

SEA-Deafness-10  
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# Situation Review and Update on Deafness, Hearing Loss and Intervention Programmes

Proposed Plans of Action for Prevention  
and Alleviation of Hearing Impairment in  
Countries of the South-East Asia Region

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## Executive summary

**Title:** Situation review and update of deafness, hearing loss and status of intervention programmes in countries of the South-East Asia (SEA) Region.

**Rationale:** Hearing impairment affects about 6% of the population of the world, about a half of which is preventable. The far-reaching implications of hearing loss, both in respect of development of communication skills, as well as in terms of social and economic quality of life, warrants an urgent need to highlight the magnitude and severity of the problem. This survey is an attempt to assess the prevalence of this disability in the SEA Region with the help of existing data available from the countries. The existing infrastructure to deal with this disability in this Region is also assessed.

**General objective:** To assess the present prevalence of deafness and hearing impairment as well as the situation of ear health care and prevention of deafness through assessment of key indicators in the SEA Region.

### Specific objectives

- (1) To assess the prevalence and nature of deafness in the South-East Asia Region.
- (2) To assess the prevalence and nature of ear diseases in the Region.
- (3) To identify the structure and plan of action at the national level.
- (4) To identify the facilities and activities at the primary, middle and tertiary level of health services.
- (5) To identify weaknesses and strengths, and short and long-term needs.
- (6) To develop a combined profile on infrastructure in the SEA Region.

## **Methodology**

A questionnaire was developed based on the protocol that has been used for earlier WHO surveys conducted in the Region. This was field-tested and mailed to investigators in nine Member countries of the SEA Region. Data was gathered by the Member countries as well as from other reports relating to this that were published in indexed journals or based on the WHO protocol. An intercountry consultation was held in order to review and validate the compiled data. Feedback from the consultants and Member countries was obtained and a final report prepared.

## **Results: The parameters surveyed are:**

- **Prevalence of significant auditory impairment (SAI)/hearing impairment:** Percentage prevalence of hearing loss (SAI) in the general population varied from a minimum of 4.2% in Indonesia to 9% in Sri Lanka. Thailand and Nepal, which use a different protocol, have 13.3% and 16.6% prevalence respectively. Based on the figures obtained, there are over 100 million persons suffering from deafness and hearing impairment in the Region.
- **Prevalence of ear diseases in the SEA Region:** The ear diseases include impacted cerumen, which is the most prevalent. Other diseases prevalent are chronic suppurative otitis media and chronic non-suppurative otitis media. Over 10% of the population in India and 4.1% in Indonesia were suffering with presbycusis. Nepal and Myanmar could provide estimates for the prevalence of noise-induced hearing loss. Only Myanmar provided an estimation on the prevalence of deafness due to ototoxicity. These two are known to be underreported causes of hearing loss.
- **A National Policy for prevention of deafness and hearing impairment** exists in Indonesia, India, Nepal, Thailand and Sri Lanka.
- **Legislation:** No environment noise control legislation exists in Bhutan, Maldives, Sri Lanka and Nepal. Bangladesh, India, Indonesia and Thailand have in place a legislation/law for environment noise control and there is legislation for control of use of vehicular horns and for hearing conservation in Myanmar.

- **Human resources and infrastructure** (Primary, secondary, tertiary levels): There is a lack of human resources in most countries of the SEA Region, and the ratio of human resources to the population varies sharply among countries. The available manpower is also not equally distributed all over the country, with such personnel being concentrated in the urban areas.
- **Primary ear and hearing care (PEHC)** is a strategy of choice for the provision and implementation of prevention of deafness and hearing impairment (PDHI). There is a need to develop PEHC programme in Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal and Sri Lanka. Indonesia has only limited PEHC that is being implemented in some parts of the country. A national programme for the prevention and control of deafness is being developed.

## **Recommendations**

- It is strongly recommended that a national ear and hearing care policy should be developed in all countries of the Region. Countries which have existing national ear and hearing care policy should evaluate the implementation of the national policy.
- The WHO Regional Office should monitor and evaluate the country commitment for PDHI and report to Member countries.
- The national health authorities should initiate the formation of a national committee for ear and hearing care.



# **1. Overview of the survey**

## **1.1 Background and justification**

Hearing impairment is common throughout the world, and it is estimated that 50% of all deafness and hearing impairment is preventable. Although it is not fatal, the implications of hearing impairment at the individual, family and community level and the disruption that it causes to the lives of the people is considerable. The far-reaching implications of hearing loss, both in respect of development of communication skills as well as in terms of social and economic consequences and quality of life warrants an urgent need to highlight the magnitude and severity of the problem. This disability cannot be “seen” and therefore has been very low profile and programmes are much behind the programmes for blindness. As much as half of the hearing loss and deafness is preventable, provided it was detected early and managed properly through appropriate health education and programme development.

The South-East Asia Regional Office of the World Health Organization is committed to these ideas and has carried out several activities towards the prevention of deafness programmes. An update on the existing data on deafness from the South-East Asia Region was commissioned. A consultative meeting on “SOUND HEARING 2030” was held at the WHO Regional Office in New Delhi in March 2007.

To be able to formulate a regional strategy for prevention and control of ear disease and deafness and to measure its progress it is essential to assess the basic infrastructure available in the SEA Region for its improvement. This too was commissioned under the banner of WHO. WHO has also developed modules for training of health-care workers at various levels in the community.

## **1.2 Objectives of the survey**

**General objective:** To assess the present prevalence of deafness and hearing impairment as well as the situation of ear health care and prevention of deafness through appraisal of the key indicators in the SEA Region.

Specific objectives:

- (1) To assess the prevalence and nature of deafness in the South-East Asia Region.
- (2) To assess the prevalence and nature of ear disease in the Region.
- (3) To identify the structure and plan of action at the national level.
- (4) To identify the facilities and activities at the primary, middle and tertiary level of health services.
- (5) To identify weaknesses and strengths, and the short and long-term needs.
- (6) To develop a combined profile on the infrastructure in the SEA Region.

## **1.3 Methodology**

This survey consisted of three interconnected and interdependent phases.

### ***Phase I: Development of Questionnaire: January 2006***

A protocol was developed based on the existing protocol that was used for the earlier surveys. This was tested by applying the same in one state of India (Delhi). Suitable revisions and changes were made in consultation with the various specialists in this field including ENT surgeons, audiologists and epidemiologists. The questionnaire was then mailed to consultants in the various countries of the Region through the members of the South-East Asian Forum for Sound Hearing and also through WHO Representatives (WRs) of Member countries.

### ***Phase II: Compilation of data: February-March 2006***

**The years of collection of data of the source for this report vary from one country to the other. The year of publication of such data ranges from the year 1990 to 2002.**

The data related to prevalence of deafness and ear diseases was gathered by the members based on earlier surveys conducted by them in this field, as well as other reports relating to this that were published in indexed journals or based on the WHO protocol.

This data was compiled and mailed back. Representative members from the South-East Asian countries then came together for an intercountry consultation to review and validate the compiled data.

### ***Phase III: Preparation of report***

The final compilation and analysis of the data was carried out based on the feedback from the consultants. The final report was then prepared.

#### **Parameters for infrastructure survey**

- **Prevalence of significant auditory impairment/hearing impairment**
- **Prevalence of ear diseases in the Region**
- **National policy**
- **Legislation**
- **Human resources** (Primary, secondary, tertiary levels)
- **Infrastructure** (Primary, secondary, tertiary levels)

### ***Phase IV: Further feedback***

Further feedback from the countries: Lacunae pertaining to the countries was conveyed to them and more feedback was sought. Feedback was obtained from Bangladesh, Indonesia and Maldives.

### ***Phase V: Preparation of final report***

The final report was prepared based on feedback obtained.



