

# THE ROLES OF DENTAL THERAPISTS AS FRONTLINE CLINICIANS

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**To cite:** Arua, S. O., Ngwu, C. C., Agbo, E. E., Silas, H., & Ucheka, P. I. (2021). The roles of dental therapists as frontline clinicians. *Orapuh Literature Reviews*, 1(1), OR005.

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An Orapuh Review is a standalone survey of current scholarly sources on a specific oral and/or public health topic to provide an (updated) overview of knowledge in that area.

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Orapuh Reviews are published in '**Orapuh Literature Reviews**' (*Orap. Lit. Rev.*) - ISSN: **2644-3651**. This journal is open access internationally peer-reviewed online repository of scholarly oral and public health review articles specifically crafted for students, researchers, and academics.

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Orapuh is an international, independent Oral and Public Health Information, Education, and Research Organization incorporated in the Republic of The Gambia (C10443).

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# The roles of dental therapists as frontline clinicians

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**RECEIVED:**  
02 October 2021  
**ACCEPTED:**  
22 December 2021  
**PUBLISHED:**  
31 December 2021  
**UPDATED:**  
31 December 2021

## ABSTRACT

Dental therapists are primary oral healthcare professionals who are trained and licensed to perform basic clinical, educational, and therapeutic services to patients, including children and young adults. As members of the dental team, dental therapists in several countries work at different levels of the healthcare system but primarily in settings that serve low-income, uninsured and underserved populations. They also work in areas with a shortage of dental health professionals as the first point of call within their scope of practice and competence. This study analysed the roles of dental therapists as frontline clinicians and how good oral health policies can help harness the skills of dental therapists in addressing the global oral health prevalence. Also, the perspectives on dental therapists as frontline clinicians in New Zealand, the United State (US), the United Kingdom (UK), and Nigeria were reviewed for a better understanding of the global view. We searched PubMed, Google Scholar, MEDLINE, Cochrane Library, and Microsoft Academic databases for adequate information. Evidence has shown how resourceful dental therapists are in promoting good oral health and delivering competent preventive and restorative treatments to people.

**Keywords:** *dental therapists, the scope of practice of dental therapists, dentistry, oral healthcare*

## INTRODUCTION

Frontline clinicians are the backbone of any effective healthcare delivery system. The term is used to describe health care workers who provide essential and routine services in the medical practice (Patel, et al., 2014). As their name implies, they are the first and most times the only link between the population and essential health care services. According to the Frontline Health Workers Coalition [FHWC] (2021), frontline clinicians include community health workers, doctors, nurses, midwives, pharmacists, dentists, etc. that provide health care services directly to their communities, connecting families and

communities to the health system. With the coronavirus disease (COVID-19) pandemic and changing demographics of patients, it has become imperative to have the right clinical workforce with the right skill sets in the right place at the right time to provide the right services to the right people (Macey et al., 2016). This can be achieved by utilizing fully all the members of the health care team and exploring new roles to reflect the changes in the population's needs.

In most developed countries, most dental practices are not complex. Most of the work of general dental practitioners relates to routine examination and oral health maintenance (Barnes et al., 2020). Improvements in the oral health

status of children and adults imply the need for minimal intervention whereas an increasing population of older adults retaining their teeth presents a complex treatment need (Macey et al., 2016). To meet the needs of these changing dental patients' demographics, workforce planning is required. On the other hand, millions if not billions of people cannot simply afford dental care or do not have access to dental treatments. In America alone, about 54 million people live in areas where there is a shortage of dentists (Brickle & Self, 2017); as a result, more dental practitioners are needed. The need to bridge the gap between the population in need of dental care and access to care in line with the concept of social justice gave rise to the establishment of mid-level dental care professionals such as dental hygienists and dental therapists in different parts of the world.

Dental therapists have been described as licensed oral health professionals who practice as part of the dental team to provide certain items of patient care such as educational, clinical, and therapeutic patient care. In the United States, the dental therapist may do so based on the recommendations, referral, or prescription from a dentist and under the supervision of a dentist depending on the therapists' level of training and competence (General Dental Council [GDC], 2019; University of Minnesota [UOM], 2021). Mertz, et al., (2021), stated that dental therapists provide access and an additional entry point to oral health care reducing oral health disparities. Established oral healthcare policies show that dental therapists work as second-level clinicians in most countries only attending to patients referred to them by dentists (Estai et al., 2016; Lynch, 2020). Although in over 53 countries with commendable levels of success dental therapists have been effective in providing preventive, restorative, and minor surgical treatments on children participating in government-sponsored health programs (Friedman, 2011; Nash et al., 2015). However, with the changing patients' demographics, there is a need to improve access to dental care, especially for the underserved populations. Hence, with the clinical training of dental therapists, which focuses mainly on prevention rather than surgical intervention on adult patients, it is expedient that they work as

frontline clinicians. This will not only increase access to basic dental care for the underserved populations, but it will also enable other oral health care professionals to function to their optimal level of productivity and expertise (Friedman, 2011).

