



Dental Amalgam Phase Down Project in Thailand

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Accelerating implementation of dental amalgam provisions and strengthen country capacities in the environmental sound management of associated wastes under the Minamata Convention

(Mar 2023 - Feb 2026)

Project objective

To enhance the country's capacity to reduce the use of amalgam dental materials and manage mercury and hazardous mercury waste from dental practices in a measurable, sustainable, and environmentally friendly manner

Project outcome

🎯 Among the Thai population, the use of dental amalgam for restorations has decreased by 10%

🎯 The release of mercury into the environment in Thailand has decreased



Formulation of national measurement in accordance with the phase-down dental amalgam under the Minamata Convention on Mercury



- Formulating national policies to promote oral health prevention and dental caries prevention across all age groups such as 'Healthy Teeth Start at Home' campaign, A Cavity-Free Future Thailand - ACFF

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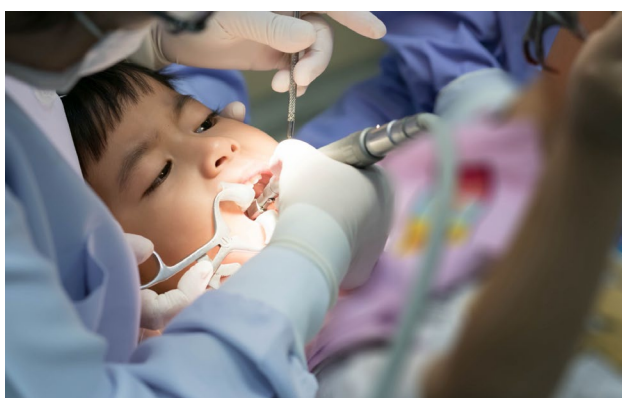
Setting national objectives aiming at dental caries prevention and health promotion, thereby minimizing the need for dental restoration



- Formulation of a national policy for the control and prevention of dental caries in children under 6 years of age (successfully implemented), and in children aged 6 to 15 years (ongoing)

3

Promoting the use of cost-effective and clinically effective mercury-free alternatives for dental restoration



- Abolition of the professional licensing examination requirement for Class II amalgam restorations in operative dentistry

5

Encouraging representative professional organizations and dental schools to educate and train dental professionals and students on the use of mercury-free dental restoration alternatives and on promoting best management practices



- The FDA has issued an announcement to the Ministry of Public Health concerning the use of metal alloys and mercury products in dental amalgams

8

Restricting the use of dental amalgam to its encapsulated form

Facilities based results in accordance with the phase-down dental amalgam under the Minamata Convention on Mercury

Conduct a feasibility research and develop processes for the implementation of amalgam separators in dental clinics in Thailand

Responsible parties

- Department of Health, Ministry of Public Health, Thailand
- WHO Collaborating Centre for Oral Health Education and Research, Mahidol University Faculty of Dentistry
- Eight Health Care Facilities

Objectives



Assess the cost-effectiveness of amalgam separators installation by comparing the reduction of mercury released into the environment with the costs of installation, amalgam waste disposal, and maintenance.



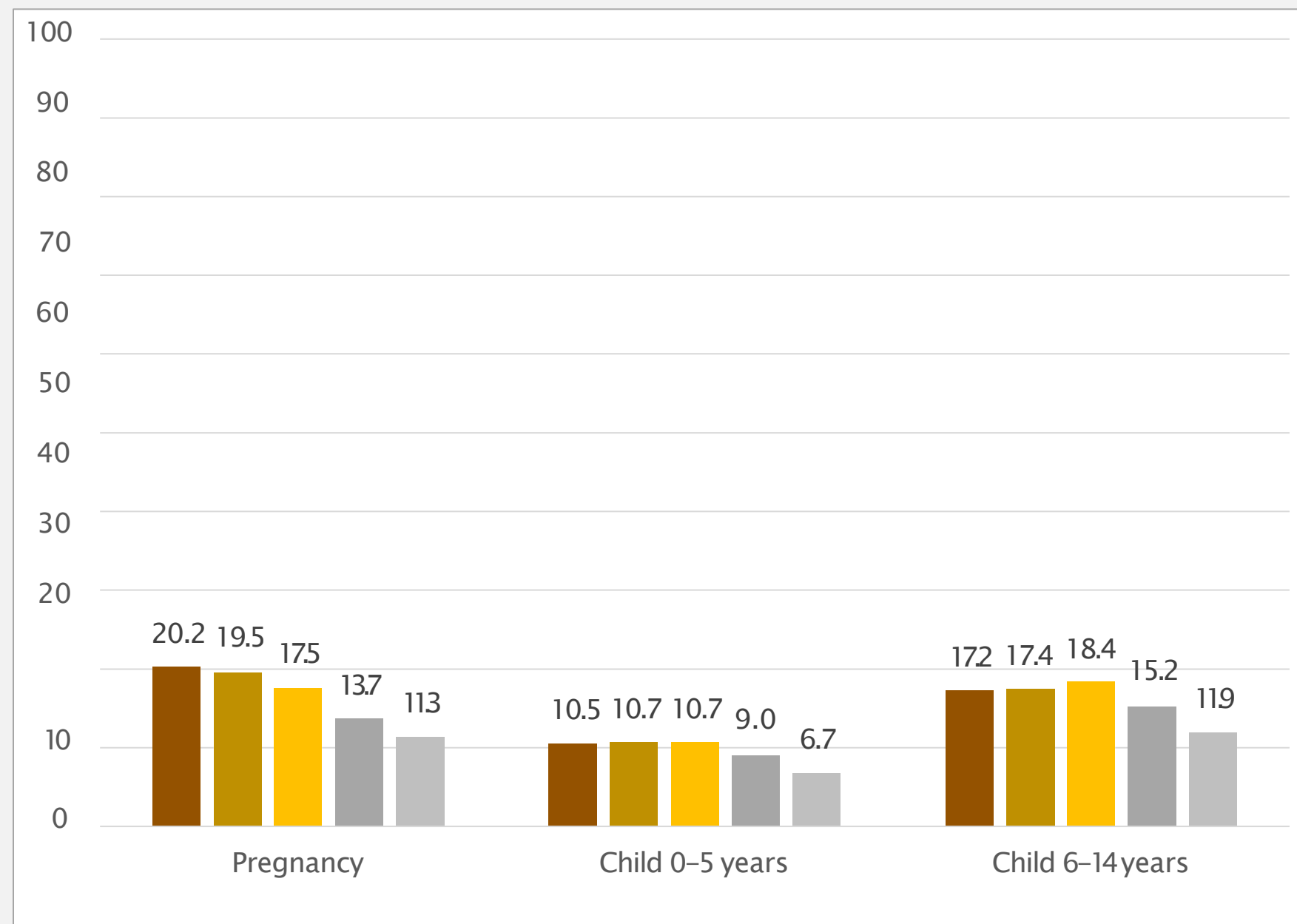
Evaluate the perspectives of stakeholders involved in the installation of amalgam separators in model hospitals in order to determine the feasibility of scaling up installation to other hospitals.