**Section A**

**Epidemiology of deafness and hearing  
impairment in South-East Asia**



## 2. Epidemiology of deafness and hearing impairment in countries of the SEA Region

### 2.1 Prevalence of deafness and hearing impairment

The prevalence of deafness and hearing impairment in the countries of the SEA Region is depicted in Table 1. The data is based on the WHO protocol in most countries except Nepal and Thailand. The WHO protocol takes into account the estimation of significant auditory impairment. This is the level of hearing impairment which causes significant disruption in the auditory abilities. Significant auditory impairment is based on the assessment of the ear which has better hearing capacity. It includes all adults with hearing loss of more than 40 dB (decibel) in the better ear and all children with hearing loss with more than 30 dB in the better ear.

**Table 1:** Prevalence of hearing impairment<sup>#</sup>

Country	% prevalence of hearing loss in the population
Bangladesh (BAN)	9% (2002)
India (IND)	6% (1997)
Indonesia (INO)	4.2% (2002)
Maldives (MAL)	6%(1997)
Myanmar (MMR)	8%(1997)
Nepal (NPL)	16.6% * (1990) (21% conductive HL & 79% sensorineural HL)
Sri Lanka (SRL)	9% (1998)
Thailand (THA)	13.3%* (year not available)

<sup>#</sup> All figures are from population-based surveys

(\* Not based on WHO protocol. Includes milder degrees of hearing loss as well)

Based on the population of each country, the average number of persons suffering with significant auditory impairment is as follows:

**Table 2:** Total number (estimated) of hearing impaired

Country	Total population (in thousands)	Estimated no. of Hearing Impaired
Bangladesh	123851	11146950
Bhutan	796	data not received
India	1112225	66733500
<b>Indonesia</b>	<b>221900</b>	<b>9319800</b>
Maldives	300	18000
Myanmar	54021	4321680 / 3457344
Nepal	25408	4217728*
Sri Lanka	19630	1766700
Thailand	66527	8848091*

\* Not based on WHO protocol. Includes milder degrees of hearing loss as well

Based on these figures, it can be estimated that there are over 100 million persons suffering with deafness and hearing impairment in the SEA Region.

## 2.2 Estimated male/female ratio of adult-onset hearing loss

**Table 3:** Estimated male/female ratio of adult onset hearing loss

Country	Male:Female
Bangladesh	1:1
Bhutan	data not received
India	1:1
<b>Indonesia</b>	<b>1:1</b>
Maldives	data not received
Myanmar	data not received
Nepal	1:1
Sri Lanka	data not received
Thailand	data not received

Unlike the previously reported data, the present data shows equitable suffering by both the sexes for deafness and hearing impairment in the countries under survey.

## 2.3 Deafness and hearing impairment in children

The onset of deafness and hearing impairment early in life has a debilitating effect on the linguistic and communication skills of the child as well as on academic performance, education and employment opportunities.

Table 4 shows the estimated prevalence of childhood onset hearing loss between ages of less than 15 years old based on population studies. Prevalence of adult onset hearing loss is significantly higher. However, in terms of years of lives lived with disability (YLD), childhood deafness accounts significantly.

**Table 4:** *Estimated prevalence of adult onset and childhood onset deafness in the SEA Region*

Country	Adult onset deafness	Childhood onset deafness
Bangladesh	33% (all levels of hearing loss)	5%
Bhutan	data not received	data not received
India	8%	2%
Indonesia	5%	4%
Maldives	data not received	data not received
Myanmar	data not received	data not received
Nepal	data not received	data not received
Sri Lanka	data not received	data not received
Thailand	data not received	data not received

Note: No current data was available from the remaining countries.

### ***Deafness in children could be both congenital and acquired***

#### *Congenital hearing loss*

Congenital hearing loss may be hereditary or non-hereditary. Hereditary hearing loss may be syndromic or non-syndromic. A large number of

syndromes associated with hearing impairment have been identified. Other non-syndromic causes are associated with various gene mutations. Primary prevention of these is possible through genetic testing and genetic counseling. However, in terms of prevention of deafness and hearing impairment (PDHI), it is the non-hereditary causes that are currently of greater importance. The non-hereditary causes include factors such as:

- Pre-natal: rubella and other maternal infections such as toxoplasmosis
- Peri-natal: prematurity, low birth weight, hypoxia, hyperbilirubinemia that needs exchange transfusion
- Post-natal: meningitis, mumps, measles, ototoxic drugs.

All the factors listed above lead to a bilateral profound hearing loss. A child with this type of deafness is unable to perceive auditory stimulus and will fail to develop speech and linguistic skills without intervention. A large proportion of this deafness can be prevented by implementing good antenatal and perinatal care, immunization against rubella, judicious use of ototoxic drugs and control of noise in the nursery. Secondary and tertiary prevention in the form of early identification and suitable rehabilitation play a significant role in the reduction of morbidity and improving the quality of life in these children

#### *Other causes of hearing loss acquired during childhood*

Other than the bilateral profound hearing impairment, children may develop milder degrees of hearing loss later in their life. The causes that commonly lead to this are: chronic suppurative otitis media, non suppurative otitis media, impacted cerumen, post-traumatic perforation and use of ototoxic drugs. High noise levels in the incubators in the nursery can also have a deleterious effect on the auditory system of premature babies who spend a long time in these incubators.

#### ***Hearing impairment in adults***

As the percentage of elderly population and life expectancy increases, there is a simultaneous need to address the problems related to the elderly. Though there are many causes that can lead to a hearing loss in adults, the commonest of these are: presbycusis, chronic suppurative otitis media,

noise-induced hearing loss and ototoxicity. Hearing loss in the elderly population is often caused by presbycusis. This hearing loss is bilateral and symmetrical. It can be aggravated by environmental factors such as noise etc. A large proportion of these causes are preventable and the others can be treated or rehabilitated to reduce the morbidity associated with them.

## 2.4 Prevalence of ear diseases that can lead to hearing loss

A variety of ear diseases can lead to conductive as well as sensorineural hearing loss. The prevalence of ear diseases is listed herein. These are the ear pathologies that have the potential of leading to auditory impairment. The figures indicated in Table 5 are percentages of the population in the various countries that were found to be affected by these ear diseases.

**Table 5:** Prevalence of ear diseases that are a potential cause of hearing loss  
(All figures are in % of general population affected by the given entity)

	BAN	IND	INO	MAL	MMR	NPL	SRL
Impacted Cerumen	3%	<b>18.7%</b>	13%	NA	2.65%	excl	NA
CSOM	4.5%	5.4%	3.6%	NA	1.3%	8.1	8.4%
Chr. NSOM	.08%	3.8%	.27%	NA	0.2%	10.3	9.5%
Congenital	.038%	0.2%	.11%	NA	0.11%	NA	NA
Post traumatic perforation	NA	0.6%	2.7%	NA	0.22%	NA	2.4%
Other causes of COHL	1%	NA	NK	NA	NA	ASOM .38% Otoscl 2.2%	NA
Presbycusis	NA	10.3%	4.1%*	NA	1.13%	6.5%	NA
NIHL	NA	NA	NK	NA	.06%	0.8%	NA
Ototoxicity	NA	NA	NK	NA	.23%	NA	NA
Other causes of SNHL	.03%	7%	3% #	NA	.5%	12.9%	NA

\* : All non-infectious adult onset causes including Presbycusis

#: Undetermined causes.

