

25. Eye and skin diseases

Introduction

One of the transmission mechanisms for water-related diseases is water-washing. It is specific 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 beneficial to patients and staff. Some pathogenic skin and eye diseases are given in Table 1.

Organism type	Examples of diseases/infections caused
Bacteria	Conjunctivitis (Haemophilus aegyptius; Streptococcus pneumoniae) trachoma (Chlamydia trachomatis) yaws (Treponema pertenuis) Staphylococcal infections such as impetigo, cellulitis, boils, carbuncles etc: tropical ulcers (Vincent'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) conjunctivitis (picorna and adenovirus)
Parasites mites fleas 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 five 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.

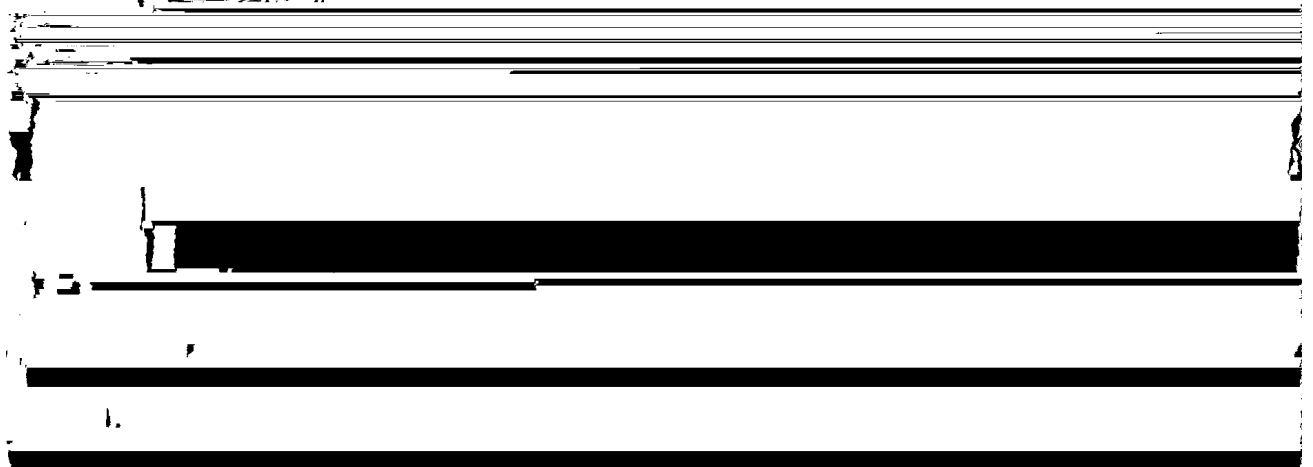
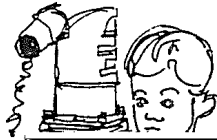
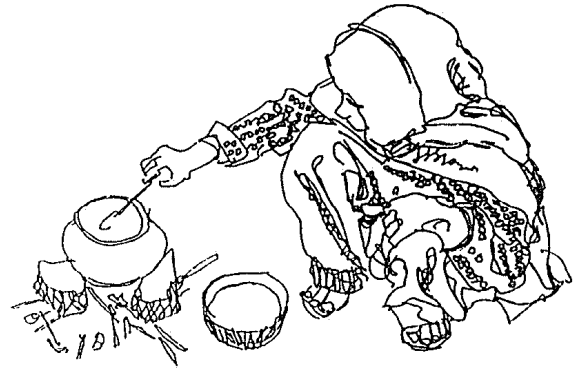
The eye has its own protective mechanisms, some of which are shown in Figure 1. These are weakened by illness, poor diet, hygiene and chemical or physical damage.



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

Onchocerciasis (African river blindness) results from infestation with worms  which are transmitted by black flies (Simulium species) when they bite. Microfilariae can cause irritation and repeated scratching damages the skin but for one million of the 20-30 million people affected microfilariae 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 flies are widespread and the worm is long lived, control programmes are long-term and expensive. They are proving successful in West Africa.

