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Original Article

Advancing special needs oral healthcare in Southeast Asia through Taiwan's New South Bound Project: Institutional feedback and sustainable strategies

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Abstract *Background/purpose:* Providing oral healthcare to individuals with special needs remains inadequate in Southeast Asia. This study evaluated the outcomes from five universities across three Southeast Asian countries participating in Taiwan's "New South Bound Special Needs Patients Oral Care Project" after its four-year implementation (2018–2021).

Materials and methods: The questionnaires distributed to participating universities collected data on dental professionals' demographics, patient characteristics, and project satisfaction. Descriptive statistics analyzed the responses.

Results: All universities reported excellent satisfaction with the project. Dental professionals' ages ranged from 31 to 60 years, and their service experience varied from 1 to 10 years. Special needs patients receiving dental care ranged from <5 % to 30 %, predominantly from urban areas, with most universities serving older adults. Each institution developed unique education, outreach, and institutional collaboration promotion strategies.

Conclusion: The project successfully established special needs oral health programs with high satisfaction levels. It facilitated knowledge transfer, including Taiwan's expertise in domiciliary dental care. Recommendations include expanding collaboration, developing standardized curricula, implementing caregiver education, establishing monitoring systems, creating a regional network, and expanding domiciliary care training. These efforts align with WHO's Sustainable Development Goals while improving oral healthcare accessibility for individuals with special needs.

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Introduction

Individuals with special healthcare needs represent one of the most underserved populations in dentistry worldwide, particularly in developing regions. The World Health Organization (WHO) estimates that approximately 15 % of the global population lives with some form of disability, with higher prevalence rates in low and middle-income countries.¹ These individuals face numerous barriers to accessing oral healthcare, including physical accessibility challenges, communication difficulties, financial constraints, and a critical shortage of appropriately trained dental professionals.

The challenge of providing adequate oral healthcare to special needs populations is particularly acute in Southeast Asia. While the region has made significant progress in general healthcare care, specialized dental services for patients with disabilities remain limited. According to recent epidemiological studies, the prevalence rates of disability in the region vary substantially: Indonesia (8.0 %), Vietnam (7.8 %), Timor-Leste (4.6 %), Thailand (2.2 %), and the Philippines (1.6 %).² Despite these significant numbers, the resources of the specialized dental workforce are severely constrained, with a disproportionate ratio of special care dentists (SCDs) to the population requiring their services. This disparity is exemplified by the limited number of practicing SCDs in the region: 11 in Malaysia (including 5 in training), 3 in Indonesia, 2 in Thailand, and 2 in the Philippines.²

Unlike this regional shortage, Taiwan has developed comprehensive special needs oral healthcare (SNOH) systems over several decades. Beginning with establishing specialized disability dental clinics in 1996, Taiwan progressively expanded services through regional demonstration centers in 2000. These centers served the dual purpose of providing direct patient care and training dental professionals in SNOH techniques and protocols. A critical component of comprehensive SNOH is domiciliary dental care (DDC), the provision of dental services in patients' homes or residential facilities, which ensures access for those unable to visit conventional dental clinics due to mobility limitations, severe disabilities, or complex medical conditions. Taiwan's systematic approach to SNOH culminated in officially recognizing special needs dentistry as a specialty by Taiwan's Ministry of Health and Welfare in 2022,³ integrating these services into the national health insurance framework and ensuring sustainable access to care.

Chung Shan Medical University (CSMU) has been at the forefront of Taiwan's SNOH development, particularly in pioneering DDC education and services. As Taiwan's population ages, CSMU recognized the growing importance of bringing dental care to patients rather than requiring all patients to visit dental clinics. Since 2017, CSMU has been

the only institution in Taiwan to fully incorporate DDC training into its undergraduate dental curriculum, complementing the university's broader special needs dentistry program.^{4–7} Recent studies on Southeast Asian healthcare systems have documented significant challenges in oral healthcare integration, including poor access to care, maldistribution of dental professionals, weak information systems, and inadequate financing.⁸ Despite having universal health coverage policies in place, many Southeast Asian countries still struggle with dental care being primarily delivered by private providers, forcing patients to pay substantial costs directly from their own pockets. This context emphasizes the importance of Taiwan's New South Bound initiative, which directly addresses these regional disparities by transferring knowledge and building capacity for special needs oral healthcare in partner countries.

Taiwan's commitment to regional healthcare development led to the 'New South Bound Special Needs Patients Oral Care Project' in 2018.⁹ Implemented by CSMU under the auspices of Taiwan's Ministry of Health and Welfare. This initiative represents a strategic effort to address healthcare disparities through knowledge transfer, capacity building, and collaborative partnerships with Southeast Asian institutions. The project leverages Taiwan's extensive SNOH experience, including its advances in DDC, to help build sustainable systems in partner countries. This approach embodies key principles from the WHO's Sustainable Development Goals (SDGs), particularly SDG 3 (good health and well-being), SDG 4 (quality education), SDG 10 (reduced inequalities), and SDG 17 (partnerships for the goals).

