

# "Country Situation Report on Phasing Out Mercury Amalgam from Dentistry of Bangladesh by 2022"

## Survey of Mercury Free Dentists of Bangladesh

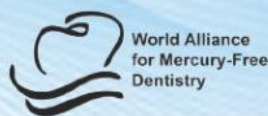


80  
**Hg**  
Mercury

Say No To **Mercury Amalgam**



### Let's Phase Out Mercury from Dentistry



## *Acknowledgment*

**E**nvironment and Social Development Organization-ESDO team are highly thankful towards everyone who supported us to complete this study. This study could not have been possible without the participation and assistance from the different associates and general people from multiple sectors. The contributions are sincerely gratefully acknowledged.

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## *Abbreviations*

- ADA (American Dental association)
- ACEH (Asian Center for Environmental Health)
- BDS (Bangladesh Dental Society)
- ESDO (Environmental and Social Development Organization)
- FDA (U.S. Food and Drug Administration)
- GIC (Glass Ionomer Cement)
- Quacks (An untrained person who pretends to be a dentist and dispenses dental advice and treatments)
- WAMFD (World Alliance for Mercury Free Dentistry)
- WHO (World Health Organization)
- ZMWG (Zero Mercury Working Group)



## *Executive Summary*

Worldwide mercury-free dentistry practice is expanding due to the hazardous impact mercury has on health and the environment. Along with the rest of the world, ESDO is also working for a long step ahead toward mercury-free dentistry associated with BDS and ACEH by encouraging mercury-free dentistry. BDS has already taken holistic approaches to achieve the target of mercury-free dentistry for children and pregnant women. They are also optimistic about the complete phase-out of mercury from the entire dentistry sector of Bangladesh by 2022. The initiative taken by the respective organizations was going in full swing until the global pandemic stroke, and a nationwide lockdown was announced on 26<sup>th</sup> March 2020 in Bangladesh. Before that, from 28<sup>th</sup> January 2018 to 16<sup>th</sup> March 2020, ESDO team members have visited and recognized 500 dental chambers and institutes that practice mercury-free dental amalgam but after the lockdown was imposed, ESDO started an online survey of dentists through questionnaires from April 2020 to April 2021. There are 11,000 government-registered dentists in Bangladesh, but ESDO successfully reached 9086 registered dentists who participated in the survey and confirmed that they are practicing mercury-free dentistry. According to the 9,086 dentists, the majority of 8,695 (95.7%) dentists do not use mercury amalgam filling. All of them are aware of the different alternatives to mercury amalgam and out of hundreds, 95.70% of doctors have access to these alternatives. The majority of dentists have acknowledged that mercury amalgam is unsafe as well as many of the patients (87.1%) are concerned about the colour and harmful effects of the mercury amalgam. GIC and composite are very popular among the alternatives due to their better health impact, aesthetic look, durability, and cost. Miracle Mix, Shofu, and Fuji 9 are other alternatives used in private clinics.







# INTRODUCTION



# 1. Introduction

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Mercury has been used in fillings since the 19<sup>th</sup> century but has faced controversy since the beginning. Shortly after the invention of amalgam in 1819, numerous harmful effects were widely reported. Mercury poisoning became a top concern and many dentists nowadays vowed to stop using the material. A rising number of patients are looking to replace mercury-containing amalgam fillings in their mouths for health reasons. As a result, awareness is being raised in patients as well.

The element mercury is a silvery-white liquid at room temperature and pressure. It quickly vaporizes and can remain in the atmosphere for up to a year. As soon as mercury is released into the air, it is carried and deposited all over the environment. Finally, mercury accumulates in lake-bottom deposits and transforms into its more deadly organic form, methylmercury. This poisonous organic form accumulates in fish tissue.

It's a common problem for all nations, from developed to emerging and under-developed to those in economic transition to delivering safe, high-quality, and cheap healthcare to their citizens. Specially, developing and underdeveloped countries have never given high priority to dental care. The notion of mercury-free dentistry is still largely unknown outside of the dental profession. Global nations need to be cognizant of this hazardous component as the link between human health and environmental pollution or deterioration becomes more apparent.

## 1.1 Background

Mercury (Hg) is considered as one of the top ten chemicals or groups of chemicals of major public health concern by WHO<sup>1</sup> and there is no safe level of exposure<sup>2</sup> because of its toxicity and pollution aspects. is a naturally occurring chemical element that exists in two main forms: elemental mercury and methylmercury (commonly found throughout the environment). Methylmercury is a combination of mercury and carbon which is invisible to the naked eyes while elemental mercury looks like silvery metal liquid material.

Silver is usually mixed with elemental mercury to create a hard and durable material dental amalgam which is frequently called silver fillings. But in reality, in most dental amalgams only about 32% is silver and 50% is mercury silver fillings also containing trace amounts of tin, copper, and zinc. This dental amalgam is filled into decayed teeth with cavities to strengthen and prevent putrefying.

As mercury is a highly toxic element, if possible, neither children nor adults should use any mercury-contained materials in their bodies (Blood, Urine) because it provides no physiological benefit<sup>3</sup>. But dentists have been using mercury as a dental restorative material due to its longevity and strength. When a person has mercury dental amalgam, about 2- 20 micrograms of mercury can be released per day from such if mechanically manipulated such as by chewing. An increase in the temperature of the mouth by drinking hot coffee or tea will also encourage the release of mercury vapors in the

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<sup>1</sup> <https://www.who.int/news-room/fact-sheets/detail/mercury-and-health>

<sup>2</sup> <https://pubmed.ncbi.nlm.nih.gov/20816346/>

<sup>3</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3096006/>



mouth<sup>4</sup>. Mercury amalgam also causes a wide range of health problems including tremors, insomnia, headaches, nerve damage, kidney problems, and respiratory failure. In 2016, research conducted by the University of Washington found that even a slow release of mercury toxins into the body from a dental tooth filling can lead to long-term brain damage<sup>5</sup>. It is also important to note that, pregnant women and those who plan to get pregnant are especially at risk. This is due to mercury exposure being proven to have a devastating impact on the health of unborn fetuses and children<sup>6</sup>.

