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Original Article

Developing an Oral Health and Welfare for Safety Net for Persons with Disabilities: Centered on a Local Dental Care Center Model

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ABSTRACT

Objectives: This study aimed to identify the structural causes of chronic dental treatment backlogs at regional dental health centers for persons with disabilities, which stem from the overlap of mild and severe patients due to the absence of a proper dental delivery system. Consequently, it proposes a three-tier healthcare-welfare linked delivery system through the introduction of 'Local Dental Health Centers for Persons with Disabilities' to establish a robust oral health welfare safety net for vulnerable populations. **Methods:** Quantitative analyses of administrative data on wait times and domestic/international oral health and welfare policies for persons with disabilities were conducted. Furthermore, a comparative policy review of community-based dental services in developed nations and Focus Group Interviews (FGI) with multidisciplinary experts were implemented to design an actionable policy model. **Results:** The current system suffers from a severe bottleneck, evidenced by an average waiting time of 137 days for dental treatment under general anesthesia. To alleviate this crisis, this study designed a structured three-tier delivery system consisting of primary (dental home and public health centers), secondary (local centers), and tertiary (regional and central centers) institutions. Under this framework, the newly established secondary local centers are required to deploy a dedicated clinical team comprising at least one dentist and two dental hygienists, regardless of whether they operate in the public or private sector. Furthermore, an 'open designation system' is introduced to select institutions that satisfy rigorous criteria-—including the completion of mandatory specialized training and the provision of physical barrier-free accessibility facilities—thereby enabling them to exclusively manage mild to moderate cases. **Conclusions:** This study identifies structural causes of regional center backlogs and validates a three-tier oral health delivery system, proposing policies such as legislating secondary local centers and reforming financial incentives. The proposed healthcare-welfare linked model aims to establish a dense, community-centered safety net for persons with disabilities, though future research is needed to enhance practical efficacy through operational protocols and user-centered assessments.

Keywords: Dental healthcare delivery system, Local dental health centers, Open designation system, Oral health for persons with disabilities, Welfare safety net

1. Introduction

Oral health is a critical determinant of systemic health and quality of life (QoL). However, socially vulnerable groups, including people with disabilities, remain marginalized due to systemic barriers to dental care. Periodontitis and gingivitis rank as the most prevalent conditions among individuals with disabilities, and the oral health disparity between this population and the general public continues to widen. To mitigate this inequality, the Korean government has established and operated Central and Regional Dental Health Centers for Persons with Disabilities under Article 15-2 of the Oral Health Act. Nevertheless, the current centralized system faces acute limitations, primarily driven by a severe shortage of infrastructure and consequent treatment backlogs. According to administrative

and audit data, the Central Center requires approximately 30 days for an initial appointment, and patients face an average wait time of 137 days for dental treatment under general anesthesia. In certain regional centers, the backlog for general anesthesia spans up to two years. International literature underscores that managing chronic wait times and general anesthesia slot imbalances in specialized facilities requires regular efficiency evaluations and secondary buffering institutions [1]. Indeed, developed nations optimize efficiency by upgrading referral networks and structuring clear intermediary pathways through secondary institutions [2]. The core driver of this severe backlog is the absence of an effective dental care delivery system. Mildly disabled patients, who could be sufficiently managed at primary or secondary local clinics, are systematically funneled into tertiary regional centers due to the lack of local anchor institutions. This influx triggers a bottleneck, paralyzing the capacity of regional centers that should otherwise focus on high-complexity, severe cases [3]. Therefore, establishing a structured three-tier delivery system—Primary (dental homes/public health centers), Secondary (local centers), and Tertiary (regional/central centers)—is imperative to alleviate backlogs and secure health rights. This study aims to propose policy measures to designate qualified public and private clinics as "Local Dental Health Centers." This model aims to disperse mild cases, resolve tertiary bottlenecks, and enhance the oral health welfare safety net for vulnerable populations.

The purpose of this study is to analyze the structural causes of chronic treatment backlogs at regional dental centers and to design a sustainable implementation model for "Local Dental Health Centers" to establish an effective delivery system. The scope of the research encompasses evaluating the current status of domestic oral health policies for the disabled and examining patient concentration at tertiary facilities. Furthermore, the analysis is confined to formulating concrete designation criteria (staffing, specialized training, and physical facilities) for both public and private local centers, alongside proposing optimized insurance incentives and referral-and-return financial mechanisms to institutionalize the system.