Outcomes

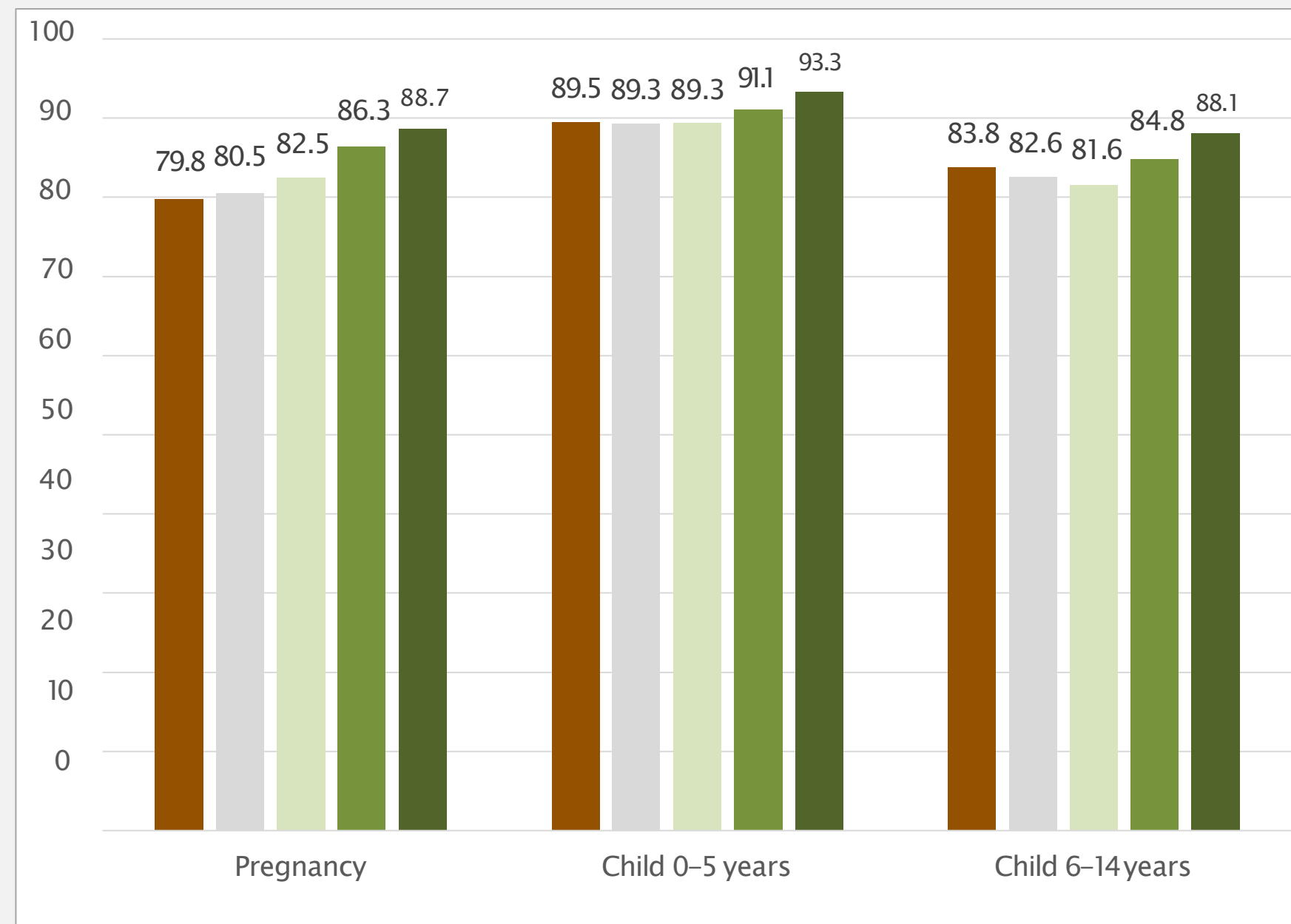
Proportion of the population receiving dental filling services, classified by frequency of visits

Amalgam filling



2019 2022 2023 2024 2025 (10 months)

Alternative fillings



2019 2022 2023 2024 2025 (10 months)

* Dental Amalgam Phase Down Project started since Marh 2023

Key success factor



Policy and Regulatory Measures

- Formulation of national policies and measures to minimize the use of dental amalgam and strengthen waste management mechanisms
- Integration with ministerial regulations, environmental policies, and the national educational system



Multi-Sectoral Collaboration

- Multi-sector stakeholder engagement (public, academia, professional, private sectors)
- Active participation of dental teams and hospital administrators
- National–international knowledge exchange and collaboration



Monitor and Evaluation

- Establishment of a national steering committee to oversee project implementation
- Continuous monitoring of progress and challenges
- Development of baseline datasets and reporting to WHO and international partners

Project Steering Committee

Public, Private, Educational sectors from Health and Environmental parts

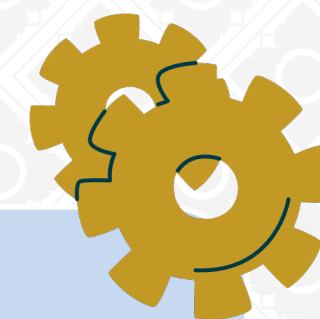


“ To drive the project forward with a shared goal of ensuring health and environmental safety ”

Project Kick Off : 1 May 2024

“ To declare a commitment to reduce the use of dental amalgam, supporting the use of alternative materials and manage amalgam waste in Thailand ”

Project Steering Committee



Bureau of Dental Health, Department of Health
Bureau of Environmental Health, Department of Health
The Dental Council of Thailand
Dental Faculty Consortium of Thailand
The Royal College of Dental Surgeons of Thailand

Department of Pollution Control
Department of health service support
The Dental Association of Thailand
Food and Drug Administration
Praboromarajchanok Institute

Private Dentist Association of Thailand
Thai association of pediatric dentistry
Association of Operative Dentistry (Thailand)
Dental Association of the Provincial Public Health Office

The next steps of the implementation plan

Establish a national framework to ensure the environmentally sound management of amalgam waste, from dental clinics to designated disposal facilities

Sources of waste



- Private dental clinics
- Hospital / Sub-district Health promotion Hospitals
- Other dental units, e.g. industrial units in factories

Amalgam waste

Hazardous or Infectious Waste from the Community

Ministerial Regulation Management of Community Hazardous or Infectious Waste, B.E. 2563 (2020)

Segregation and Collection

Preparation



Store in sealed plastic containers with disinfectants such as hypochlorite or YSP solution



Record / Collect Data

Dental procedures



Store in sealed plastic containers with disinfectant (chlorinated solution or alcohol-based)