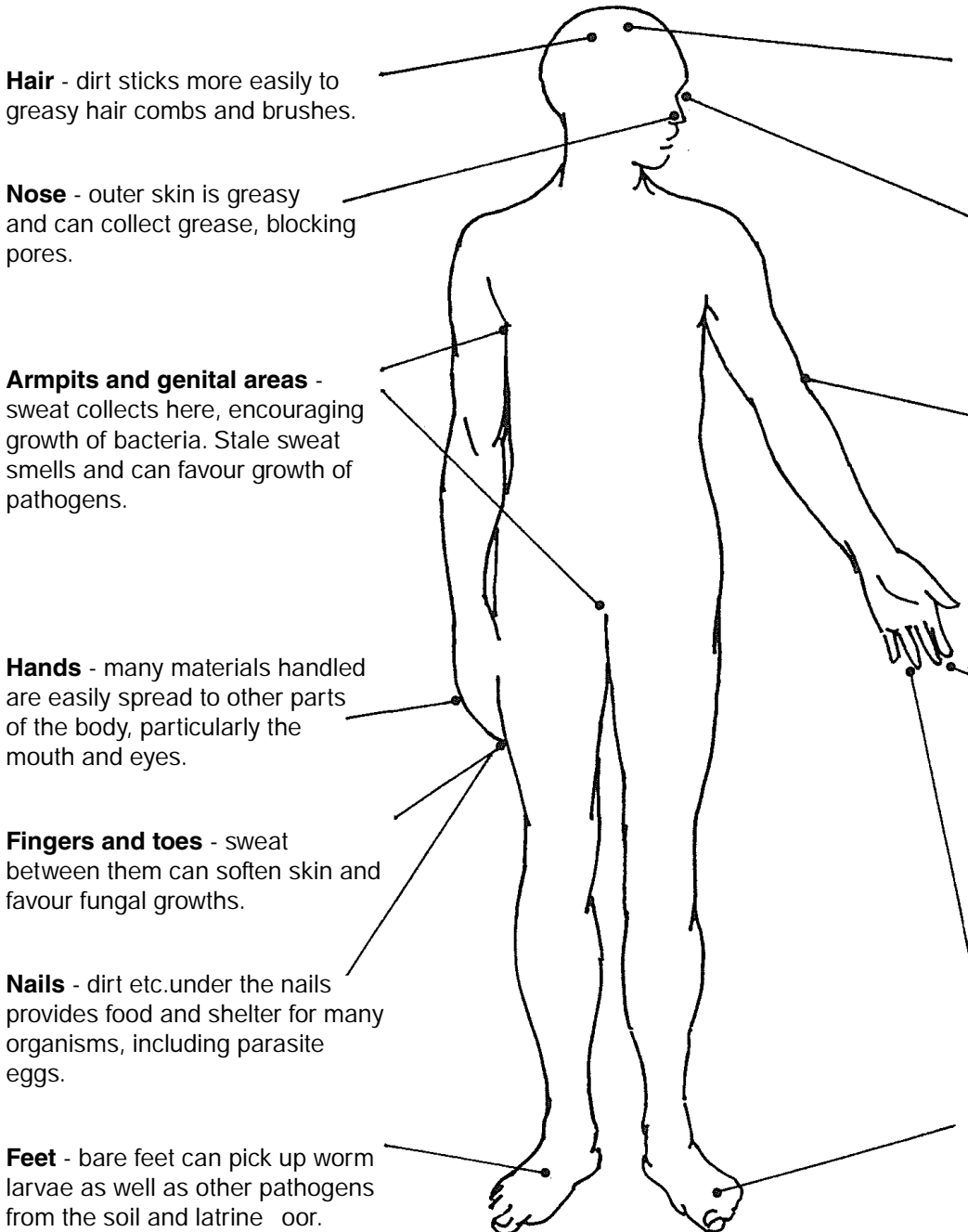
Xerophthalmia (nutritional blindness), eye lesions that can result in blindness, is due to vitamin A deficiency, caused by a deficient diet or losses in repeated diarrhoeal attacks or severe illness. In Asia it affects over five million children annually, blinding 500,000; many die because of lowered 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.

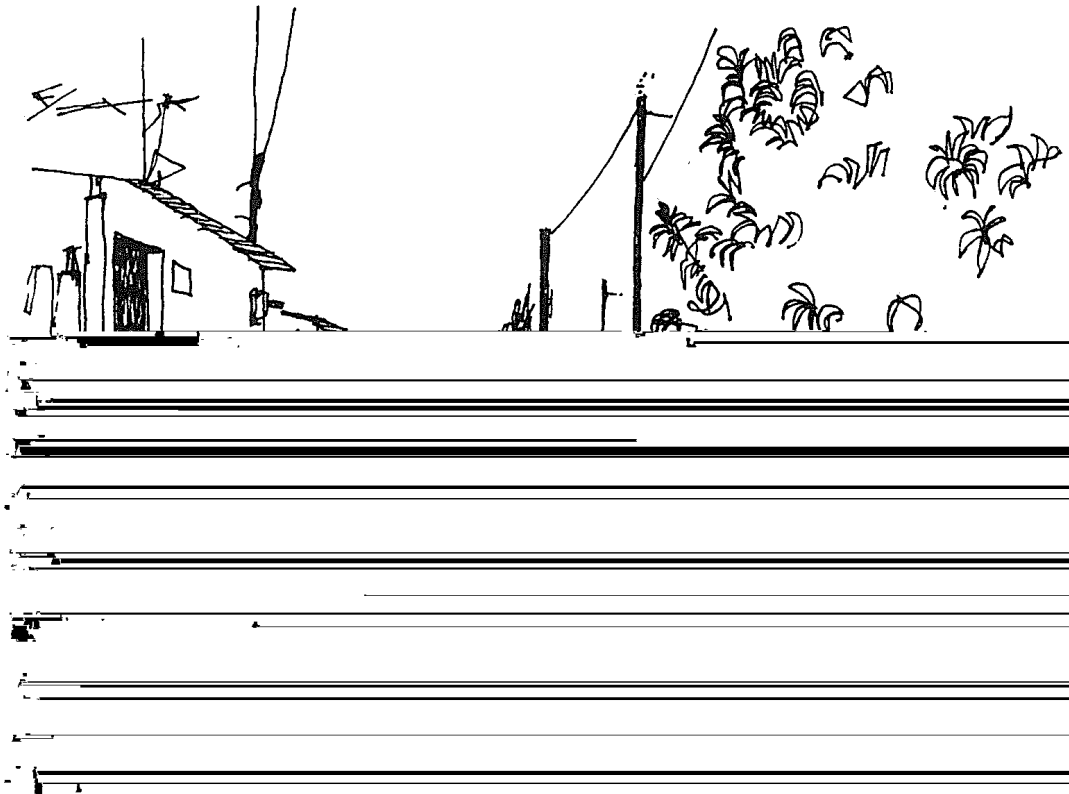
A guide to personal hygiene

Problem areas



Using natural fibres, such as wool and cotton in clothes and bedding is better than using man-made fibres, 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 flies, such as the tumbu fly (*Cordyloba anthropophora*). The eggs hatch and fly 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



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