FDA has also issued a safety communication recommending against amalgam use<sup>7</sup> in people who are at higher risk from the adverse effects of mercury exposure, including-

- Pregnant women and their developing infants
- Women who are planning to become pregnant
- Nursing women and their new-borns or infants
- Children, especially those younger than 6 years of age
- People with pre-existing neurological disease
- People with impaired kidney function
- People with known heightened sensitivity (allergy) to mercury or other components of dental amalgam.

## 1.2 Rationality and Justification

Considering all the harmful effects and adverse impacts of mercury amalgam on human health, ESDO in association with ACEH, BDS and WAMFD is working relentlessly to ban mercury amalgam from dentistry as well as the import of mercury since 2010. To accelerate this works against mercury amalgam, to get updated information on mercury use in dentistry, and to gather solidarity of dentists, ESDO started surveying registered dentists to assess the current percentage of mercury use or mercury amalgam free practicing dentists of Bangladesh. These achievements will ultimately advance the ban of mercury import and use in dentistry to reach the key goal of ratifying the Minamata Convention in Bangladesh. Worldwide several countries and conventions have implemented actions to phase down the use of mercury in dental amalgam. Keeping the health hazards of mercury in mind, ESDO and other partnering organizations are trying their best to facilitate the government for phasing down mercury amalgam use in dentistry.

❖ In 2011, countries like Sweden, Armenia, Moldova, Norway, Saint Kitts and Nevis, Russia<sup>8</sup>, Germany, Denmark and Finland, etc. have banned or restricted the use of mercury in dental amalgam due to its proven toxic and poisonous effects.

<sup>4</sup> <https://www.mayocliniclabs.com/test-catalog/Clinical+and+Interpretive/8618>

<sup>5</sup> <https://www.mcclatchydc.com/news/nation-world/national/article53118775.html>

<sup>6</sup> <https://www.fda.gov/medical-devices/dental-devices/dental-amalgam-fillings>

<sup>7</sup> [https://www.fda.gov/medical-devices/safety-communications/recommendations-about-use-dental-amalgam-certain-high-risk-populations-fda-safety-communication?utm\\_medium=email&utm\\_source=govdelivery](https://www.fda.gov/medical-devices/safety-communications/recommendations-about-use-dental-amalgam-certain-high-risk-populations-fda-safety-communication?utm_medium=email&utm_source=govdelivery)

<sup>8</sup> [https://www.mercuryconvention.org/sites/default/files/documents/information\\_document/4\\_INF26\\_DentalAmalgam\\_WHO.English.pdf](https://www.mercuryconvention.org/sites/default/files/documents/information_document/4_INF26_DentalAmalgam_WHO.English.pdf)





- ❖ European Union has published a regulation from 1st July 2008 that the mercury dental amalgam shall not be used for dental treatment of deciduous teeth of children under 15 years and of pregnant or breastfeeding women except when deemed strictly necessary by the dental practitioner based on the specific medical needs of the patient.
- ❖ Minamata Convention on Mercury is an international treaty designed to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury-containing products. Till now, 135 countries are parties to the convention and working to phase down the use of mercury in dental amalgam.

However, in the USA the use of mercury in dental fillings is still approved by the government and the ADA.

### 1.3 Objective of the Study

ESDO has accomplished a survey on registered dentists to understand the current country situation of Bangladesh regarding mercury-free dentistry, which will help to ban the import and use of mercury in dentistry and facilitate the phasing out mercury dental amalgam in Bangladesh. The main goal, along with primary and secondary objectives, is given below:

- The main purpose is to recognize mercury amalgam-free dentists and encourage others to practice by raising awareness.

#### **Primary Objective:**

- ❖ To ban the import of mercury for the dentistry sector in Bangladesh
- ❖ Ultimately to phase out mercury dental amalgam from dentistry in Bangladesh

#### **Secondary Objective:**

- ❖ To identify the mercury-free amalgam practicing dentists
- ❖ To distinguish mercury amalgam-free dental chambers
- ❖ To create a database of mercury amalgam-free registered dentists of Bangladesh.

### 1.4 Methodology

To conduct a comprehensive survey, ESDO has surveyed the registered dentists in phases. Firstly, through physical visits and questionnaire surveys but when the COVID-19 pandemic started, ESDO implemented the survey through an online platform using Google form. In the second stage, ESDO has surveyed the dentists more extensively with survey questions created by international organizations (WAMFD & Zero Mercury group). The whole process of surveying the dentists to bring out updated information on mercury use has been elaborated below-



- ❖ **Survey population:** Till now there are 11,000 registered dentists in Bangladesh. Out of them, ESDO managed to survey about 9,086 dentists as some numbers of dentists have died or not practicing anymore as well as there are some foreign students (Nepal, India, Malaysia). But unfortunately, there are a lot of dental quacks/ assistants of dentists who pretend as dentists in rural/peripheral areas of Bangladesh where dentists are scanty. This report has not counted them.
- ❖ **Survey time:** ESDO team members have visited and recognized 500 dental chambers and dental institutes that practice mercury-free dental amalgam from 28<sup>th</sup> January 2018 to 16<sup>th</sup> March 2020 (a chart of recognized dental chambers has been given in annexures). But after the Covid lockdown imposed on 26<sup>th</sup> March 2020, ESDO started an online survey of dentists through questionnaires from April 2020 to April 2021.
- ❖ **Survey areas:** All over Bangladesh
- ❖ **Survey technique:** After the COVID-19 pandemic, the physical survey had been converted to online survey through online questionnaires. Questionnaires were changed to Google form. Then the Google form has been circulated through emails, social media as well as through BDS official website. Then the forms had been analyzed and tabulated to form a database of mercury-free dentists in Bangladesh. In addition to ESDO survey, WAMFD and Zero Mercury Working Group have sent another set of questionnaires for performing the survey, which has also been followed to understand the exact situation of mercury amalgam and alternatives to it.





# Survey Findings and Interpretation



## 2. Survey Findings and Interpretation

### 2.1 Key Findings of 1st stage of the survey

The key findings of ESDO's first stage of the survey are given below based on different factors –

#### 1. Types of Dentists:

Out of 9,086 registered surveyed dentists, about 7,787 (85.70%) dentists are practicing generally while the other 1,299 are specialist practitioners.

