

THE SIGNIFICANCE OF SANITATION FOR HUMAN HEALTH

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Abstract:

The right to water and sanitation is foundational to several Sustainable Development Goals. Safe sanitation is essential for health, from preventing infection to improving and maintaining mental and social well-being. The lack of safe sanitation contributes to diarrhoea, a major public health concern and a leading cause of disease and death among children under five years in low- and middle-income countries; poor sanitation also contributes to several neglected tropical diseases, as well as broader adverse outcomes such as undernutrition. Lack of access to suitable sanitation facilities is also a major cause of risks and anxiety, especially for women and girls. For all these reasons, sanitation that prevents disease and ensures privacy and dignity has been recognized as a basic human right. So present investigation was carried out to understand the relation between sanitation and health along with recommended sanitary guidelines.

Key words: Health, Sanitation, WHO

Introduction:

Sanitation is defined as access to and use of facilities and services for the safe disposal of human urine and faeces. A safe sanitation system is a system designed and used to separate human excreta from human contact at all steps of the sanitation service chain from toilet capture and containment through emptying, transport, treatment (in-situ or off-site) and final disposal or end use. Safe sanitation systems must meet these requirements in a manner consistent with human rights, while also addressing co-disposal of greywater, associated hygiene practices and essential services required for the functioning of technologies.

The purpose of these guidelines is to promote safe sanitation systems and practices in order to promote health. Safe sanitation is essential for health, from preventing infection to improving and maintaining mental and social well-being. The lack of safe sanitation systems leads to

infection and disease, including: Diarrhoea, a major public health concern and a leading cause of disease and death among children under five years in low- and middle income countries (Pruss Ustuss et al. 2016); Neglected tropical diseases such as soil-transmitted helminth infections, schistosomiasis and trachoma that cause a significant burden globally (WHO, 2017); and Vector-borne diseases such as West Nile Virus or lymphatic filariasis (Curtis et al., 2002; van den Berg, Kelly-Hope & Lindsay, 2013), through poor sanitation facilitating the proliferation of Culex mosquitos.

Unsanitary conditions have been linked with stunting (Danaei et al., 2016), which affects almost one quarter of children under-five globally (UNICEF/ WHO/World Bank, 2018) through several mechanisms including repeated diarrhoea (Richard et al., 2013), helminth infections (Ziegelbauer et al., 2012) and environmental enteric dysfunction (Humphrey, 2009; Keusch et al., 2014; Crane et al., 2015). The lack of safe sanitation systems contributes to the emergence and spread of antimicrobial resistance by increasing the risk of infectious diseases (Holmes et al., 2016) and thereby use of antibiotics to tackle preventable infections. Inadequate management of faecal waste that includes antimicrobial residues from communities and health care settings can also contribute to emergence of resistance (Korzeniewska et al., 2013; Varela et al., 2013).

Method and Approach :

A systematic literature search was conducted in February, 2023 to identify articles that investigated the role of sanitation and health in India. Databases included; Academic Search Complete, Global Health, WHO. Articles were first screened by title and abstract based on the inclusion criteria. The full text of selected articles was obtained for assessment for final inclusion.

Sanitation as a human development issue:

Inadequate sanitation systems exist in many parts of the world. Many people worldwide practice open defecation and many more do not have services that prevent faecal waste from contaminating the environment (WHO-UNICEF, 2017). In many low- and middle-income countries (LMICs), rural areas are underserved, cities are struggling to cope with the scale of sanitation needs caused by rapid urbanization, while sanitation system maintenance is challenging and costly worldwide. Challenges caused by climate change require continued adaptation to ensure sanitation systems safeguard public health.

Principles for implementation of sanitation interventions:

Sanitation systems should address the following minimum requirements to ensure safety along each step of the sanitation service chain.