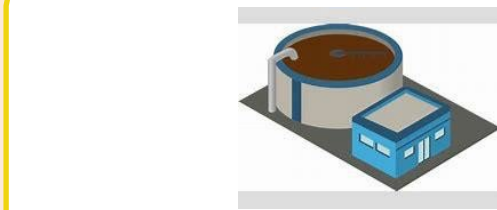


Collect for further transfer and disposal

Waste water

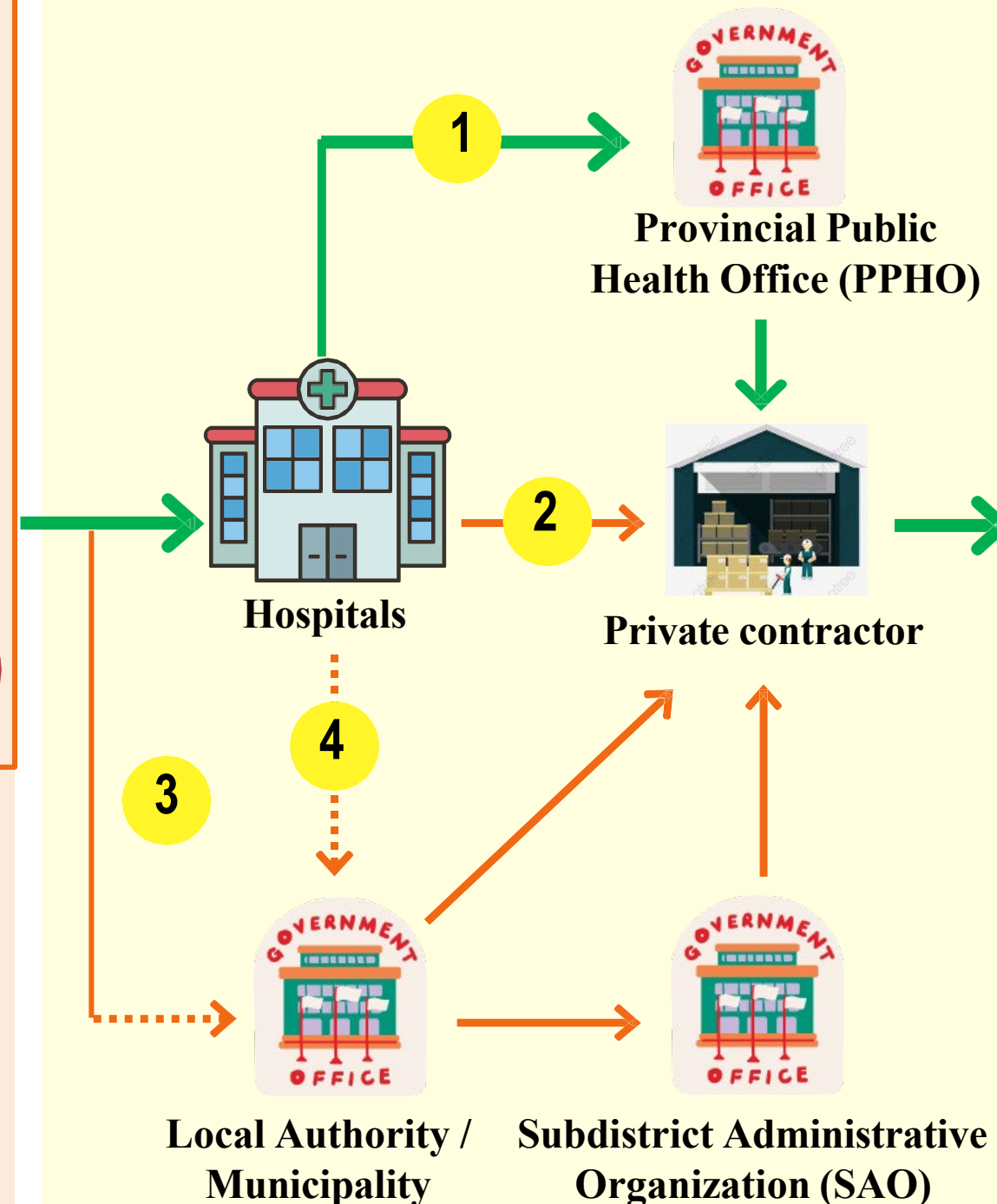


Amalgam Separator



Wastewater Treatment System

Collection units



Disposal facilities



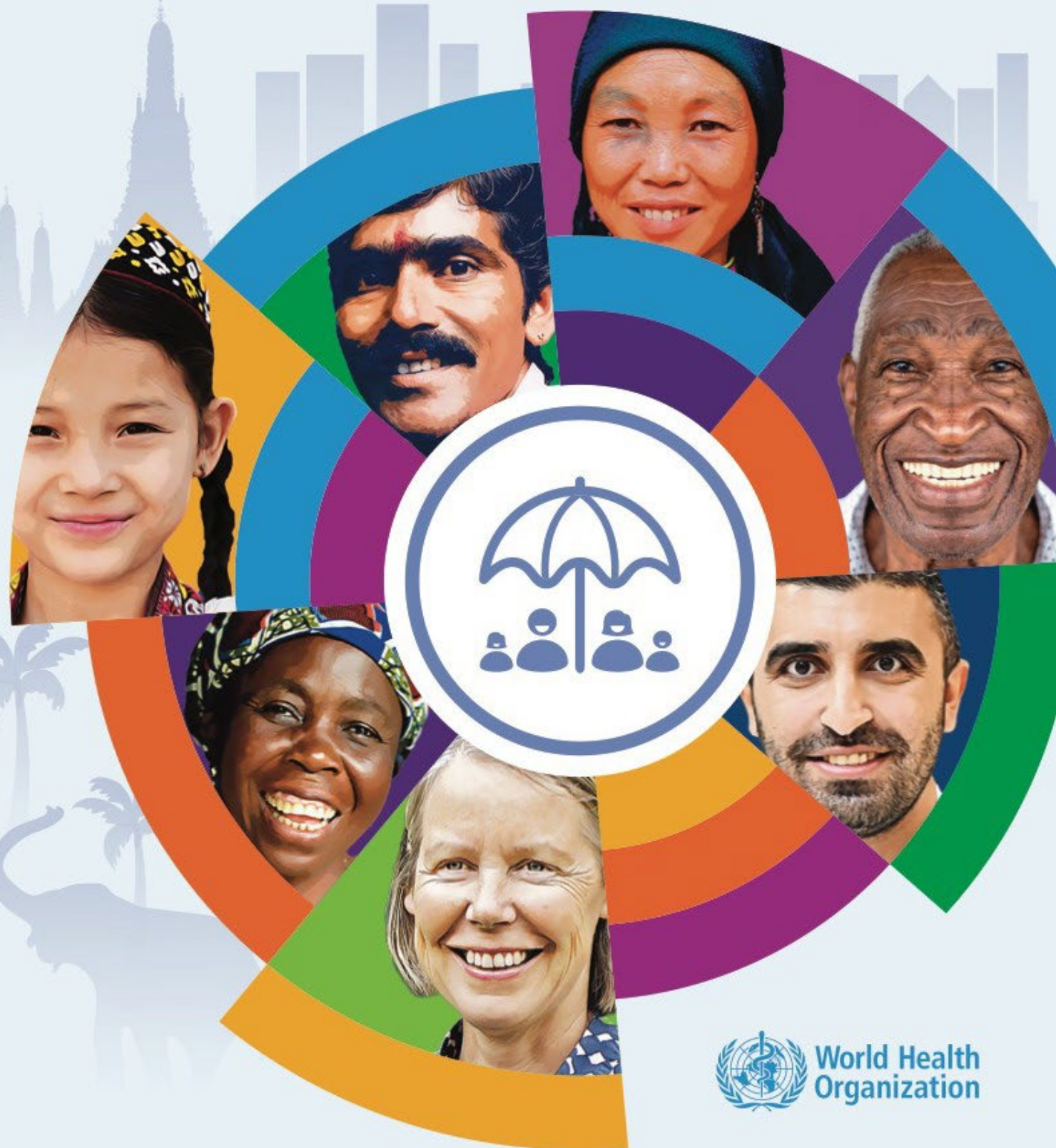
Recycling according to factory regulations



Incineration / Sanitary landfill according to the Ministerial Regulation on the Management of Community Hazardous or Infectious Waste, B.E. 2563 (2020)

Bangkok Declaration

No Health Without Oral Health



Commitments to Accelerated Action on Oral Health 2023 - 2030



1. Oral Health Governance



2. Oral Health Promotion and Disease Prevention



3. Health Workforce



4. Oral Health Care



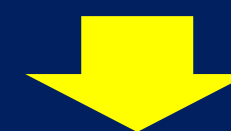
5. Oral Health Information Systems



6. Oral Health Research Agendas



7. Oral health and the Environment



- Strengthen cross-sectoral collaboration to phase down or phase out dental amalgam under the Minamata Convention
- Promoting preventive, less invasive, and environmentally sustainable oral healthcare through mercury-free products, responsible waste management

Thailand's accelerated project on phasing down dental amalgam under the Minamata Convention supports the implementation of the Bangkok Declaration on Oral Health

Reduced use of dental amalgam and promotion of mercury-free alternatives

▶ **Supports the shift towards safe, affordable, and sustainable oral health services**

Strengthened preventive oral health programs

▶ **Reduces demand for restorative treatment, aligning with preventive health promotion**

Environmentally sound management of amalgam waste

▶ **Minimizes mercury release into the environment and promotes eco-friendly practices in dental clinics**

Capacity building and education for dental professionals on mercury-free materials