To achieve these objectives, this study employs a combination of literature reviews, administrative data analyses, and Focus Group Interviews (FGIs). First, domestic and international reports on oral health for the disabled and wait-time statistics from regional centers are analyzed to quantify the current backlog. Second, this study compares and analyzes cases of specialized dental delivery systems for people with disabilities in advanced countries to derive practical implications. Third, through interviews with dental and welfare experts, the effectiveness of the designation criteria for local centers proposed in this study is verified. To achieve this, the focus group interview (FGI) was conducted with a total of 15 participants, including eight oral health professionals working at the Central and Regional Dental Centers for Persons with Disabilities, and seven officials in charge of community dental clinics for people with disabilities, such as primary public health centers. Through these interviews, qualitative analysis was performed on their perspectives regarding the workforce and installation standards for the Regional Dental Centers for Persons with Disabilities. The comprehensive research system is structured into a three-phase process: "Problem Identification and Status Analysis → Operational Model Design → Policy Recommendations.

2. Theoretical background and current status analysis

2.1. Public health significance of oral health rights for vulnerable populations

Health rights are fundamental human rights that must be guaranteed to all citizens, and oral health serves as a core indicator of social integration and overall quality of life (QoL). However, individuals with disabilities face severe vulnerabilities; due to physical, mental, and

Table 1. Current average waiting days for general anesthesia dental treatment at major dental centers for people with disabilities

	Central Center (S Dental Hospital)	Regional Center A	Regional Center B	Regional Center C
Waiting for first appointment	About 30 to 50 days	About 40 to 60 days	About 45 to 67 days	About 7 days
Waiting for surgery under general anesthesia	Average 175 days (about 6 months)	About 120 days (about 4 months)	About 205 days (about 7 months)	Up to 180 days (about 6 months)
Main cause of congestion	Surge in demand for third-level complex surgeries	Mix of mild and severe patients and lack of general anesthesia slots	Patient crowding due to the lack of buffer institutions in the area	Lack of mobile medical services and dedicated doctors in the area

* Ministry of the Health and Welfare(2024) [4].

economic constraints, their untreated oral diseases frequently lead to chronic pain, nutritional imbalances, and the exacerbation of systemic conditions. Therefore, securing oral health rights for vulnerable populations constitutes a critical benchmark for evaluating the efficacy of a nation's healthcare safety net. Furthermore, proactive and preventive care pathway yield significant public health value by substantially reducing subsequent public healthcare expenditures associated with high-complexity surgeries and preventable systemic complications.

2.2. Oral health disparities and unmet dental care needs among the disabled

The oral health indicators of people with disabilities in South Korea reveal a profound structural inequality compared to the general population. For individuals with developmental or brain lesions who face challenges in self-administered oral hygiene, plaque control remains severely compromised, making periodontitis and gingivitis the leading causes of morbidity in this population. According to the National Oral Health Survey by the Ministry of Health and Welfare, the dental caries experience rate among 12-year-old children with disabilities stands at 85.2%, a figure significantly higher than that of their non-disabled peers. Despite having a higher number of missing teeth due to missed opportunities for timely conservative treatments, their unmet dental care needs remain critically high. Data from the Korea National Health and Nutrition Examination Survey and the National Survey of Disabled Persons demonstrate that the unmet dental care rate among disabled individuals is approximately two to three times higher than that of the general population. This disparity is driven by a complex interplay of three core barriers: economic factors, specifically the burden of high out-of-pocket expenses coupled with reduced household income; physical barriers, characterized by the absolute shortage of primary dental clinics equipped with accessible facilities; and technical barriers, arising from a lack of dental professionals trained to manage disability-specific behavioral characteristics.

2.3. Current operational status and structural limitations of regional centers

The existing centralized model, centered entirely around Tertiary Regional Dental Health Centers, faces definitive limitations regarding both infrastructural capacity and financial sustainability. Government administrative audits reveal that most operating regional centers are confronting chronic operational deficits and severe budgetary constraints, primarily driven by a high volume of mandated uncompensated care and steep fee discounts for vulnerable patients. Most crucially, a severe institutional and legal vacuum exists at the secondary care level between primary dental homes and tertiary regional centers. In the absence of a secondary buffering infrastructure, high-complexity general anesthesia slots are rapidly consumed by low-complexity cases. This misallocation accelerates the exhaustion of specialized resources and severely undermines medical accessibility for patients with severe disabilities who legitimately require tertiary intervention.

