

Short Communication



Empowering health workforce for oral health outreach in Iran' primary schools: The sixth tooth celebration

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Abstract

Background: The first permanent molar plays a vital role in long-term oral health, yet awareness among parents of young children remains limited. This initiative aimed to empower Iran's community health workforce—including primary health care (PHC) staff, dental students, and volunteers—to implement the "Sixth Tooth Celebration," an oral health education program targeting first-grade students and their parents in East Azerbaijan. Grounded in social accountability, the program was integrated into Iran's PHC system.

Methods: The intervention was carried out in two phases: a pilot in selected Tabriz schools (2022–2023), followed by a province-wide rollout in fall 2024. Cascade training was conducted in both in-person and online formats for school health educators, PHC staff, dental students, and private-sector dental professionals. Educational materials included a themed poem, posters, PowerPoint slides, and tooth models. The evaluation followed Kirkpatrick's four-level model: reaction, learning, behavior, and results.

Results: Approximately 300 participants were directly trained by the lead educator through workshops and webinars. These trained individuals then conducted local sessions in their districts. The "Sixth Tooth Celebration" was ultimately implemented in 927 schools across 21 counties. Surveys completed by 30 facilitators indicated high satisfaction with training, improved educational delivery skills, and positive community response. Feedback was used to adjust and enhance the program.

Conclusion: This initiative demonstrates how localized capacity-building and curriculum integration can advance socially accountable oral health promotion. With strong support from the Ministries of Health and Education, the program has gained national attention and is now under review for formal nationwide adoption.

Introduction

Dental caries remains one of the most prevalent chronic diseases among children globally and in Iran.^{1,2} The first permanent molars—often called the "sixth teeth"—erupt around age six and are highly vulnerable to early decay due to their position and limited parental awareness.¹

Tackling this issue requires more than clinical care; it demands socially accountable, community-based education. Global and national reforms increasingly promote aligning health education with real-world needs, especially through primary health care (PHC) systems.^{3,4} Social accountability emphasizes empowering health trainees and workers to address local health priorities.^{5,6} School-based oral health programs serve as effective platforms for early prevention, but their success relies on trained personnel, inter-professional collaboration, and culturally relevant materials.^{7,8}

The "Sixth Tooth Celebration" was created as a scalable initiative embedded in Iran's PHC and school networks.

It focused on multi-level empowerment, involving dental students, PHC staff, health educators, volunteers, and private-sector dentists as facilitators of change.^{9,10}

Dental students engaged as part of their Dental Public Health training, reinforcing service-learning models.^{11,12} Broad collaboration across health, education, municipal, and civil sectors further extended the program's reach and public visibility.¹³

This article describes a two-phase oral health initiative in East Azerbaijan: a pilot in Tabriz schools followed by a province-wide rollout. The program was embedded in Iran's PHC system and emphasized social accountability. It highlights how academic-community collaboration can advance oral health equity at scale.

Methods**Program design and setting**

This educational initiative was developed by the Department of Community Oral Health at Tabriz

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University of Medical Sciences and executed in two phases: a pilot phase in five selected urban schools in Tabriz (2022–2023), followed by a province-wide rollout across 21 counties of East Azerbaijan in November 2024.

Grounded in principles of social accountability, the program utilized Iran's PHC infrastructure and school network as dissemination channels. A multisectoral steering committee—including representatives from the Ministry of Health and Medical Education (MOHME), the Provincial Department of Education, municipal authorities, academic institutions, media outlets, and private-sector dental professionals—guided the initiative ([Supplementary file 1, A](#)).

Participants

Approximately 300 individuals participated in the empowerment program, including:

- PHC workers
- Dental students (as part of their *Dental Public Health* course)
- Dental assistants
- Volunteer private-sector dentists
- Community health volunteers and school educators

Training sessions were conducted by the program coordinator (NSh), and distribution by participant role and training modality is summarized in [Supplementary file 1, B](#).

Educational materials

A standardized educational package was developed, including:

- Illustrated PowerPoint slides introducing the sixth permanent molar, common risk factors, and preventive strategies
- Facilitator guides with step-by-step instructions
- Visual aids such as posters and tooth models (“dentics”)
- A culturally adapted educational poem and song

All materials were shared via administrative channels, educational portals, and internal communication systems. Representative materials are presented in [Supplementary file 2](#), (slides), and [Supplementary file 1, C](#) (poem and poster).

