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Promoting handwashing and sanitation behaviour change in low-and middle-income countries

August 2017

Systematic
Review
Summary 10

Water, sanitation and hygiene



International
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This summary report, *Promoting handwashing and sanitation behaviour change in low- and middle-income countries, 3ie Systematic Review Summary 10*, is based on a full review of the same title, which is available on the [3ie website](#). All content is the sole responsibility of the authors and does not represent the opinions of 3ie, its donors or the 3ie Board of Commissioners. Any errors are the sole responsibility of the authors. Please direct any questions or comments about this summary report to the corresponding author, Emmy de Buck, at Emmy.debuck@rodekruis.be

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Promoting handwashing and sanitation behaviour change in low- and middle-income countries

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Summary

In low- and middle-income countries, sanitation and hygiene promotion programmes aim to promote sanitation and improved hygiene as a means of preventing infectious diseases such as diarrhoea and cholera and to achieve community empowerment and human rights. Achieving sustained and equitable sanitation behaviour change is a major policy objective, and many scientific studies claim to measure improvements in these outcomes and identify how to make programmes more effective. This summary report is based on the first systematic review of that evidence.

The aim of the systematic review was to find which promotional approaches might change handwashing and sanitation behaviour and which implementation factors affect the success or failure of such promotional approaches. We defined four categories of promotional approaches:

1. **Community-based approaches**, a promotional approach where there is typically community involvement and engagement and shared decision-making, e.g. community-led total sanitation.
2. **Social marketing approaches**, a promotional approach combining enterprise approaches with demand stimulation, and assuming that people both want and are able to change their behaviour.
3. **Sanitation and hygiene messaging**, a predominantly directive educational approach, consisting mainly of one-way communication, designed to help individuals and communities improve their health by increasing their knowledge and/or skills.
4. **Other promotional approaches using psychosocial theory**, in which behavioural factors (e.g. knowledge, feelings and social pressure) are specifically addressed, e.g. Evo-Eco or risk attitude norm ability self-regulation.

We conducted a thorough search for published and unpublished studies on promotional approaches for handwashing, latrine use, safe faeces disposal, and the discouragement of open defecation among children and adults in low- and middle-income countries. We included impact evaluations that used a counterfactual to answer the question ‘Does it work?’ (effectiveness). We also incorporated high-quality qualitative studies answering the question ‘Under which circumstances does it work (or not)?’ (implementation). Two reviewers independently screened and selected relevant studies, assessed the quality of included studies, and synthesised findings.

Results

We included 42 studies examining the effectiveness of various promotional approaches. Most studies were conducted in Asia (51%) and Sub-Saharan Africa (40%), while others were done in Latin America (9%). We cannot identify a promotional approach that is better than all others in achieving all outcomes, yet several promotional elements seem promising:

- The **community-based promotional approach** probably improves sanitation behaviours around latrine use and open defecation and may increase the uptake of handwashing with soap. Improvements are less clear in the longer term (more than 12 months following implementation);

- **Social marketing** probably improves latrine use and reduces open defecation for up to 12 months after implementation, but only when handwashing and sanitation programmes are combined. The effects of this approach on handwashing alone are unclear;
- **Other promotional approaches using psychosocial theory** may increase the uptake of handwashing with soap at key times for up to 12 months following implementation, but their impact on sanitation is unknown; and
- **Sanitation and hygiene messaging** merely seems to have a short-term effect on the uptake of handwashing with soap, while no effects on sanitation are evident from this approach.

An additional 28 studies investigated which **implementation factors** were associated with the success or failure of these promotional approaches. We found that a number of enablers are relevant across all promotional approaches:

- Longer intervention periods with adequate follow-up;
- Frequent visits by the implementer;
- Using short communication messages;
- The availability of training materials;
- Financial assistance and partnerships;
- The kindness and respect of the implementer;
- The accessibility of the implementer; and
- The implementer's status and authority.

For sanitation and hygiene programme participants, enablers included awareness about a project's costs and benefits, their own social capital, access to infrastructure and availability of space, and other people demonstrating the intended behaviour (e.g. safe disposal of faeces).

Implementation **enablers of community-based approaches** are:

- The enthusiasm of community leaders about a project;
- The community having a sense of ownership of a project;
- The implementer being part of the community;
- The sex of the implementer being suited to the community member;
- Trust between the community and the implementer
- Income-generating activities for community members;
- Clear communication between the implementer and the community; and
- Developing a culture of cooperation.

Implementation enablers of social marketing approaches included working with local contractors and considering consumer preferences. We also identified a number of **barriers to the effective implementation of social marketing approaches**:

- A lack of communication with latrine business owners about which area to cover;
- Sanitation loans not reaching poor people;
- Sanitation loan officers' attitudes and high interest rates on loans;
- Long sanitation loan processing times;
- Lack of financial knowledge among programme beneficiaries; and
- Poverty in the target community.

We identified **barriers to effective sanitation and hygiene messaging**:

- Messages, including short message service, that were too long or were culturally inappropriate;
- Passive teaching methods in schools;
- The need for longer intervention periods and frequent reminders when working with children;
- Overlaps between school- and community-based interventions;
- Families' lack of interest and involvement in school-based interventions; and
- Illiteracy among project beneficiaries.

Implications for policy, programming and research

Policy

Promotional approaches designed to prompt handwashing and sanitation behaviour change can be effective in improving the uptake of handwashing with soap, latrine use and safe faeces disposal, and in reducing open defecation. The following are effective elements of behaviour promotion:

- Community-based approaches in sanitation programmes that involve the community in the design and implementation stages, resulting in tangible actions taken by community members;
- Social marketing elements in combined handwashing and sanitation programmes, e.g. determining people-centred needs, stimulating demand for handwashing and sanitation, delivering desired satisfaction more effectively and efficiently than competitors, working with local builders and other entrepreneurs, and considering consumer preferences and desires;
- Adding elements derived from psychosocial theory to promotional approaches in handwashing interventions, i.e. using psychosocial theory, social cognitive elements or theoretical elements of behaviour change to design the intervention; and
- Using interpersonal communication as part of a communication strategy.

In contrast, we found that sanitation and hygiene messaging, commonly used in schools, is not effective in improving behaviours beyond a project's implementation phase.

Programming

Evidence showed that the effects of water, sanitation and hygiene promotion programmes vary due to differences in context and approach, and a lack of standardised behaviour outcome assessments. However, we identified several effective elements of behaviour promotion. These include recognising the different barriers and enablers that influence the implementation of promotional approaches in a particular context.

More in-depth formative research during the assessment phase, leading to selecting and identifying the right promotional elements and influencing factors, is critical for programmes aiming for sustained behaviour change in sanitation and handwashing.

Research

To improve the quality of the evidence and its use, we need to have a more uniform method for measuring water, sanitation and hygiene behaviour outcomes, which will also improve the quality and findings of synthesis studies based on such evidence.

It is important to further test the barriers and enablers identified in this review in mixed-method studies that also incorporate quantitative analyses of promotional approaches. At present, there is not enough evidence to answer major policy questions around the incorporation of financing into sanitation demand approaches. Specific studies are needed to assess combined approaches, such as community approaches combined with sanitation marketing and financial support.