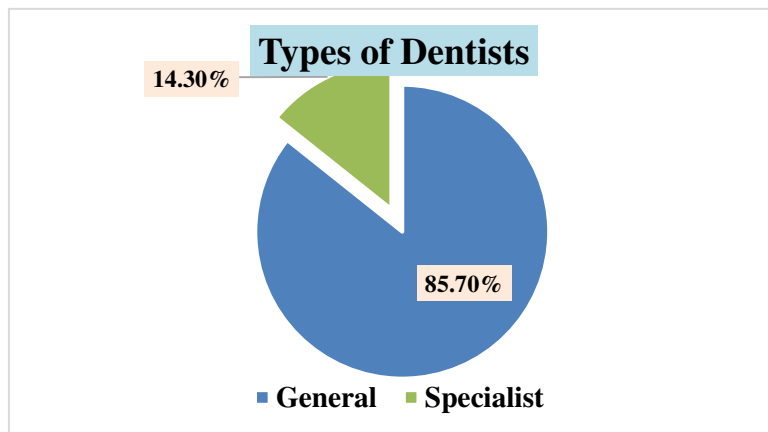


Figure 1: Type of dentists

#### 2. Service sectors of dentists:

Among the 9,086 surveyed dentists, about 8,549 (94.20%) dentists are practicing in private hospitals while each 268 dentists work in tertiary hospitals and in government hospitals respectively.

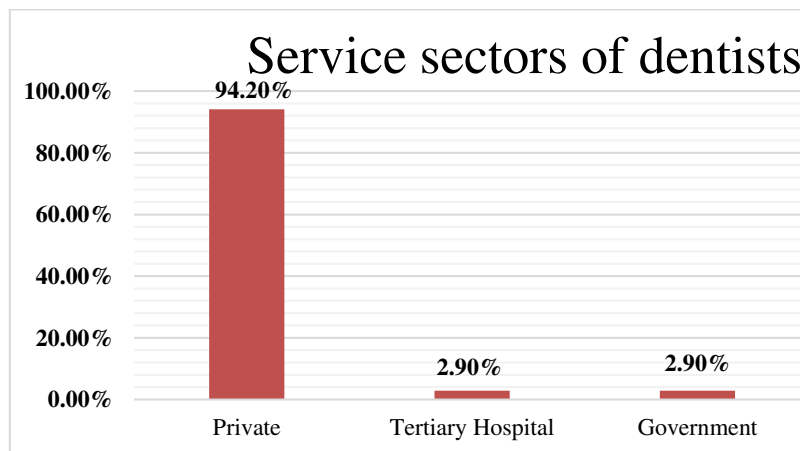


Figure 2: Service sectors of dentists

### 3. Use of mercury amalgam:

It is a matter of fact that, in Bangladesh out of 9,086 registered surveyed dentists, about 8,695 (95.70%) dentists are not using mercury dental amalgam in their treatment.

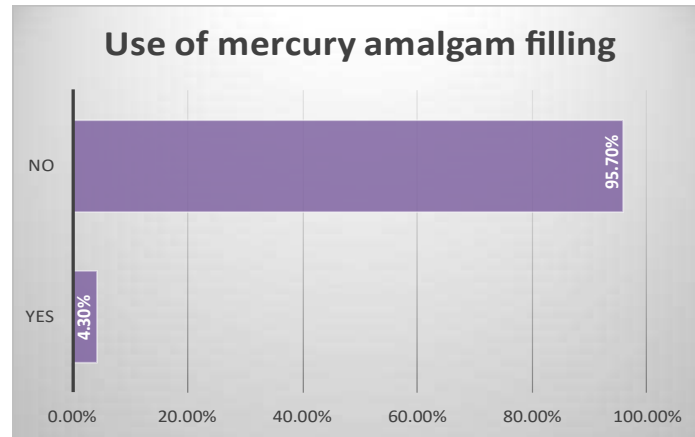


Figure 3: Number of dentists using mercury amalgam filling

### 4. Sources of awareness:

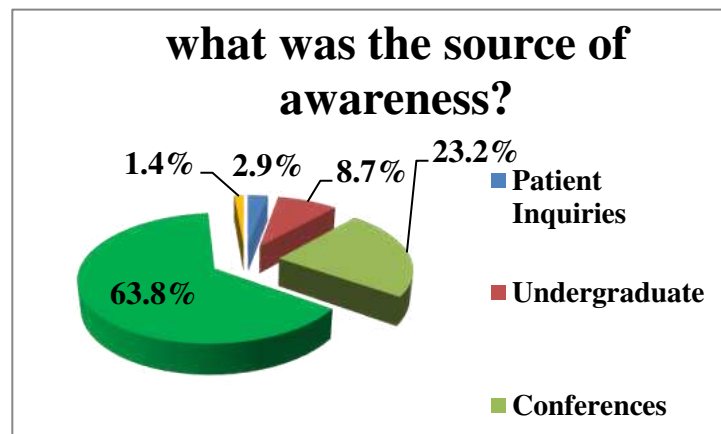


Figure 4: Source of awareness regarding mercury amalgam

As 8,695 registered dentists are not using mercury as the dental restorative materials, ESDO further asked them about their source of awareness regarding the negative impacts of mercury amalgam. As a result, it was evident that out of 9,086 surveyed dentists, about 5,797 dentists are aware of the harmful effects of mercury amalgam through their advanced continuous dentistry education. And about 2,108 dentists have gathered knowledge from different conferences. Other mentionable sources are patient self-inquiries, the undergraduate study of dentistry and word of mouth.



## 5. Dentist's opinion regarding mercury amalgam:

The majority of the dentists, 6,232 (68.60%) mentioned mercury unsafe for patient health for avoiding the use of mercury amalgam but a small portion of dentists 2.90% said it is safe while the other 28.50% of dentists are still uncertain about the harmful impact of mercury amalgam.