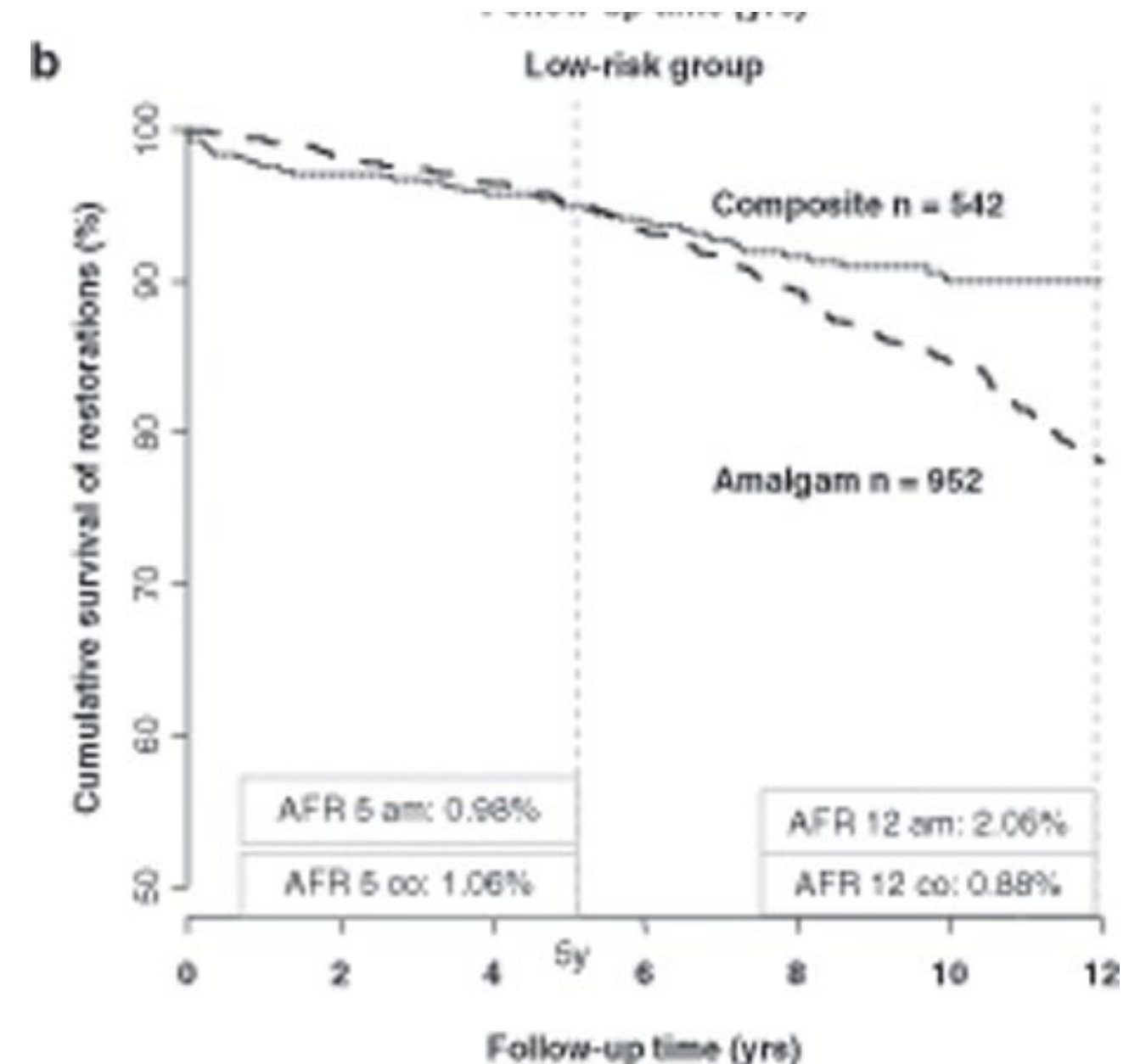
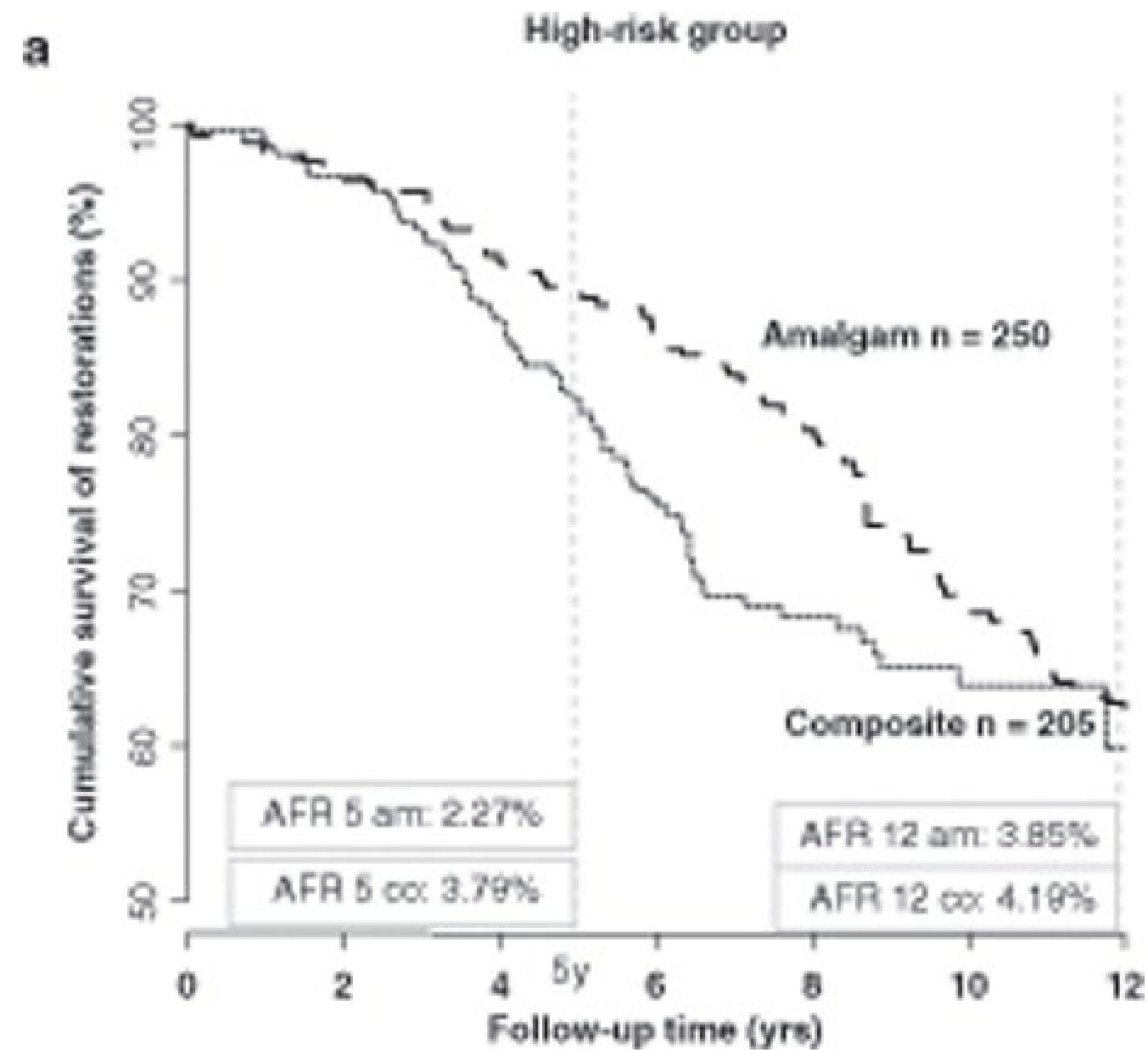
▶ **Strengthens knowledge, skills, and research capacity for sustainable alternatives**

Strengthening multi-sectoral collaboration in oral health to mobilize and sustain support for oral health

▶ **Encourages collective ownership, national commitment, and sustainability of oral health initiatives**

Thank You for Your Attention

Historically, Amalgam > Composite in High Caries Risk Patients



Longevity of Composite Restorations

Annual Failure Rate

- Ranged 0.08% to 6.3%

Reasons for Failures

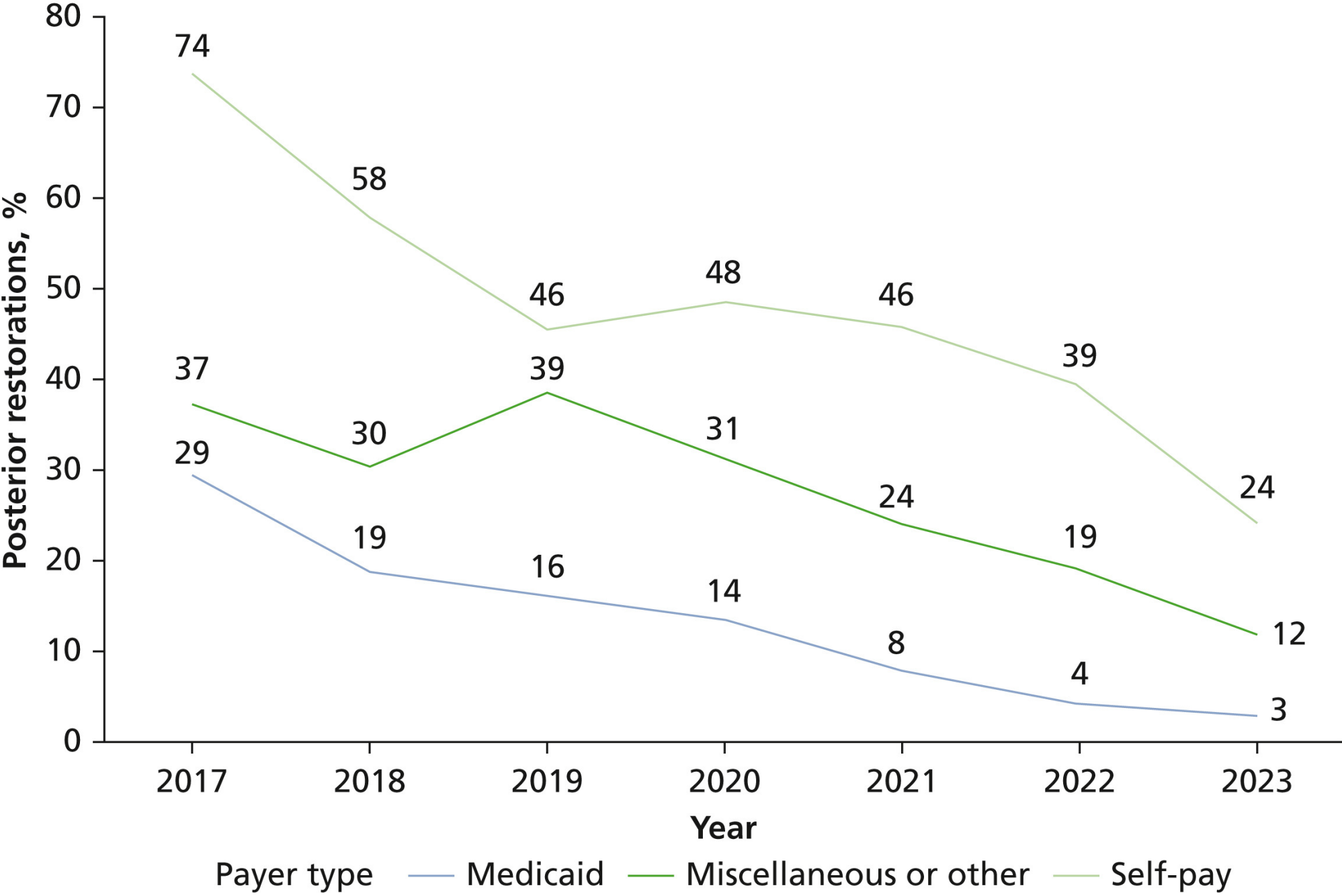
- Secondary Caries
- Fractures
- Esthetic Compromise