3. Comparative analysis of overseas dental care delivery systems and policy implications

3.1. Operational case studies of developed nations

3.1.1. United kingdom: community dental services (CDS) based on the national health service (NHS)

Under the National Health Service (NHS) framework, the United Kingdom operates the 'Community Dental Services (CDS)' as a distinct delivery system tailored for individuals with disabilities and vulnerable populations. When a primary care general dental practitioner (GDS) encounters a patient with a disability whose condition exceeds local management capacity, the patient is not immediately referred to a tertiary hospital. Instead, they are systematically directed to a secondary CDS buffering hub staffed by public health specialists and dedicated clinical teams. Major developed nations consistently optimize systemic efficiency by upgrading specialized referral networks and structuring clear intermediary pathways through secondary institutions. By deploying mobile dental units and local anchor clinics, the CDS maximizes geographic accessibility. Furthermore, its rigorous filtering mechanism successfully prevents the inflation of waitlists for high-complexity general anesthesia slots at tertiary general hospitals.

3.1.2. United states: open destination infrastructure and behavior management fee incentives

The United States has expanded its specialized oral healthcare infrastructure by combining public health insurance frameworks, such as Medicaid, with private sector clinical resources. Rather than restricting specialized designations strictly to public entities, the U.S. government actively designates qualified private dental practices, community clinics, and university-affiliated facilities as accessible regional hubs. To preserve and compensate for the

extensive clinical time and labor invested by dental practitioners, the system provides explicit, fee-for-service reimbursement codes dedicated to behavior management and the deployment of specialized stabilization devices. This robust financial compensation mechanism serves as a powerful market incentive, encouraging private dental clinics to voluntarily integrate themselves into the broader care delivery network for vulnerable populations [5].

3.1.3. Japan: primary care dental home networks and certified disability specialist systems

Japan has established a model that organically links primary dental clinics, centered on private practitioners, with "dental treatment bases for persons with disabilities" based on local dental associations. To ensure that patients with disabilities can receive primary prevention and management within their communities, Japan has promoted a system of "disability dental specialists and certified dentists" for primary care dentists. Under this system, mild-to-moderate patients capable of behavioral guidance are managed by these local certified dentists, while only patients with severe disabilities are referred to specialized centers or university hospitals at the prefecture level, thereby maximizing the efficiency of medical resources [6].

3.2. Policy implications for the domestic framework

A comparative analysis of these international frameworks yields three core policy implications for reforming the South Korean dental care delivery system. First, the structural differentiation of a secondary buffering tier is imperative. As demonstrated by the British CDS model, an intermediary infrastructure must be established between primary clinics and tertiary regional centers to absorb mild to moderate cases. This evidence reinforces the thesis of this study that implementing "Local Dental Health Centers" serves as a pragmatic and essential mechanism to alleviate chronic bottlenecks at tertiary facilities. Second, infrastructure expansion must be accelerated by diversifying operational entities. Establishing specialized centers solely through direct public investment, as historically observed, demands unsustainable expenditures and prolonged timelines. Following the U.S. model of public-private partnerships (PPP), an open designation system must be instituted to absorb qualified private sector resources into the public safety net, thereby maximizing infrastructural capacity in the short term. Third, sustainable institutional incentives—encompassing both financial compensation and professional education—must be codified. To secure active private sector participation, South Korea must benchmark the behavior management fee structures of the United States and the specialized certification systems of Japan. Codifying mandatory disability-specific clinical training for core personnel (one dentist and two dental hygienists), paired with structural financial offsets such as designation subsidies and optimized fee-for-service scales, is a prerequisite to securing the health and welfare rights of vulnerable populations.

4. Policy improvement measures centered on the local dental health center model

In South Korea, oral health care services for older adults and individuals with disabilities have been provided primarily through primary public health centers; however, the scope of community-based and facility-based services remains limited [8]. The COVID-19 pandemic further restricted service delivery, particularly for community-dwelling older adults and individuals with disabilities. Moreover, although various healthcare programs have been implemented under the community integrated care pilot project (2019–2025), oral health care services have been offered only in a limited number of regions. Therefore, this study aims to derive policy improvements centered on the Regional Dental Centers for Persons with Disabilities [7]. To achieve this, policy alternatives are proposed based on the qualitative analysis of findings obtained through a literature review, administrative data analysis, and expert focus group interviews (FGIs).