**No data was received from Bhutan, Maldives and Thailand.**

- **Impacted cerumen:** Cerumen in the ear, commonly termed as ear wax, is present in a large percentage of persons in India and Indonesia. Cerumen impaction often leads to hearing loss that may be mild or moderate. This is one form of hearing loss that is completely avoidable and treatable. Besides hearing loss, impacted cerumen can lead to other ear diseases such as otitis externa.
- **Chronic suppurative otitis media (CSOM):** This is of two types: tubotympanic and atticoantral. CSOM can occur at all ages, but children are often the most affected. It can lead to moderate to severe degrees of hearing impairment. In the SEA Region there is widespread prevalence of this disease. This entity can be prevented in a large number of cases by following certain simple precautions. Wherever it does occur, it can be treated to correct the hearing loss and prevent complications.
- **Chronic non-suppurative otitis media:** Non-Suppurative Otitis media is caused as a result of improperly treated middle ear infections and upper respiratory infections. It can be largely prevented and treated by medical and surgical means. Untreated, it leads to hearing loss and can progress to cause chronic suppurative otitis media.
- Other causes of conductive hearing loss include diseases such as otosclerosis, acute suppurative otitis media, foreign body impaction, tympanosclerosis, etc. All the conditions can be treated in order to prevent and correct the resultant hearing loss.
- **Presbycusis:** It is an age-related hearing loss. High prevalence is reported from India and Nepal.
- **Ototoxicity and noise-induced hearing loss** are under-reported and under-diagnosed entities. Sri Lanka is the only country which has estimated the prevalence of NIHL. However, such data may be available from other sources such as “database on adverse drug reaction” or “occupational hearing loss studies” which is to be identified in near future. Further epidemiological research is required in these areas, as both the causes are completely preventable. However, once they do occur, the

hearing loss cannot be reversed and we can only offer the patient rehabilitation in the form of hearing aids.

- **Other causes of sensorineural hearing loss** show very variable prevalence in the region. This is probably due to the fact that there has been no standardization as to the ear diseases included under this. In some places, NIHL and ototoxicity are a part of this group.



## **Section B**

# **National policy and human resources**



### **3. National policy and national laws**

#### **3.1 Introduction**

National concern can lead to effective and pragmatic policy formulation for the prevention of deafness only if there is an awareness regarding hearing loss and about the fact that hearing problems can adversely affect child development as well as the productivity and well-being of adults. It must be remembered that the successful implementation of widescale effective programmes for the prevention of deafness and hearing impairment cannot be accomplished by the otorhinolaryngological, medical or scientific profession alone.

The financial and manpower resources essential to accomplish the objectives of prevention often go far beyond the realm of health. Any intervention must be based on the realities of cultural, economic and social factors which includes education, nutrition and other determinants that are outside the health sector.

Such an intervention needs the support of the public and private sectors and the community at large. National concern with the prevention of deafness and hearing impairment must galvanize the national will to act. The formation of a committee, task force or society for the prevention of deafness and hearing impairment may be a critical step. Such national committee or equivalent panel should consist of influential representatives from the government together with otorhinolaryngologists, public health specialists and leaders from the media, industry and the community. It should provide a common platform to influence policy-makers and planners about the extent of the problem and the high costs of inaction. It should encourage public awareness, act as a coordinating body and assist in identifying existing and potential resources.

Human resources for the prevention of deafness and hearing impairment is a major component of a country's health system. As stated by WHO, it accounts for about three-fourths of the total investment outlay on

national health expenditure. Investment in human resources is vital for obtaining an approximate mix of health professionals and for bringing about improvement in the quality of services. Countries in the South-East Asia region have accorded greater emphasis to human resources for health (HRH) activities and have made significant progress towards achieving a better HRH situation. Although much more needs to be done, an analysis of the health workforce in Member countries has shown significant improvement in both quality and quantity of HRH. Some major factors that contribute to the success or failure of a national HRH policy or plan include political commitment at the higher levels, ownership of HRH plans and projections by the country, availability of authentic and reliable data, and sufficient financial resources for HRH activities.

### **3.2 National policies and programmes**

Differences in the design, content and management of health systems are translated into differences in a range of social value outcomes such as health, responsiveness or fairness. Decision-makers at all levels need to quantify the variation in health systems performance, identify factors that influence them and articulate policies that will achieve better results in a variety of settings.

**Table 6:** *National policy on prevention of deafness and hearing impairment in SEA Region countries*

<b>Country</b>	<b>National policy on prevention of deafness and hearing impairment</b>	<b>Focal person in the Ministry of Health (MoH)</b>
Bangladesh	Not available	None
Bhutan	Not available	–
India	National Programme for Prevention and Control of Deafness in pilot phase	Director-General of Health Services, Ministry of Health and Family Welfare (MoHFW)
Indonesia	Available	MoH, Sub-directorate for eye and ear health
Maldives	Not available	–
Myanmar	Committee on Prevention and Control of Deafness	Chairperson: Director-General, Department of Health

Country	National policy on prevention of deafness and hearing impairment	Focal person in the Ministry of Health (MoH)
Nepal	Available *	Programme Coordinator, HMG/WHO Nepal Prevention and Control of Deafness
Sri Lanka	Available	None
Thailand	Available	None

\* formulated as an overall policy for the disabled

A national policy for the prevention of deafness and hearing impairment is in place in Thailand, Indonesia and Nepal. There is no such policy in Bangladesh and Sri Lanka. In India, a national policy and programme for prevention and control of Deafness is under development. Pilot phase of this programme has been launched in 25 districts of the country. In Nepal the national policy has been formulated as an overall policy for the disabled. In India such a policy is currently under development and there is a strong possibility of a National Programme for Prevention and Control of Deafness being launched in the coming years.

**Table 7:** Programme for prevention of deafness and hearing impairment coordinated at the national level in SEA Region countries.

Country	National programme
Bangladesh	Not available
Bhutan	Not available
India	Under development. Pilot phase of national programme for prevention and control of deafness is underway.
Maldives	Not available
Myanmar	Not available
Indonesia	Available
Nepal	Available
Sri Lanka	Available, but not implemented.
Thailand	Available

A national ear and hearing care policy has been adopted as a special programme in Thailand and Indonesia. In Nepal, the existing programme for prevention and control of deafness is being coordinated by the Ministry of Health and WHO. In Bangladesh, the government has nominated a focal person for the programme. A proposal of the national committee is under active consideration of the Ministry of Health and Family Welfare.

Besides this, NGOs play an important role since their activities cover both national and local programmes.

### **3.3 Laws on noise**

Protection of public health from the adverse effects of noise are important for the success of the prevention of deafness and hearing impairment programme and needs suitable regulations or laws to be framed by the governments.

India, Indonesia, Bangladesh and Thailand are countries that have formulated legislation on environmental and/or occupational noise. Myanmar has established no-horn zone and initiated steps for the protection of hearing in the industrial sector.

## **4. Human resources**

### **4.1 Introduction**

Ear-care services can be provided at the community or primary level, secondary level and tertiary level. Services at the primary level are provided by primary health workers or community volunteers. Simple diagnostic devices for ear and hearing examination and basic treatment and referral services should be provided at this level. These include public awareness programmes. Basic ENT equipment sets and a screening or clinical audiometer along with appropriate medication and simple ear surgery facilities would be available at the secondary level. Human resources consist of a general medical practitioner or an ENT specialist/Otolaryngologist. The tertiary level usually comprises has an ENT department at the provincial level with a staff complement consisting of otolaryngologists and associated personnel including audiologists, audiometricians, hearing aid technicians, ENT nurse and speech therapists. The facilities would include all essential ENT examination equipment, diagnostic audiometer, electro-physiological testing equipment

(tympanometer, BERA, OAEs testing) as well as facilities for micro-surgery of the ear. Besides these three levels of ear care, special mobile units can be useful in two settings: 1) for pilot studies and surveys on a short-term basis, and 2) for outreach services delivery, where such mobile units can function at the secondary or tertiary levels.

## 4.2 Medical doctors, ENT specialists, otologists

The national plan should include human resources in adequate numbers and quality. This is an important prerequisite for the effective organization, management and implementation of the programme.

As shown in Tables 8, countries surveyed have a different quantity of human resources.

