MINISTRY OF HEALTH

ORAL HEALTH SERVICES

KENYA NATIONAL INFORMATION ON NON-MERCURY ALTERNATIVES TO DENTAL AMALGAM

Implementation of additional measures in phasing down the use of dental amalgam.

1.0 Preamble

Stakeholders of the Minamata Convention on Mercury in Kenya are somewhat advanced in awareness of the convention including phase down of the use of dental amalgam.

Several consultative forums have been organised with appreciable participation. However, the country is yet to forge a nationwide process to kick start dental amalgam phase down which could partly be explained by the lengthy process in ratifying the Minamata Convention on Mercury (MCM) in order to join the 123 countries as at July 2020[1].

The government is however in the later stages in completing the ratification process. This process once completed, will allow the implementation of the completed national plan to phase down the use of dental amalgam[2].

1.1 Annex A part II submitted by the African group

Kenya does not support the proposal of the amendment to the dental amalgam provisions in Annex A part II submitted by the African group. Due to the following reasons;

i. Dental amalgam is still used as a posterior restoration in many parts of the country. The untreated dental caries burden stands at 46.3% among children 35.5% adults[3] and it is postulated to increase with both urbanisation and affluence as reported by Macigo *et al* [4].

ii. The recognition that the transition to the use of alternatives to dental amalgam should be accompanied by a considerable level of preparedness at policy level to set guidelines and goals, knowledge sharing, re orientation of practising dentists towards a new restorative philosophy where dental amalgam is no longer the mainstay posterior restorative.

iii. Dental training curriculum review and dental clinic's infrastructural development need to be adjusted towards non-mercury alternatives.

iv. No structured oral health prevention and promotion which is key in the reduction of dental diseases and thus reduced need for dental treatment

2.0 Non mercury alternatives to dental amalgam

2.1 Availability

Dental amalgam alternative restoratives (DAARs) are available in the Kenyan market; resin composites, glass ionomer cements, compomers, giomers, dental ceramics, stainless steel crowns and gold alloys. Kenya has more than 22 dental materials supply companies as revealed by the

East Africa Dental Amalgam Phase Down Project in 2013, the country even supplies dental materials to neighbouring countries.

However, the availability in the national body that procures dental materials for public hospitals the Kenya Medical Supplies Authority (KEMSA) is comparatively less. There is a disparity in the procurement and use of alternatives to dental amalgam across the counties which should be investigated.

Alternatives to dental amalgam are accessed more by the private sector than the public sector due to financial constraints and budgetary allocation that limit in the latter.

Despite reports from some organisations on upscale of the use of alternatives to DA especially resin composites, ceramics and gold alloys, **no formal research** has been done in the country to support this. Besides the high-tech casting equipment are only available in very few institutions in Kenya, hence these treatment options are prohibitively expensive.

Most of the public and some private dental clinics lack infrastructure amenable for quality alternative restorations namely; functional dental units, light curing units, instruments, accessories, including running water and electricity.

A study by Kassim B.A et al done in Nairobi on 83 light curing units in both private and public institutions reported that 42.17% had unacceptable intensity below 300mw/cm^2. The situation in the two dental schools in Kenya is characterised by erratic availability of dental materials in general DAARs inclusive, inadequate number of light curing units and accessories for quality posterior restorations. This calls for a Kenyan context dental amalgam phase down approach which should be gradual to allow necessary measures to be taken for successful use of non-mercury alternatives.

2.2 Use of non-mercury alternatives to dental amalgam for posterior restorations

Trends in the use of the commonly applied alternative to dental amalgam resin composite, for posterior restorations has shown a gradual increase, from 4.0 - 6.25% in 2009[5] to 25.2% for Class I restorations and 18.5% for II restorations in 2014 among dentists in Kenya.[6] In addition, preliminary findings in a current on-going study analysing use of alternatives to DA in posterior restorations in three institutions; private, teaching and public show usage at 31.8 to 36%. The most cited reason for increase in use of alternatives to DA is patient preference for aesthetic restorations.

