REGIONAL COMMITTEE

Provisional Agenda item 14.1

Fifty-sixth Session
10-13 September 2003

SEA/RC56/8

2 July 2003

WATER, SANITATION AND HYGIENE DETERMINANTS OF HEALTH IN THE SOUTH-EAST ASIA REGION – SITUATION ANALYSIS AND ROLE OF HEALTH MINISTRIES

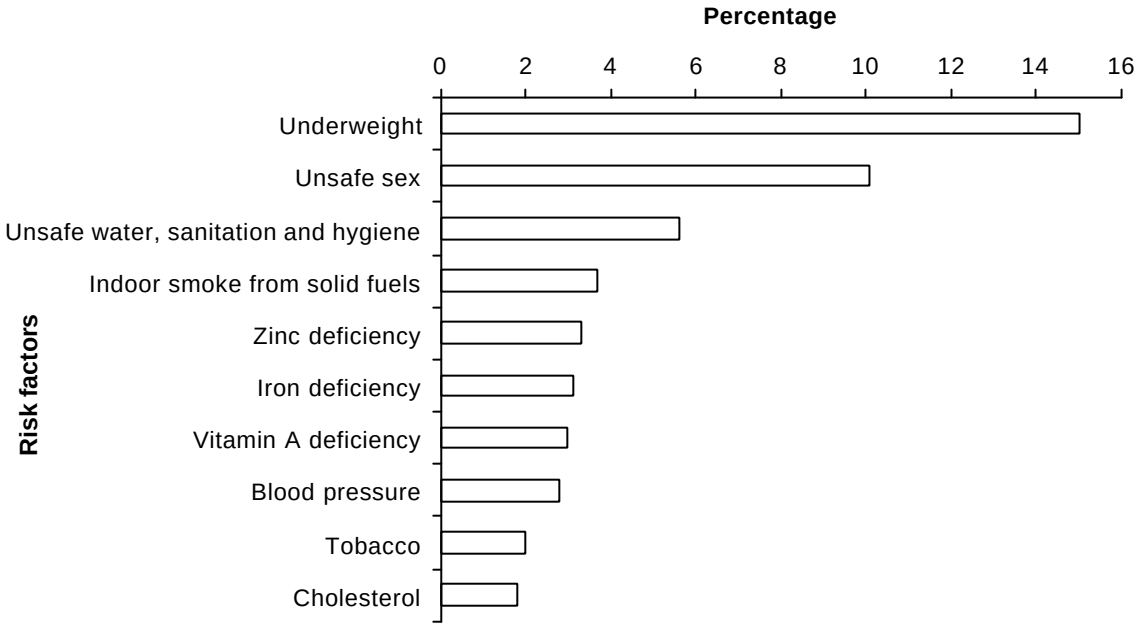
CONTENTS

Page

1. GLOBAL PERSPECTIVE

The World Health Report 2002 stated that unsafe water, sanitation and hygiene were the third most important risk factors among developing countries having high rates of mortality (see Figure).[1] Most countries in the South-East Asia Region fall into this group.

Figure. ***Burden of diseases attributed to 10 selected leading risk factors in developing countries with high mortality***



Source: WHO, 2002. World Health Report 2002: Reducing Risks, Promoting Healthy Life. WHO Geneva

It has been estimated that the total number of deaths worldwide attributable to unsafe water, sanitation and hygiene is 1.8 million per year. This figure corresponds to 88 per cent of diarrhoeal diseases worldwide which is considered to be the percentage of diarrhoea due to unsafe water, sanitation and hygiene, and the following diseases: trachoma, schistosomiasis, ascariasis, trichuriasis and hookworm disease. Other diseases, such as malaria and Japanese encephalitis, are related to inadequate water resources management. The total number of deaths per year due to these two diseases is approximately 1.1 million.[2]

2. SITUATION IN THE SEA REGION

[1] WHO 2002. World Health Report 2002. Reducing Risks, Promoting Healthy Life. WHO, Geneva.