**Table 8:** Number of physicians

Country	BAN	BHU	IND	INO	MAL	MMR	NPL	SRL	THA
Total No. of doctors	34502	145	500000	data not received	75	13000	5824	12500	data not received
Ratio to the population	1:3590	1:5191	1:2224.5	data not received	1:3916.6	1:4155	1:3949	1600	data not received

**Table 9:** Number of otolaryngologists and otologists and their ratio to total population

Country	Number of ENT Specialists	Ratio to the population	Number of micro-ear surgeons	Ratio to the population
Bangladesh	307	1:43423	62	1:1997597
Bhutan	4	1:188175		1:752700
India	8000*	1:139028	4000*	1:278056
Indonesia	720	1:305000	70	1:3000000
Maldives	3	1:97915.3	03	1:97915.3
Myanmar	100	1:540210	50	1:1080420
Nepal	26	1:384615	26	1:384615
Sri Lanka	25	1:800000	25	1:800000
Thailand	589	1:104584	150	1:410666

\* These are approximate figures.

Table 8 shows that Thailand and India have a relatively good ratio of ENT specialist/population in contrast with Sri Lanka which has only 25 ENT specialist leading to a ratio of 1:800000. India and Thailand also have a high ratio of otologists to the total population.

### **4.3 Audiologists, speech therapists**

Other important personnel for assessing hearing impairment are audiologists and audiometricians. Audiometricians are paramedical staff who have undergone training by audiologists or physicians in audiology, to be able to perform the hearing assessment tests (including behavioural tests, audiometry, tympanometry, and in some centres also BERA and OAE testing).

Indonesia has 17 audiological assistants and 20 audiological physicians. In Bangladesh there are six audiologist while India and Nepal have audiologists, audiometricians and speech therapists or personnel who double up as all of these. Although India and Thailand have the most number of audiologists, it is still not enough to develop the appropriate programme.

Thailand and India have the most audiologists in the Region. In India audiologists also perform the work of speech therapists. The rest of the Member countries of the WHO SEA Region have a very limited number of audiologists. Some otolaryngologists perform the role of audiologists to ease this imbalance.

**Table 10:** *Number of audiologists and audiometricians and their ratio to total population*

<b>Country</b>	<b>Audiologists</b>	<b>Audiologists per total population</b>	<b>Audio-metrician</b>	<b>Audiometricians per total population</b>
Bangladesh	6	1:20641833	81	1:1529025
Bhutan	0	0	1	1:725,700
India	1200 *	1:9216854		
Indonesia	37 (17 Assistants & 20 physicians)	1:6000000	30	1:7,000,000

Country	Audiologists	Audiologists per total population	Audio-metrician	Audiometricians per total population
Maldives	data not received	data not received	data not received	data not received
Myanmar	1	1:54021000	10	1:5402100
Nepal	11	1:2090909	14 (combined)	1:1642857
Sri Lanka	6	1:3000000	28	1:715000
Thailand	50	1:1230000	300	1:205000

**Table 11:** Number of speech therapists for the deaf and their ratio to total population

Country	No. of speech therapists for the deaf	Speech therapists for the deaf per total population
Bangladesh	24	1:5160458
Bhutan	0	0
India	1200*	1:9216854
Indonesia	100	1:2200000
Maldives	1	1:293746
Myanmar	data not received	data not received
Nepal	12	1:1916666
Sri Lanka	44	1:455000
Thailand	40	1:1540000

\* India has a total of 1200 audiologists-cum-speech therapists

#### 4.4 Number of teachers for the deaf and sign language translators

The most devastating impact of deafness for a child is the consequence of hearing and listening deficits in their educational programme. The role of the teacher is therefore very important for the deaf.

**Table 12:** Number of teachers for the deaf and sign language translators/interpreters

Country	Teachers for the deaf	Sign language translators
Bangladesh	84	Available
Bhutan	4	Available
India	4039	Available
Indonesia	200	Available
Maldives	4	Not available
Myanmar	20	Available
Nepal	200	Available
Sri Lanka	300	Available
Thailand	910	Available

## 4.5 Educational facilities

### (1) ENT specialization

- Bangladesh: Six government hospitals provide training in ENT through a five-year M.S. (ENT) course, a three-and-a-half year fellowship, and a two-year diploma course. Two of the institutes have a temporal bone laboratory.

Average annual output of ENT specialists: 16

- Bhutan:- No training available
- India: 170 colleges with attached teaching hospitals run three-year M.S. courses and two-year diploma courses in ENT. Only about 25 to 30 centres are equipped with temporal bone dissection facilities.

Annual output of ENT specialists: 400

- Indonesia: Thirteen government colleges impart ENT training. Six have temporal bone dissection facilities.

Average Annual output of ENT specialists: 40

- Maldives: No training available

- Myanmar: information yet to be received
- Nepal: Two university hospitals exist which run three-year courses on ENT. One centre has temporal bone dissection facilities.
- Sri Lanka: Nine centres for ENT training with a five-year course in ENT. One centre with temporal bone dissection
- Thailand: information yet to be received

**(2) Schools for audiologists, speech therapists and hearing aid technicians:**

Indonesia has two schools for audiologists and speech therapists. In India there are government centres running B.Sc courses in audiology and speech pathology. About 160 audiologists and speech therapists are trained annually. India has 16 schools for Audiology, the most prominent being the All-India Institute for Speech and Hearing (AIISH) in Mysore. There is no training school for audiologists in Bangladesh, Nepal and Sri Lanka. Nepal and Bangladesh only provide informal training to hearing aid technicians. No schools for audiologist and speech therapists exist in Myanmar.

## **5. Summary and recommendations**

### **5.1 Summary**

- Of the WHO SEA Region countries, only Thailand and Indonesia have a full-fledged national policy relating to deafness. Countries such as India and Sri Lanka are trying to develop and formalize a national policy and national programme on the same. A national committee on deafness exists in these countries. Organized efforts in this direction are yet to be made by Bhutan, Bangladesh, Maldives and Myanmar.
- There is no legislation on environmental noise control in Bhutan, Maldives, Sri Lanka and Nepal. All other countries studied – Bangladesh, India, Indonesia and Thailand – already have a legislation/Law on environmental noise control.
- There is a lack of human resource in most WHO SEA Region countries, and the ratio of trained personnel to the population reveals the sharp contrast in available resources among countries. Also, the

manpower pool is not distributed equally all over the country, and there is often a concentration of such personnel in urban areas.

- Primary ear and hearing care (PEHC) was a strategy of choice for the provision and implementation of prevention of deafness and hearing impairment (PDHI). There is a need to develop PEHC programme in Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal and Sri Lanka. Indonesia has only limited PEHC.
- The ratio of otolaryngologists and otologists to the population varies among countries, and most of these ear and hearing professionals work in the urban areas.
- Thailand and India have the most audiologists in the Region, though their numbers are far from adequate. In India audiologists also double up as speech therapists. Most of other WHO SEA Region countries have no or very few audiologists and audiometricians.

## **5.2 Recommendations**

### ***National Ear and Hearing Care Policy***

- It was strongly recommended that countries which have no national ear and hearing care policy should develop such a programme at the earliest. Other countries which have an existing national ear and hearing care policy in place should evaluate the implementation of such a policy in the entire country.
- The SEA Regional Office through the country representative and the MoH should monitor and evaluate the country commitment for PDHI.
- The national health authorities should initiate the formation of a National Committee for Ear and Hearing Care.

### ***National programme for prevention of deafness and hearing impairment (PDHI)***

- As this programme has so many constraints, the national health authorities should work in close cooperation and coordination with other institutions and NGOs.

- The role of the WHO Country Representative is important to support the programme and to enlist financial and technical assistance through the cooperation of NGOs/INGOs.
- An annual national meeting of the national health authorities concerned and other institutions, including the WHO Country Representative who has the responsibility for the PDHI programme, is recommended.