Risk Factors for Failure

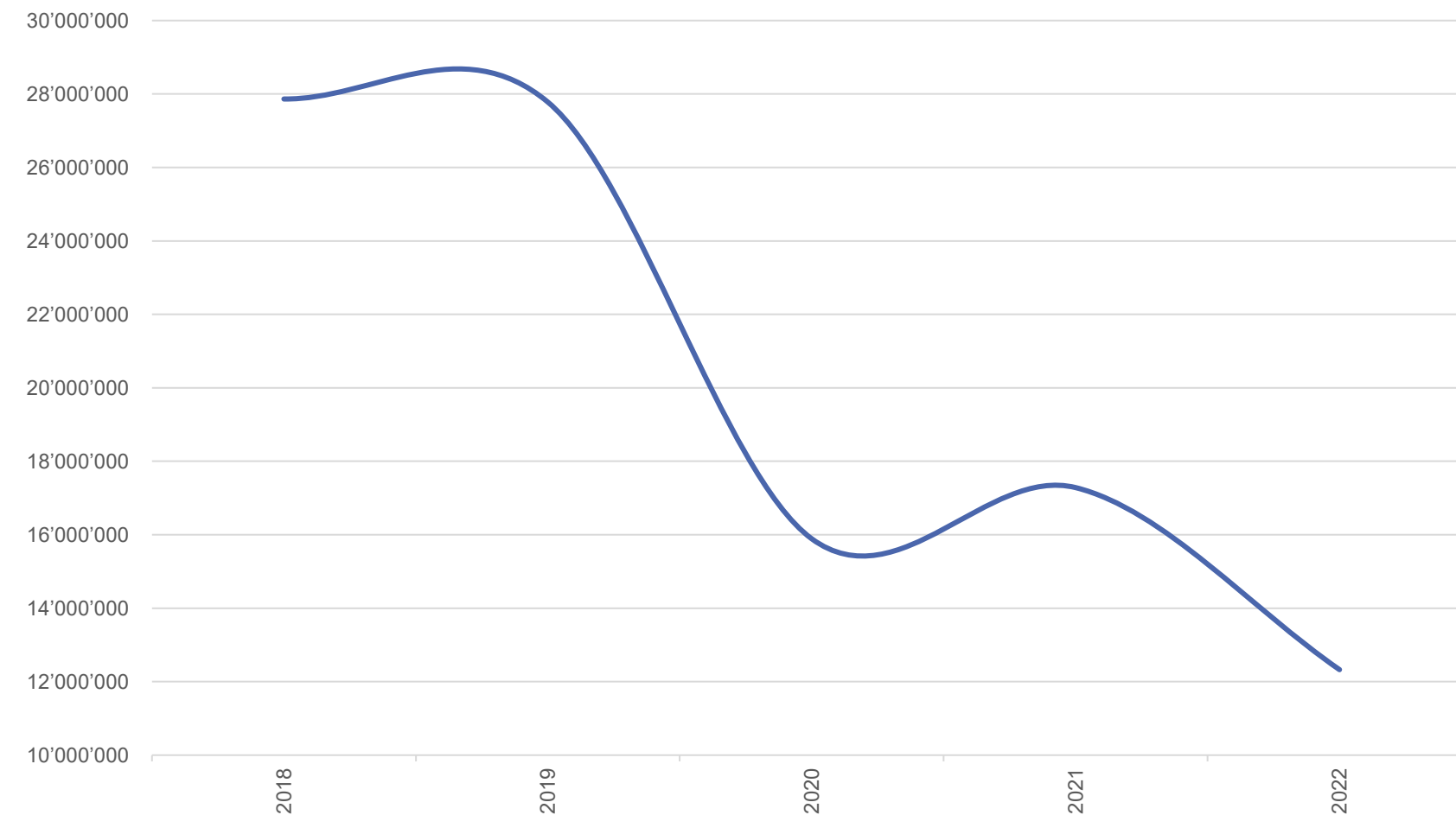
- Patient
 - Caries Risk
 - Parafunctional Habits
 - Dental Visits/Year
 - SES
- Tooth
 - Endodontic Treatment
 - Tooth Location, Other Restorations
- Dentist
 - Practice Setting
 - Experience

Phase Down is Working

Percentage of posterior restorations with dental amalgam in pregnant people



GLOBAL AMALGAM SALES ARE RAPIDLY DECLINING THE PHASE DOWN IS WORKING



- GLOBAL AMALGAM SALES (USD), INCLUDING NORTH AMERICA
- DOES NOT INCLUDE LOCAL MANUFACTURES FROM CHINA, INDIA, IRAN, MALAYSIA, GREECE, TURKEY, SPAIN, ISRAEL

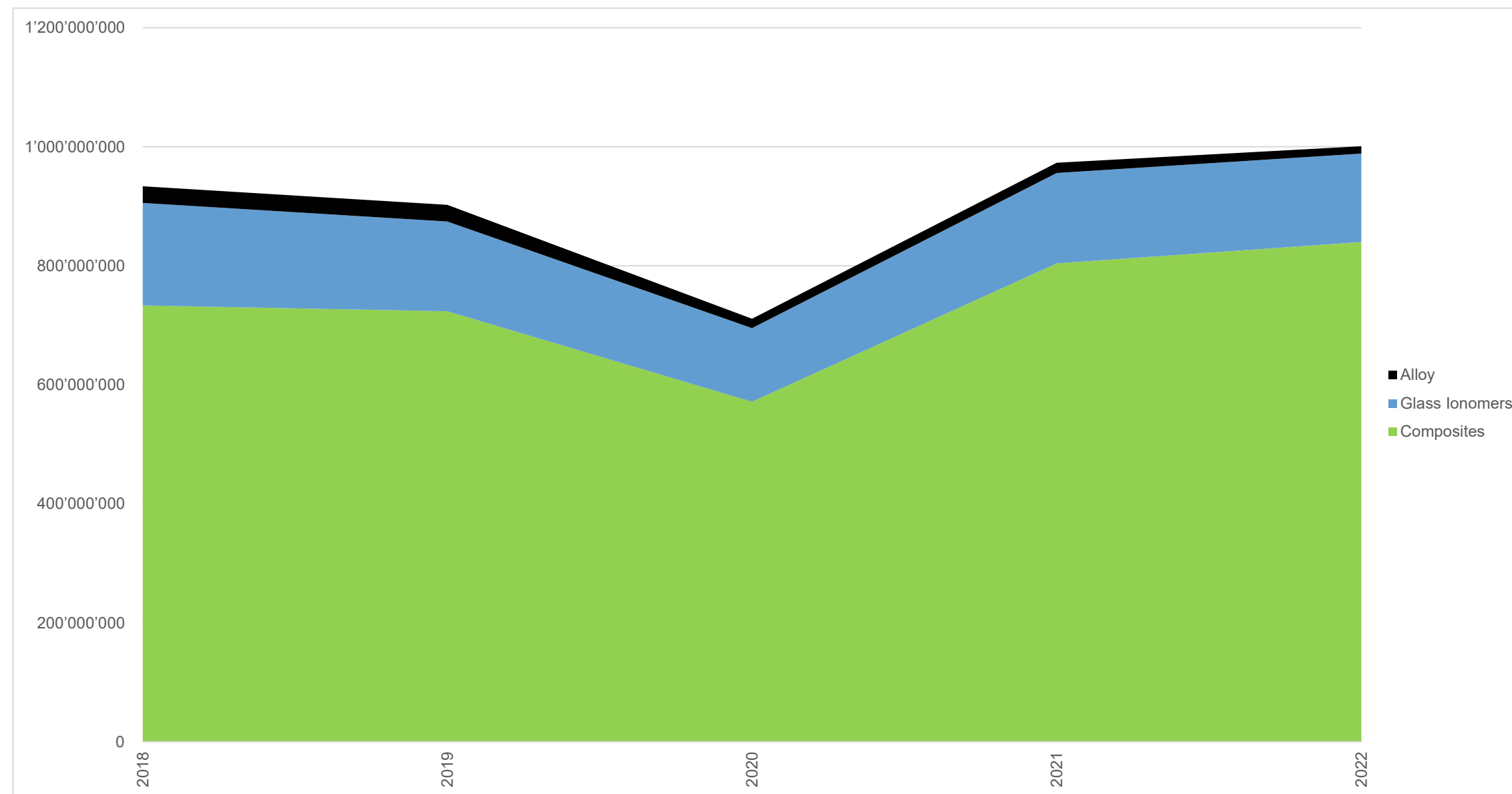
Source: Fastrak Analysis – Key-stone SRL
USD

Includes: Cavex, Coltene, Dentsply, DMG, Ivoclar, Kerr, SDI. (Coltene, Dentsply, Kerr have left the market over the past few years, but their sales are in the history)



YOUR SMILE. OUR VISION.

GLOBAL RESTORATIVE SALES - \$1BN



Source: Fastrak Analysis – Key-stone SRL
USD,

Includes: North America, plus manufacturers: 3M, Cavex, Coltene, Dentsply, DMG, GC, Ivoclar,

Kerr, Kulzer, SDI, Shofu, Tokuyama, Ultradent, Voco

Does not include many composite manufacturers that do not report to Keystone



YOUR SMILE. OUR VISION.