This work, therefore, aimed to review the critical roles of dental therapists as frontline clinicians – with regards to improving access to oral healthcare services for the underserved populations, and with regards to the scope of the dental therapist's practice in New Zealand, the US, the UK, and Nigeria.

### WHO IS A DENTAL THERAPIST?

A dental therapist has been conceptualised as an allied oral healthcare professional who received adequate theoretical and clinical training from an accredited dental school and successfully graduated with either a diploma or bachelor's degree in dental therapy. When licensed, a dental therapist can provide certain oral healthcare treatments as outlined in their country's scope of practice. In the US, some advanced dental therapists can perform advanced dental procedures with no supervision from a dentist (Beek & Davidson, 2016; Colgate, 2021; UOM, 2021).

In the UK, dental therapists may gain additional skills to be able they carry out advanced functions such as administration of sedation via inhalation, tooth whitening, and suture removal based on the prescription from a dentist (GDC, 2019).

### DENTAL THERAPISTS AND THE GLOBAL ORAL DISEASE PROFILE

Over the years, global concerns have been raised by several researchers about the rising prevalence of oral diseases, dental caries, periodontal diseases, and others, (Adeniyi, et al., 2012; Estai, et al., 2016; Uguru, et al., 2020; WHO 2021). With the rising prevalence of these oral diseases and with NOMA causing about 90% fatality in children, the 2021 World Health Assembly, recommended to the World Health Organization (WHO) that a shift from curative to a preventive approach, that includes promotion of oral health awareness within schools, families, communities, and workplaces be adopted (WHO, 2021).

The WHO has reintroduced oral health into the global health agenda to address the risk factors of oral diseases which are similar to that of non-communicable diseases, such as the behavioural and biological risk factors shared between type two diabetes and periodontal diseases (Ucheka et al., 2021; WHO, 2021). Dental therapists licensed in every country, play a key role in using the preventive approaches as recommended by the WHO to address the global prevalence of oral diseases (Adeniyi et al., 2012; Nash et al., 2014; Uguru, et al., 2021; WHO, 2021). Also, dental therapists and dental hygienists were captured by the World Dental Federation [FDI], (2021), among other professionals to assist in the global periodontal health project, by using the online disease profile assessment tool for diagnosing and determining the treatment plan for periodontal diseases. Currently, dental therapists are recognized as essential participants in the prevention of dental caries in Scottish children through the 'child smile' program (Public Health Scotland (PHS), 2020).

## THE ROLE OF DENTAL THERAPISTS IN RESPONSE TO THE URGENT GLOBAL NEED FOR ORAL HEALTHCARE INTERVENTION

### *Emergency/Urgent Oral Healthcare*

Generally, there are no barriers to where medical emergencies may occur. For example, a patient can collapse at any time and in any place without prior notice and regardless of whether they are receiving treatment or not. It is therefore expedient that every healthcare professional including the dental therapist is well acquainted with the standard up-to-date procedures in medical first aid and resuscitation (GDC, 2019).

Dental therapists are trained to handle emergency cases such as toothache, avulsion, soft tissue injury, and other traumatic injuries commonly seen among school children and adults. With a dental therapist on the ground, oral health problems requiring urgent care can be treated if they are within their scope of practice, competence and they are indemnified to do so (GDC, 2019). A dental therapist can provide palliative care (first aid treatment), pending the arrival and/or availability of a dental surgeon (Davis, 2020). In a school setting, the onsite dental

therapist ensures that precautionary measures are always adopted by school children before engaging in sporting activities. These measures may include but are not limited to ensuring that sporting students are fitted with adequate protective mouth guards and when necessary, provide timely management of trauma to the oral structures resulting from accidents during sports (Abraham et al., 2021; Bakarcic, et al., 2017).

### *Involvement in Dental Public Health*

As a preventative measure, dental therapists have been effective in conducting school visits for oral health promotion among children and in anchoring school-based dental sealants and fluoride varnish application programs for dental caries prevention (Friedman 2011; Himida & Ucheka 2017; Nash et al., 2008; Nash et al., 2015).