While previous studies have documented the initial establishment of this project,⁹ including the formation of memorandums of understanding and cooperation agreements, there has been no comprehensive assessment of the participating institutions' experiences, satisfaction, and implementation strategies. This study addressed this gap by analyzing feedback from the five participating universities in the Philippines, Thailand, and Indonesia after the four-year implementation period (2018–2021). This evaluation examined the characteristics of dentists and patients, institutional satisfaction with the project, and the development of sustainable SNOH promotion strategies. The findings provide critical insights for refining international healthcare cooperation models and advancing the WHO's vision of universal health coverage that meaningfully includes vulnerable populations.¹⁰

Materials and methods

This study evaluated the four-year implementation (2018–2021) of the 'New South Bound Special Needs Patients Oral Care Project' coordinated by CSMU under the support of Taiwan's Ministry of Health and Welfare. The

project involved five dental schools from three Southeast Asian countries: two universities from the Philippines, two from Thailand, and one from Indonesia. These institutions were selected based on their interest in developing special needs oral healthcare programs and their ability to implement such services.

To assess project outcomes and collect institutional feedback, we developed a comprehensive three-part questionnaire distributed to project coordinators at each participating university in December 2021. Part 1 focused on the demographics and professional background of special needs dental care providers, including their age range and years of service in treating patients with special needs. Part 2 examined the characteristics of special needs patients receiving care in each institution, including the percentage of such patients among total dental patients, their geographical distribution (urban versus suburban), gender predominance, and age range. Part 3 evaluated institutional satisfaction with the project implementation across four domains (consultation and cooperation, lecturer assistance, administrative work, and overall satisfaction) using a four-point Likert scale (poor, fair, good, excellent). This section also explored the strategies of each university to promote oral healthcare within their institutions and surrounding communities.

The project coordinators and dental faculty members directly involved in implementing the project at their respective institutions completed the questionnaires based on institutional records and their professional assessment of the project's impact. Data were compiled and analyzed using descriptive statistics to identify participating institutions' patterns, challenges, and opportunities. Promotion strategies were qualitatively assessed to understand the diverse approaches developed in response to local needs and contexts. This evaluation provides a comprehensive overview of the project's impact and offers insight for future collaborative initiatives in special needs oral healthcare.

Results

Dental professional characteristics

The survey revealed variations in the demographics and professional experience of dental professionals involved in special needs patient care at participating universities (Table 1). The age distribution of these professionals ranged from 31 to 40 years at Universities A and B, 41–50 years at Universities C and D, and 51–60 years at University E.

The levels also varied significantly, with University B reporting the least experienced practitioners (1–3 years of

service), Universities C, D, and E having moderate experience (4–6 years), and University A having the most experienced professionals (7–10 years).

Patient characteristics and care patterns

The percentage of special needs patients receiving dental care varied significantly between participating universities (Table 2), ranging from less than 5 % at Universities D and E to 21–30 % at University B, with Universities A and C reporting 11–20 % and 6–10 % respectively.

Most patients at Universities A, C, and D were from urban areas (cities), while those at Universities B and E were predominantly from suburban areas. The gender distribution showed variation, with Universities A, C, and E reporting a predominance of female patients, while Universities B and D served more male patients.

The age distribution of the patients showed distinct patterns across institutions: University B primarily served younger patients (10–20 years), University D focused on middle-aged patients (51–60 years), Universities A and C both served older adults (61–70 years), while University E concentrates on the oldest patients (>70 years).

Project satisfaction and promotion strategies

All five universities rated the project as 'excellent' in all four evaluation aspects: consultation and cooperation, lecturer assistance, administrative work, and overall satisfaction.

All universities expressed a strong commitment to promoting SNOH within their institutions and surrounding communities, with each developing tailored promotion strategies detailed in Table 3. These strategies varied based on local needs and resources: University A focused on implementing comprehensive oral health care courses for patients and caregivers; University B established broader cooperation with centers for disabled children, organizing monthly dental examinations, providing proper tooth brushing education, and equipping specialized treatment centers; University C developed afternoon sessions specifically for elderly patients and their caregivers while emphasizing home oral care education and planning domiciliary dental visits; University D took a government-partnership approach by establishing collaborations with local authorities to reach more patients, beginning with institutionalized individuals near the university and planning gradual expansion; and University E concentrated on intensifying oral health education for families and caregivers while encouraging volunteer training to build community capacity for special needs patient care.