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Abbreviations and acronyms

CLTS	Community-led total sanitation
L&MICs	Low- and middle-income countries
RANAS	Risk attitude norm ability self-regulation
ToC	Theory of change
WASH	Water, sanitation and hygiene
WHO	World Health Organization
WSSCC	Water Supply and Sanitation Collaborative Council

1. Introduction

1.1 The problem

An estimated 2.4 billion people still lack improved sanitation facilities. In addition, 663 million people still have no access to safe water, with rural populations being most vulnerable.¹ The Sustainable Development Goal for sanitation is to 'achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations' by 2030.²

Reaching this ambitious target will be most challenging in Sub-Saharan Africa and South Asia, where only 30% and 41% of people, respectively, have access to improved sanitation. Decision makers urgently need high-quality evidence about what works in promoting behaviour change.

The objectives of many sanitation and hygiene programmes are to bring sustainable and equitable behaviour change and to promote the use of sanitation and hygiene as a means of achieving community empowerment and human rights.

When adopted by communities, sanitation and hygiene approaches can combat life-threatening diseases, such as diarrhoeal disease.³ According to the World Health Organization (WHO), diarrhoea is the second-leading cause of death in children under five years old in low-income countries, with around 760,000 deaths each year.⁴ Other important benefits of improved water supply, sanitation and hygiene include reduced drudgery for those collecting water and improved safety and psychosocial well-being, particularly for women and girls.⁵

1.2 The intervention

Water, sanitation and hygiene (WASH) interventions aim to reduce diarrhoeal disease by (1) improving water supply and water quality; (2) reducing open defecation practices and supporting latrine construction, latrine use and latrine hygiene; and (3) encouraging handwashing, showering or bathing, and domestic hygiene.⁶

Most early WASH interventions focused on the 'hardware' component, i.e. constructing a water source or latrine. However, the impact of water quality interventions on protection against disease lessens over time because improved behaviours are not maintained.⁷ To improve the effectiveness of WASH interventions, 'software' interventions (promotional approaches) were developed. These interventions are important in ensuring the long-term sustainability of behaviours and the technical durability of facilities.

In the 1980s and 1990s, health promotion was primarily based on cognitive psychology.⁸ These interventions assumed that people make rational decisions about protecting their health, based on knowledge, skills and facilities. As such, this era was marked by extensive health and/or hygiene campaigns to educate the public by raising awareness about risky behaviour.

In the early 2000s, promotion shifted toward social marketing strategies, which led to widespread production of information, education and communication materials to

facilitate behaviour change. More recently, community-based approaches and psychosocial theory have emphasised the importance of attitudes and beliefs in promoting behaviour change.

1.3 Rationale and objectives

Despite the efforts to develop a diversity of WASH approaches, there is no consensus about the effectiveness of promotional approaches in changing WASH behaviour. In addition, there is a major policy debate on the added value of financial incentives (e.g. subsidies) or non-financial incentives for influencing behaviour change in programming.

Six previous systematic reviews have synthesised evidence on a mix of promotional approaches, including social marketing,⁹ community-based,¹⁰ sanitation and hygiene messaging and/or the use of different communication channels,¹¹ or multiple promotional approaches.¹² None of these systematic reviews focuses on behaviour change outcomes or incorporates mixed methods using quantitative and qualitative evidence.

The systematic review on which this summary report is based¹³ is the first to bring together evidence on behaviour change outcomes in sanitation and hygiene programmes. It had two objectives: (1) to synthesise evidence on the effectiveness of approaches to promote handwashing and sanitation behaviour in low- and middle-income countries (L&MICs) (research question 1); and (2) to collect evidence on implementation factors associated with intervention effectiveness (research question 2).

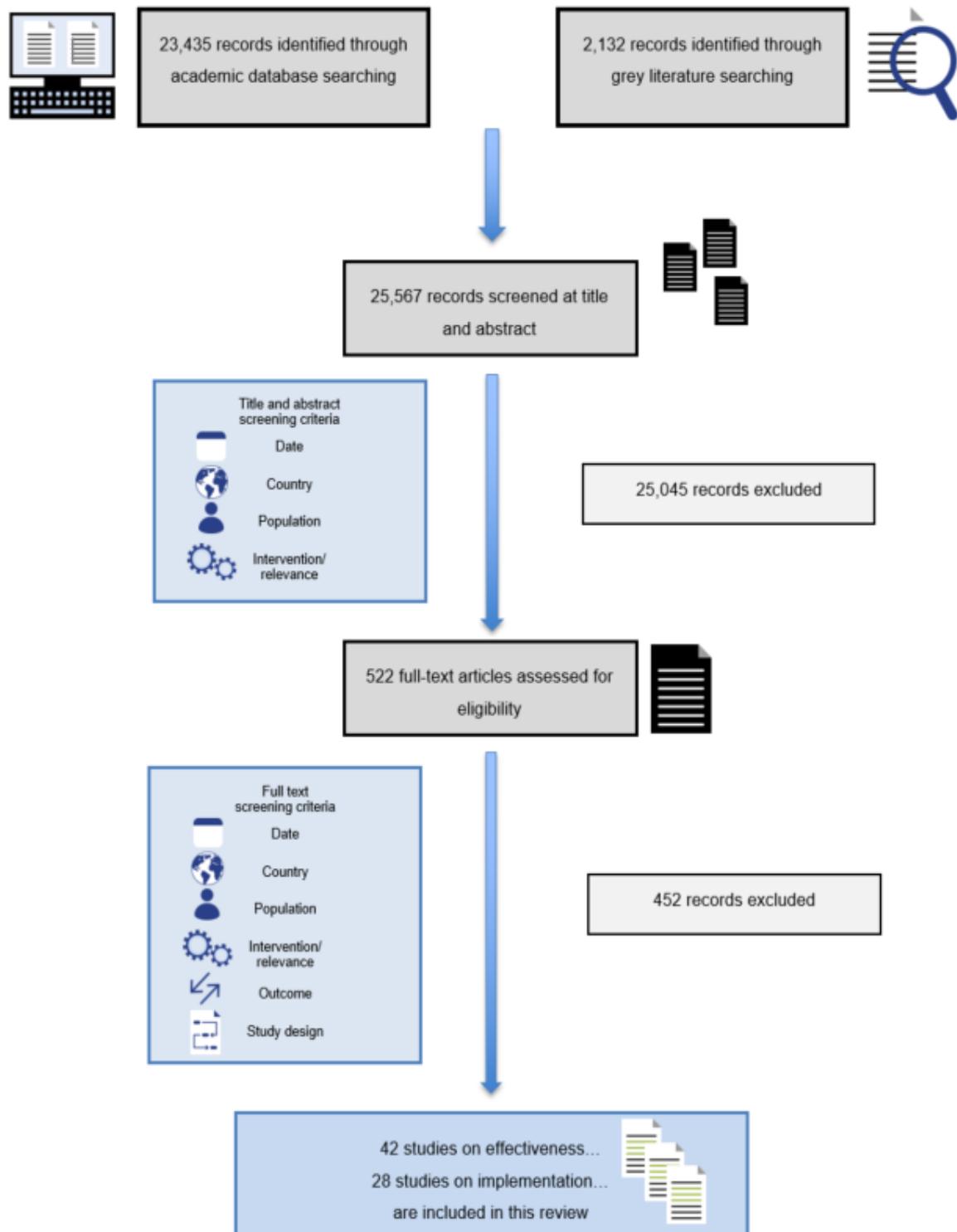
1.4 Methods

We carried out a mixed-method systematic review, incorporating findings from impact evaluations to quantify the difference to outcomes made by behaviour change programmes (research question 1) and qualitative evidence to understand the underlying reasons, opinions and motivations that may explain why change occurs or does not occur (research question 2).