As part of the dental practice staff team, the dental therapist's role, and involvement in preventing early childhood caries via active participation in the delivery of school-based programmes in New Zealand (Coates et al., 2009) and the prestigious child-smile programme as recognized by Public Health Scotland (PHS, 2020), cannot be overemphasized. Different countries around the globe have recorded high successes in the reduction of dental caries occurrence, treatment of dental diseases, provision of safe and quality patient care leading to positive oral health outcomes at the international level, by the active utilization of dental therapists as key players in population-level oral health care.

### *Involvement During the Global Pandemic*

During the COVID-19 pandemic, access to adequate dental care services was reduced in some countries. Dental therapists who worked primarily in settings with low-income, underserved populations or areas with a shortage of dental health professionals were very resourceful in breaching the gap by employing the COVID-19 health safety precautions to provide safe oral healthcare services (Davis, 2020). Generally, the study of Estai et al. (2016) showed that dental therapists work as frontline clinicians to assist in early detection of oral diseases, promotion of oral health, proper referral

of complicated and surgical cases requiring specialized treatment.

### PERSPECTIVES ON DENTAL THERAPISTS AS FRONTLINE CLINICIANS

The dental therapy profession has been a global oral healthcare area of interest for the expansion of the dental team to reduce cost and increase access to adequate and competent oral healthcare services especially in the underserved population (Brickle & Self, 2012; Lynch, 2020; Nash, et al., 2008; Nash et al., 2015). Nash, et al., (2008) studied the roles of dental therapists in over 50 countries and stated their undeniable impact as frontline clinicians in the oral healthcare domain especially in increasing access to oral healthcare services for the underserved communities. In this paper, the scope of practice of dental therapists in four countries, namely, New Zealand, the US, the UK, and Nigeria was reviewed to understand the global perspective on dental therapists as frontline clinicians.

#### *New Zealand*

New Zealand was the first country in the world to start the use of dental therapists in 1921, (Coates et al., 2009; Nash, et al., 2008). The Dental Council of New Zealand has structured the country's oral healthcare delivery system such that the scope of practice and competencies for dental therapists has positioned dental therapists as frontline clinicians for reaching the underserved areas with adequate and competent oral healthcare services. The country also primes disease prevention, oral health promotion, and maintenance as core activities of dental therapists for achieving and maintaining good oral health as an integral part of general health (Coates et al., 2009; Nash, et al., 2008).

Dental Therapists' scope of practice in New Zealand, according to GPW Online (2016), includes:

1. Obtaining medical histories and consulting with other health practitioners as appropriate.
2. Examination of oral tissues, diagnosis of dental caries, and recognition of abnormalities.
3. Preparation of an oral care plan.

4. Informed consent procedures.
5. Administration of local anaesthesia using dentoalveolar infiltration, inferior dental nerve block, and topical local anaesthetic techniques.
6. Preparation of cavities and restoration of primary and permanent teeth using the direct placement of appropriate dental materials.
7. Extraction of primary teeth.
8. Pulp capping in primary and permanent teeth.
9. Preventive dentistry, including cleaning, polishing, and scaling (to remove deposits in association with gingivitis), fissure sealants, and fluoride applications.
10. Oral health education and promotion.
11. Taking of impressions for, constructing, and fitting mouthguards.
12. Referral as necessary to the appropriate practitioner/agency.
13. Performing pulpotomies on primary teeth.
14. Taking and interpreting periapical and bitewing radiographs.
15. Preparing teeth for and placing stainless steel crowns on primary teeth.

#### *The United States*

In the US, not much dental workforce was available to meet the increasing demand and provide equal access to oral healthcare services, especially in the underserved communities. As a result, the US Department of Health and Human Services (USDHHS), Department of the Treasury, and Department of Labour in collaboration with the US Federal Trade Department understood the need to introduce dental therapists to breach the gap by issuing the Reforming America's Health System through Choice and Competition (Cardinal, 2021; Wong, 2021). By the issuance of the reform, dental therapists were empowered as frontline clinicians among the dental team to provide adequate access to oral healthcare. Recently, Oregon lawmakers approved having dental therapists to be trained and employed to serve as frontline clinicians (Cardinal, 2021; Wong, 2021).