Table 1 Demographics and professional background of special needs dental care providers at participating universities.

| Item/University | A | B | C | D | E |
|---|-------|-------|-------|-------|-------|
| The average age of dental professionals in the treatment of patients with special needs. | 31–40 | 31–40 | 41–50 | 41–50 | 51–60 |
| The average time (years) of service for dental professionals in the treatment of patients with special needs. | 7–10 | 1–3 | 4–6 | 4–6 | 4–6 |

Table 2 Special needs patient characteristics and care patterns at participating universities.

| Item/University | A | B | C | D | E |
|--|--------|---------|--------|-------|---------|
| The percentage of patients with special needs receiving dental care. | 11–20 | 21–30 | 6–10 | <5 | <5 |
| Most living area of the patients with special needs. | City | Suburbs | City | City | Suburbs |
| The largest percentage of the patients with special needs receiving dental care. | Female | Male | Female | Male | Female |
| The average age of patients with special needs receiving dental care. | 61–70 | 10–20 | 61–70 | 51–60 | >70 |

Discussion

The New South Bound Special Needs Patients Oral Care Project has successfully introduced and strengthened SNOH programs in five universities in three Southeast Asian countries. The unanimous excellent satisfaction ratings across all evaluation aspects demonstrate the project's success in meeting the needs of participating institutions. These findings align with the project outcomes reported previously,⁹ which highlighted the signing of 82 Memorandums of Understanding for medical healthcare agreements and 15 for cooperation agreements to establish a regional referral network for SNOH.

The success can be attributed to several factors. First, the professional demographics revealed in Table 1 show a mixture of younger professionals (31–40 years in Universities A and B) and more experienced practitioners (41–60 years at Universities C, D, and E), creating a balanced foundation for the implementation of advanced dental care techniques. Second, the various promotion strategies developed by each university demonstrate the customization of the SNOH approaches to local contexts and resources, improving sustainability. Third, the participation of both academic institutions and local communities in these promotion strategies suggests a promising foundation for long-term impact beyond the project's initial implementation period.

The survey revealed several challenges and opportunities. The relatively low percentage of special needs patients receiving dental care, below 5 % in Universities D and E and reaching only 21–30 % in the highest (University B), indicates significant room for growth in service provision. The notable age distribution patterns identified in Table 2, with University B focusing on younger patients (10–20 years) and the other universities primarily serving older patients (51 years and older), suggest the need for age-

specific care approaches. The urban-rural divide in patient distribution, with 60 % of universities reporting patients primarily from urban areas, highlights potential access barriers for rural residents that future initiatives should address.

A particularly valuable component of the knowledge transfer process was sharing CSMU's extensive experience with domiciliary dental care (DDC). With Taiwan's rapidly aging population, CSMU has developed significant expertise in DDC, the first and only institution in Taiwan to fully incorporate DDC training into its undergraduate dental curriculum since 2017.^{4–7} The transfer of this specialized knowledge to Southeast Asian institutions represents a significant value-added component of the project, addressing the needs of patients who cannot easily access traditional dental clinics. This is particularly relevant given the geographic and infrastructure challenges in many parts of the region.

The outcomes of this project contribute significantly to the WHO's Sustainable Development Goals framework. By improving access to oral healthcare for people with special needs, the project addresses SDG 3.8, which calls for achieving universal health coverage, including financial risk protection and access to quality essential healthcare services. The focus on education and training supports SDG 4.7 by promoting education for sustainable development and global citizenship. The project's focus on serving marginalized populations with special needs aligns with SDG 10, which aims to reduce inequalities within and among countries. Additionally, the partnerships between Taiwan and Southeast Asian universities embody SDG 17.6, encouraging international cooperation and access to science, technology, and innovation.

Based on our findings, we conclude that the Taiwan New South Bound Special Needs Patients Oral Care Project has successfully established SNOH programs with high

Table 3 Promotion strategies for special needs oral healthcare by participating universities.

| University | Promotion strategy |
|------------|--|
| A | Oral health care course for patients and caregivers |
| B | Cooperation with centers for handicapped children; monthly dental examinations; education on proper tooth-brushing; equipping treatment centers for special needs patients |
| C | Afternoon sessions for elderly and caregivers; dental education on home oral care; home visits for special needs patients |
| D | Collaboration with local government units; focus on institutionalized patients near the university; gradual expansion to other institutions |
| E | Intensifying oral health education for families and caregivers; encouraging volunteer training for special needs patient care |

satisfaction levels. We recommend (1) expanding collaboration to other regional institutions, (2) developing standardized but locally adaptable curricula, (3) implementing targeted caregiver education programs, (4) establishing monitoring systems, (5) creating a regional best practices network, and (6) expanding domiciliary dental care training programs based on CSMU's model. These efforts would significantly improve oral healthcare accessibility for people with special needs in Southeast Asia, advancing Taiwan's humanitarian healthcare mission and supporting the achievement of the SDGs of the WHO by 2030.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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