Training strategy

A cascade training model was implemented in October–November 2024:

- In-person workshops led by the program implementer (NSh) for select PHC staff, oral health officers, and volunteers
- Local training sessions by trained PHC staff in their respective counties
- Supervised rehearsals and practical training for dental students and assistants
- Two webinars for PHC workers, school staff, and volunteers in remote areas

Training instruments and feedback forms are included in [Supplementary file 1, D](#).

Implementation

The *Sixth Tooth Celebration* took place between November 15–22, 2024, in 927 primary schools across 21 counties. Trained facilitators delivered structured oral health education to first-grade students and their parents through:

- In-person sessions using PowerPoint slides, posters, and tooth models
- Q&A and discussion with parents
- Group recital of the “Sixth Tooth” educational poem
- Creative activities such as oral-health-themed student crafts

A detailed overview of the implementation process during the provincial phase is provided in [Supplementary file 1, E](#), which outlines the chronological steps from training to in-school activities. Standardized documentation procedures were used; Excel templates are in [Supplementary file 1, F](#).

Evaluation strategy

Program evaluation followed Kirkpatrick's Four-Level Model:

1. Reaction: Participant satisfaction via post-training surveys ([Supplementary file 1, D](#))
2. Learning: Assessed through observed rehearsals and in-field delivery
3. Behavior: Real-world performance via peer/self-assessments and facilitator reports
4. Results: Reach, stakeholder engagement, and institutional uptake documented in submitted reports and visual media

Feedback loops embedded throughout the pilot and provincial phases enabled data-driven revisions, enhanced stakeholder ownership, and strengthened the program's credibility as a scalable model for school-based oral health promotion. Structured feedback and revisions were categorized and presented in [Supplementary file 1, G](#). Final evaluation metrics and examples of reporting templates are shown in [Supplementary file 1 \(H, F, I, J\)](#) and [Supplementary 3](#).

Statistical analysis

SPSS version 16 software was utilized to analyze the data. A significance level of less than 0.05 was established. T-test and chi-square were applied.

Results

The *Sixth Tooth Celebration* initiative was conducted in two phases, with evaluation confirming its effectiveness in empowering facilitators, engaging communities, and fostering intersectoral coordination.

Pilot phase

As part of a socially accountable educational initiative,

the “Sixth Tooth Celebration” was introduced by Nsh to promote early oral health education. The program emphasized training both school health providers and dental students. During a workshop held in November 2022, 200 school health providers were introduced to educational materials and trained to deliver the content in schools. Concurrently, dental students received practical training and participated in school-based activities as part of their curriculum, allowing them to engage directly with children and parents. Oral health sessions were conducted using dentics, and PowerPoint presentations for both parents and first-grade students. A parent questionnaire administered to 141 mothers revealed:

- 68% were previously unaware that the sixth tooth is permanent
- 95% found the celebration useful and necessary (See [Supplementary file 1, J](#)).

Following positive feedback from participants and stakeholders (See [Supplementary file 3](#)), the program was incorporated into the dental public health curriculum and expanded through webinars and peer-led cascade training. The initiative empowered school health instructors to independently organize the celebration and enabled dental students to practice community-based health education. Recognized as a model for national scale-up, the program received first place at the EATA Festival and was formally acknowledged by the Ministry of Health.

Province-wide rollout

In October–November 2024, a total of 300 facilitators were trained directly, including:

- 100 school health workers
- 170 PHC workers
- 10 dental students
- 10 dental assistants
- 10 private-sector volunteer dentists (Details in [Supplementary file 1, B](#))

Trained PHC staff subsequently led local training sessions for colleagues in their districts. The cascade model enabled widespread participation. Trained facilitators delivered in-school sessions using standardized materials. The full implementation sequence is detailed in [Supplementary file 1, E](#), which outlines a step-by-step timeline of activities from preparatory meetings and content development to in-school events and post-program evaluation, ensuring coordination and consistency across all counties.

Implementation roles by organization are listed in [Supplementary file 1, A](#), which documents the coordinated efforts of various entities, including the Provincial Department of Education, multiple Vice-Chancellors from Tabriz University of Medical Sciences (Health, Treatment, and Education), the Department of Community Oral Health at Tabriz Dental School, the Faculty of Health and School of Nursing & Midwifery, the Tabriz Municipality Health Department, the Iran Medical Council (East Azerbaijan Branch), the Red Crescent

Youth Organization, the Welfare Organization, Sahand State TV Channel (IRIB Sahand), the Academic Jihad Institute, private-sector volunteer dentists, community health volunteers, and national-level leadership from the Ministry of Health and Ministry of Education. Each organization played a distinct role in logistics, training, outreach, or content delivery.

