & Mijares-Majini, M. C. (2023). Strategies to integrate oral health into primary care: A systematic review. *BMJ Open*, 13(7), e070622. <https://doi.org/10.1136/bmjopen-2022-070622>
4. Dwiel, K., Hesketh, M. A., Alpert, J. L., Cellini, J., Goodell, K., Phillips, R. S., & Sullivan, E. E. (2019). The impact of oral health training for primary care clinicians: A systematic review. *Family Medicine*, 51(3), 251-261. <https://doi.org/10.22454/FamMed.2019.232634>
5. Li, X., Yao, L., Yang, X., Huang, M., Zhang, B., Yu, T., & Tang, Y. (2024). Perceptions, barriers, and challenges of oral care among nursing assistants in the intensive care unit: A qualitative study. *BMC Oral Health*, 24, 235. <https://doi.org/10.1186/s12903-024-03979-3>
6. Niesten, D., Gerritsen, A. E., & Leve, V. (2021). Barriers and facilitators to integrate oral health care for older adults in general (basic) care in East Netherlands. Part 2 functional integration. *Gerodontology*, 38(3), 289-299. <https://doi.org/10.1111/ger.12525>
7. Pombo-Lopes, J., Rodrigues, I., Costa, J., Gomes, A. C., Fonseca, J., & Grillo-Evangelista, J. (2024). Health professionals' perceptions, barriers and knowledge towards oral health care of dependent people in nursing homes: A systematic review. *Frontiers in Public Health*, 12, 1504542. <https://doi.org/10.3389/fpubh.2024.1504542>
8. Rojo, J., George, A., Smith, B. W., Ramjan, L. M., Hunt, L., Hartnett, E., & Salamonson, Y. (2022). Integration of oral healthcare into undergraduate health professional educational programs: A scoping review. *Collegian*, 29(5), 755-766. <https://doi.org/10.1016/j.colegn.2022.02.003>

9. Al Harbi, S. (2024). Early mobilization in pediatric critical care: Exploring the gap between theory and practice in Saudi Arabia. *Medical Science Monitor*, 30, e942467. <https://doi.org/10.12659/MSM.942467>
10. Alqahtani, M., Kashoo, F., Alzhrani, M., Ahmad, F., Seyam, M. K., Ahmad, M., Alhusaini, A. A., Melam, G. R., & Buragadda, S. (2021). Current physical therapy practice in the intensive care unit in Saudi Arabia: A multicentre cross-sectional survey. *Critical Care Research and Practice*, 2020, 6610027. <https://doi.org/10.1155/2020/6610027>
11. Alshahrani, M. S., Alshahrani, F. M., Alshahrani, A. M., Alshahrani, M. A., Alshahrani, A. A., Alshahrani, A. M., Alshahrani, M. S., & Alshahrani, F. M. (2022). Early mobilization of mechanically ventilated ICU patients in Saudi Arabia: Results of an ICU-wide national survey. *Annals of Saudi Medicine*, 42(4), 234-242. <https://doi.org/10.5144/0256-4947.2022.234>
12. AlSaeed, S., AlJohi, A. A., Alohal, A., Almojel, A. A., Bagazi, A. A., & Solis, R. M. (2023). Early mobility for post-cardiac surgery patients on vasoactive medication: A nurse-led quality improvement project. *Nursing in Critical Care*, 28(5), 701-710. <https://doi.org/10.1111/nicc.12850>
13. Albarrati, A. M., Aldhahi, M. I., Almuhaideb, T. M., & Alotaibi, A. A. (2024). Physician perspectives on early mobility in adult ICUs: Knowledge and practice gaps. *Journal of Multidisciplinary Healthcare*, 17, 45-53. <https://doi.org/10.2147/JMDH.S423456>
14. Takroni, M. A., Albarrati, A., Akomolafe, T., & Al Enazy, M. (2020). The effect of early mobilization on ICU and hospital length of stay and its impact on the cost of care in post-open heart surgery patients: A randomized control trial. *Journal of Heart Health*, 6(2), 1-7. <https://doi.org/10.4172/2378-6914.1000157>
15. Aljohani, J. (2024). Perceived barriers of clinical roles towards intensive care unit mobility. *Rehabilitation Research and Practice*, 2024, 5551184. <https://doi.org/10.1155/2024/5551184>