25. Eye and skin diseases

Introduction

One of the transmission mechanisms for water-related diseases is water-washing. It is speci□c to those diseases dependent on water quantity but excludes those that are faecal-orally transmitted. (Technical Briefs 17 and 19, respectively). As the majority of water-washed diseases affect the skin and eyes, this Technical Brief considers the effects of both hygiene practices and the availability of water on skin and eye disease. Two notable diseases not in this group, Onchocerciasis (river blindness) and Xerophthalmia (nutritional blindness), are included because of their impact on numbers of blind people.

In tropical and subtropical developing countries skin and eye diseases are common causes for visiting a health clinic. Reduced incidence would, therefore, be bene□cial to patients and staff. Some pathogenic skin and eye diseases are given in Table 1.

Table 1. Pathogenic and parasitic skin and eye diseases

Organism type	**Examples of diseases/infections caused**
Bacteria	Conjunctivitis (Haemophilus aegyptius; Streptococcus pneumoniae) trachoma (Chlamydia trachomatis) yaws (Treponema pertenue) Staphylococcal infections such as impetigo, cellulitis, boils, carbuncles etc: tropical ulcers (Vincenti's organisms)
Fungi	Ringworm (tinea or dermatophytosis) - athlete's foot (tinea pedis) - scalp ringworm (tinea capitis)
Viruses	Warts (human papilloma virus) cold sores (herpes simplex virus) conjuctivitis (pitorna and adenovirus)
Parasites mites □eas worms	Allergic reaction at site of bite scabies (Sarcoptes scabiei) chiggers (Tunga penetrans) onchocerciasis (Onchocerca volvulus

Eye disease

Two-thirds of the 28 million blind people in the world live in the developing countries, where blindness rates can be 10-20 times the rates in developed countries. People and particularly children under □ve years old living in a poor environment, with inadequate housing, sanitary facilities, food intake and health care are most these areas, up to 80% of blindness could be prevented.

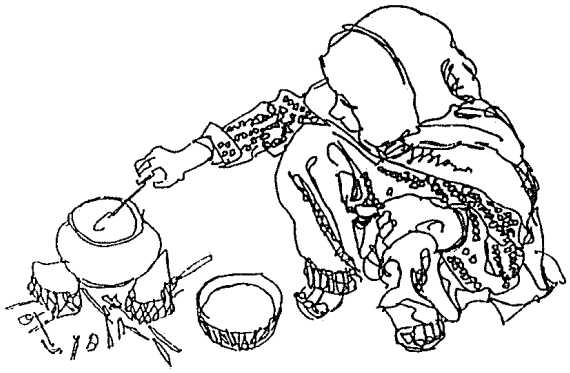
The eye has its own protective mechanisms, some of which are shown in Figure 1. These are weakened by illness, poor diet, hygiene and chemical or physical damage.

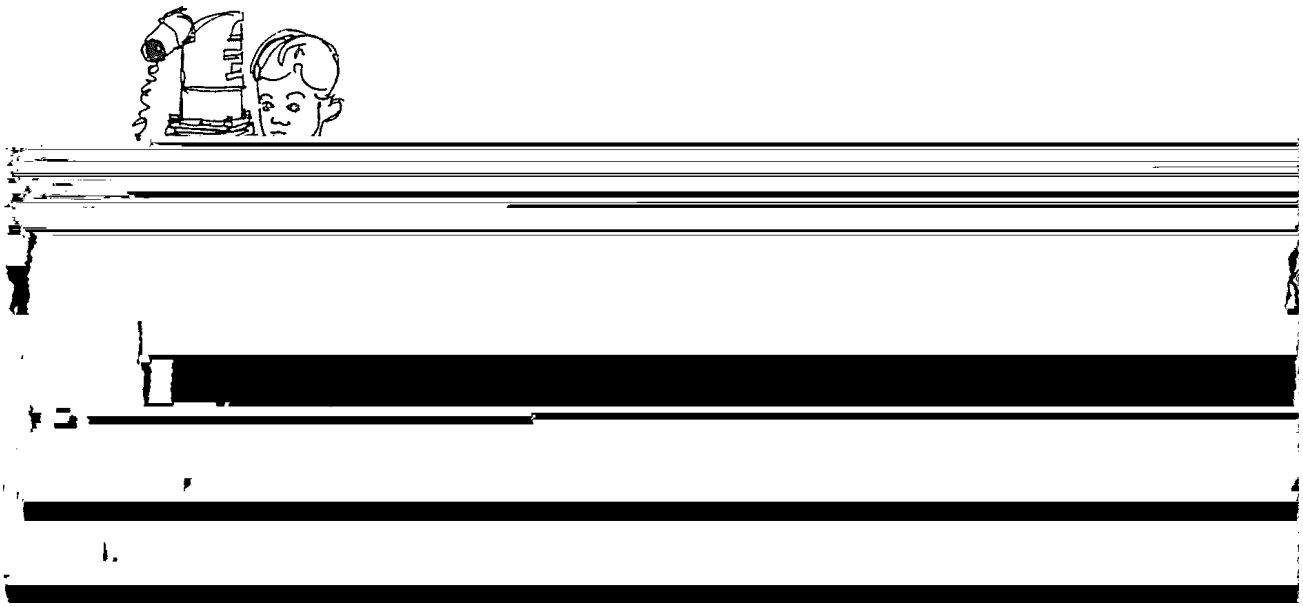
Figure 1: The eye and its protective mechanisms