4.1. Establishment of a three-tier dental healthcare delivery system for dispersing mild patients

To resolve the chronic bottleneck in domestic oral health services for people with disabilities and normalize the function of Regional Dental Health Centers, re-establishing the dental care delivery system is imperative. This study proposes a structured "Three-Tier Oral Health Welfare Delivery System" consisting of primary institutions (dental homes and local public health centers) for basic preventive care, secondary buffering institutions (Local Dental Health Centers) for managing mild to moderate patients who can be treated with standard behavioral guidance, and tertiary advanced anchor institutions (Regional and Central Dental Health Centers) focusing on high-complexity oral surgeries and treatments under general anesthesia. This structural differentiation prevents low-complexity cases from needlessly saturating tertiary facilities, effectively securing medical slots for severe patients who legitimately require advanced general anesthesia interventions.

Table 2. Proposed reform of the three-tier dental healthcare delivery system for persons with disabilities and designation criteria for local centers

Structure	Primary Institution (Prevention & Management)	Secondary Institution (Local Center-New)	Tertiary Institution (Regional/Central Center)
Key Roles	Oral examinations, basic scaling, and simple restorative treatments	Dedicated care for mild-to-moderate patients with disabilities and diversion of patients manageable with behavioral guidance	Care for severe disabilities and concentrated dental surgery under general anesthesia
Designating Body	Clinics designated under the Dental Homecare System for Persons with Disabilities	Public or private institutions meeting the criteria	National university dental hospitals and similar regional/central centers
Staffing Standards	No specific restrictions	One dedicated dentist, two dedicated dental hygienists, and one administrative staff or social worker	Multiple specialists, including oral and maxillofacial surgeons and pediatric dentists
Mandatory Education	Completion of the Primary Care Physician Training Course	Mandatory Completion of Specialized Dental Care Training for People with Disabilities	Board-certified in dental care for persons with disabilities
Facility Standards	General dental clinic environment	Barrier-free environment, 1.5m wheelchair turning radius, and special dental chairs or transfer devices	Dedicated operating and recovery rooms for general anesthesia, plus large-scale specialized equipment

4.2. Concrete designation criteria and operational models for local dental health centers

To ensure that Local Dental Health Centers function effectively as secondary buffering institutions, specific institutional and legal designation criteria must be codified across staffing, specialized training, and physical facilities as follows:

4.2.1. Staffing standards and clinical team composition

The clinical team at a designated local center must mandate a core, full-time personnel structure consisting of at least one dentist and two dental hygienists. The dentist manages overall clinical operations and specializes in restorative, prosthetic, and periodontal treatments for mild to moderate patients who do not require general anesthesia. Among the two dental hygienists, one is dedicated to behavioral guidance and clinical assistance to ensure patient safety, while the other focuses on preventive therapies, scaling, and oral health education, thereby maximizing clinical efficiency within a limited resource setting.

4.2.2. Mandatory deployment of social workers for welfare integration

Administrative and social support demands—such as transport assistance, appointment scheduling, and welfare benefit linkage—are substantially higher in disability-specific dental care. Therefore, this model mandates the deployment of one social worker (or dedicated administrative staff) at each local center. Incorporating a multidisciplinary approach into clinical dental settings has been shown to significantly improve overall patient satisfaction and quality of life among vulnerable populations [8]. Specifically, the social worker processes financial support paperwork for non-covered treatments based on the patient's socioeconomic status and builds robust networks with local welfare centers and residential facilities to execute comprehensive case management. This framework aligns with the broader public health paradigm of constructing a flexible, community-based health governance safety net [9].

4.2.3. Qualification requirements and specialized training frameworks

Given the clinical complexities of managing disability-spe- cific behavioral characteristics and underlying systemic conditions, a rigorous professional verification system is required. All core personnel (dentists and dental hygienists) at local centers must complete a mandatory "Specialized Training Course in Disability Dentistry" certified by the Ministry of Health and Welfare or the Central Center. The curriculum encompasses behavioral management techniques, conscious sedation assistance, and emergency response protocols, and it will be linked to continuing education credits to ensure continuous competence renewals.

4.2.4. Accessibility standards and physical facility requirements

To guarantee physical accessibility for patients with severe mobility constraints, compliance with barrier-free (BF) environment standards is mandatory. The facility must eliminate entrance thresholds, provide ramps, and secure accessible elevators and dedicated parking slots. Within the clinic, a minimum wheelchair turning radius of 1.5 meters must be maintained. Furthermore, local centers are legally required to equip at least one dental operatory with specialized transfer boards or dedicated wheelchair-accessible dental chairs.