The roles and scope of Dental Therapists in Minnesota are spelt out in the Minnesota statutes

section 150A.105, Subdivisions 1 - 5. Subdivision 4 enumerates the scope of practice as defined under subdivisions 1 -3 as follows:

*General Supervision (dentist may or may not be present)*

Oral health instruction and disease prevention education, including nutritional counseling and daily analysis:

1. Preliminary charting of the oral cavity
2. Making radiographs
3. Mechanical polishing.
4. Application of topical preventive or prophylactic agents, including fluoride varnishes and pit and fissure sealants
5. Pulp vitality testing
6. Application of desensitizing medication or resin
7. Fabrication of athletic mouthguards
8. Placement of temporary restorations
9. Fabrication of soft occlusal guards
10. Tissue conditioning and soft reline
11. Atraumatic restorative therapy.
12. Dressing changes
13. Tooth reimplantation
14. Administration of local anaesthetic
15. Administration of nitrous oxide

*Indirect Supervision (dentist onsite)*

1. Emergency palliative treatment of dental pain
2. The placement and removal of space maintainers
3. Cavity preparation
4. Restoration of primary and permanent teeth
5. Placement of temporary crowns
6. Preparation and placement of preformed crowns
7. Pulpotomies on primary teeth
8. Indirect and direct pulp capping on primary and permanent teeth
9. Stabilization of reimplanted teeth
10. Extractions of primary teeth
11. Suture removal
12. Brush biopsies
13. Repair of defective prosthetic devices

14. Recementing of permanent crowns ([Minnesota Department of Health 2016a; 2016b](#)).

[Chi et al., \(2018\)](#) showed evidence that dental therapists breach the gap in the underserved areas of the US. They also showed that the number of treatments provided after the introduction of dental therapists within a few days in YK Delta tremendously increased.

#### *The United Kingdom*

In the UK, the practice of dental therapy stems from the roles of the dental hygienist; and has been defined by the General Dental Council, (GDC) as registered dental professionals who carry out certain items of dental treatment to patients or under prescription from the dentist. With the approval of the GDC, most dental schools and training institutions can combine the training and education of both the dental therapist and the dental hygienist. Hence, to practice as a dental therapist in the UK, you must obtain a diploma or degree in dental hygiene and therapy or its equivalent and be licensed by the UK GDC as a dental care practitioner. As stipulated by the GDC, a dental therapist in the UK may carry out clinical and non-clinical procedures similar to that of the dental hygienist, with the addition of those practices reserved for the dental therapist ([GDC, 2019](#)). The dental therapist may only practice those duties within the therapist's scope of training, competence, and indemnity. According to [GDC](#), following successful completion of dental therapy training, a licensed dental therapist in the UK can:

1. Obtain a detailed dental history, evaluate medical history, and keep an accurate and contemporaneous patient record.
2. Carry out clinical examinations including oral cancer screening, complete periodontal examination, and charting, and employ the use of periodontal indices to screen and monitor periodontal disease. Identify anatomical features, recognize abnormalities, and interpret common pathologies.
3. Diagnose and carry out treatment planning; plan the delivery of patient care including prescribing of radiographs, taking,

processing, and interpreting of various film views used in general dental practice.

4. Provide preventive oral care to the patient; care for implants, carry out treatment of peri-implant tissues and liaise with the dentist over the treatment options for caries, periodontal diseases, and tooth wears.
5. Manage plaque-related diseases using appropriate anti-microbial therapy and using either manual or powered instrument undertake subgingival and supragingival scaling and root surface debridement.
6. Give appropriate patient advice including smoking secession.
7. Take impression, place rubber dam, and take intra- and extra-oral photographs.
8. Give infiltration and inferior dental block analgesia; carry out direct restoration on primary and secondary teeth, carry out pulpotomies and extract primary teeth.
9. Place a pre-formed crown on a primary tooth, place temporary dressing, and re-cement crown with temporary cement.
10. If working on the prescription of a dentist, vary the details but not the direction of the prescription according to the patient's needs.

GDC (2019) further reiterated that a dental therapist can develop additional skills to carry out tooth whitening on a dentist's prescription, administer inhalation sedation, and remove sutures following consultation with a dentist. The full details of the scope of practice of the dental therapist in the UK are available in the GDC scope of practice handbook.

### *Nigeria*

The Official Gazette of the Federal Republic of Nigeria [OGFRN] (2005) shows that Nigerian licensed dental therapists practice as part of the dental team to provide educational, clinical, and therapeutic services. The scope of practice of dental therapists in Nigeria is not as expanded as that of other countries such as the UK, New Zealand, and the US, yet their skills are underused (Barnes, et al., 2020; Nash, et al., 2014; Turner et al., 2020).