Toilet:

- Toilet design, construction, management and use should ensure that users are safely separated from excreta.
- The toilet slab and pan or pedestal should be constructed using durable material that can be easily cleaned.
- The toilet superstructure needs to prevent the intrusion of rainwater, stormwater runoff, animals and insects.
- It should provide safety and privacy with lockable doors for shared or public toilets.
- Toilet design should include provision of culturally- and context-appropriate facilities for anal cleansing, handwashing and menstrual hygiene management. Toilets need to be well maintained and regularly cleaned.

Containment storage/treatment:

- Where groundwater is used as a drinking-water source, a risk assessment should ensure that there is sufficient vertical and horizontal distance between the base of a permeable container, soak pit or leach field and the local water table and/or drinking-water source (allowing at least 15 m horizontal distance and 1.5 m vertical distance between permeable containers and

drinking-water sources is suggested as a rule of thumb).

- When any tank or pit is fitted with an outlet, this should discharge to a soak pit, leach field or piped sewer. It should not discharge to an open drain, water body or open ground.
- Where products from storage or treatment in an on-site containment technology are handled for end use or disposal, risk assessments should ensure workers and/or downstream consumers adopt safe operating procedures.

Conveyance :

- Wherever possible motorized emptying and transport should be prioritized over manual emptying and transport.
- All workers should be trained on the risks of handling wastewater and/or faecal sludge and on standard operating procedures (SOPs).
- All workers should wear personal protective equipment (e.g. gloves, masks, hats, full overalls and enclosed waterproof footwear) particularly where manual sewer cleaning or manual emptying is required.

Treatment :

- Regardless of the source (i. e. wastewater from sewer-based technologies or faecal sludge from on-site sanitation) both the liquid and solid fractions require treatment before end use/disposal.
- The treatment facility should be designed and operated according to the specific end use/disposal objective and operated using a risk assessment and management approach to identify, manage and monitor risk throughout the system.

End use/disposal:

- Workers handling effluent or faecal sludge should be trained on the risks and on standard operating procedures and use personal protective equipment.
- A multi-barrier approach (i. e. the use of more than one control measure as a barrier against any pathogen hazard) should be used.

Sanitation behaviour change:

Behaviour change is an important aspect of all sanitation programmes and underpins adoption and use of safe sanitation.

- Governments are the critical stakeholder in the coordination and integration of sanitation behaviour change activities and they should provide leadership and adequate funding.
- All sanitation interventions should include a robust sanitation promotion/behaviour change programme (including monitoring and evaluation), with all stakeholders and participants aligned around the same set of objectives and strategies. To influence behaviour and design successful promotion activities it is important to understand the existing sanitation behaviours and the determinants of those behaviours, noting that specific

population groups will have different sanitation needs, opportunities for change and barriers to improvement.

- Behaviour change interventions are most successful when they target the determinants of behaviours; a range of models and frameworks exist to aid understanding and target behavioural drivers and should be drawn upon in the intervention design process.
- Careful consideration should be given to the intervention delivery model (stand-alone behaviour change versus integrated approaches; focused versus comprehensive strategies); for a strategy to be successful it needs to impact on uptake, adherence and long-term practice/use of the safe behaviour.
- Behaviour change programming needs adequate and dedicated resources.

The health impact of unsafe sanitation

Direct impact (infections)	Sequelae (conditions caused by preceding infection)	Broader well-being
Faecal-oral infections <ul style="list-style-type: none"> • Diarrhoeas (incl. cholera) • Dysenteries • Poliomyelitis • Typhoid 	Stunting/ growth faltering (related to repeated diarrhea, helminth infections, environmental enteric dysfunction)	Immediate: Anxiety (shame and embarrassment from open defecation, shared sanitation) and related consequences and not meeting gender specific needs
Helminth infections <ul style="list-style-type: none"> • Ascariasis • Trichuriasis • Hookworm infection • Cysticercosis (Taenia solium/ infection) • Schistosomiasis \ • Foodborne trematodes 	Consequences of stunting (obstructed labour, low birthweight)	Sexual assault (and related consequences)
Insect vector diseases (vectors breed in faeces or faecally contaminated water) <ul style="list-style-type: none"> • Lymphatic filariasis • West Nile Fever • Trachoma 	Impaired cognitive function Pneumonia (related to repeated diarrhea in undernourished children)	Adverse birth outcomes (due to underuse of healthcare facilities with inadequate sanitation)
	Anaemia (related to hookworm infections)	Long-term: School absence Poverty Decreased economic productivity Anti-microbial resistance