4.2.5. Operational flexibility: the open designation system

Rather than restricting operational entities exclusively to public institutions, this model implements a "Criteria-Centered Open Designation System" accessible to any entity satisfying the aforementioned staffing, training, and facility requirements. This approach encompasses public infrastructures—such as public health clinics and municipal hospitals—as well as highly accessible private dental clinics and hospitals. Implementing such a public-private partnership (PPP) model serves as an exceptionally cost-effective strategy to rapidly expand specialized infrastructure and improve geographical accessibility within a short time frame [10].

4.3. Optimization of insurance fees and financial support mechanisms

To incentivize private sector participation and offset the financial losses inherent in disability-specific dentistry, structural financial compensation is crucial. Reflecting the clinical reality that treating patients with disabilities demands at least two to three times more time and labor, the government must introduce a dedicated "Behavioral Management Fee Scale" for local centers or expand existing fee-for-service multipliers. Government data indicates that the current centralized financial structure is unsustainable due to heavy uncompensated care burdens [11]. Therefore, to secure the voluntary participation of private clinics, the system must optimize non-covered care subsidies and establish robust financial stabilization mechanisms [12]. This study recommends a "Designation Subsidy Program," wherein central and local governments co-fund initial facility renovations and partial labor costs via matching funds.

4.4. Implementing financial incentives for referral-and-return pathways

A seamless three-tier delivery system requires a functional referral-and-return fee framework to prevent institutional fragmentation. Primary clinics or secondary local centers should receive a "Specialized Referral Fee" when directing high-complexity, severe cases to tertiary regional centers, compensating for their administrative and clinical diagnostics. Conversely, when a tertiary regional center successfully stabilizes a patient through acute therapies or surgery and refers them back to a secondary local center for continuous community-based maintenance, a "Return Incentive Fee" is granted. This financial mechanism optimizes the rotation of valuable general anesthesia slots at tertiary hubs and drives the systemic circulation of the delivery network.

5. Conclusion and policy recommendations

This study has demonstrated that the severe bottleneck and long wait times at tertiary Regional Dental Health Centers are structurally driven by the overlap of mild and severe patients resulting from the absence of a proper dental delivery system. As a pragmatic policy alternative, this study formulated a standardized "Local Dental Health Center" model—anchored by a core team of one dentist, two dental hygienists, and one social worker, alongside mandatory barrier-free facilities—and validated the systemic necessity of an open designation system bridging the public and private sectors. Based on these findings, the following policy recommendations are proposed to build a sustainable oral health welfare safety net for vulnerable populations: First, the Ministry of Health and Welfare is encouraged to amend the Enforcement Decree and Enforcement Regulations of the Oral Health Act to establish a clear legal definition and designation criteria for Local Disabled People's Oral Care Centers, functioning as secondary Local Dental Health Centers. Second, to ensure smooth institutional integration, the government should initiate a "Local Dental Health Center Pilot Project" in key regional municipalities by partnering with willing public health centers and competent private practices. This pilot project will serve to empirically validate the clinical efficacy of the staffing standards and the welfare-linked social worker model, while allowing for the fine-tuning of the insurance fee scales. Third, to guarantee long-term operational sustainability, the National Health Insurance and Medical Care Assistance frameworks must expand behavioral management fee codes and formally adopt the referral-and-return financial incentive system. Once the three-tier delivery model proposed in this study is fully institutionalized, it will not only relieve the systemic backlogs at regional centers but also establish a dense, community-centered oral health welfare safety net, ensuring that vulnerable individuals are never marginalized in accessing their fundamental right to health.

However, to ensure the effectiveness of the policy alternatives proposed in this study, the following limitations must be addressed, and follow-up research should be conducted. First, although designation criteria were derived through expert FGIs, the study did not deeply address realistic constraints, such as chronic dental workforce shortages in local areas and participation incentives for private institutions (e.g., financial support and specialized fee

schedules). Second, to prevent the fragmentation of the delivery system, future research must precede the development of practical patient referral and return system protocols and information-sharing infrastructures among central, regional, and local centers. Third, due to the focus on addressing immediate domestic challenges, this study has a limitation in that it did not sufficiently compare and analyze the oral health systems and prior literature of major foreign countries. An in-depth comparative analysis with global precedents will be pursued as a future task to expand the scope of this study. Fourth, because this study was limited by its concentration on provider-centered surveys, future quantitative needs assessments should be supplemented to reflect the accessibility demands of individuals with disabilities and their guardians who actually utilize the services.

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Conflicts of Interest

The authors declare no conflict of interest. The views expressed in this article are those of the author and do not necessarily represent the official position of the MOHW.

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