[2] WHO, 2002. Water, Sanitation and Hygiene Links to Health – Facts and Figures, WHO, Geneva, 28 August 2002

Although unsafe water, poor sanitation and inadequate hygiene are important risk factors for a range of diseases, most of the health gains achieved by improvements in water, sanitation and hygiene are due to reduction of diarrhoeal illnesses.[3]

The South-East Asia Region bears a disproportionate share of global diarrhoea-related deaths, accounting for 40.8 per cent of the world's total.[4] Within the Region, diarrhoea is one of only six diseases that, taken together, cause 90 per cent of the deaths due to communicable diseases. Since oral rehydration therapy was introduced in 1979, control of diarrhoeal disease programmes, in conjunction with other key interventions, have led to a marked reduction in deaths caused by diarrhoea.[5] Nonetheless, the number of deaths per year in this Region, due to diarrhoeal illnesses, exceeds the number of deaths per year due to all other infectious diseases, except respiratory infections, and remains unacceptably high at 802 000.[6] (Table 1).

Table 1: *Deaths caused by selected infectious diseases in the SEA Region, 2002 (Figures in 000)*

Disease	Mortality stratum		
	Total	Low child, low adult	High child, high adult
Respiratory infections	1 377	121	1 256
Diarrhoeal diseases	802	44	758
Tuberculosis	701	160	541
HIV/AIDS	445	60	385
Measles	193	32	161
Malaria	95	9	86

Source: World Health Report 2002

Similarly, the burden of disease due to diarrhoea in this Region exceeds the burden due to all other infectious diseases except respiratory infections.[7] (Table 2).

Table 2: *Burden of disease in DALYs caused by selected infectious diseases in the SEA Region, 2002 (Figures in 000)*

Disease	Mortality stratum		
	Total	Low child, low adult	High child, high adult
Respiratory infections	32 904	2 497	30 407
Diarrhoeal diseases	22 377	1 128	21 249

[3] Thompson, T. and S. Khan, nd. Situation analysis and epidemiology of infectious disease transmission: a South-East Asian Regional perspective. *(To be published in the International Journal of Environmental Health Research, 2003)*

[4] WHO 2002. World Health Report 2002. Reducing Risks, Promoting Healthy Life. WHO, Geneva.

[5] Health Situation in the South-East Asia Region 1998-2000.

[6] WHO 2002. World Health Report 2002. Reducing Risks, Promoting Healthy Life. WHO, Geneva.

[7] Ibid

Tuberculosis	15 968	3 549	12 419
HIV/AIDS	13 608	1 850	11 758
Measles	6 922	1 151	5 771
Malaria	3 680	353	3 327

Source: World Health Report 2002

Affected populations

Most of the deaths due to diarrhoea occur in children under five years of age. Rural populations and the urban poor are at greatest risk of illness due to unsafe water, sanitation and hygiene. Women suffer the health effects of inadequate access to water supply and sanitation more than men, and lack of sanitary facilities is a major cause of school drop-out among girls.[8] Among populations affected by natural disasters, water supply, sanitation and hygiene are among the earliest felt needs.

Water supply coverage

In the SEA Region, water supply coverage increased from 76 per cent to 86 per cent during the period 1990-2000. Services were extended to an additional 320 million persons during this period, but more than 213 million people within the Region still lack access to *improved* sources of drinking water (Table 3). Disparities exist among social classes and geographically within countries. Moreover, *improved* water supply does not necessarily imply *safe* water supply. The WHO/UNICEF *Global Water Supply and Sanitation Assessment 2000 Report* defines improved water supply as water delivered through house connections, public standpipes, boreholes, protected dug wells, protected springs and rainwater collection systems.[9] While water supplied through these technologies may be assumed to be safe, in reality it may or may not be so. Concern also exists about the sustainability of water supplies as some water sources are under stress due to over-extraction and pollution.

Table 3: *Water supply and sanitation coverage in the SEA Region, by country*

Country	Year	% urban water supply coverage	% rural water supply coverage	% urban sanitation coverage	% rural sanitation coverage
Bangladesh	1990	98	89	78	27
	2000	99	97	82	44
Bhutan	1990	-	-	-	-
	2000	86	60	65	70
DPR Korea	1990	-	-	-	-
	2000	100	100	99	100
India	1990	92	73	58	8
	2000	91	86	73	14
Indonesia	1990	90	60	76	44
	2000	91	65	87	52
Maldives	1990	-	-	-	-

[8] Bosch, C., K. Hommann, G.M. Rubio, C.Sadoff and L. Travers, 2001. Water, Sanitation and Poverty. Draft for Comments, April, 2001, World Bank.