It is important to note that blanket statement on the use of DAARs in a country without specific delineating application in posterior teeth can give a false picture. For instance in the 2013, Phase-down of DA in East Africa 2012 (Kenya, Uganda and Tanzania) (N= 62) reported equitable use of DA and resin composites where 91.2% of the dentists used amalgam while 92.6% used Composite Resin.[7] The use of alternatives particularly glass ionomer cements and compomer has replaced DA use in deciduous teeth in some institutions.

Of concern is the availability of pre-requisites for execution of quality posterior restorations by dentists. Their attitude to the phase down of DA, Knowledge, skill and competencies will influence the shift from dental amalgam.

3.0 Implementation of additional measures in phasing down the use of dental amalgam.

Since Kenya has not rolled out its' phase down strategy it is not possible to state the additional measures. However, the activities that have occurred since becoming a signatory to the convention are summarised below;

(i)	Setting national objectives aiming at dental caries prevention and health promotion thereby minimizing the need for dental restoration;	Not yet set as the phase down process has not been flagged off
(ii)	Setting national objectives aiming at minimizing its use;	"
(iii)	Promoting the use of cost-effective and clinically effective mercury-free alternatives for dental restoration;	Awareness creation in on going
(iv)	Promoting research and development of quality mercury-free materials for dental restoration;	• One prototype dental cement developed • On-going research on a new dental restorative
(v)	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;	• Dental school has commenced review of curriculum • Few Continuous Professional Development talks by Kenya Dental Association done on phase down on dental amalgam
(vi)	Discouraging insurance policies and programmes that favour dental amalgam use over mercury-free dental restoration;	-
(vii)	Encouraging insurance policies and programmes that favour the use of quality alternatives to dental amalgam for dental restoration;	-
(viii)	Restricting the use of dental amalgam to its encapsulated form;	This is prevalent in the country
(ix)	Promoting the use of best environmental practices in dental facilities to reduce releases of mercury and mercury compounds to water and land.	Best management practice in waste of dental amalgam implemented by very few facilities.

4.0 Impediment to commencement of nationwide phasing down of the use of dental amalgam

1. Pending ratification of the Minamata convention on mercury by the government.
2. National policy and guidelines on phasing down the use of dental amalgam not yet in place.
3. Inadequate knowledge skills and competency of some of the practicing dentists.
4. Low priority to matters of oral health, inadequate budget allocation for dental caries prevention and oral health promotion, need to re- training of dentists, low availability of alternatives to dental amalgam and inadequate dental clinics infrastructure.

5. The necessity to have both Ministry of Health and Ministry of Environment & Forestry on board and coordinated.
6. Inadequate data for situational analysis.

References

1. United Nations Environmental Programme. Minamata convention signatories and parties [Internet]. Available from: http://www.mercuryconvention.org/Countries/Parties/tabid/3428/language/en-US/Default.aspx
2. PLAN TO PHASE-DOWN DENTAL AMALGAM [Internet]. Kenya; Available from: A National Plan to phase down the use of dental amalgam in Kenya.pdf
3. Kenya National Oral health Survey report [Internet]. 2015. Available from: http://www.health.go.ke/?wpdmpro=national-oral-health-survey-report-2015
4. Macigo FG1, James RM1, Ogunbodede E2 GL. Sugar consumption and dental caries experience in Kenya. Int Dent J [Internet]. 2016;66(3):158–62. Available from: https://www.ncbi.nlm.nih.gov/pubmed/?term=sugar+consumption+and+dental+caries+experince+in+Kenya
5. Ganatra FA, Kisumbi B.K GL. Selection of posterior dental restoratives by dentists. 2009;1(2):59–64.
6. Osiro O.A, Kisumbi B.K SH. Selection of direct restorative and root filling materials Kenyan dentists by Kenyan dentists in 2014. East Africa Med J. 2016;93(10):27–32.
7. Kisumbi B.K, Gathece L.W., Koyio L.N, Wamai J. Dental amalgam waste management by dentists in East Africa. Int Dent J. 2013;63(Suppl 1):P 684.