Conjuctivitis and trachoma, common water-washed eye diseases, are transmitted by dirty hands and towels and sometimes by □ies. Trachoma affects over 500 million people, blinding seven to nine million of them through scarring of the conjunctiva, distortion of the eyelids and opaci□cation of the cornea.

Onchocerciasis (African river blindness) results from infestation with worms *Onchocerca volvulus* which are transmitted by black□ies (*Simulium* species) when they bite. Micro□lariae can cause irritation and repeated scratching damages the skin but for one million of the 20-30 million people affected micro□lariae reach the eye causing permanent blindness. Because prevention through widespread use of drugs is difficult, control of the vector, by insecticide spraying is often preferred. As □ies are widespread and the worm is long lived, control programmes are long-term and expensive. They are proving successful in West Africa.

Xerophthalamia (nutritional blindness), eye lesions that can result in blindness, is due to vitamin A de□ciency, caused by a de□cient diet or losses in repeated diarrhoeal attacks or severe illness. In Asia it affects over □ve million children annually, blinding 500,000; many die because of lowered resistance to other diseases. Sight is saved

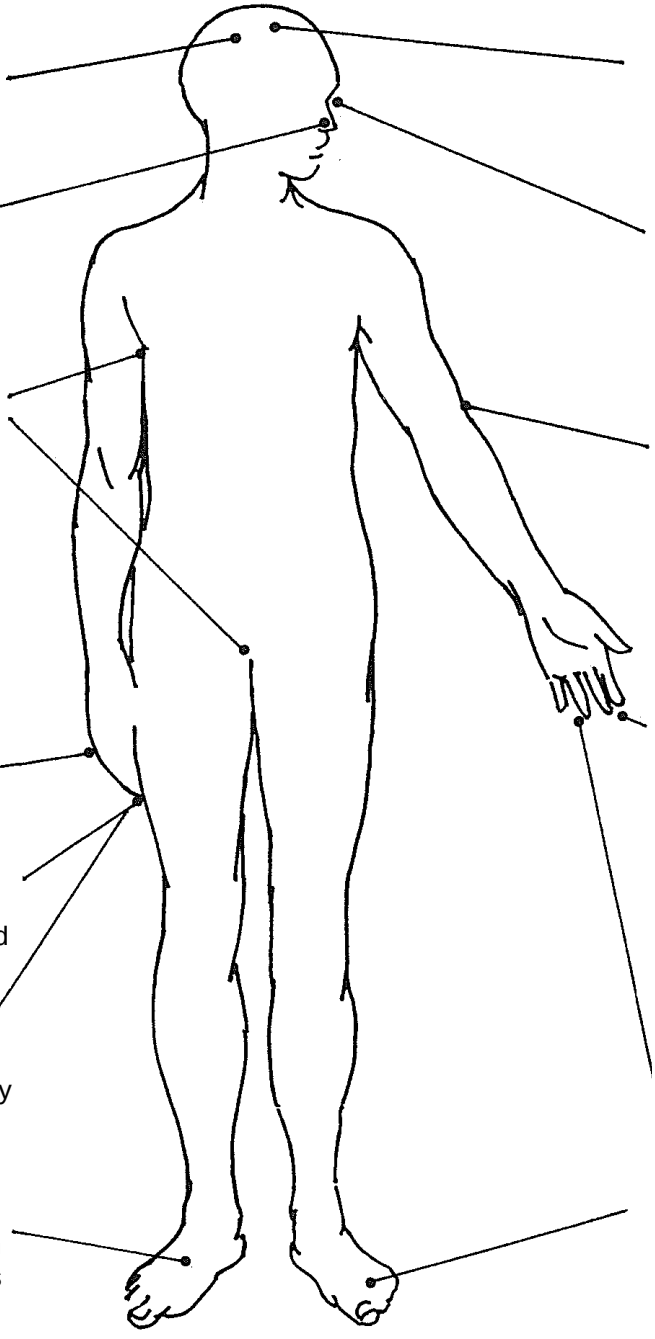




To reduce the incidence of water-washed diseases good personal hygiene practices are vital. Some of the problem areas and solutions are illustrated below.