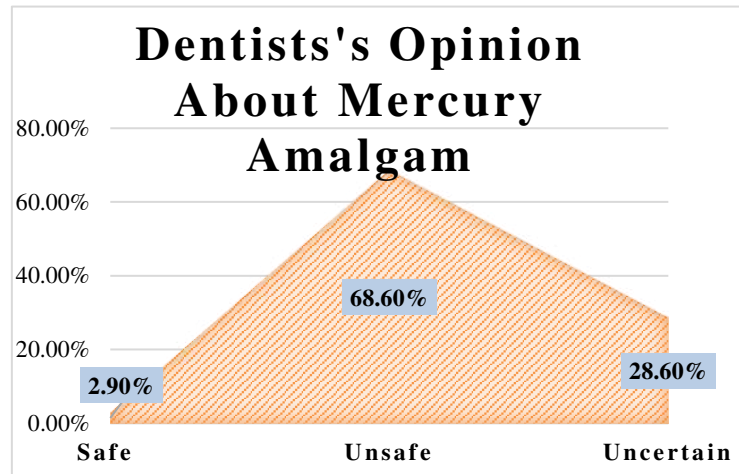


Figure 5: Doctor's opinion about mercury amalgam

## 6. Concern of patients:

According to most dentists (7,914), the majority of the patients are concerned about the black color of the amalgam from the aesthetic point of view, even if they know the detrimental effects.

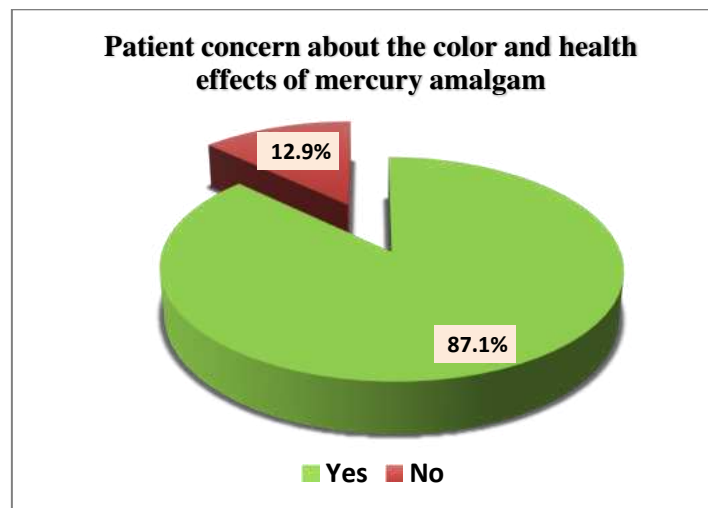


Figure 6: Patient's concern about mercury amalgam

### 7. Dentist's awareness and access to mercury amalgam alternatives

Fortunately, 100% of the dentists are aware of different amalgam alternatives and most of them (95.7%) have access to the alternatives to mercury amalgam.

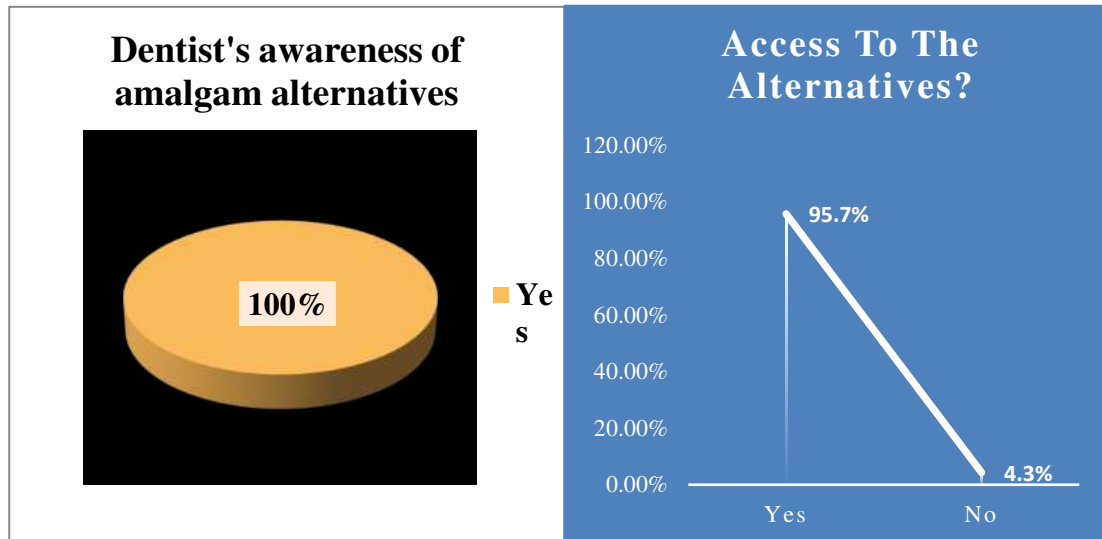


Figure 7: Dentist's awareness and access to mercury amalgam alternatives.

### 8. Patient's concern about the alternatives

Around 5,969 (65.7%) dentists stated that the patients are bothered about the amalgam alternatives while the other 34.3% said the opposite.

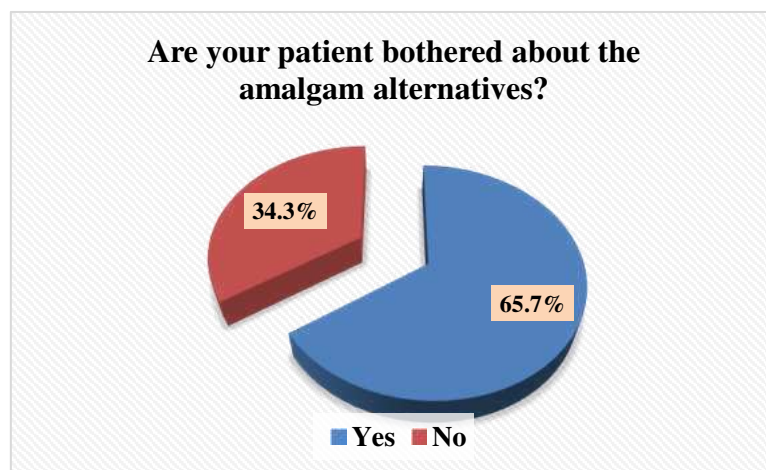


Figure 8: Patient's concern about the alternatives of mercury amalgam

## 2.2 Key Findings of 2nd stage of the survey

To know the present situation of mercury in dentistry, ESDO had briefly surveyed both senior and young dentists according to the survey questionnaires prepared by WAMFD & Zero Mercury group in June 2021. The question has been attached to the annex and the key findings are mentioned below –