We conducted an extensive search for studies in any language. We identified relevant articles through electronic searches of databases and websites. Figure 1 shows the search and screening process. From 25,567 potentially relevant citations, we reviewed the full text of over 500 papers and identified 70 studies (74 references) that were eligible for inclusion in the review, covering 42 impact evaluation studies and 28 qualitative research studies addressing influencing factors about the implementation of these programmes.

We critically appraised each included study for validity and synthesised findings narratively, since there was too much variation in study population, programmes and methods to pool data statistically. A more comprehensive description of the methodology is provided in the full systematic review technical report.¹⁴

Figure 1: PRISMA diagram of search and screening process for systematic review



Following 3ie guidance, we formed a stakeholder engagement advisory group (comprising 13 development practitioners, 3 policymakers and 4 donors) and invited the advisory group members to two consultation meetings, in Cape Town and Geneva. Group members were involved throughout the process of conducting this systematic review, actively contributing to the development and refinement of the theory of change (ToC), the research questions and selection criteria, and categorising the included

studies into the four main categories of promotional approaches. Additionally, these experts gave input on the implications of the findings for policy, programming and practice.

1.5 Report structure

We first describe the interventions in more detail (Section 2). In Section 3, we describe how the interventions are supposed to work. In Sections 4 and 5, we describe the findings of our review. For each type of promotional approach, we describe the evidence on what works (effectiveness evidence), under which circumstances and why (implementation evidence). Finally, in Section 6 we describe the implications of our findings for policy, programming and future research.

2. The interventions

Several promotional approaches have been developed over the past few decades and are currently being applied to promote uptake of WASH interventions and to achieve WASH behaviour change.¹⁵ This systematic review classified promotional approaches into four groups: community-based approaches, social marketing approaches, sanitation and hygiene messaging, and other approaches based on elements of psychosocial theory. This classification was based on the main focus or major element of the promotional approach, and was validated by different stakeholders (content experts, practitioners and policymakers).

The first category encompasses a **community-based approach**, which requires involvement of the entire community and is characterised by shared decision-making. Typically, such interventions make use of community meetings to trigger a behaviour change.

Prominent examples of community-based interventions are community-led total sanitation (CLTS), which aims to declare communities open defecation free, and participatory hygiene and sanitation transformation (PHAST) interventions. Other community-based approaches include participatory rural appraisal (PRA); self-esteem, associative strengths, resourcefulness, action-planning and responsibility (SARAR); community reunion; community hygiene club or mother club; community health clubs; child-to-child approach; urban-led total sanitation (ULTS); community approaches to total sanitation (CATS); methodology for participatory assessments (MPA); community action planning; child hygiene and sanitation training (CHAST) and transformation; and the model home approach.

The second category involves **social marketing approaches**, which use commercial marketing techniques to promote the adoption of behaviour that will improve the health or well-being of the target audience or society as a whole.¹⁶ Such commercial marketing strategies combine enterprise approaches with demand stimulation, while focusing on 'the four Ps': product (e.g. handwashing facility), price (e.g. of soap), place (products need to be easily available) and promotion. It is the implementer's responsibility to determine the needs, wants and interests of target populations and to deliver the desired intervention more effectively and efficiently than competitors.¹⁷

Importantly, such commercial marketing techniques assume that people both want, and are able, to change their behaviour. Examples of social marketing approaches include Saniya, Global Public-Private Partnership for Handwashing (PPPHW), support to small-scale independent providers (SSIPs), SaniMart, SanMark, and total sanitation and sanitation marketing (TSSM).

Third, **sanitation and hygiene messaging** is an educational approach predominantly consisting of one-way communication. These interventions are designed to improve health by increasing community members' knowledge and/or skills.

A fourth category includes **other approaches using psychosocial theory**, which are behavioural factors (e.g. knowledge, feelings or social pressure) derived from social psychology theories. These factors, such as a feeling of disgust, are then specifically addressed in the promotional programme, with the aim of triggering behaviour change.

Examples of programmes based on elements of psychosocial theory include focus opportunity ability motivation (FOAM); risk attitude norm ability self-regulation (RANAS); integrated behavioural model for water, sanitation and hygiene (IBM-WASH); access build create deliver evaluate (ABCDE); and the Evo-Eco or behaviour-centred design (BCD) model.

In addition to these categories of promotional approaches, **promotional elements such as incentives** can be incorporated. Incentives can be either financial or non-financial. Financial incentives include national government subsidy programmes, vouchers or cash transfers. Non-financial incentives encompass providing food or soap, or giving awards to community leaders who meet open-defecation-free targets.

Any of the promotional approaches above can be delivered using one or more **communication strategies**:

- **Interpersonal communication**, such as peer-to-peer communication, home visits or focus groups. These approaches could be implemented by change transformation agents, such as hygiene promoters, WASH committees, champions or natural leaders who are not part of a community leadership system, community leaders (chiefs, elected or appointed village leaders or councillors), religious leaders, teachers, village health workers, local government staff (dealing with WASH, social services or health), or volunteers (e.g. Red Cross volunteers). Methods can include lectures, workshops, games, providing materials and demonstrations, quizzes and so on;
- **Mass media communication**, such as posters, TV or radio spots, radio programmes, billboards, newspapers, outdoor or transit advertising, megaphones, hygiene days, and stickers or paintings; and
- **Traditional communication**, such as songs, folk drama and theatre performances, concerts, rallies, parades, or cinema shows.