The program was successfully held in 927 schools across 21 counties between November 15–22, 2024. Many sessions featured:

- Group poem recitations
- Tooth-themed student plays
- Parent engagement and crafts

Documentation was submitted through standardized templates ([Supplementary file 1, F](#)), and a detailed county-level breakdown of participating schools is presented in [Supplementary file 1, I](#).

Training feedback and evaluation

Survey responses from 30 facilitators demonstrated high satisfaction and perceived effectiveness (see [Table 1](#)). Summary of findings:

- 91% rated content as comprehensive
- 78% found in-person workshops effective
- 82% reported webinar usefulness
- 87% recommended annual celebration

Evaluation via Kirkpatrick’s model confirmed strong outcomes at all four levels ([Table 2](#)).

Continuous feedback collected from stakeholders at various levels—ranging from implementers and faculty to parents and national forums—played a pivotal role in refining the program’s content, logistics, and delivery. These insights were systematically documented ([Supplementary file 1, G](#)) and informed real-time adjustments as well as strategic recommendations for national scale-up (summarized in [Supplementary file 1, G](#)).

Stakeholder engagement and national recognition

The program was supported by extensive public engagement efforts, including academic briefings, social media outreach, television appearances, and official communications across multiple sectors. Their

Table 1. Survey responses from trained participants on training effectiveness (n = 30)

Survey item	Positive response rate (% Yes)
Training content was comprehensive	91%
In-person training sessions were effective	78%
Webinar sessions were effective	82%
The quality of educational delivery in schools was high	82%
Schools provided positive feedback on the program	82%
Annual repetition of the Sixth Tooth Celebration is useful and necessary	87%

Note: Aggregated responses from 30 facilitators who participated in empowerment sessions. Data reflect perceptions of training quality, delivery modality, and program sustainability.

Table 2. Evaluation of the program based on Kirkpatrick's Four-Level Model

Kirkpatrick level	Evaluation focus	Findings / Indicators
Level 1: Reaction	Satisfaction with content, mode, and timing of training sessions	High satisfaction among participants; appreciation for flexible in-person and virtual formats
Level 2: Learning	Knowledge and skill acquisition by trainees	Demonstrated competence during practice sessions; improved delivery after receiving feedback.
Level 3: Behavior	Application of learned skills during field implementation	Participants delivered structured oral health education effectively; peer and self-assessments revealed improvement areas
Level 4: Results	Impact on organizational and public health goals	High outreach (908 schools), strong institutional and community support, national recognition from MOH

Note: This table summarizes the evaluation of the program using Kirkpatrick's four-level model, highlighting key findings and outcomes in terms of reactions, learning, behavioral changes, and overall program impact.

contributions are summarized in [Supplementary file 1, A](#) and documented in [Supplementary file 1, H](#).

In March 2025, the program was featured in a national oral health webinar by the Ministry of Health. Before this, a formal report was sent to the Ministries of Health and Education recommending national adoption. With the joint support of the Ministry of Health and the Ministry of Education, the “Sixth Tooth Celebration” has been officially integrated into the upcoming year's PHC agenda and is scheduled for implementation within national school health programs ([Supplementary file 1, K](#) and [Supplementary file 3](#)) (<https://eazphcp.tbzmed.ac.ir/?PageID=3269>).

Discussion

This initiative highlights the potential of a structured, multi-level empowerment model to operationalize social accountability in oral health education within Iran's PHC system. Unlike traditional top-down campaigns, the *Sixth Tooth Celebration* prioritized capacity building among frontline health staff, dental students, and community volunteers, fostering responsive and sustainable community engagement in school-based oral health promotion.^{3,5,6}

Cross-sectoral collaboration played a vital role in amplifying the program's reach and legitimacy. Entities such as the Departments of Health and Education, municipal offices, media, and universities contributed to public awareness, training logistics, and material dissemination. These partnerships are detailed in Appendix A, and their operational roles are documented comprehensively.

Through the cascade training approach, a network of more than 1200 trained personnel—including PHC workers, dental students, dental assistants, and private-sector volunteers—was activated to deliver consistent educational content across the province. This decentralized structure allowed for scalable outreach across 927 schools in 21 counties, with trained local facilitators conducting educational sessions independently ([Supplementary file 1, B and E](#)).