- 1. Forms of mercury in use:** At the time of the survey, it has been confirmed that due to rising awareness by BDS, ESDO and dentist's consciousness against the use of mercury dental amalgam, neither capsulated nor mercury powder has been used by the dentists of Bangladesh. As a result, the demand and import of mercury have decreased sharply, confirmed by the mercury importing companies in Bangladesh. But it is a matter of dispute that still a little amount of mercury is being used by dental quacks at the peripheral district areas of Bangladesh.
- 2. Factors for choosing dental restoratives:** Choosing among the dental restorative materials, cost and durability are two of the main deciding factors. Though mercury is cheap and more durable than other alternatives, due to the health hazard and aesthetic aspect, both the dentists and patients are against using this metal poison. Mercury amalgam causes ulceration on gum and black in color whereas alternatives are teeth colored and do not impose health risks.
- 3. Health insurance:** There is no public health insurance available in Bangladesh to cover the dental service costs.
- 4. Available alternatives:** Dentists have deliberated that, composite filling, GIC (Miracle mix, Fuji 9, Shofu etc.) are mostly used alternatives to mercury amalgam.
- 5. Patient preferences of alternatives:** Although, GIC and composite are the top preferences of patients in private dental clinics. But if the patients look for expensive choices, dentists of Bangladesh use miracle mix or fuji 9 or shofu (Japanese).
- 6. Costs of dental restoratives:** A comparative costing of dental restoratives and alternatives have been shown in Table-1.



**Table 1: Costing of available amalgam products in Bangladesh.**

Products		Quantities	Cost
Dental amalgam capsules		30gm	2300 tk <sup>9</sup>
Composite filling materials		2gm	1130tk <sup>10</sup>
Glass ionomer filling materials		20gm	450 <sup>11</sup>
Other materials	Fuji 9	1 capsule (15gm)	50 capsule 8700 tk <sup>12</sup>
	Miracle mix	1 capsule (15gm powder)	50 capsules 11000 <sup>13</sup>
	Shofu	1 pack (15gm powder)	1630 <sup>14</sup>

<sup>9</sup> <https://www.daraz.com.bd/products/dental-amalgam-ana-2000-i132808196.html>

<sup>10</sup> <https://www.dentalkart.com/tetric-n-flow.html>

<sup>11</sup> <https://www.dentalkart.com/bio-glass-gold-gic-restorative-big-pack.html?queryId=dcf43310b765d96a65aba851041b66ff&position=1>

<sup>12</sup> <https://www.dentalkart.com/bio-glass-gold-gic-restorative-big-pack.html?queryId=dcf43310b765d96a65aba851041b66ff&position=1>

<sup>13</sup> <https://www.dentalkart.com/gc-miracle-mix.html?queryId=3a15f4e780bd8b58cf62db5d29828d75&position=1>

<sup>14</sup> <https://www.dentalkart.com/shofu-glasionomer-fx-ii-improved.html?queryId=73f40569567a605c5c67e6edbeabc7ab&position=2>





# ESDO' Initiatives and Recommendations





### 3. Major Initiatives and Accomplishments of ESDO for MFD

Although Bangladesh has still not ratified the Minamata Convention, it is still one of the fast-moving countries towards mercury-free dentistry and its elimination. For example, the mandatory standard of mercury in skin cream is only 1ppm announced by Bangladesh Standards & Testing Institution (BSTI) in 2020<sup>15</sup>. In Bangladesh, alternatives to mercury dental amalgam, GIC and Composite have been already popular and are readily available and affordable. It has been evident that more than 75% of dentists use Composite and the rest use both GIC & Composite in Bangladesh<sup>16</sup>. The major achievements of ESDO's accomplishments regarding the mercury-free dental amalgam are mentioned below -

1. ESDO has been working with the Bangladesh Dental Society (BDS) since 2010 and together they have achieved many remarkable achievements toward mercury-free dentistry. As Bangladesh is a signatory country of the Minamata Convention, BDS together with ESDO and Asian Center for Environmental Health made a call to the dental surgeons of Bangladesh to put an end to the use of mercury amalgam in the treatment of pregnant women, nursing mothers, and children in June 2018<sup>17</sup>.
2. On 28<sup>th</sup> January 2018, ESDO, Asian Center for Environmental Health and BDS collaborated with World Alliance for Mercury-Free Dentistry (WAFMD) and Asian Centre for Environmental Health inaugurated 'Mercury Amalgam Free Dental Chamber Visit'. After that, a total of 500 dental chambers has already been visited and recognized till now as mercury-free dental chambers by ESDO. But due to the COVID-19 situation, the in-person visits had been replaced by an online survey started on April 2020 until April 2021.
3. ESDO signed MOU with BDS for the third time on January 2021. The whole year's action plan including awareness campaigns, research, policy advocacy, dental curriculum revision, the petition to the government and implementation of different action-oriented activities toward mercury-free dentistry were discussed in the consultation.
4. ESDO and Asian Center for Environmental Health along with BDS have also prepared a petition for submission to the government of Bangladesh in the hope to phase out mercury from dentistry. The petition has been primarily submitted to relevant ministries and departments for suggestions and recommendations.
5. Moreover, BDS submitted a letter to Minamata Secretariate mentioning the information regarding their initiatives and achievements in association with ESDO to end dental amalgam in Bangladesh. BDS moving forward to ban dental amalgam use by 2022 and push for a ban on dental amalgam mentioned the Minamata Convention obligations in Annex A-II to phase down the use of amalgam. In Bangladesh, the government and civil society are both following paths to reduce the use of dental amalgam substantially and then phase it out entirely.

<sup>15</sup> <https://www.theindependentbd.com/post/239322>

<sup>16</sup> [http://www.mercuryconvention.org/Portals/11/documents/meetings/COP4/submissions/ESDO\\_DentalAmalgam.pdf](http://www.mercuryconvention.org/Portals/11/documents/meetings/COP4/submissions/ESDO_DentalAmalgam.pdf)

<sup>17</sup> <https://mercuryfreedentistry.net/2018/03/10/bangladesh-dental-society-calls-for-amalgam-phase-out-in-the-treatment-of-children-pregnant-women-and-nursing-mothers-by-june-2018/>



6. ESDO has surveyed almost 11,000 registered dentists regarding their status on mercury-free dentistry and compiled a database on mercury-free dentists.
7. Last but not least, ESDO is extensively spreading awareness regarding the health hazards of poisonous mercury amalgam through Facebook, Instagram posts and Twitter. ESDO publishes a newsletter and also observes different important days such as ‘World Oral Health Day’.