### ***Primary ear health centre***

- There is a need to start developing the PEHC programme in most Member countries.
- The SEA Regional Office should support each country in developing their own guidelines and standardization of their basic complement of human resources in PEHC based on their local conditions.

### ***Human resource for hearing and ear care***

- Based on this infrastructure survey results, the national health authority should initiate planning to develop educational programmes. Due to the inadequate number of otorhinolaryngologists, training of general doctors and health workers at primary settings is mandatory. Based on a shortage of hearing and speech personnel and teachers for the deaf, it is recommended that training programmes at the graduate and diploma level be organized based on each country's needs.
- The national and local health authority must have a role to play in the planning and distribution of qualified ear, hearing and speech personnel in rural and underdeveloped areas.
- Short courses for simple diagnostic and management of ear and hearing disorders should be offered to related personnel at the primary, secondary and tertiary levels.
- There is also a need to provide regular training related to ear and hearing care in community and primary health centre settings.



## Section C

# Services and programmes in ear and hearing health care



## 6. Services in ear and hearing health care

In most countries, an organized system of health-care delivery exists. This system usually provides the basic ear and hearing care to the people. The health-care personnel in most cases are responsible for ear and hearing care in the community.

### 6.1 Primary level

Primary care services for the ear and hearing in Bangladesh, Indonesia, Sri Lanka are provided by the PHC doctors. In India, Thailand, Bhutan and Nepal, trained PHC nurses and PHC volunteers also offer these services along with doctors. General physical diagnosis, cleaning of ear-wax, prescribing and dispensing medicine and/or ear drops, and referral to the appropriate centre or doctor are done at the primary centre. Tuning fork tests, hearing screening and otoscopy examinations are not offered by primary health centres in the Region, except for some centres in Indonesia, Nepal and Maldives.

The ear diseases that can be treated at the PHC are acute and chronic otitis media, earwax and otitis externa.

The primary ear care services at the government PHC as well as the medicine provided are free in India and Thailand. In Bangladesh, Nepal, Sri Lanka the consultation is free while the medicines have to be paid for by the patient.

**Table 13:** Number of centres at the primary level

BAN	BHU	IND	INO	MAL	MMR	NPL	SRL	THA
6558	176	Sub-centre 142611 <hr/> PHC 22974	Data not received	75 PHC	314	180 PHC	All group of hospitals provide services	Data not received

In Nepal, there are 180 primary centres. There is no special primary health centre for ear and hearing care in Bangladesh or Sri Lanka. In India, there are 22974 government primary health centres but none of them is devoted to ear and hearing health care. Indonesia is the only country in the South-East Asia Region that has special governmental PEHC that combines with eye care and is called the Community Eye and Ear Clinic.

The services provided and diseases treated at the primary level centres in the countries of SEA Region are given in Tables 13 and 14.

**Table 14:** Services available at the primary-level centres

General physical diagnosis	BAN, BHU, IND, INO, MAL, MMR, NPL, SRL, THA
Tuning fork test	BHU
Hearing screening	BHU, MMR
Cleaning of cerumen	BAN, BHU
Ear examination with otoscope	MAL SRL, THA, INO, IND*
Prescribe medicines or ear drops	BAN, INO, NPL, SRL, THA, BHU, MMR, MAL
Dispense medicines	BAN, INO, MAL, ,SRL, THA, MMR, BHU
Refer to appropriate centre	BAN, IND, INO, MAL, SRL, THA , MMR, BHU, NPL

\* Oscopes are being provided to PHCs in a phased manner.

**Table 15:** Diseases treated at the primary-level centre

BAN	BHU	IND	INO	MAL	NPL	SRL	THA
ASOM*	ASOM	ASOM	ASOM	ASOM	ASOM	AOM <sup>+</sup>	ASOM
CSOM <sup>++</sup>	CSOM	CSOM	CSOM	CSOM	CSOM		CSOM
Cerumen <sup>^</sup>	Cerumen	Cerumen	Cerumen	Cerumen	Cerumen		Cerumen
Otitis	Otitis	Otitis	Otitis	Otitis	Otitis		Otitis
Externa	Externa	Externa	Externa	Externa	Externa		Externa

\*ASOM – Acute Suppurative Otitis Media

+AOM – Acute Otitis Media

++CSOM – Chronic Serous Otitis Media

^ Cerumen – medical treatment of Cerumen only

## **6.2 Secondary level**

### ***Bangladesh***

Nine secondary hospitals act as mid-level ear and hearing care centres, six of them are government facilities. More than half of all district hospitals (34 of 62) have ENT specialists but no audiometer.

### ***Bhutan***

One mid-level hospital named Mongar Regional Referral Hospital.

### ***India***

The district health centres in India act as second-level or mid-level facilities for ear and hearing health care. The total number of these centres in the whole country is approximately 600.

### ***Indonesia***

There are about 200 hospitals in the country acting as mid-level facilities.

### ***Myanmar***

There are 24 200-bedded hospitals.

### ***Maldives***

No mid-level facilities are available.

### ***Nepal***

There are 6 district hospitals in Nepal for mid-level ear and hearing health care. They all have ENT specialists, but audiometers and surgical equipment is not present everywhere.

### ***Sri Lanka***

There are some mid-level or district hospitals in Sri Lanka. The number and details are unavailable.

### ***Thailand***

A total of 67 general hospitals in Thailand provide mid-level ear and hearing care facilities.

## **6.3 Tertiary level**

### ***Bangladesh***

There are 24 tertiary centres for ear and hearing care, 11 among them are government centres. Two government hospitals and one private clinic have audiological as well as microsurgery facilities, seven hospitals have only microsurgery facilities, and the 14 remaining hospitals have none of both.

### ***Bhutan***

One tertiary referral centre. However, no facilities for diagnosis of hearing loss in young children exist.

### ***India***

There are around 350 government-run hospitals in the whole country that provide tertiary facilities. Of these 120 have the availability of diagnostic facilities for early diagnosis and rehabilitation. There are a significant number of private centres offering this facility but most of them are concentrated in the big cities and are not accessible in the interiors.

### ***Indonesia***

About 30 (13 government and 17 private) tertiary hospitals are conducting tertiary ear and hearing care and 22 of these centres have facilities for early diagnosis of hearing impairment.

### ***Maldives***

Only one tertiary centre exists but it does not have facilities for early diagnosis of hearing loss.

### ***Myanmar***

Government referral hospitals provide diagnostic and micro-ear surgery facilities.

### **Nepal**

Seventeen hospitals (7 governmental and 10 private) are the main tertiary centres for referral of ear and hearing problems. Three of them provide early screening and intervention programmes for young deaf children, with objective audiometry available.

### **Sri Lanka**

There are 15 government tertiary hospitals with ear and hearing care facilities. Six hospitals have objective audiometry available.

### **Thailand**

In Thailand, 92 tertiary hospitals with audiological equipment and microsurgery facilities are available.

## **6.4 Average cost of ear surgery**

The average cost of surgery in these countries is as given in the table below:

**Table 16: Average cost of ear surgery (in US\$)**

Surgery	Bangladesh	Bhutan	India	Indonesia	Maldives	Myanmar	Nepal	Sri Lanka	Thailand
Type I Tympanoplasty	20-30 100-200	Data not received	250-300	200-300	72.37	50	20	300	Data not received
Grommet insertion	20-30 50-150	Data not received	125-150	50	72.37	25	15	150	Data not received
Modified radical mastoidectomy (MRM)	30-40 200-400	Data not received	400-600	100-300	82.49	100	35	400	Data not received
Radical Mastoidectomy	30-40 200-400	Data not received	400-600	100-300	41.25	100	35	400	Data not received
Stapedectomy	30-50 200-400	Data not received	450-650	200-300	82.88	75	30	300	Data not received

There are wide variations in the cost of such surgeries in Member countries, for example, in Bhutan all surgeries are free of cost and in India, all health care is free in government-run centres only.