Collated from: Bartram & Cairncross, 2010; Bouzid et al, 2018; Campbell et al, 2015; Cumming & Cairncross, 2016; Cairncross et al., 2013; Schlaudecker et al, 2011.

Recommendations:

Following are some of the recommendations for sanitation and health for human being.

Recommendation 1: Ensure universal access and use of toilets that safely contain excreta

- Universal access to toilets that safely contain excreta and elimination of open defecation should be prioritized by governments, ensuring that progress is equitable and in line with the principles of the human right to water and sanitation.
- Demand and supply of sanitation facilities and services should be addressed concurrently to ensure toilet adoption and sustained use and enable scale.
- Sanitation interventions should ensure coverage of entire communities with safe toilets that, as a minimum, safely contain excreta, and address technological and behavioural barriers to use.
- Shared and public toilet facilities that safely contain excreta can be promoted for households as an incremental step when individual household facilities are not feasible.
- Everyone in schools, health care facilities, workplaces and public places should have access to a safe toilet that, as a minimum requirement, safely contains excreta.

Recommendation 2: Ensure universal access to safe systems along the entire sanitation service chain

- The selection of safe sanitation systems should be context specific and respond to local physical, social and institutional conditions.
- Progressive improvements towards safe sanitation systems should be based on risk assessment and management approaches (e. g. Sanitation Safety Planning).
- Sanitation workers should be protected from occupational exposure through adequate health and safety measures.

Recommendation 3: Sanitation should be addressed as part of locally delivered services and broader development programmes and policies

- Sanitation should be provided and managed as part of a package of locally-delivered services to increase efficiency and health impact.
- Sanitation interventions should be coordinated with water and hygiene measures, as well as safe disposal of child faeces and management of domestic animals and their excreta to maximize the health benefits of sanitation.

Recommendation 4: The health sector should fulfill core functions to ensure safe sanitation to protect public health

- Health authorities should contribute to overall coordination of multiple sectors on development of sanitation approaches and programmes, and sanitation investment.
- Health authorities must contribute to the development of sanitation norms and standards.
- Sanitation should be included in all health policies where sanitation is needed for primary prevention, to enable coordination and integration into health programmes.
- Sanitation should be included within health surveillance systems to ensure targeting to high disease burden settings, and to support outbreak prevention efforts.
- Sanitation promotion and monitoring should be included within health services to maximize and sustain health impact.
- Health authorities should fulfil their responsibility to ensure access to safe sanitation in healthcare facilities for patients, staff and carers, and to protect nearby communities from exposure to untreated wastewater and faecal sludge.

Good practice actions for enabling safe sanitation service delivery

The recommendations are complemented by a set of good practice actions to help all stakeholders put the recommendations into effect.

- Define government-led multi-sectoral sanitation policies, planning processes and coordination.

- Ensure health risk management is properly reflected in sanitation legislation, regulations and standards.
- Sustain the engagement of the health sector in sanitation through dedicated staffing and resourcing, and through action on sanitation within health services. Undertake local health-based risk assessment to prioritize improvements and manage system performance.
- Enable marketing of sanitation services and develop sanitation services and business models.

Conclusion:

The evidence reviewed in the process of developing the guidelines suggests that safe sanitation is associated with improvements in health, including positive impacts on infectious diseases, nutrition and well-being. In general, however, the quality of the evidence is low. Sanitation reduces the severity and impact of malnutrition. It reduces the spread of intestinal worms, schistosomiasis and trachoma. Helps in promoting dignity and boosting safety, particularly among women and girls.

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