#### *4. Event accomplishments by ESDO for MFD*

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To phase out Mercury Amalgam, a high-level policy dialogue was held on 23<sup>rd</sup> February 2022 in the Department of Environment Auditorium. This noteworthy event (see Annex-C) was started with an introductory session by **Samina Khandaker**, Program Associate of ESDO, and a welcome speech by **Prof Dr. Humayun Kabir Bulbul**, Secretary-General, BDS. After the welcome speech, a presentation on the country situation report was presented on the topic of "Country Situation Report on Phasing out Mercury Amalgam from Dentistry of Bangladesh by 2022" by **Subhatun Nur Prithy**, project associate, ESDO.

After the presentation, a session involved the active participation of special guests from the different national and international organizations such as the president and vice-president of World Alliance for Mercury-free Dentistry, **Attorney Charles G. Brown** and **Dominique Bally**, the director of European Center for Environmental Medicine, **Florian Schulze**, and the director of Department of Environment, Ministry of Environment, Forest and Climate Change, **Masud Iqbal Md. Shameem** also gave their recommendation and suggestions to prevent the use of toxic chemical mercury from the dentistry and how Bangladesh can proceed to Minamata ratification.

An open discussion session was moderated by the Secretary-General of ESDO, **Dr. Shahriar Hossain**, where the discussion was made to phase out mercury from Bangladesh. Here, our guest of honor, **Prof. Dr. Md. Abul Kasem**, President, Bangladesh Dental Society, the chief guest of the event, **Keya Khan**, Additional Secretary and **Habibun Nahar**, Deputy Minister, of Ministry of Environment, Forest and Climate Change, gave their insightful remarks on the vital issue of using mercury and also discuss the strategies to ban this toxic chemical. Moreover, the closing remark was delivered by **Syed Marghub Murshed**, Former Secretary, Government of the People's Republic of Bangladesh & Chairperson, ESDO, and **Siddika Sultana**, Executive Director, ESDO.

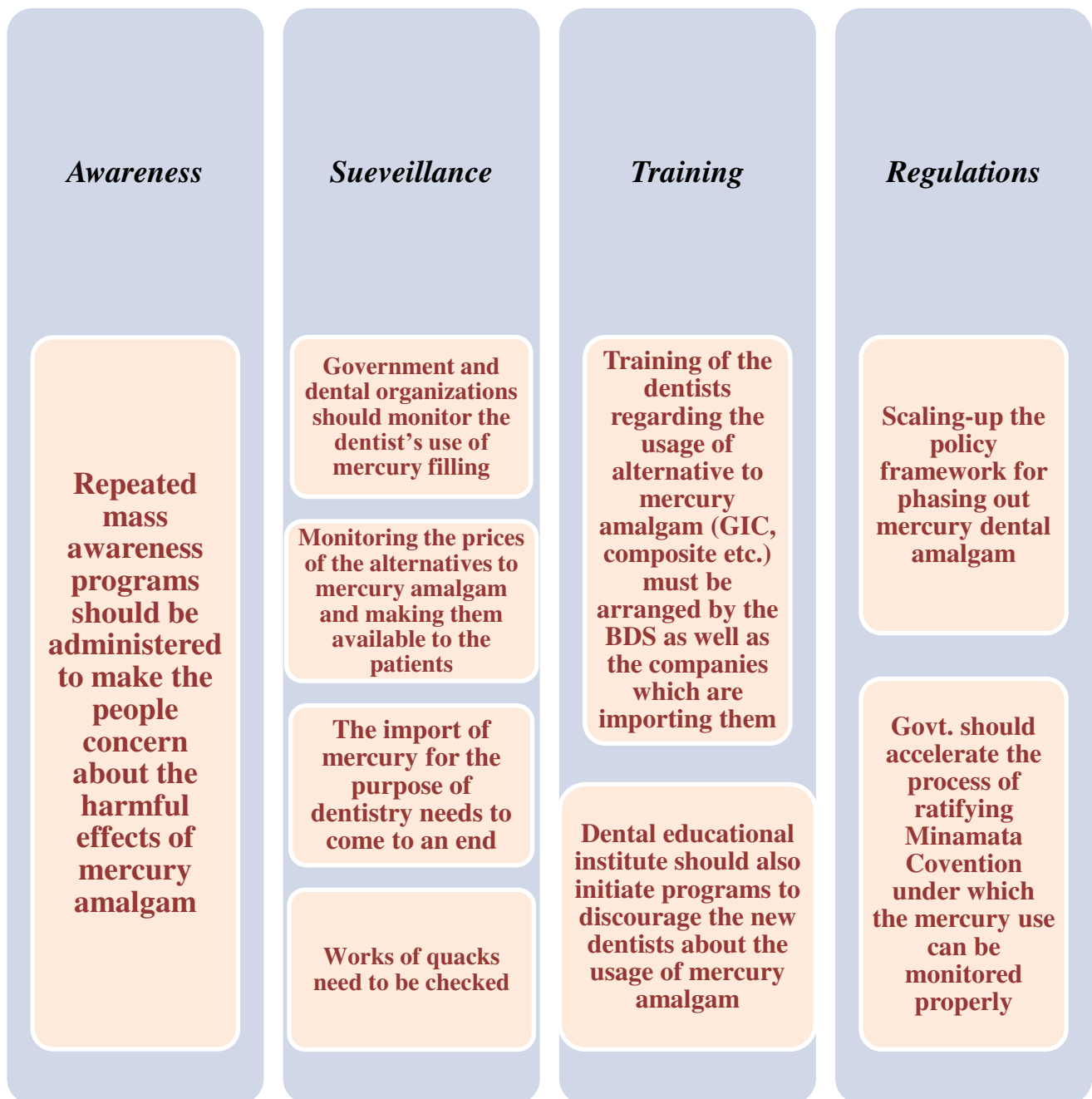
Discussion and suggestions by our notable guests, representatives of numerous institutions, and government authorities presented in this policy briefing are as follows:

1. The policy dialogue was successfully able to draw the attention of different organizational bodies, stakeholders, and the Bangladeshi government on the issue of banning mercury from dentistry.