3. How interventions are supposed to work

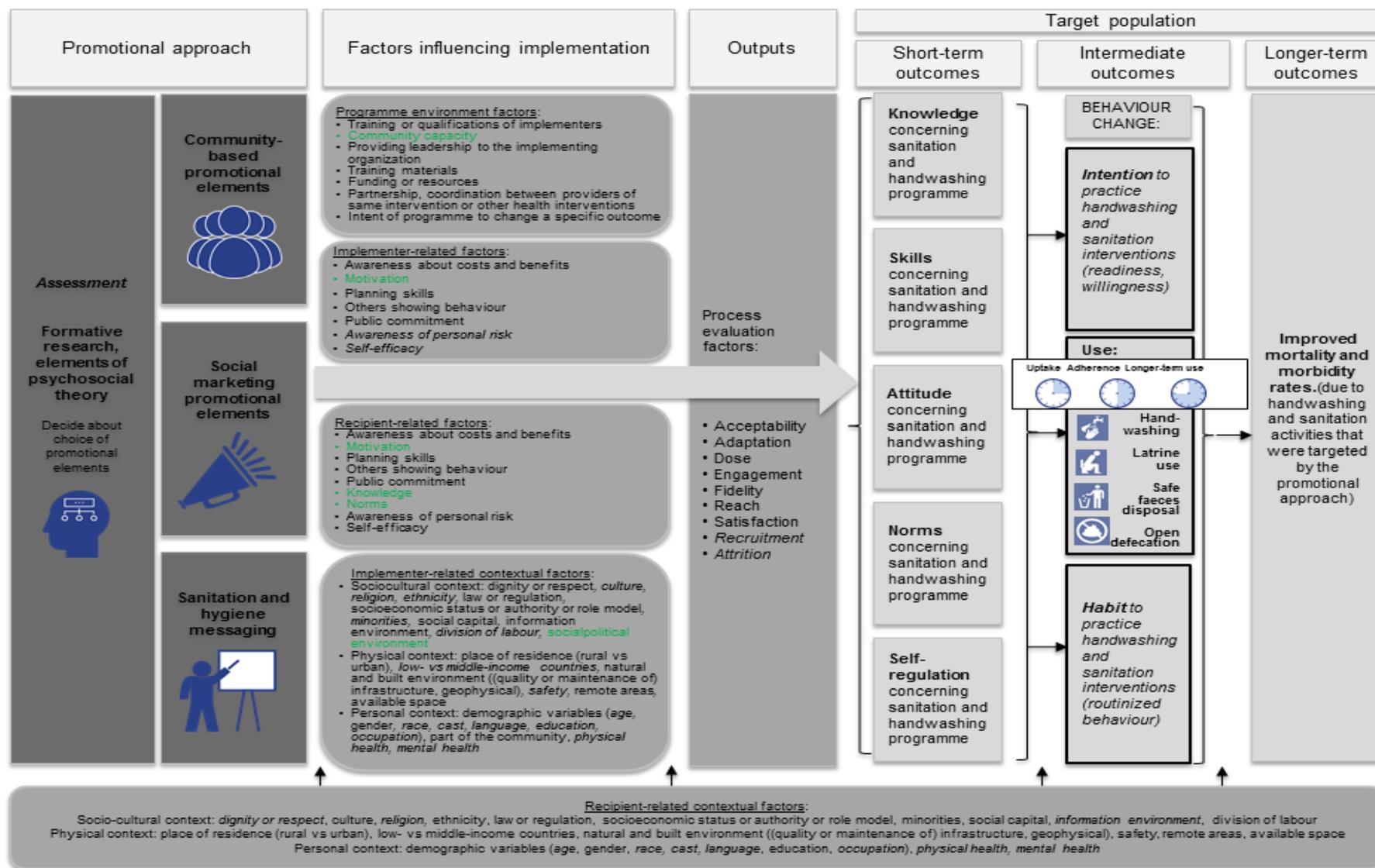
We built a theory of change (ToC) framework to illustrate the hypothesised causal links between handwashing and sanitation promotional approaches and their intended short-, intermediate- and long-term outcomes (Figure 2). The ToC was developed iteratively based on existing frameworks,¹⁸ as well as from input from the stakeholder engagement group members.

The ToC framework contains the four types of **promotional approaches** intended to induce handwashing and sanitation behaviour change (indicated in yellow): community-based approach, social marketing approach, sanitation and hygiene messaging, and other approaches using elements of psychosocial theory.

The promotional approaches are identified as promotional elements to indicate that a promotional approach can consist of several elements of different approaches. Approaches using elements of psychosocial theory were placed in an assessment box, indicating that these should be identified via formative evaluations (on a small scale) and then later incorporated in a broader promotional approach in larger-scale formative evaluations.

Implementation factors affecting the success or failure of such promotional approaches are also included in the ToC.

Figure 2: Theory of change framework



The promotional interventions' **short-term, intermediate and long-term outcomes** are shown in green boxes. Short-term outcomes consist of five 'behavioural factors' that underlie behaviour change: knowledge, skills, attitude, norms and self-regulation.

The intermediate outcomes are behaviours themselves: handwashing with or without soap, handwashing at key times (before eating, before food preparation, after visiting the toilet, after children's faeces disposal or cleaning a baby's bottom), latrine or toilet use, safe faeces disposal, and open defecation practice.

Behaviour change comprises 'intention', 'use' and 'habit', as defined in the RANAS model.¹⁹ Intention represents a person's readiness to practise a behaviour, i.e. how willing they are to implement a behaviour. Use refers to the execution of actions, and both the desired behaviour and competing behaviours must be considered. Use is further categorised as 'uptake' (during implementation), 'adherence' (12 months later) or 'longer term use' (12 months later). Habits are routinised behaviours that are executed in specific, repeating situations nearly automatically and without any cognitive effort.²⁰

Finally, longer term outcomes include health measures such as mortality and morbidity due to illness caused by faecal-oral transmission (e.g. diarrhoea, acute respiratory illness or gastrointestinal disease) and psychosocial well-being. Health outcomes are the endpoint outcomes in this causal chain, for which behaviour change is a prerequisite to achieve them.

Implementation factors affecting the success rate of a promotional approach are in blue boxes. These consist of six main categories:

1. Programme environment factors (e.g. training and qualifications of the implementer and coordination between providers of the same intervention).
2. Process evaluation factors (e.g. content, frequency, duration, coverage and reach of a programme).
3. Implementer-related factors (e.g. motivation and planning skills of the implementer).
4. Recipient-related factors (e.g. public commitment and self-efficacy of participants).
5. Implementer-related contextual factors (e.g. sex of the implementer).
6. Recipient-related contextual factors (e.g. culture and education level of participants).

4. Evidence

The programmes on which this report is based were conducted in 24 L&MICs. The programmes were implemented across various regions and countries (Figure 3), reaching varied target areas or settings (Figure 4) and using a variety of interventions (Figure 5). They also measured a range of different outcomes (Figure 6).