As stated in the gazette (OGFRN, 2005), the following roles are to be carried out by the dental therapists in Nigeria as frontline clinicians:

1. Plaque control and dietary counseling.
2. Root planning and gingivectomy.
3. Scaling and polishing of the teeth.
4. Application of fluoride gel and fissure sealant.
5. Taking dental radiographs.
6. Providing dental health education to individuals, patients, and communities.
7. Restoration and extraction of deciduous teeth.
8. Giving local anesthesia, especially infiltration of the upper teeth.
9. Placement of a crown on deciduous teeth.
10. Placement of temporary dressing on cavities.
11. Taking impression of the teeth.
12. Carry out a whole range of clinical procedures that are preventive and therapeutic to all patients including the physically challenged, medically compromised, and patients with a learning disability.
13. Making treatments available to patients who are unable to access regular dental care in the community.
14. Operating in schools health services.
15. Lecturing students in Dental Schools.
16. Cleaning splints, irrigating, and removing black cement in maxillofacial patients.

### DISCUSSION

The roles of dental therapists in the four countries, discussed in this review are similar. According to Beek & Davidson (2016), there are basic oral healthcare needs in high demand in the underserved populations. Beek & Davison revealed that dental therapists generate a high revenue when their services are adequately utilized. Koppelman et al. (2016), alongside Macey et al. (2016), highlighted the importance of creating oral healthcare centers especially in rural areas to enable increased access to and availability of the services of dental therapists as it would help to accelerate coverage of oral healthcare needs and promote dentistry as a profession.



Adeniyi et al. (2012), and Ucheka (2017), in their independent studies have reviewed and analyzed the Strengths, Weaknesses, Opportunities, and Threats (SWOT) of the oral healthcare sector in Nigeria and confirmed that the National Oral Health Policy targeted at increasing access to oral healthcare is faced with low priority in the healthcare system of Nigeria. Adeniyi et al. (2012) and Uguru et al. (2020, 2021) also highlighted the challenges of the oral healthcare system in Nigeria to include poor oral healthcare policies, inadequate training institutions, delayed integration of oral healthcare into the Primary Healthcare system, cost of treatment, lack of adequate funding, etc. The worry remains that these challenges are handicapping the impact of oral healthcare professionals in Nigeria in the face of the rapidly increasing population. The implication is that the demand for dental professional services is increasing without good oral healthcare policies to meet these needs (Adeniyi, et al., 2012; Ochayi, 2020; Uguru et al., 2020).

The importance of teamwork among the dental professionals (dental surgeons, dental therapists, dental nurses or dental surgery assistants/technicians, dental technologists, and others) have been emphasized as key to delivering competent oral healthcare services and a wider reach to the underserved populations (Ajao, 2018; Dyer & Robinson, 2015). The dentists and other members of the dental team have been advised to boost their knowledge of the roles of dental therapists, as frontline clinicians in general dental practices. This is to enable the dental team to develop a sustainable practical process of collaborative working, to expedite the dental therapists' contribution to patient-centered oral healthcare within the general dental practices (Barnes et al., 2020). New Zealand, the UK, and the US defined the dental therapists' scope of practice and competence in their statutes, to ensure that no professional team member or group compromises on the delivery of competent healthcare services.

## CONCLUSION

Dental therapists as members of the dental team play important roles as trained and licensed oral

healthcare professionals, to meet the oral healthcare needs of the underserved populations. Globally, there is poor access to oral healthcare services in the underserved areas. Plus, the prevalence of oral diseases, especially dental caries and periodontal diseases, is on the rise. Countries around the globe have realized the importance of dental therapists, as a potential solution to the issues around oral healthcare demands in areas with a shortage of dental professionals. Sadly, Nigeria is yet to make effective oral healthcare policies to address the oral healthcare challenges.

**Acknowledgments:** All the authors who contributed to the success of this review are highly appreciated. We also appreciate the authors of all the literature reviewed.

**Ethics Approval:** Nil needed.

**Conflicts of Interest:** The authors declare no conflict of interest.

**Funding:** Nil secured.

**Plagiarism:** The plagiarism test on this manuscript yielded a 16% score.

**Originality:** This Review is an original work carried out by the aforementioned authors. It is not copied from elsewhere.

**Contributions of authors:** Samuel Oko ARUA led the drafting of the review paper and searched the sources with assistance from Chika Charity Ngwu, Emmanuel E. Agbo, and Haggai Silas while Promise Ucheka assisted with the re-drafting of the paper, interpretation of the results, development of search strategy, and adding of context to the paper.

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