IADR Policy Statement on Safety of Dental Amalgam (2025 Update)

- Based on the best available evidence, IADR affirms the safety of dental amalgam for the general population without allergies to amalgam components or severe renal diseases.
- IADR supports maintaining its availability when it's the best restorative option and alternatives would be inferior for clinical, economic or practical reasons.
- IADR supports maintaining clinically acceptable existing amalgam restorations.
- IADR emphasizes the importance of ensuring the safe use and proper management of amalgam throughout its lifecycle to minimize occupational exposure and environmental impact.

Industry Response

- **Company A:** **Product W** is our alternative to amalgam for class I and class II cavities. The best part? It outperforms glass ionomer cement, offering a strong, bioactive* and tooth-colored restoration.
- **Company B** has drawn on its 50 years of amalgam material experience to develop **Product X** – the true amalgam alternative.
 - **Product X** is an innovative high-performance self-cure composite that was designed from the ground up to replace amalgam.
- As the dental industry moves away from amalgam, **Company C** is presenting its latest restorative solutions at the 2025 FDI World Dental Congress this week. The company is highlighting how **Product Y** and **Product Z** enable dental professionals to transition to modern materials without compromising durability, efficiency or aesthetics.

IADR Summary

- Full support of Minamata Convention and Phase Down Approach on the Use of Dental Amalgam
- Phase Down is Working
- Investments in Research (Government and Private Sector)
 - Exciting Improvements in Alternative Restorative Materials
 - Remaining Hurdle: Cost
 - Implementation



IADR

INTERNATIONAL ASSOCIATION
FOR DENTAL, ORAL, AND
CRANIOFACIAL RESEARCH

Global Survey on Dental Amalgam Use: Results

Mr Enzo Bondioni
FDI Executive Director

FDI – a world with optimal oral health



- Over 1 million dentists worldwide
- Our membership includes 156 National Dental Associations across 134 countries
- We have members in all the six Regions of the United Nations and we keep our members updated on all policies relevant to oral health

MEMBERSHIP



1 M+
Dentists



191
Member associations



134
Countries

Global survey overview

Objectives:

1. To assess FDI members' understanding of the Minamata Convention on Mercury and its provisions on dental amalgam use
2. To assess our members' perspectives on country readiness for dental amalgam phase out

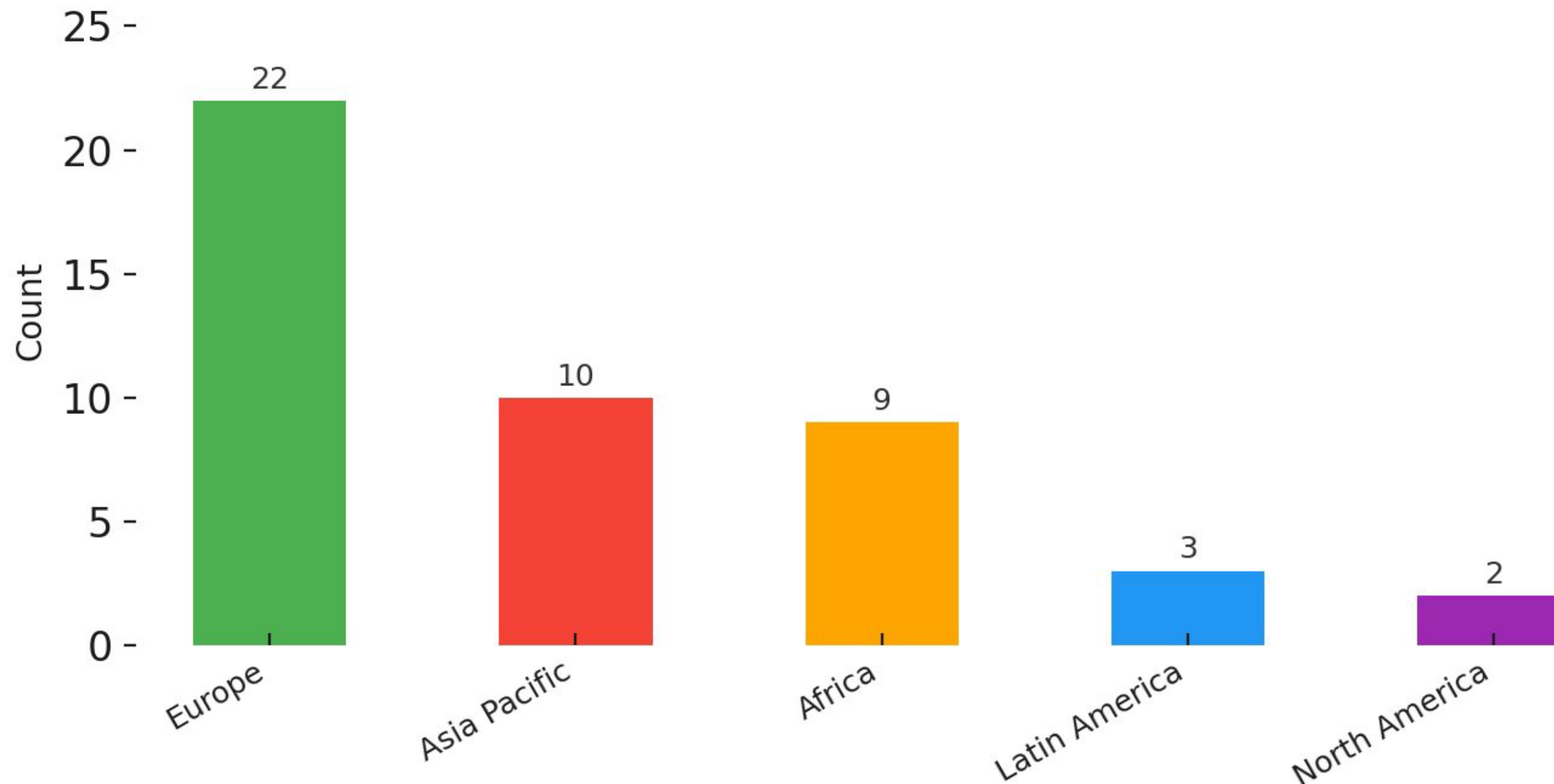
Target: National Dental Associations (1 response per country)