Figure 3: Geographic distribution of included studies

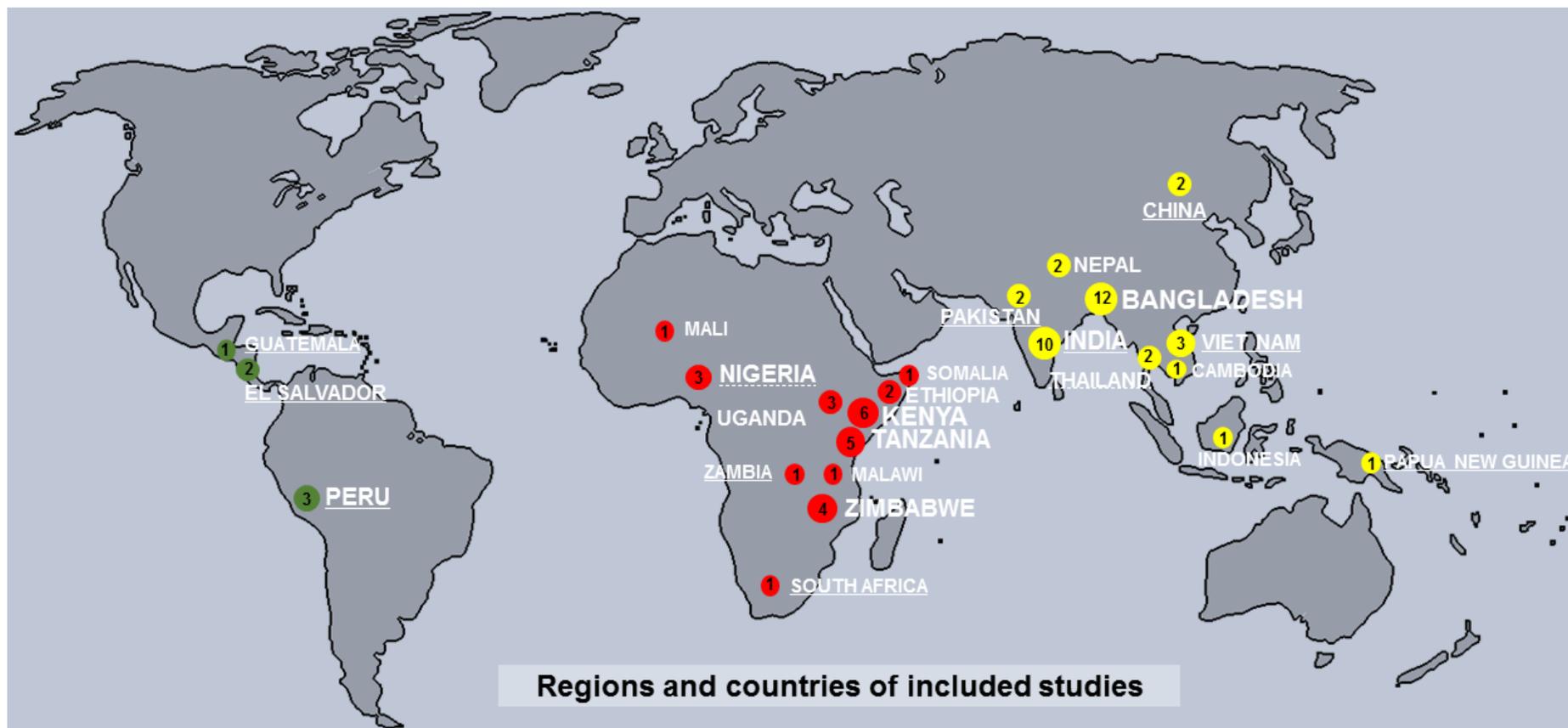


Figure 4: Distribution of areas targeted by included studies

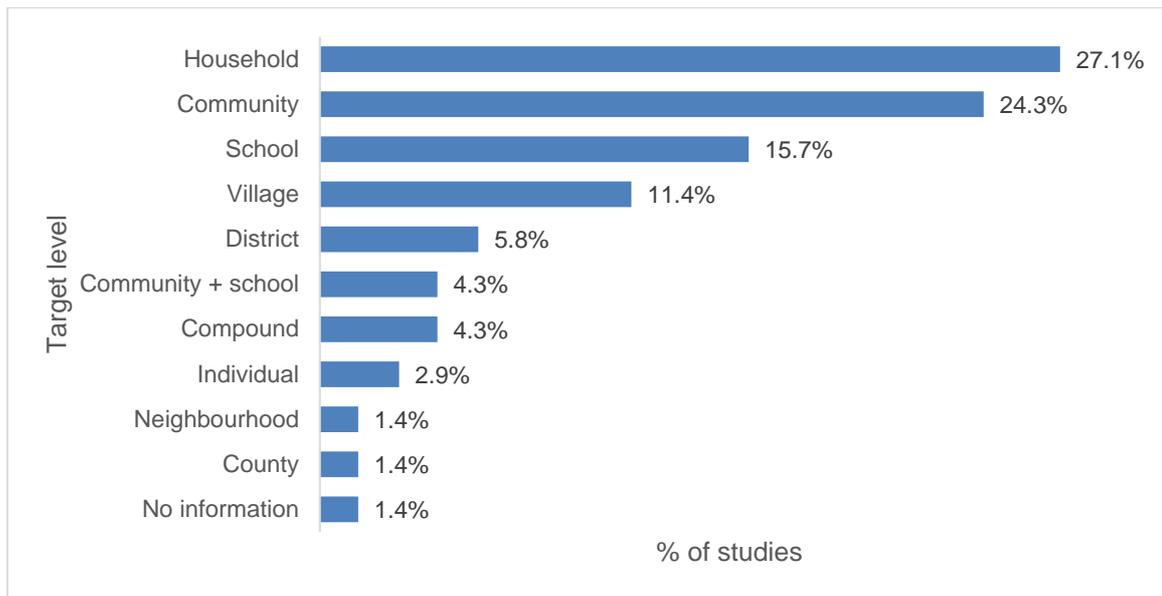


Figure 5: Distribution of included studies across intervention

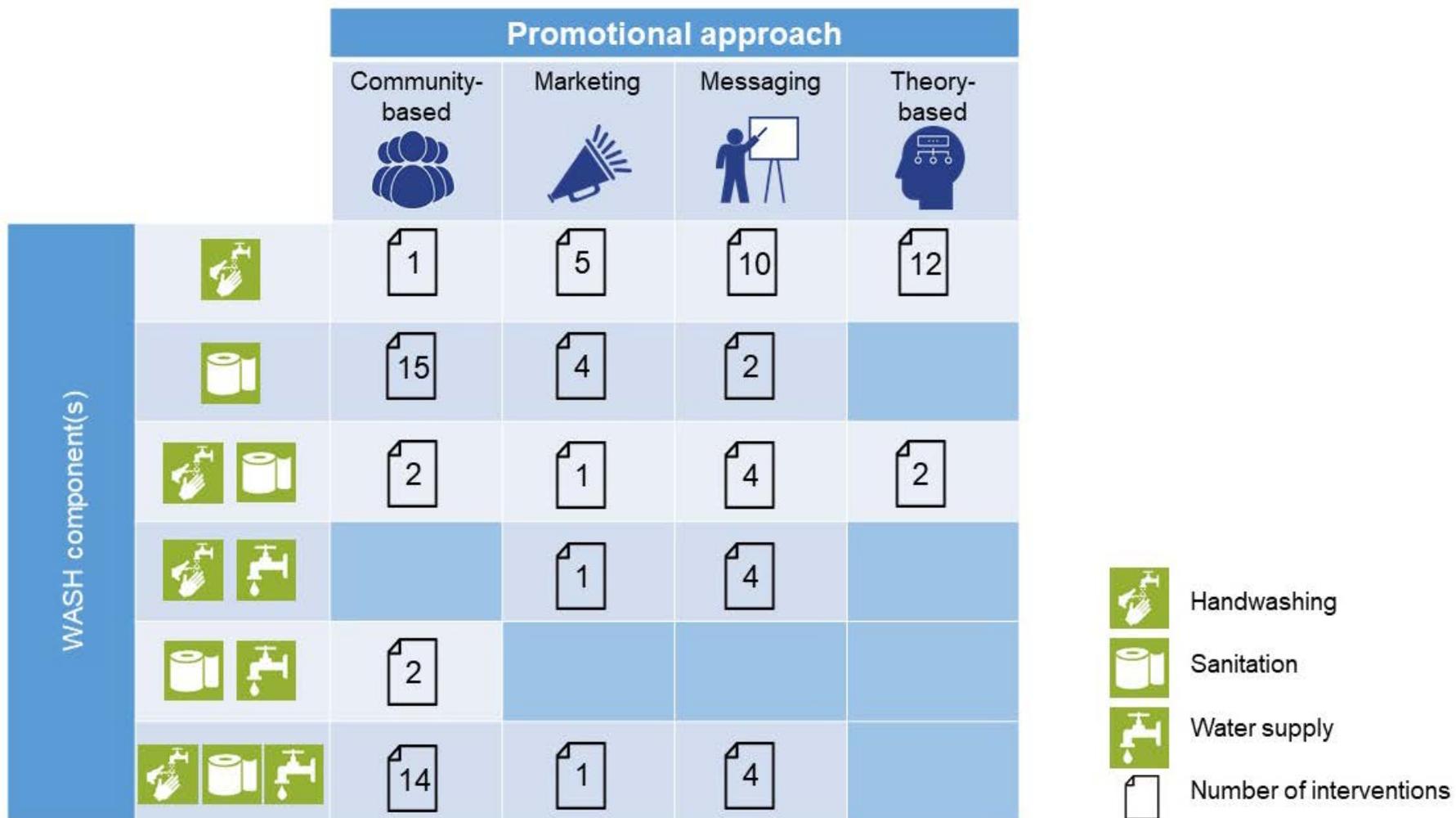
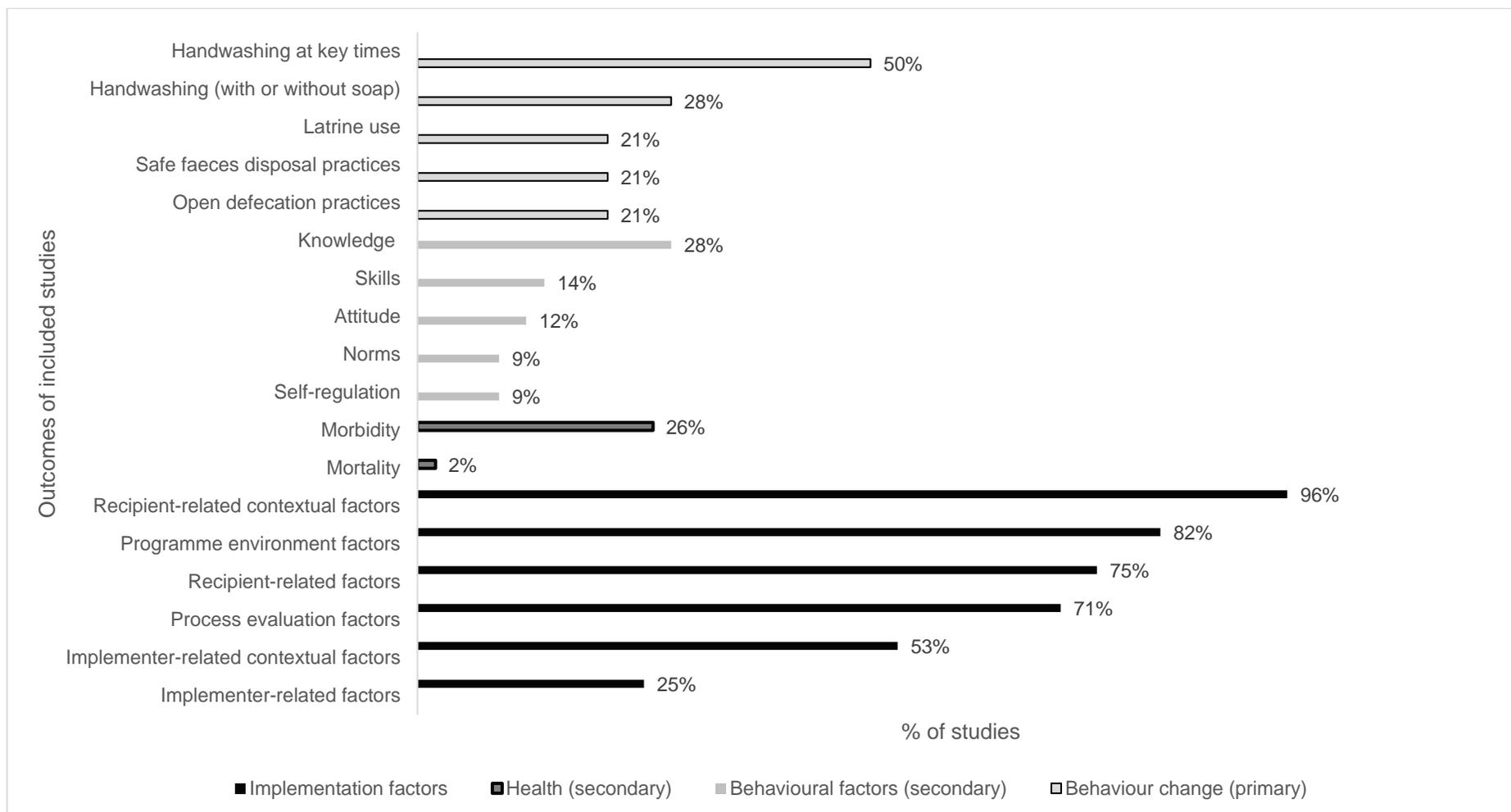