[9] WHO and UNICEF, 2000. Global Water Supply and Sanitation Assessment 2000 Report. WHO, Geneva.

	2000	100	100	100	41
Myanmar	1990	88	56	65	38
	2000	89	66	84	57
Nepal	1990	96	63	66	16
	2000	85	80	81	20
Sri Lanka	1990	90	59	66	79
	2000	91	80	83	80
Thailand	1990	83	68	97	83
	2000	89	77	97	96

Source: WHO/UNICEF *Global Water Supply and Sanitation Assessment 2000 Report*

Safety of drinking water in the SEA Region

A recent study found important initiatives to improve the safety of drinking water in some countries of the Region but also found significant weaknesses in drinking water quality surveillance programmes in all countries.[10] As a result, the safety of drinking water cannot be independently assured except in some of the largest urban centres. In most countries of the Region, contamination of drinking water with microbiological pathogens is not uncommon, both in urban and rural water supply systems, and several countries face serious health issues associated with chemicals such as arsenic and fluoride in drinking water. Although there is little reliable data at present, according to some reports more than one million people are affected by arsenic-contaminated water in concentrations of more than 0.05 mg/l in West Bengal, (India) and another 28-35 million in Bangladesh.[11] Also, according to estimates, due to excessive fluoride in drinking water, parts of Bangladesh, India, Sri Lanka and Thailand suffer from endemic fluorosis.[12]

Sanitation

Compared to other WHO regions, the SEA Region has the lowest sanitation coverage – 42 per cent. Coverage increased significantly during the last decade - from 32 per cent in 1990 - but today, some 873 million people in the Region still lack access to basic sanitation facilities. The problem is most severe in urban slums and rural communities. Of the 2.4 billion people worldwide who lack access to basic sanitation, nearly one in three lives in the South-East Asia Region.

Hygiene

A significant proportion of people in rural and peri-urban areas do not practise adequate hygiene behaviours such as hand-washing, safe disposal of infants' faeces, proper maintenance of latrines, and safe water storage.[13] In much of the rural areas in the Region, after defecation many people clean their hands by rubbing them on wet ground followed by rinsing. One study in India found that, only a quarter of the rural population understand the

[10] Howard, G. and K. Pond, nd. Situation Analysis of Drinking Water Quality Surveillance Programmes in SEA Region (to be published).

[11] http://www.who.int/inf-fs/en/fact210.html

[12] UNICEF Waterfront, Issue 13, December 1999, page 12

[13] Water, Waste and Well Being: A Multicountry Study, Steven A. Esrey, American Journal of Epidemiology, 1996, Vol 143, No. 6

dangers of oral-faecal transmission of diseases; most do not believe that children's faeces are unhygienic, and only 14 per cent of the rural population wash hands with soap and water.[14]

3. CURRENT ACTIVITIES OF MINISTRIES OF HEALTH IN RELATION TO WATER SUPPLY, SANITATION AND HYGIENE

In most countries of the Region, the responsibility for planning, design, construction, operation and financing of water supply and sanitation systems rests with municipal or other local bodies with respect to urban infrastructure while rural development authorities, public health engineering units and community organizations or NGOs develop rural systems. Health authorities in most countries of the Region do not have direct responsibility for developing water supply and sanitation systems although the benefits of this development accrue to the health sector in terms of health gains.

In recent years, the role of health authorities vis-à-vis water supply and sanitation in most countries has focused primarily on hygiene promotion and drinking water quality surveillance. Ministries of health of all countries of the Region have active national programmes on hygiene promotion but few have been independently evaluated in recent years and the prevalence of unhygienic practices in the Region calls into question the effectiveness of these programmes. Again, ministries of health have active national programmes for drinking water quality surveillance but a recent assessment found deficiencies in the programmes of all countries, typically with respect to national standards, laboratory capacity, staffing, and enforcement capability.

The eradication of guinea-worm disease in the Region during the 1990s stands as a model of successful intersectoral cooperation in favour of health. There is a justification to emulate that model today in order to reduce other water-related illnesses, especially diarrhoea. Country-level assessments of water supply and sanitation carried out in 8 countries of the Region in 2002-2003 found a need to strengthen linkages between ministries of health and authorities responsible for water supply and sanitation services in most countries. Health ministries in a few countries of the Region play active roles today as evidence-based advocates for improvements in water supply and sanitation services.