## 6.5 Hearing aid services

The details of services related to manufacturing and fitting of hearing aids are as given in Table 16:

**Table 17: Hearing aid services**

	BAN	BHU	IND	INO	MAL	MMR	NPL	SRL	THA
Hearing aid Manufacturers	Nil	Data not received	4	Nil	Nil	Data not received	Nil	Nil	Data not received
Hearing aid fitting	5	Data not received	300-400	20	2	10	5	3	Data not received
Cost of cheapest model of hearing aid	US\$ 50	Data not received	US\$ 30	US\$ 20	Average: US\$ 120*	Data not received	US\$ 40	US\$ 35	Data not received
Cost of superpower hearing aid	US\$ 200	Data not received	US\$ 1300	US\$ 1200	--do--	US\$ 15-20**	US\$ 300	Data not received	Data not received
Number of hearing aids sold per year	1500	Data not received	Data not received	Data not received	50	Data not received	450	2695	Data not received
Average age of persons taking a hearing aid	<5yr: 10% 5-59yrs: 80% >59yrs: 10%	Data not received	Children: 6 yrs 4 months	Data not received	45-50 yrs	Data not received	Children: 4 yrs Adults: 65 yrs	< 5 yr: 15% 5-59 yr: 55% >59yrs: 30%	Data not received

\* Overall average cost of hearing aids in Maldives.

\*\* Though this is the reported figure, it appears to be disproportionately low

### **Bangladesh**

There are five centres in the whole country that fit hearing aids on the patients in Dhaka. However hearing aid manufacturers and services are concentrated in cities.

### **Bhutan**

Bhutan does not manufacture hearing aids. They are procured and provided free of cost to the public.

### ***India***

In India, there are four manufacturers of hearing aids and almost 400 centres fitting them.

### ***Indonesia***

There are 20 outlets for fitting hearing aids. There are many provinces (especially outside Java Island) where no services are available.

### ***Maldives:***

Data is yet to be received.

### ***Myanmar***

There are 10 private hearing aid dispensers.

### ***Nepal***

There are five hearing aid firms and dispensers in the city of Kathmandu. Besides this, no services are available in the rest of the country.

### ***Sri Lanka***

Three main dealers exist in Sri Lanka. They are in the cities of Colombo, Kandy and Kurunegala.

### ***Thailand***

There are seven hearing aid firms selling hearing aids in Thailand.

## **6.6 Programme for development/distribution of low-cost, high-quality hearing aids**

Such a programme exists in Nepal. Infact Nepal has started the process of distribution of low-cost programmable hearing aids through the University Teaching Hospital in Kathmandu. In India this has been initiated in

collaboration with Hearing International. A similar programme exists in Indonesia and Thailand too, but there is none in Bangladesh, Bhutan, Maldives, Myanmar and Sri Lanka.

## **6.7 Cochlear implant**

### ***Bangladesh***

One cochlear implant was carried out in Dhaka in 2005 by a guest surgeon from the United Kingdom.

Approximately 500 to 600 persons, mostly children, have undergone cochlear implantation surgery in the country.

### ***India***

Many centres in North and South are running cochlear implant programme.

### ***Indonesia***

One centre is performing cochlear implantation. At least 24 persons have benefited from this in this centre.

### ***Nepal***

The ENT–HNS department of the University Teaching Hospital in Kathmandu has performed implantation on 12 children. The cost varies from US\$ 15,000 to US\$ 23,000.

### ***Sri Lanka***

Two private centres offer this surgery. Eighteen persons have been implanted till now.

### ***Thailand***

The facility of cochlear implantation is available in the country.

No such services are available in Bhutan, Maldives and Myanmar.

## **7. Upgrading courses**

### **7.1 Courses for ENT surgeons, audiologists and paramedics**

#### ***Bangladesh***

Four courses for ENT surgeons have been organized in the last year. A programme named BAN DPR-001 was earlier being run by the National Centre for Hearing and Speech of the Society for Assistance to Hearing Impaired Children (SAHIC) under WHO sponsorship, for training of paramedics in community ear and hearing care.

#### ***Bhutan***

No information is received from Bhutan.

#### ***India***

Numerous courses for upgradation of knowledge and skills are held. Many training sessions for refreshing or updating knowledge in audiology or on audiology updates have been organized.

There are various workshops on temporal bone dissection and micro-ear surgery being held in India.

#### ***Indonesia***

Training in community ear and hearing health for physicians, nurses or other personnel working in primary health centres has been conducted. Such programmes are organized locally by each of the university training centres.

#### ***Maldives***

No courses for ENT and audiological professionals have been conducted. However, primary health-care workers and nurses are given training on primary ear care.

### ***Myanmar***

An annual temporal bone surgery course and an annual one-month course for ENT nursing care are conducted.

### ***Nepal***

A couple of ENT surgeons have been undergoing short-term training in Bangkok, Thailand, every year over the last decade. Two or three nurses have been undergoing training at New Delhi, India, during the same period.

### ***Sri Lanka***

Training programmes for PHC doctors and nurses have been conducted in collaboration with WHO. Training in temporal bone dissection and microsurgery of the ear has been carried out. Workshops and seminars are held for audiologists from time to time.

### ***Thailand***

Every year, the Bangkok Otological Centre conducts international audiology update courses in Bangkok and Pattaya. This Centre as well as the Rajawitee Hospital conducts yearly temporal bone dissection courses in Bangkok.

## **7.2 School programmes**

### ***Bangladesh***

A team of ENT specialists and audiometricians visit about 10 different schools to evaluate the state of ear care and ear diseases, provide treatment or consultation for treatment, and rehabilitation.

### ***Bhutan***

School programmes are held in Bhutan (no description available).

### ***India***

The Government of India has started school health programmes with the aim of early detection and prevention of various common diseases. However, these programmes do not focus on ear and hearing care in most of the regions. In Delhi, a programme for screening children for ear diseases is being carried out with the help of a questionnaire-based survey followed by a check-up by ENT surgeons.

### ***Indonesia***

Such programmes are sporadically organized by the local government. Most of the programmes for screening of ear diseases and hearing impairment have been established as integration with the existing primary school health programme.

Hearing tests are done by trained paramedics/PHC doctors, ENT candidate doctors or ENT doctors; using tuning fork and screening audiometer.

### ***Maldives***

No school programmes for ear health care reported.

### ***Myanmar***

Details not available.

### ***Nepal***

No school programmes for ear health care reported.

### ***Sri Lanka***

No school programmes for ear health care reported.

### ***Thailand***

The Bangkok Otological Centre has, in cooperation with general hospitals, routinely conducted field surveys and services in ordinary schools as well as schools for the deaf.

### **7.3 Awareness programmes**

#### ***Bangladesh***

Awareness programmes are held from time to time in the form of seminars, lectures and health camps. Seminars organized by 'Hearing International Bangladesh Chapter' have also helped in awareness creation.

#### ***Bhutan***

Awareness programmes are being held.

#### ***India***

Awareness programmes relating to ear and hearing, noise etc. are organized from time to time at the community level.

#### ***Indonesia***

Sporadically organized programmes by PERHATI, Hearing International Indonesia, and University centres.

#### ***Maldives***

None

#### ***Myanmar***

Posters and lectures related to deafness are common.

#### ***Nepal***

NGOs and MoH have been distributing posters and leaflets regarding different aspects of deafness prevention such as infection, noise, drugs, vaccinations, etc.

### **Sri Lanka**

Awareness generation is mainly through programmes on radio and television in primary care clinics and ENT clinics.

### **Thailand**

No information is received from Thailand.