2. Through the event, we were able to receive an expert opinion on Bangladesh's current dentistry regulating system and its shortcomings and the insightful ideas of future studies.
3. The event served as a platform of discussion among the stakeholders on the negative health effects of mercury poisoning was able to draw the attention of media personnel that is going to help spread awareness among mass people later on.
4. Moreover, the event successfully allowed the dentists to urge for the establishment of Regulation as relevant experts and regulatory bodies were present.

## *4. Recommendations*



# Conclusion



## 5. Conclusion

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In dentistry, dental amalgam has traditionally been the primary restorative material utilized directly on the teeth. While composite resins and glass ionomers are excellent direct restorative materials, they are prohibitively expensive when compared to numerous indirect restorative options. The debate in dentistry about mercury and dental amalgam revolves around the possibility that mercury leaking from amalgam fillings is harmful to one's health.

Mercury is known to be neurotoxic at a large level, capable of causing a wide range of neurobehavioral consequences. The availability of alternative materials and new techniques for cavity preparation, such as the concept of removing as little of the tooth as possible, are contributing to a further trend away from dental amalgam as a primary restorative material.

Mercury amalgam and silver fillings are widely used across the world, but it's long past time to cease them. It's time for dentists to do their part for the greater good, and mercury amalgam-free dentistry is a key indicator of Bangladesh's healthy rise within the global movement. The government should also help BDS and ESDO minimize mercury consumption in dental amalgam and ratify the Minamata Convention.

Dental amalgam is still a desired direct restorative material from a cost and lifespan viewpoint. It is the material of choice in some clinical settings where its characteristics are superior to other materials. Dental amalgam must be phased out if dentists are to do their part. Consumers in general, on the other hand, should be extra cautious when it comes to dental exams.

Dental amalgam (also known as "dental mercury") phase-out will have a substantial influence on dental education and practice in developing nations. To teach future generations of dentists in mercury-free minimal intervention dentistry, dental schools will need to adapt their curricula quickly. This is critical if they want to preserve their ecosystem and the health of future generations. Dental schools should be the focal point of all phase-down efforts and should also lead the way in upgrading general dentists' knowledge and abilities in minimal intervention dentistry through conferences, seminars, and hands-on workshops. Dental faculties, governments and international bodies should provide financial and equipment assistance to dental schools so that they can perform their obligations. The moment to act has come.





# Annex-A

## 1. Google form

The form is titled "Phasing Out Mercury from Dentistry by 2022" and is an "Online Survey Questionnaire on Mercury Free Dentistry (Dental Surgeon)". It consists of several sections:

- Respondent's name:** A short answer text field.
- Phone number:** A short answer text field.
- Sex:** A short answer text field.
- Age:** A short answer text field.
- Name of dental chamber:** A short answer text field.
- Location of dental chamber:** A short answer text field.
- District of dental chamber:** A short answer text field.
- Field of practice:** Radio button options for "General" and "Practitioner Specialist".
- Service Sector:** Radio button options for "Private", "Tertiary hospital", and "Government".
- Do you use mercury amalgam filling? \*** Radio button options for "Yes" and "No".
- If no, what was your source of awareness? \*** Radio button options for "Patient inquiries", "Undergraduate", "Conferences", "TV and Radio", "Colleagues", "Continuing dental education", and "Word of mouth".
- What is your opinion about mercury amalgam? \*** Radio button options for "Safe", "Unsafe", and "Uncertain".

Is your patient concerned about the color and harmful effects of mercury amalgam? \*

Yes

No

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Are you aware of amalgam alternatives, e.g., posterior composite, ceramic, cast gold restorations?

Yes

No

---

Do you have the access to the alternatives?

Yes

No

Are your patient bothered about the amalgam alternatives?

Yes

No

Signature of the respondent

Short answer text


After section 1 Continue to next section

Section 2 of 2

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## 2. Recognized dental chambers (a few):

No	Name of the Dental Chambers	Dentist Name	Location
1	University Dental College	Dr. Niloy Das	Boro Magbazar
2	Dental Comfort	Dr. Shaila Chowdhury	Magbazar
3	New Oro Dent Care	Dr. Md. Abul Kalam Azad	Magbazar
4	Anam Oro Dental Care	Dr. Mushtaq Salehin	Magbazar
5	Smile Dental Care	Dr. Nur-E-Jannat	Magbazar
6	Tooth and Dental Care	Dr. Ibrahim Khan	Malibag
7	Al Khidma Dental	Dr. Hosan Mahmood	Malibag
8	Dental Park	Dr. Raihan Ali	Malibag
9	Dental Care	Dr. Achem Ahmed	Malibag
10	Dental View	Dr. Jannatul Ferdous	Malibag
11	Saphena Women's Dental College	Dr. Sarkar Nahin Ahmed	Malibag
12	Dental Surgeon	Dr. Md. Rifat Waliullah	Mouchak
13	Malibag Dental Care	Dr. Md. Abdullah	Mouchak
14	Vision Dental Care	Dr. Md. Rubel Hussain	Mouchak



15	Omeo Dental	Dr. Kashem Khan	Mouchak
16	New Green Oral and dental surgery	Dr. Fahimuzzaman	Mouchak
17	Insaf Dental Care	Dr. Shahin	Mouchak
18	Doctors Dental Care	Dr. Fatema Kaniz	Mouchak
19	Dr. Bashar's Dental Care	Dr. Md. Abul Bashar	Khilgaon
20	Khushi Dental Care	Dr. Md. Saiful Aziz	Khilgaon
21	Unity Dental Care	Dr. Tanvir Ahmed	Khilgaon
22	Dental Circle	Dr. H. M. Hasan	Khilgaon
23	Dental View	Dr. Shahnaz Parveen	Khilgaon
24	Dental Corner and Maxillofacial Center	Dr. Khalid Hasan	Khilgaon
25	Anamika Dental	Dr. Ruhim Khan	Khilgaon
26	Classic Dental	Dr. Moshuddin Ahmed	Khilgaon
27	Shovon's Dental Care	Dr. Shovon Banik	Goran
28	Dental Heaven	Dr. Md. Aminul Islam	Goran
29	Dental Heaven	Dr. Moniruzzaman Rana	Goran
30	Unity Dental Care	Dr. Tanvir Ahmed	Khilgaon
31	Broti Dental Orthodontics	Dr. Broti Chowdhury	Goran
32	Janani Dental Care	Dr. Shahnaz Parveen	Goran
33	Samiul Dental Surgery	Dr. Samiul Hasan	Goran
34	Mikrani Dental	Dr. Rubina Khatun	Goran
35	Saad Dental Care	Dr. Sasdrul Ahmed	Goran
36	Jayed's Dental Care	Dr. Tahlil Rashid	Rayerbazar
37	Crescent Dental Care	Dr. Hasina Parvin	Rayerbazar
38	Farzana's Dental Care	Dr. Farzana Haque	Rayerbazar
39	Cube Dental Care	Dr. Anisuzzaman	Rayerbazar