Responses: 46

Survey period: July – August 2025

Response per member region

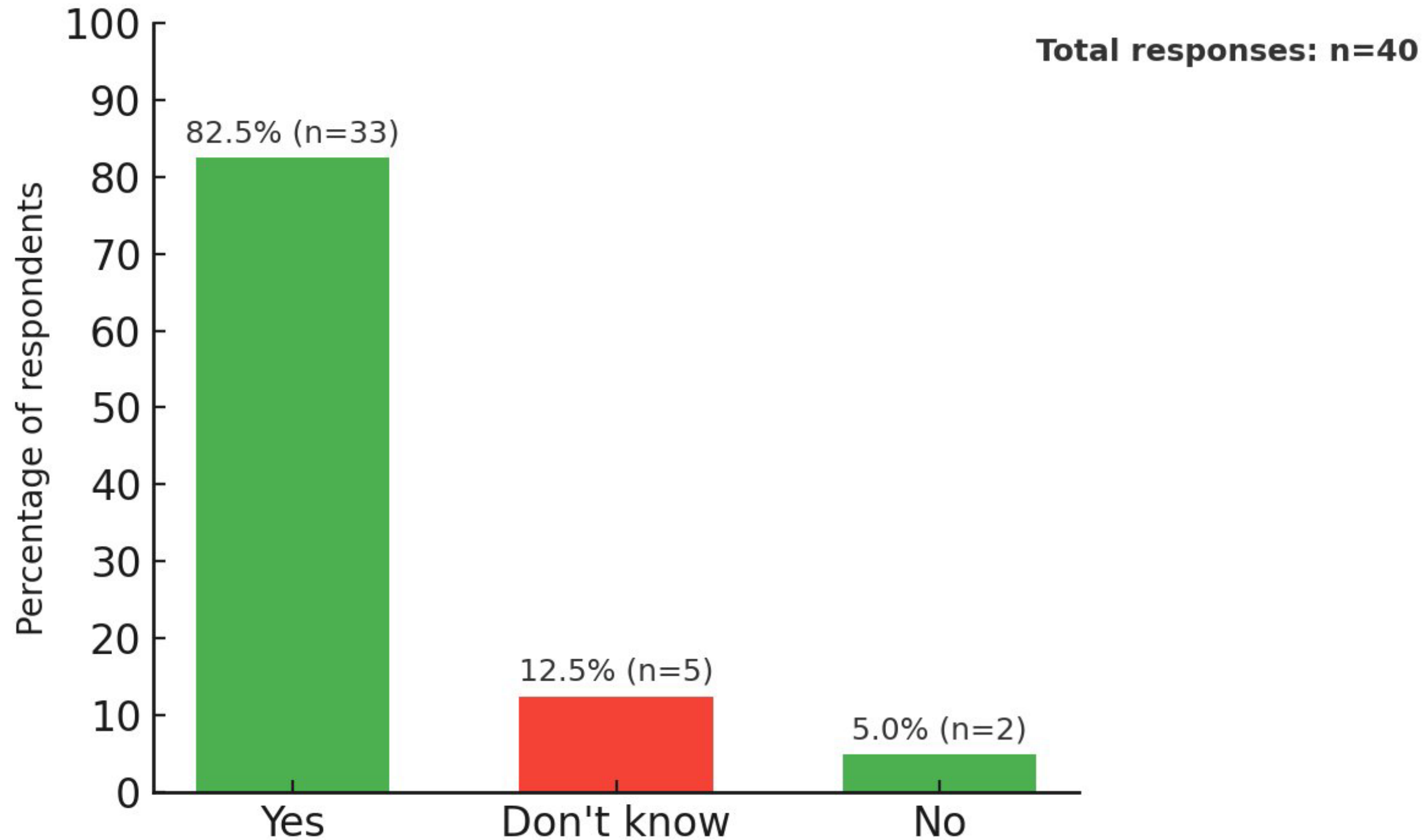
Responses by Region



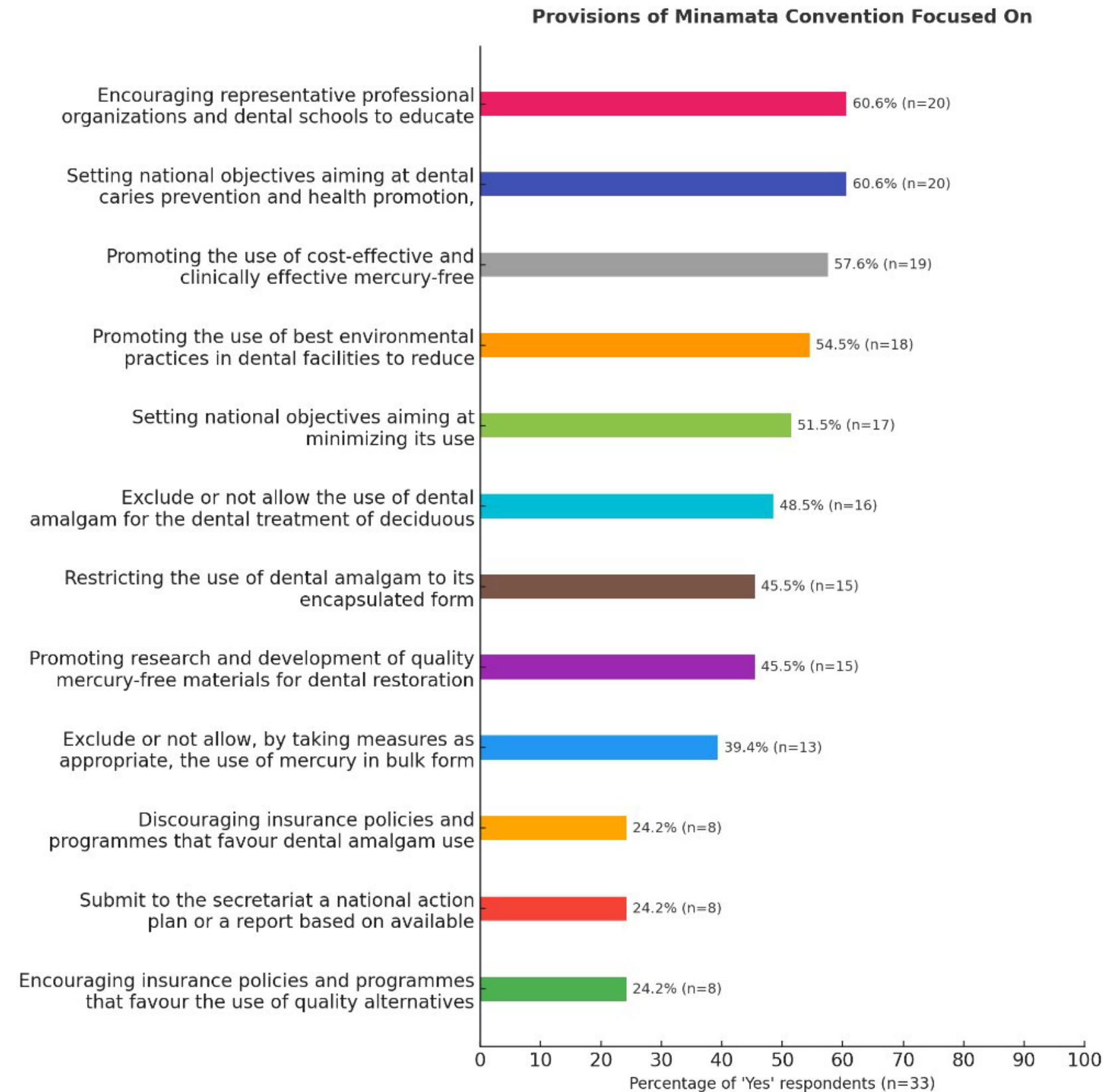
n=46

Amalgam use and related policies

Awareness of Minamata Convention on Dental Amalgam Use



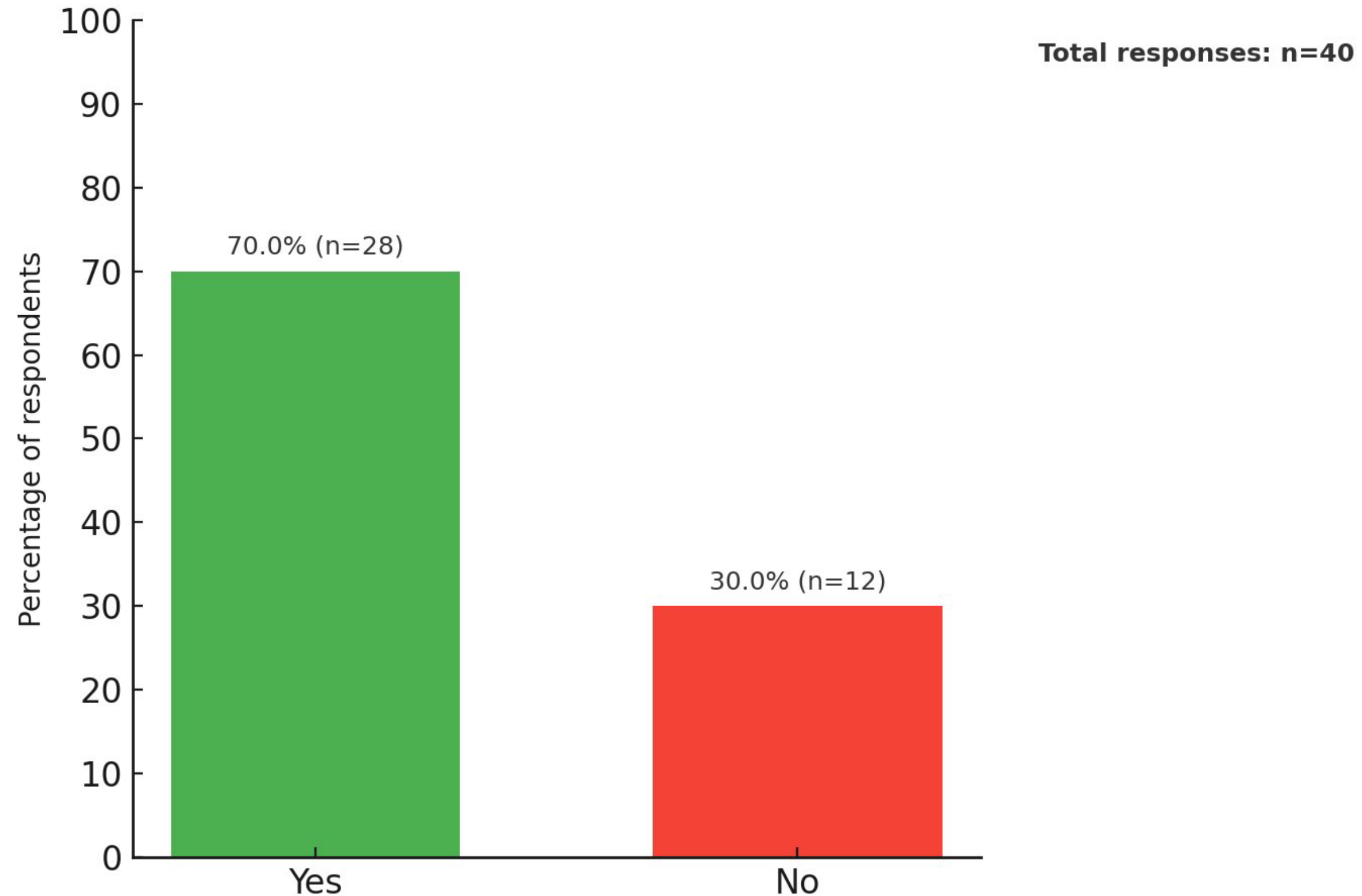
Amalgam use and related policies



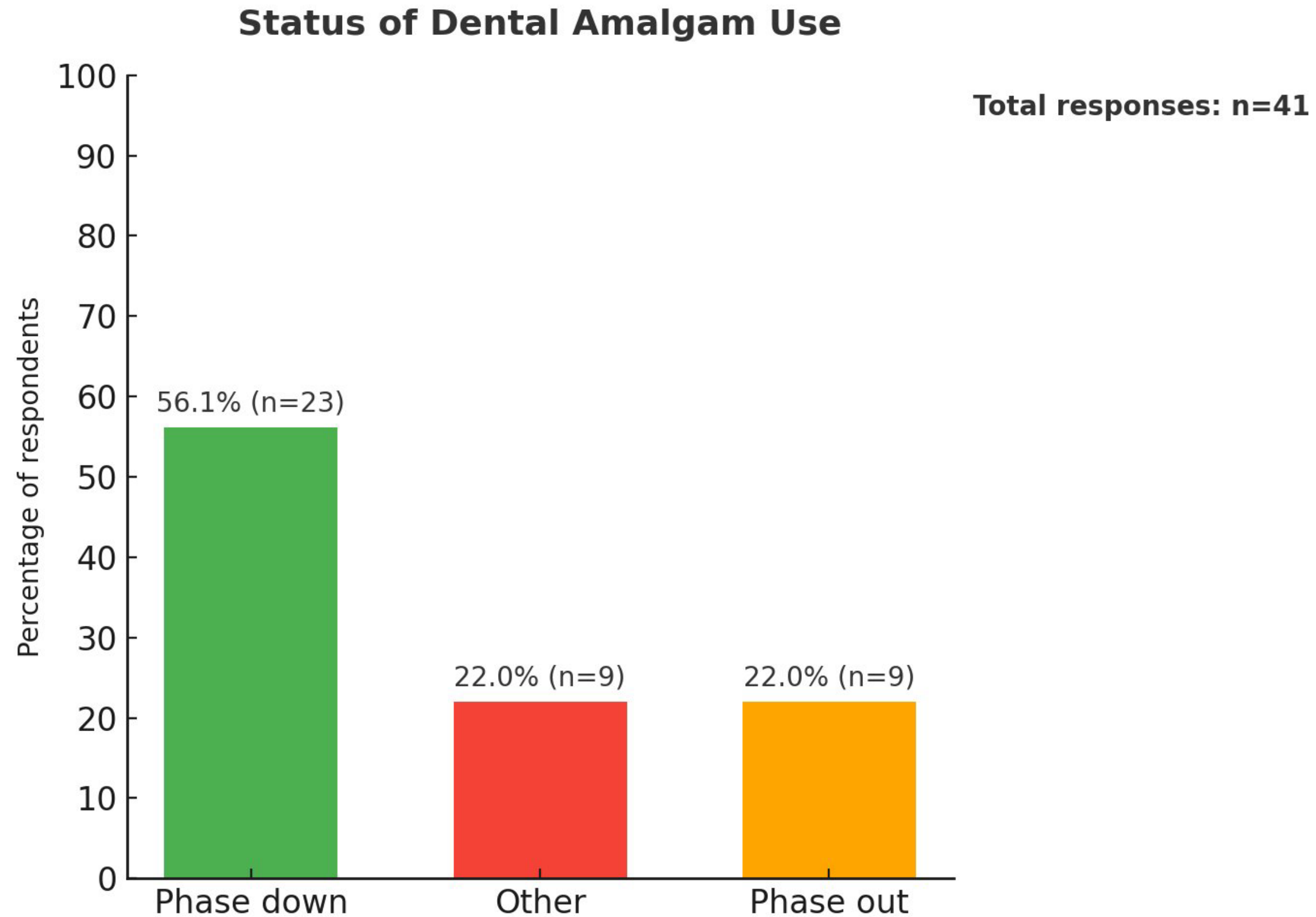
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Amalgam use and related policies

Awareness of EU ban on dental amalgam (from Jan 2025)?

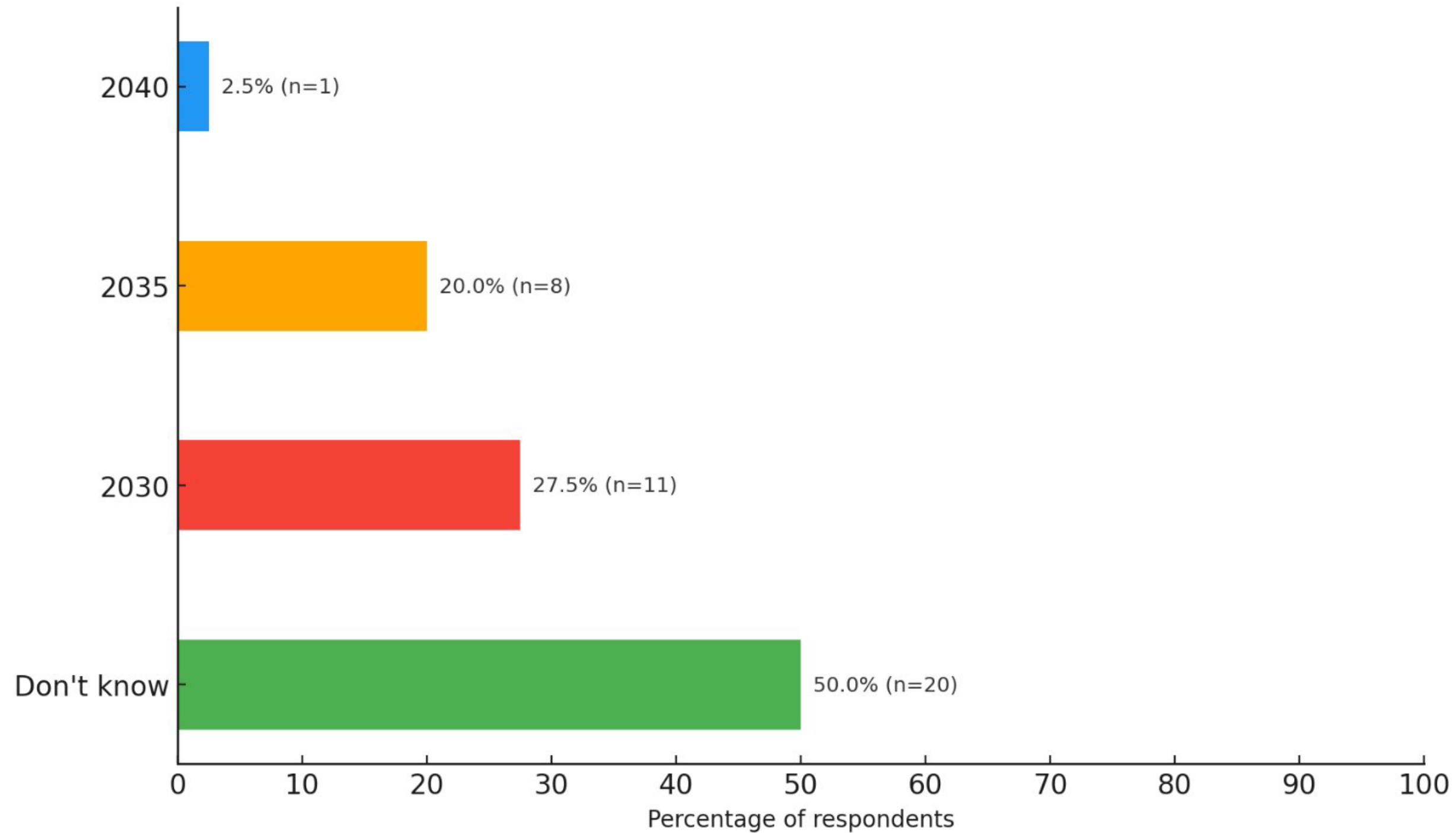


Amalgam use and related policies



Predicted year for amalgam phase-out

When will dental amalgam be phased out?



Total responses: n=40

Main barriers to phase out

- Perceived durability of substitutes
- Insurance coverage restricted to amalgam
- Higher costs of alternatives and equipment needed to treat with alternatives
- Ongoing market availability and supply chain

Summary of findings

- Dental amalgam use is declining
- EU countries are making regulatory progress, however, in many countries, systemic, and financial barriers persist
- Without complementary measures amalgam phase-out risks widening oral health inequalities
- Awareness of Minamata Convention on Mercury & its provisions on dental amalgam use is growing among National Dental Associations
- Governments are encouraged to adopt a holistic approach and partner with National Dental Associations to address barriers to phase down / out measures

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Thank you