## **7.4 Networks**

### **Bangladesh**

<b>Name of the centre</b>	<b>Name of the foundation/NGO</b>	<b>Years</b>	<b>Main programme</b>
SAHIC	ANDHERI HILFE ev	1990-1998	Rural ear camp
Mohakhali	Bon Germany		<ul style="list-style-type: none"> <li>• Development of NCHS, Dhaka</li> <li>• Development of specialized ENT hospital, Mohakhali, Dhaka</li> <li>• Development of preschool for hearing-impaired child in oral auditory method</li> </ul>

### **India**

- Hearing International – India
- Mahavir Viklang Institute, Mumbai
- All India Federation of Deaf, Delhi
- Delhi Association for Deaf, Delhi
- Delhi Association for Deaf Women, Delhi
- Mangalam, Lucknow

- Sweekar, Hyderabad
- SHIRC, Kolkata
- Pratibandhi Kalyan Kendra, Kolkata
- Bal Vidyalaya, Chennai
- Little Flower Convent, Chennai
- CTD School, Mumbai
- Shruti School, Mumbai

### **Indonesia**

<b>Name of the centre</b>	<b>Name of the foundation/NGO</b>	<b>Years</b>	<b>Main programme</b>
Jakarta Centre	HI Japan	since the 90s	training, equipment

Other centres have cooperation with Rotary Clubs, Lion clubs and or international NGOs.

### **Nepal**

<b>Name of the centre</b>	<b>Name of the foundation/NGO</b>	<b>Years</b>	<b>Main programme</b>
Dept. of ENT-HNS, T.U. Teaching Hospital	IMPACT Nepal	1991 onwards	Mobile ear surgery camps, training of different level of health personnel, medical equipment, public awareness programme, temporal bone dissection courses, etc
Dept. of ENT-HNS, T.U. Teaching Hospital	The Britain Nepal Otology Service	1989 onwards	Mobile ear surgery camps, training of different level of health personnel, medical equipment, etc

### **Sri Lanka**

<b>Name of the centre</b>	<b>Name of the foundation/NGO</b>	<b>Years</b>	<b>Main programme</b>
Badulla	Provincial secretariat		Hearing aids
Badulla	Department of rehabilitation		Hearing aids
Badulla	Plan International		Hearing aids
Kandy	Women's development centre	19	Hearing aids
Kandy	Rocky club of Kandy	14	Hearing aids
Kandy	Lions Club	6	Constructing clinic/hearing aids
Kandy	Deaf Parents Association	10	Finding jobs/hearing aids batteries
Children's Resources centre	Colombo/IMPACT	7	PDH

### **Thailand**

Bangkok Otological Centre have networking for epidemiological survey, training and education with:

- IFOS
- ISA
- Hearing International

No information is received from Bhutan, Maldives and Myanmar.

## **8. Summary and recommendations**

### **8.1 Summary**

- There is a wide variety of services and service providers, trained and untrained, at the primary level. The cost for primary ear and hearing care also varies from free services to out-of-pocket payment for

medicines. Material for training of primary ear-care health workers as well as public awareness material are still very minimal, except in Nepal and Thailand. In some countries, NGOs play an important role at the primary level.

- Ear and hearing care is not always available in the secondary level of services. The criteria of secondary level of services is also not yet clearly defined.
- All countries have tertiary-level services for ear and hearing care which are not evenly distributed. The cost of surgeries varies largely. Rural outreach programmes are most prominent in Thailand and Nepal.
- The number of hearing aid distributors and dispensers is also few, especially in Nepal and Sri Lanka. The price of hearing aids varies between US\$ 20 and US\$ 50 for the basic model, and between US\$ 200 and US\$ 1300 for the Superpower hearing aid. Most of the hearing aids are used by the adult and old age groups.
- Cochlear implantation has been performed in a limited number of patients in all six countries. India, Indonesia, Nepal, Sri Lanka and Thailand can conduct such surgery within the country.
- Training programmes for community ear and hearing health, audiology update and temporal bone dissection courses have been conducted in all countries.
- School programmes for the prevention of deafness and hearing impairment (PDHI) are very limited. In Bangladesh, SAHIC of Mohakhali, Dhaka, runs the school programme. School programmes are also being carried out in Bhutan. In Indonesia, the programme is organized by PERHATI, HI Indonesia and some of the university teaching hospitals. In India, the school programme is being run in select states only, as part of the school health system. In Sri Lanka, too, this is run as a part of the school health programme. The Bangkok Otological Centre has routinely conducted field surveys and services in schools. No such activities were reported in Maldives, Myanmar and Nepal.
- The centres in all countries collaborate and network with inland as well as foreign NGOs and donors for ear and hearing health services.

## **8.2 Recommendations**

- A National Council for the prevention of deafness and hearing impairment should be established in all SEA Region countries, for the development of better services in ear and hearing health care. These should be initiated with the support of the Regional Office and should be multi-disciplinary, including governmental focal persons, professional societies, NGOs, the private sector and organizations for the deaf.
- Networking and cooperation between the SEA Region countries should be promoted for more effective sharing and exchange of expertise and lessons learnt in the services and programmes for the prevention of deafness and hearing impairment.

## **Annex 1**

### **List of acronyms**

ABR	auditory brainstem response (see BERA)
AIISH	All Indian Institute for Speech and Hearing
AOM	acute otitis media
BERA	brainstem evoked response audiometry
CEHH	community ear and hearing health
CHL	conductive hearing loss
CSOM	chronic suppurative otitis media
ENT	ear, nose and throat
HA	hearing aid
HI	Hearing International
MoH	Ministry of Health
NA	(Data) Not available
OAE	oto-acoustic emissions
NIHL	noise-induced hearing loss
ORL	oto-rhino-laryngology
PDHI	prevention of deafness and hearing impairment
PEHC	primary ear and hearing care
PHC	primary health centre
SEARO	South-East Asia Regional Office (of WHO)
SNHL	sensori-neural hearing loss
SOM	serous otitis media
WHO	World Health Organization
WHO-EHDSP	WHO Ear and Hearing Disorders Survey Protocol

**Countries**

BAN	Bangladesh
BHU	Bhutan
IND	India
INO	Indonesia
MAL	Maldives
NPL	Nepal
SRL	Sri Lanka
THA	Thailand

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### **Annex 3**

## **Country reported data**

Bangladesh by Prof. (Dr.) Mohammad Abdullah, Prof. Md Abul Hasan Joarder

Bhutan by Mr. Dorji Phub

India by Dr Abraham Joseph, Dr A.K. Agarwal, Dr Shelly Khanna Chadha

Indonesia by Dr Bulantrisna Djelantik

Maldives by Dr Aishath Ali

Myanmar by Prof. U. Thein Tun

Nepal by Dr Rakesh Prasad Shrivastav, Dr M. P. Dahal

Sri Lanka by Dr T.R.C. Ruberu

Thailand by Dr Manus Potaporn

## Annex 4

# Questionnaire and checklist of survey

### WHO SEA Region and Sound Hearing 2030 Situation Review and Update of Deafness, Hearing Impairment and Intervention Programmes Status in the South-East Asia Region

Country: .....

Reviewer:

Name: .....

Address: .....

.....

Tel: ..... Fax: .....

E-mail: .....

**Time of investigation: January – February 2006**

**Completed questionnaire to be returned BY EMAIL to [drshellychadha@rediffmail.com](mailto:drshellychadha@rediffmail.com); while any copies of relevant documents and references to be sent by post, at the latest by 28 February 2006 to:**

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**(Pl. label as 'Attn. Survey Sound Hearing 2030')**

## Questionnaire

### Epidemiology

#### 1. **Population-based studies (not clinical studies) on the causes and prevalence of ear disease and hearing impairment:**

1. Year: ..... Institution: .....  
Principal Investigator: .....  
Sample size: .....  
Districts and population age groups involved: .....  
Summary of results:

2. Year: ..... Institution: .....  
Principal Investigator: .....  
Sample size: .....  
Districts and population age groups involved: .....  
Summary of results:

Note: If available, please include the prevalence of chronic middle ear infections, congenital hearing loss, presbycusis, ear wax and noise induced hearing loss, and send copies of study reports

Please fill up the tables given below based on the data that you have provided as well as any other documented studies or reports. Kindly provide a detail of the references below the table or together at the end. If no figures are available for a particular parameter, please label it as "DNA" (data not available).