Figure 6: Distribution of included studies across outcomes



The majority of programmes and projects covered by studies included in this report were in Sub-Saharan Africa.

These include community-based interventions in Nigeria (EDEE intervention package and CLTS), Mali (CLTS), Zimbabwe (community health clubs, CLTS, and participatory hygiene and sanitation transformation [PHAST]), Ethiopia (Millennium Water Programme), Tanzania (National Sanitation Campaign and MTUMBA approach), Uganda (Rural Water and Sanitation project), Zambia (Hygiene and Sanitation Scaling-Up Project), Kenya (Water and Sanitation Programme) and South-Africa (Health Promotion and Disease Prevention Programme).

Sanitation and handwashing were promoted via sanitation and hygiene messaging in eight school-based interventions (e.g. the Nyando Integrated Child Health Education [NICHE] programme in Kenya, The Lushoto Enhanced Health Education Project in Tanzania and the Tippy Tap Handwashing programme in Uganda).

A few programmes used social marketing techniques (e.g. sanitation in peri-urban areas in Malawi or handwashing with soap in Tanzania) or elements of psychosocial theory (use of public commitment in addition to education, infrastructure promotion, and/or group discussions in Ethiopia and Uganda) to promote sanitation and/or handwashing.

Twenty-four sanitation and handwashing programmes were implemented in four South Asian countries: India, Nepal, Pakistan and Bangladesh. In India and Bangladesh, 11 community-based interventions implemented in rural areas included Sanitation, Hygiene Education and Water Supply in Bangladesh (SHEWA-B); BRAC; the Water and Sanitation Partnership Project; and India's Total Sanitation Campaign.

Six programmes used sanitation and hygiene messaging as the promotional approach: two handwashing promotion interventions in households in Pakistan, three educational interventions in urban compounds and communities and rural villages in Bangladesh, and one big campaign in Indian rural villages (The Great WASH Yatra handwashing awareness-raising campaign). The SuperAmmma programme (promoted based on elements of psychosocial theory) was implemented in rural villages and schools in India.

In South East Asia, eight sanitation and handwashing programmes were implemented. They included community-based interventions in rural households of Papua New Guinea (community-based WASH intervention) and in rural communities of Viet Nam (the Water Supply, Sanitation, Hygiene Promotion and Health in Viet Nam (SANIVAT) project).

Three social marketing programmes took place in this region (a sanitation marketing campaign in rural Indonesian villages, a hygiene school intervention in Thailand, and the Cambodia Rural Sanitation and Hygiene Improvement Program (CR-SHIP). The two sanitation and hygiene messaging programmes in this region were the Household Influenza Transmission Study (HITS) in urban Thailand and a school-based handwashing with soap Intervention (HWWS) in rural Viet Nam.

The evidence base is more limited for Latin America and the Caribbean and East Asia. The five programmes implemented in the first one comprised a community-based school intervention in El Salvador, community health clubs in Haiti, a water treatment and handwashing campaign in Guatemala, and marketing and sanitation and hygiene

messaging interventions in Peru (Global Scaling Up Handwashing Project and growth and development programme, respectively). Interventions in East Asia consisted of a sanitation marketing programme and a health education intervention, both in rural China.

5. Effectiveness and implementation of sanitation and hygiene behaviour change programmes

5.1 Community-based approaches

Community-based approaches involve and engage community members with the aim of optimising handwashing and sanitation behaviour changes. Typically, shared decision-making is an important part of this approach.