The participation of dental students, integrated as part of their *Dental Public Health* curriculum, provided meaningful experiential learning aligned with academic

objectives.¹¹ Practical rehearsals and faculty supervision ensured not only knowledge transfer but also fostered a sense of professional responsibility—echoing findings from similar community-based learning interventions.^{4,7,12}

Evaluation using Kirkpatrick's model demonstrated high levels of satisfaction and knowledge acquisition. For instance, 91% of trained health workers found the content comprehensive, while 87% recommended annual program continuation ([Table 1](#)). The pilot-phase parent survey also showed promising engagement, with 95% of respondents supporting the program and its continuation in schools ([Supplementary file 1, J](#)). Moreover, structured feedback loops—including reports, verbal feedback, and group discussions—led to iterative improvements in content and delivery strategies ([Supplementary file 1, G and F](#)).

The program's success was further enhanced by multisectoral partnerships with health departments, educational institutions, media, municipalities, and civil organizations. Their engagement provided logistical support, ensured public visibility, and increased institutional legitimacy across the province.¹³

Importantly, written proposals for national implementation were submitted to the Ministry of Health and Ministry of Education in late 2023, based on the program's strong regional performance. In March 2025, the program's outcomes were formally presented during a national oral health webinar hosted by the Ministry of Health, where it was positively received. Plans were subsequently discussed to scale up the initiative as part of the national school health strategy for the 2025–2026 academic year.

The inclusion of the “*Sixth Tooth Celebration*” in both the PHC agenda and school health programs, supported by the Ministry of Health and the Ministry of Education, represents a strategic step toward promoting oral health from an early age. This initiative not only underscores the value of preventive care but also highlights the effectiveness of intersectoral collaboration in addressing public health priorities ([Supplementary file 1, K](#)).

This experience provides a practical, scalable, and community-rooted model for oral health promotion that integrates academic, clinical, and PHC sectors. It supports global recommendations from WHO and the Lancet Commission to align health education with population

needs^{14,15} while also advancing Iran's domestic agenda to embed social accountability within medical and dental education frameworks.^{9,10}

Conclusion

The *Sixth Tooth Celebration* initiative demonstrates how the empowerment of PHC personnel, dental students, and health volunteers can serve as a practical mechanism for operationalizing social accountability in oral health promotion. By integrating training and implementation into both academic curricula and Iran's PHC infrastructure, the program successfully aligned educational efforts with broader public health objectives.

The cascade training model—reinforced by strong intersectoral collaboration—enabled the mobilization of over 300 trained facilitators and the successful delivery of the program in 927 primary schools across 21 counties. Feedback from participants and community members confirmed the program's feasibility, acceptability, and educational impact, highlighting its potential for long-term institutionalization.

Following the provincial rollout, a formal recommendation for national adoption of the program was submitted to the Ministries of Health and Education via official correspondence. The outcomes of the program were subsequently presented in a national oral health webinar hosted by the Ministry of Health in March 2025, where it was recognized as a model for nationwide implementation in the upcoming academic year.

As a result of intersectoral collaboration between the Ministry of Health and the Ministry of Education, the "*Sixth Tooth Celebration*" has been formally included in the upcoming PHC agenda and is set to be implemented in school health programs nationwide, reflecting a commitment to early childhood oral health promotion.

This experience offers a scalable and replicable framework for integrating community-engaged learning, interprofessional collaboration, and socially accountable education into health professions training. It reinforces international recommendations by the WHO and the Lancet Commission to reorient health education toward social accountability,^{14,15} and supports Iran's ongoing efforts to embed community responsiveness and equity into health sciences education.¹³

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Competing Interests

None.

Ethical Approval

Not applicable. This study reports on a socially accountable educational initiative and program evaluation. It did not involve human subjects research, clinical interventions, or the collection of personal or sensitive data. Therefore, it was not subject to formal ethical review under institutional guidelines. Nonetheless, all activities were conducted under the principles of the Declaration of Helsinki. Participation was voluntary, and all activities were carried out with transparency and respect for the rights and dignity of participants.

Funding

None.

Supplementary Files

Supplementary file 1 contains Appendices A-K as follows:

- A. Organizational Roles and Multisectoral Contributions
- B. Training Sessions by Target Group and Modality
- C. Educational Poem, Song Lyrics, and Event Poster
- D. Training Feedback Survey
- E. Step-by-Step Implementation Plan for Provincial Rollout
- F. Standardized School Reporting Template Used by Counties
- G. Summary of Feedback and Revisions Applied During Program Implementation
- H. External Engagements and Communication Materials
- I. Number of Participating Schools by County
- J. Parent Questionnaire Used in Pilot Phase and its Results Following the Sixth Tooth Celebration
- K. Effectiveness of intersectoral collaboration

Supplementary file 2 contains Facilitator Guides: PowerPoint Slides

Supplementary file 3 contains Visual Documentation and Official Letters to organizations (2023–2025)

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