**1.1 Prevalence of moderate to severe hearing impairment in %**

– % of Conductive Hearing loss	
– % of Sensorineural Hearing loss	
Estimated prevalence of Adult onset deafness	
Estimated prevalence of childhood onset deafness	
Male/female ratio (eg. 1:1)	

**1.2 Prevalence of ear diseases that are potential causes of hearing loss:**

Impacted cerumen	
Chronic suppurative otitis media (CSOM)	
– Chronic tubotympanic suppurative otitis media	
– Chronic atticoantral suppurative otitis media	
Chronic nonsuppurative/mucoid otitis media	
Congenital hearing loss	
Persistent post-traumatic perforation	
Other causes of conductive hearing loss (Give details, if possible)	
Presbycusis	
Noise-Induced hearing loss/Exposure to noise	
Ototoxicity	
Other causes of sensorineural hearing loss (Give details, if possible)	

**2. Ear and hearing health delivery system at national level**

**2.1 Is there a national committee for the prevention and control of hearing impairment and ear Disease?**

( ) NO ( ) YES

If YES,

Name of committee: .....

Postal and email address: .....

.....

Chairperson: .....

Main programmes: .....

.....

.....

.....

**2.2. Is there a national policy, law or rule regarding the environmental noise level permitted in hearing conservation programme?**

( ) NO ( ) YES

**If yes, the summary of this law is (describe since when, ministry involved, level permitted)**

.....

.....

**2.3. The otolaryngological society in the country:**

a. Name of organization: .....

b. Postal and Email Address: .....

.....

.....

c. Names of current president, vice-presidents and secretary:

President: .....

Vice-president: .....

Secretary: .....

**2.4. Is there any national organization for audiologists?**

NO  YES: .....

**2.5. Is there any national organization for speech therapists?**

NO  YES: .....

**2.6. Is there a national collegium or national board for ENT specialization?**

NO  YES: .....

**3. Human resources**

**3.1. The number of professionals and related fields in the whole country:**

	<b>Total</b>	<b>Ratio (1 for .....population)</b>
Total number of doctors	_____	_____
ENT specialist/otolaryngologists	_____	_____
ENT specialists performing ear microsurgery	_____	_____
Audiologists	_____	_____
Audiometricians	_____	_____
Speech therapists for the deaf	_____	_____
Combined speech therapist- audiologist	_____	_____
Teachers of the deaf	_____	_____
Sign language interpreters	_____	_____

#### **4. Educational facilities**

The number of educational facilities in the whole country:

	<b>Government</b>	<b>Private</b>	<b>Length of Education</b>	<b>Yearly Output</b>
<b>4.1. ENT specialization</b>				
University Teaching Hospitals	_____	_____	_____	_____
<b>Hospital-based</b>	_____	_____	_____	_____
Total	_____	_____	_____	_____
Of these centres with temporal bone laboratory for training	_____	_____	_____	_____
<b>4.2. Schools for</b>				
<b>Audiologists</b>	_____	_____	_____	_____
<b>Speech therapists.</b>	_____	_____	_____	_____
<b>Hearing aid technician</b>	_____	_____	_____	_____

**5. Ear and hearing care facilities**

**5.1 Primary level: Number and type of centres providing primary health care:**

.....

**5.2 Primary level: Who is providing ear health-care services to the patients at the primary health centre or post?**

- Doctor                       Trained nurse                       Trained volunteer cadre  
 Others: .....

**5.3 Primary level: What kind of services can be done at most of the primary/ community-level health centre (PHC) or post?**

- General physical diagnosis                       Ear examination with otoscope  
 Tuning fork test                       Prescribe medicine or ear drops  
 Hearing screening                       Dispensing medicine/ear drops  
 Cleaning ear wax professionally                       Refer to appropriate centre

**5.4 Any other activities pertaining to public awareness programmes or screening:**

.....

**5.5. Which kinds of ear disease can be treated or managed at the PHC?**

- AOM                       CSOM                       Ear wax                       External otitis  
 Others: .....                       None

**5.6 Mid-level facilities: Are there any smaller/second-level hospitals with ENT specialists, audiological units (at least one audiometer) and simple ear surgery equipment?**

- NO     YES

If yes, the names of this kind of hospital are .....,  
and the total number of this such hospitals in the whole country is .....

**5.7. Tertiary facilities: Are there any referral hospitals and/or centres with “diagnostic” audiological unit and ear microsurgery facilities?**

( ) NO ( ) YES

If yes, the number of such hospitals/centres in the whole country is .....  
 (..... government and ..... private)

How much does the patient have to pay ( in USD) for

Surgery	Cost in US\$
Type I tympanoplasty	
Grommet insertion	
Modified radical mastoidectomy	
Radical mastoidectomy	
Stapedectomy	

**5.8. Early screening and intervention**

The number of hospitals/audiological centres/hearing centres with facilities (BERA, OAE, early HA fitting) for referral of babies or young children (under the age of three years old) for early screening and intervention/management of hearing impairment in the whole country:.....

(..... government and ..... private)

**5.9 Hearing aid services**

Are there hearing aid manufacturers in the country?

If yes, how many? \_\_\_\_\_

Provide their names: \_\_\_\_\_

Are there hearing aid dispensers in the country?

If yes, around how many and in which cities? \_\_\_\_\_

\_\_\_\_\_

Are there cities or provinces without hearing aid services available?

How much does the patient have to pay for a lowest cost pocket-type and how much for a Superpower BTE hearing aid (in US\$)? \_\_\_\_\_

Approx. number of hearing aids sold in an year: \_\_\_\_\_

Average age of patients fitted with a hearing aid: \_\_\_\_\_

## **6. Upgrading courses**

Has there been upgradation of courses for professionals in the last three years:

### **6.1 Upgrading courses for ENT specialists in micro-ear surgery**

NO  YES, short description:

### **6.2 Upgrading courses for ENT specialists in audiology, neuro-otology, hearing aid services, ear and hearing health care**

NO  YES, short description:

### **6.3 Upgrading courses for nurses/paramedics in community ear and hearing health, or hearing aid fitting**

NO  YES, short description:

## **7. Ear and hearing care programmes**

### **7.1 School programme:** Are there centres with ongoing evaluation of ear disease and/or screening of hearing impairment in school children?

NO  YES, short description:

### **7.2 Awareness programmes:** Have there been awareness programmes in the form of seminars, posters or brochures for the public regarding ear and hearing health and its prevention (for instance, regarding middle-ear infections, noise-induced hearing loss, congenital deafness etc.)?

NO  YES, short description

### **7.3 Hearing aid services:** Have there been any programmes for high-quality, low-cost hearing aids?

NO  YES, short description:

**7.4 Cochlear implant:** Are there centres that can perform Cochlear Implant Surgery in the country?

NO  YES, short description regarding number of centres and number of implantees in the last three years, and the cost (in US\$) for the surgery and rehabilitation package.

## 8. Networks

**Has there been cooperation with inland and foreign foundations/NGOs in the area of ear health-care programmes?**

NO  YES, short description:

Name of the centre	Name of the foundation/NGO	Years	Main programme
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

## 9. Recommendation

Please put down your recommendations for ways to get more up-to-date and ongoing epidemiological and infrastructure data on ear disease and hearing impairment in your country.