Community-based approaches were evaluated in 13 effectiveness studies (review question 1) and 18 implementation studies (review question 2). The majority of studies investigated the effects of community-based approaches using the following approaches:

- CLTS in Bangladesh, India and Mali;²¹
- Community-based interventions in El Salvador and Nigeria;²² and
- Community health clubs or women's groups in Zimbabwe and Bangladesh.²³

Four studies conducted in Bangladesh, India and Papua New Guinea did not formally describe their approach as community-based, but clear elements of community involvement and engagement were described.²⁴

The effectiveness evidence on community-based approaches in improving handwashing and sanitation behaviour (Figure 7) can be summarised as follows:

- Community-based approaches probably improve overall **latrine use, safe faeces disposal and open defecation** practices during implementation and at 12-month follow-up. However, programme effects were not seen for some specific outcomes (ending of open defecation by boys, latrine use by children aged 2–5 years);
- Community-based approaches may improve the uptake of **handwashing with soap**, both during implementation and at 12-month follow-up.
- No studies evaluated the effects of community-based approaches on **skills, attitudes, norms and self-regulation**;
- Several studies were not able to find **long-term effects** on handwashing or sanitation outcomes;
- Community-based school programmes in rural El Salvador and India significantly improved **knowledge** of key handwashing times,²⁵ while the effects on knowledge of the causes and consequences of diarrhoea were mixed; and²⁶
- Community-based interventions showed no consistent effect on **diarrhoea** prevalence, although a decrease in acute **respiratory tract illness** was found for India's Total Sanitation Campaign²⁷ and participatory women's groups in Bangladesh.²⁸

Figure 7: Effectiveness of promotional activities in included studies

BEHAVIOURAL CHANGE OUTCOMES	INTERVENTION											
	 Community-based			 Marketing			 Messaging			 Theory-based		
	Uptake	Adherence	Longer term use	Uptake	Adherence	Longer term use	Uptake	Adherence	Longer term use	Uptake	Adherence	Longer term use
 Handwashing	Yellow	Yellow	Grey	Grey	Grey	Grey	Green	Orange	Red	Yellow	Green	Grey
 Latrine use	Grey	Yellow	Yellow	Grey	Green	Grey	Grey	Grey	Grey	Grey	Grey	Grey
 Safe faeces disposal practices	Grey	Green	Yellow	Grey	Grey	Grey	Grey	Red	Grey	Grey	Grey	Grey
 Open defecation practices	Green	Green	Grey	Grey	Green	Grey	Red	Red	Grey	Grey	Grey	Grey

[Intervention] probably improves or reduces [behavioural change outcome] (moderate quality or certainty evidence)

[Intervention] may improve or reduce [behavioural change outcome] (low quality or certainty evidence)

[Intervention] probably makes little or no difference to [behavioural change outcome] (moderate quality or certainty evidence)

[Intervention] may make little or no difference to [behavioural change outcome] (low quality or certainty evidence)

We are uncertain whether [intervention] improves or reduces [behavioural change outcome] as the quality or certainty of the evidence has been assessed as very low

Effect of [intervention] unknown because no or only limited evidence (from 1 study) available

5.1.1 Effectiveness of adding incentives to the community-based approach

Only one study, in rural Bangladesh, compared the effectiveness of a community-based intervention with and without subsidies (latrine vouchers). Researchers found that the additional subsidies incentives were linked with significantly bigger impacts on reducing open defecation.²⁹

5.1.2 Comparison of different community-based approaches

One study in Zimbabwe compared two community-based approaches: community health clubs versus CLTS. The approaches were equally effective in improving latrine use and open faeces disposal,³⁰ but no information was available to quantify the effects of either approach. We conclude that it is important to involve the community when designing behaviour change programmes, but currently there is no comparative effectiveness evidence about which method is better.

5.1.3 Barriers to and enablers of implementation

Studies also described the implementation of community health clubs, CLTS or other approaches with community involvement in Sub-Saharan Africa (Nigeria, Ethiopia, Kenya, South Africa, Tanzania, Uganda, Zambia and Zimbabwe), South Asia (Bangladesh and India), Latin America and the Caribbean (El Salvador and Haiti) and South East Asia (Viet Nam).

We identified barriers to and enablers of implementing community-based programmes for primary implementers and participants. Since implementing community-based approaches typically involves community members, we also see these participants as secondary implementers.

We identified the following enablers and barriers for **primary implementers**:

- Enablers: where the implementer is part of the community and a representative for the community; the reliability and accountability of the implementer; the implementer developing a culture of cooperation; the use of people showing the behaviour in real life as a teachable moment; and the enthusiasm of community leaders
- Barriers: a lack of communication or information from implementers to participants, and a lack of implementer training in participatory development methods
- Sex and gendered norms could function either as a barrier or as an enabler because villagers sometimes want to discuss private issues with an implementer of the same sex

We identified the following enablers and barriers for **secondary implementers (participants)**:

- Enablers: introduction of competition between participants or villagers; forming identity within a health club (e.g. using a club name and slogan); participants having responsibility and a sense of ownership; and conducting income-generating activities at health clubs
- Barriers: participants feeling undervalued by being asked to perform voluntary work as part of an initiative
- Sex and gendered norms could function as a barrier or enabler (e.g. men not having time to participate in community-based WASH activities or women not having the same decision-making power as men)

5.2 Social marketing approaches

Social marketing approaches make use of commercial enterprise techniques to create demand. Such approaches were described in seven effectiveness studies (review question 1) and two implementation studies (review question 2) included in this review:

- Six studies conducted in India, Tanzania, Indonesia, Peru and Thailand evaluated the effects of using a marketing campaign or social marketing techniques or interventions; and³¹
- One study from Guatemala did not describe its approach as a formal social marketing approach but used several elements that are generally part of a social marketing approach (infrastructure promotion and incentives).³²

The evidence on the effectiveness of social marketing approaches on handwashing and sanitation behaviour (Figure 7) can be summarised as follows:

- Social marketing approaches probably improve **latrine use** and decrease **open defecation** until 12 months after implementation. But social marketing was only effective when sanitation and handwashing interventions were combined, as shown in an intervention in rural households in Tanzania.³³ This was not the case for handwashing or sanitation interventions alone;³⁴
- The effect of social marketing approaches on **handwashing** behaviour and **safe faeces disposal** is uncertain;
- Effects on **knowledge** about the causes of diarrhoea could not be demonstrated in two studies conducted in Indonesia³⁵ and Peru.³⁶ General handwashing knowledge improved, albeit only in specific contexts, i.e. only in combination with a sanitation intervention in rural households in Tanzania or only when targeting the community as well as schools in Peru;³⁷
- Consistently positive effects on **skills, attitude** and **norms** were not found;
- No studies evaluated the effects of social marketing approaches on **self-regulation**; and
- Evidence does not suggest that social marketing approaches reduce **illness**.

5.2.1 Comparison of different social marketing approaches

When comparing two social marketing approaches in rural Chinese villages, using a local builder social marketing approach resulted in fewer households refusing to use the new toilet when compared to an approach using an outside building team.³⁸

5.2.2 Effectiveness of different communication strategies

In rural Tanzanian households, a mass media campaign alone had no effect on handwashing behaviour and behavioural factors (knowledge), whereas a combination of mass media and community involvement had some effects on handwashing behaviour and knowledge.³⁹

5.2.3 Barriers to and enablers of implementation

Only two studies, of households in rural Cambodia and in urban Malawi, reported on enablers of, and barriers to, the implementation of social marketing approaches.⁴⁰

For **implementers**, we identified partnerships with government and NGOs and implementers' actual involvement and accessibility as factors enabling implementation. We identified an implementer's inappropriate attitude as a barrier to it.