A guide to personal hygiene

Problem areas



Hair - dirt sticks more easily to greasy hair combs and brushes.

Nose - outer skin is greasy and can collect grease, blocking pores.

Armpits and genital areas - sweat collects here, encouraging growth of bacteria. Stale sweat smells and can favour growth of pathogens.

Hands - many materials handled are easily spread to other parts of the body, particularly the mouth and eyes.

Fingers and toes - sweat between them can soften skin and favour fungal growths.

Nails - dirt etc.under the nails provides food and shelter for many organisms, including parasite eggs.

Feet - bare feet can pick up worm larvae as well as other pathogens from the soil and latrine □oor.

Using natural □bres, such as wool and cotton in clothes and bedding is better than using man-made □bres, such as nylon and polyesters, as they allow the skin to breathe and sweat to evaporate. Care must be taken to avoid transmission from clothes to skin of eggs laid by bot □ies, such as the tumbu □y (*Cordylobia anthropophaga*). The eggs hatch and □y larvae penetrate the skin producing large painful lesions from which the mature larvae emerge and fall to the ground. Sepsis often occurs at these exit sites. The practice of drying clothes on the ground increases transmission; ironing clothes kills the eggs.

Cleaning and washing are essential for good health, good skin and good eyes

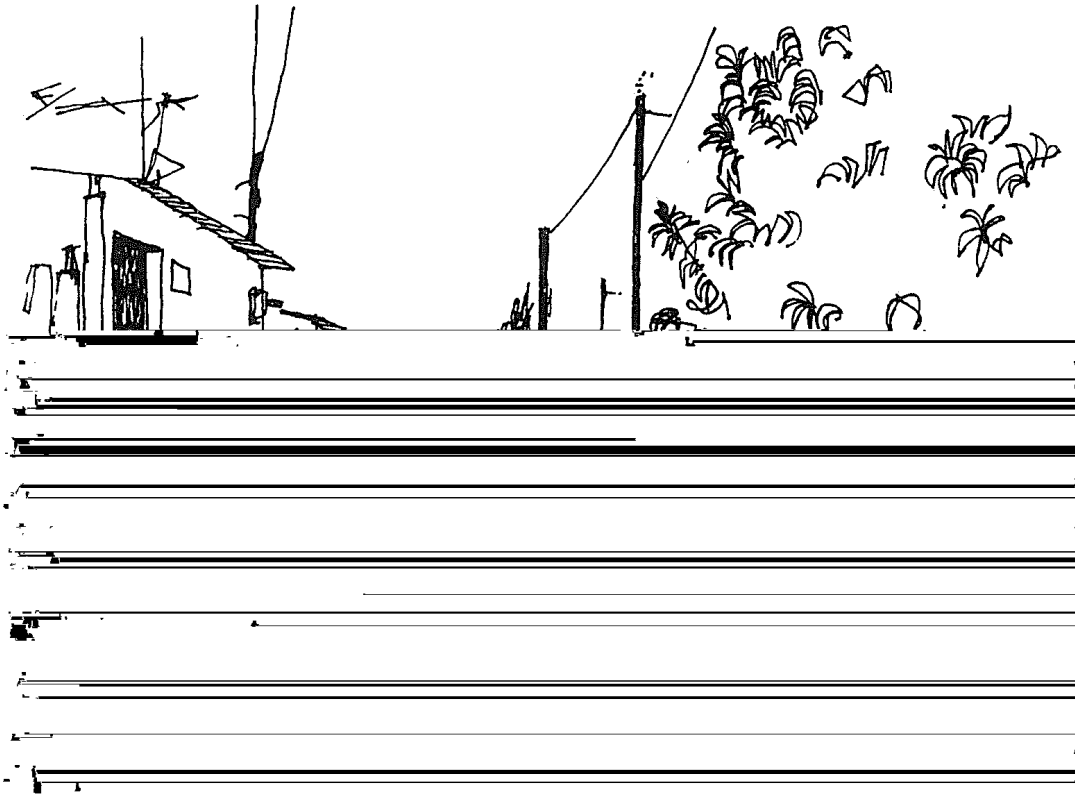


Figure 4. Transmission of water-washed disease is decreased if houses and surrounding areas are kept clean and if bodies, hair, clothing and bedding are washed frequently.

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