40	Pulok's Dental Care	Dr. Shahriar Pulok	Rayerbazar
41	Jinnat Dental Care	Dr. Jinnat Huda	Rayerbazar
42	Unique Dental Zone	Dr. Riaz Kabir	Rayerbazar
43	Anisa Dental Care	Dr. Anisa Jaman	Rayerbazar

### 3. Database of mercury free dentists

ESDO has already started to upload the database in Asian center for environmental health website ( <http://www.asiancenter.asia/reports/> )

### 4. WAMFD and Zero mercury group survey question



Environmental and Social Development Organization

#### Assessing the availability and use of dental amalgam and mercury free dental restorations among dentists

##### Introduction:

Mercury is toxic to human health and the environment. However it is still used in various products for specific applications even though mercury-free alternative products have been produced for many of these same applications. Dental amalgam is comprised of approximately 50% mercury and has been widely used for over a century. However, because of its mercury content, it can have an adverse impact on human health and the environment. Since 2013, more than 130 countries have signed and ratified the Minamata Convention on Mercury, a global treaty that aims to protect human health and the environment from anthropogenic emissions of mercury and mercury compounds. In collaboration with international partners, [NGO partner] is/are working in support of [NAME COUNTRY] in promoting mercury reductions under the Minamata Convention on Mercury.

##### Rationale:

As part of current activities supporting the Minamata Convention implementation, [NGO partner] is carrying out this survey in support of mercury reductions under the Minamata Convention.

Accordingly, we would be most grateful for your kind participation in contributing to the gathering of information on mercury-free dental restoration products as alternatives to dental amalgam that are currently imported, distributed and sold. The aggregated data will be presented to government and stakeholders prior to inclusion in a country situation report.

Should you be agreeable to participate in this survey, please kindly read the questionnaire below and provide the most appropriate answers to the questions by typing, writing or checking the appropriate boxes. Once completed, please mail back the completed questionnaire to [NGO partner, address]. Kindly note that the deadline for returning the filled questionnaires is by [ADD IN THE DATE HERE]

The collected data will be aggregated and results of individual dental clinics will not be divulged.

Thank you in advance and looking forward to your participation.

#### Questionnaire for Dentists

- Please provide dental clinic/hospital name: **Lalmatia dental clinic**
- As a professional of the dental sector, in which type of setting do you normally operate?  
Public sector  Private clinics  Both public & private sectors  At your home   
According to our survey Out of 9086 surveyed dentists 8549 (94.10%) dentists are practicing in private hospitals. 268 in government hospitals & 268 in tertiary hospitals.
- Which types of direct dental restoration products you have been trained to use? (Please check one or both options below)  
A) Dental Amalgam  B) Mercury-free dental restoration products [yes, composite]
- If you use dental amalgam, in what form do you buy it (please check one or both options below; please leave blank if you do not use amalgam)  
a. Encapsulated   
b. Elemental mercury and metal powders
- Please provide information on the quantities of direct dental restorations that you have bought in the past one year (if you did not buy a particular product, please enter zero)

Product	Quantities (bought in calendar year 2020)
Dental amalgam capsules	Enough capsules for <input type="text"/> fillings
Dental mercury	Enough for <input type="text"/> fillings using <input type="text"/> kg of mercury
Composite filling materials	Enough materials for <input type="text"/> fillings
Glass ionomer filling materials	Enough materials for <input type="text"/> fillings
Any other (please specify)	Enough materials for <input type="text"/> fillings



6. How do you decide whether to use dental amalgam or a mercury-free dental restoration material? Circle "Y" for "yes" or "N" for "no" if any of the following criteria are factors in your decision.

Criteria	Restoration materials	
	Mercury-free dental restoration materials	Dental amalgam
Cost	Y/N	Y/N
Availability	Y/N	Y/N
Customer preference	Y/N	Y/N
Age or health of the patient, including pregnancy, infancy	Y/N	Y/N
Restoration Quality/Durability	Y/N	Y/N
Ease of use/application	Y/N	Y/N

7. Is dental care covered by public health insurance in your country? Please identify what types of direct dental restorations are covered: **There is no dental health insurance**

Dental Amalgam [  ] B) Mercury free dental restoration products [  ]

If both are covered partly, please explain: .....

8. Any final remarks /comments/suggestions.....:

- THANK YOU FOR YOUR TIME AND COLLABORATION -





## Annex-B

### *SURVEY PHOTOS*



(a) Survey questions were asked to a dental surgeon.



(b) One of the young dental surgeons filling out the questionnaire.



(b) One of the young dental surgeon's chambers was recognized as mercury free dental chamber.



(d) Survey with one of the customers in a dental chamber and letting her know about the harmful effects of mercury amalgam.



(e) Survey with one of the customers in a dental chamber and letting him know about the alternatives of mercury amalgams.

## Annex-C

### EVENT PHOTOS



(a) Cover photo of the event report about high-level policy dialogue on mercury-free dentistry.







(b) Chief Guest, Habibun Nahar, MP, Honorable Deputy Minister, Ministry of Environment, Forest and Climate Change giving her valuable remarks.



( c ) Session Chair Syed Marghub Murshed, Former Secretary of Govt. of the People's Republic of Bangladesh and Chairperson of ESDO is providing his remarks



(d) Special Guest, Keya Khan, Additional Secretary, Ministry of Environment, Forest and Climate Change; Government of the People's Republic of Bangladesh



(e) Prof. Dr. Md. Abul Kasem, President, Bangladesh Dental Society giving his remarks



(f) Respected Guests



(g) Dental Surgeons Participation in this event







**"Go for Mercury Free Dentistry"**



**Environment and Social Development Organization**

[www.esdo.org](http://www.esdo.org), [www.asiancenter.asia](http://www.asiancenter.asia), <https://www.facebook.com/esdobd90>