4. CHALLENGES TO OPTIMIZE HEALTH GAINS DUE TO WATER SUPPLY AND SANITATION IMPROVEMENTS – ROLE OF HEALTH AUTHORITIES

By definition, a health system includes all activities whose primary purpose is to promote, restore or maintain health.[15] Water supply and sanitation systems however promote, restore and maintain social and economic development, and human dignity, in addition to health. Their primary purpose may vary from country to country or at various stages in a country's development, but there can be no doubt that water supply and sanitation are inextricably linked to health systems. Included within the definition of health systems are actions intended chiefly to improve health by influencing how non-health systems function.[16]

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[14] Nath, K.J. 2000. Environmental Sanitation and Community Water Supply, A Situation Analysis. In, *Voluntary Health Association of India, 2000*. Cited in Thompson, T and S Khan, nd. Situation analysis and epidemiology of infectious disease transmission: a South-East Asian Regional perspective. *(To be published in the International Journal of Environmental Health Research, 2003)*

[15] WHO 2002. World Health Report 2002. Reducing Risks, Promoting Healthy Life. WHO, Geneva.

[16] Ibid

The surveillance of drinking water quality, practised to varying degrees by health authorities in the Region, is one example of an action intended to improve health by influencing how a water supply system functions. Hygiene promotion, also practised to varying degrees by health authorities in the Region, is another example: use of, not access to, sanitary latrines improves health, and the health impact is optimized when latrines are properly used, maintained in hygienic conditions and accompanied by hand-washing.

It is recommended that ministries of health in the SEA Region confront three challenges in order to optimize health gains associated with water supply and sanitation improvements.

(1) Advocate increased investment, efficiency and equity in the water supply and sanitation sector

It has been estimated that the global expenditure on water and sanitation must double in order to meet the Millennium Development Goals of reducing by half the percentage of people without access to safe drinking water and sanitation services by 2015.[17] In most countries of the Region, health authorities do not bear the financial costs of developing water supply and sanitation infrastructure but improvements in these services result in benefits to the health sector. As stewards of the nation's health, health authorities have a responsibility to advocate greater investment, increased cost efficiency and better equity of access in the water supply and sanitation sectors through evidence-based information.

(2) Accelerate health gains through low-cost, interim measures

The Millennium Development Goals call for universal coverage of water supply and sanitation services by 2025. In the interim period, low-cost interventions can accelerate the health gains that may be anticipated from improved water supply and sanitation infrastructure. Examples of such interim measures include household-level treatment of drinking water and low-cost sanitation. Such measures are intended chiefly to improve health and their promotion is the responsibility of the health sector.

(3) Improve hygiene promotion programmes

The prevalence of unhygienic behaviours and consequent disease burden in many rural communities and urban slums in the Region points to the need to expand and improve hygiene promotion programmes at various levels (personal, household and community), including food hygiene. Initiatives to improve the effectiveness of hygiene promotion programmes should begin with an evaluation of the existing programmes. It has been estimated that the cost per Disability Adjusted Life Year (DALY) saved in controlling diarrhoea among under 5-year olds through hygiene education was found to be comparable to the cost per DALY saved by oral rehydration therapy - US$ 20 against US$ 24.[18]

5. SUMMARY

[17] UN Press Release ENV/DEV/726

[18] Varley, R.C.G., Tarvid, J. and Chao, D.N.W., 1998. A reassessment of the cost-effectiveness of water and sanitation interventions in programmes for controlling childhood diarrhoea. Bull. World Health Organization., **76**, 617-31.

Water supply, sanitation and hygiene are major determinants of health in the countries of the Region. While much has been accomplished to improve water supply and sanitation systems and to control illnesses related to these risk factors, many challenges remain. Health authorities, as stewards of their nation's health, bear a responsibility to engage intersectoral partners in the development of policy and programmes bearing on health. WHO is ready to assist health ministries in strengthening their capacity to engage with water supply and sanitation partners and others at the policy level as evidence-based advocates; to accelerate health gains through low-cost interim measures; and to improve hygiene promotion programmes that are necessary to optimize health gains associated with water supply and sanitation improvement.