For **participants**, additional income generation and the durability of programme infrastructure were enablers to implementation. Barriers to implementation included a lack of financial knowledge and factors relating to the use of sanitation loans (e.g. high interest rates, extensive processing times and application processes, and loans being too expensive and not reaching the poor).

5.3 Sanitation and hygiene messaging

Sanitation and hygiene messaging is a predominantly directive educational approach, mainly comprising one-way communication designed to help individuals and communities improve their health by increasing their knowledge and/or skills.

Sanitation and hygiene messaging was described in 15 effectiveness studies (review question 1) and 5 implementation studies (review question 2):

- Fourteen studies across South Asia (Bangladesh, India and Pakistan), South East Asia (Thailand), East Asia (China), Latin America (Peru) and Sub-Saharan Africa (Uganda) evaluated the effects of sanitation and hygiene messaging;⁴¹ and
- Of these, four studies described school-based interventions in Sub-Saharan Africa (Nigeria, Kenya and Tanzania).⁴²

The effectiveness evidence for sanitation and hygiene messaging on handwashing and sanitation behaviour (Figure 7) can be summarised:

- Sanitation and hygiene messaging may improve **handwashing with soap** during programme implementation. Studies could not find post-implementation or longer term effects;
- Sanitation and hygiene messaging may make little or no difference on **sanitation** outcomes. Studies found no effects on latrine use and open defecation. In the one study examining the effect on safe faeces disposal (the Growth and Development Programme in urban communities in Peru), results were inconsistent;⁴³
- Sanitation and hygiene messaging did not consistently improve **knowledge** of health, personal hygiene and the causes of diarrhoea;
- No consistent effect on **skills** and **attitude** was shown; and
- In one handwashing awareness-raising campaign in India (the Great WASH Yatra), there were no effects on **norms** and **self-regulation**.⁴⁴

5.3.1 Comparison of different sanitation and hygiene messaging approaches

When comparing two types of sanitation and hygiene messaging, using a poster contest showed no added benefit on handwashing behaviour compared to a standard school-based education intervention in rural Kenya.⁴⁵

5.3.2 Barriers to, and enablers of, implementation

Five studies reported on enablers of, and barriers to, sanitation and hygiene messaging: three at the school level in rural Kenya,⁴⁶ Tanzania⁴⁷ and Viet Nam,⁴⁸ one at community level with short message service messages in Somalia,⁴⁹ and one in urban Peru with video and pamphlet messages.⁵⁰

We identified the following enablers and barriers for **implementers**:

- Enablers: using some (inter)active teaching methods with children; innovative messaging; longer interventions; and being able to influence parents via their children

- Barriers: messages (including short message service) that were too long or not culturally sensitive; passive teaching methods in schools; lack of longer intervention periods and lack of frequent reminders when working with children; overlaps between school-level and community interventions; and difficulty in disseminating behaviour from children to parents because it was felt improper for children to teach parents

For **participants**, poverty, illiteracy, and, in case of a school intervention, lack of family interest and involvement are potential barriers.

5.4 Approaches using psychosocial theory

Theory-based promotional approaches focus on behavioural factors derived from a psychosocial theory. Approaches based on elements of psychosocial theory were described in six effectiveness studies (review question 1) and three implementation studies (review question 2). Four studies examined the effects of psychosocial theory approaches on behaviours. These studies used different psychosocial theories:

- The theory of planned behaviour to develop a handwashing promotion intervention in Nepal;⁵¹
- The RANAS model intervention, including group discussions with(out) public commitment in Uganda;⁵²
- The SuperAmma approach in rural households in India;⁵³ and
- An approach based on the stages of change theory to develop a soap and hand sanitiser intervention in rural compounds in Bangladesh.⁵⁴

The effectiveness of approaches using elements of psychosocial theory on handwashing and sanitation behaviour (Figure 7) can be summarised:

- Using elements of psychosocial theory may improve **handwashing with soap** at various key times, as in a handwashing promotion programme in Nepal and a soap and hand sanitiser intervention in Bangladesh,⁵⁵ as well as up to 12 months after the SuperAmma Programme was implemented in India.⁵⁶ However, this effect could not be demonstrated for all key times;
- Evidence from a study in Uganda (group discussions with or without public commitment) showed mixed effects on behavioural factors, such as **knowledge, attitude and skills**;⁵⁷
- No studies were available on norms and self-regulation; and
- Limited evidence showed a reduction of **diarrhoea** following approaches using elements of psychosocial theory.

5.4.1 Effectiveness of adding elements of psychosocial theory to existing hygiene messaging

Several specific aspects of psychosocial theory were studied separately, including infrastructure promotion, public commitment and using elements of disgust. Focusing on infrastructure promotion and using reminders (in rural households in Ethiopia and a school in Uganda) resulted in significant improvements in handwashing and several behavioural factors.⁵⁸ Focusing on public commitment⁵⁹ and using feelings of disgust⁶⁰ did not alter handwashing behaviour but had some effect on behavioural factors and knowledge of key handwashing times, respectively.

5.4.2 Comparison of different approaches based on psychosocial theory

A study conducted in rural India found no difference in handwashing when comparing a motivational intervention followed by a self-regulatory intervention versus a self-regulatory intervention followed by a motivational intervention.⁶¹

5.4.3 Effectiveness of different communication strategies

Interpersonal communication in addition to a mass-media campaign showed greater improvements in handwashing behaviour and morbidity, compared to a mass-media campaign only, in a programme based on psychosocial theory conducted in rural communities in Viet Nam.⁶²

5.4.4 Enablers of and barriers to implementation

We did not identify any enablers or barriers specifically related to using elements of psychosocial theory. However, two studies using a community-based approach reported the use of emotive factors, such as shame and disgust, as an enabler for implementation.

5.5 Summary of effectiveness and implementation evidence

Community-based approaches are probably effective in improving sanitation behaviours and may be effective in improving hygiene. Context plays a major role in the implementation, and therefore the effectiveness, of community-based programming. Prior assessment of the context before implementation will provide more information on which influencing factors to take into account and which elements should be included in the promotional strategy.

Social marketing approaches combining sanitation and handwashing interventions are probably effective in improving sanitation behaviours up to 12 months after implementation. Context again plays an important mediating role, so a pre-assessment phase that defines contextual elements is important for effective implementation.

Sanitation and hygiene messaging is probably not effective in improving sanitation and hygiene behaviours.

Approaches using psychosocial theory may be effective in improving hygienic behaviours, but because there are very few studies based on these new approaches it is not possible to be conclusive. Using elements of psychosocial theory is a research-driven approach, currently only used in small-scale research rather than large-scale programmes. It will be crucial to include formative research before designing a programme to identify relevant elements of psychosocial theory and contextual factors influencing implementation.

6. Implications

6.1 Implications for policy

Promotional approaches targeting handwashing and sanitation behaviour are complex programmes based on several promotional elements and should be adapted to the context of the environment where they are implemented. We conclude that no single promotional approach is more effective than all others in improving all outcomes. In other words, one size does not fit all.

However, we find evidence of community-based approaches and social marketing improving sanitation behaviours (increasing latrine use and reducing open defecation) up to 12 months after implementation. The evidence does not support use of messaging approaches, such as health communication, to affect any behaviour change beyond the implementation period.

We identified several elements of effective behaviour promotion:

1. Involving the community (i.e. a community-based approach) in the different stages of designing and implementing sanitation programmes, therefore resulting in tangible actions taken by community members
2. Using social marketing elements in sanitation programmes (i.e. determining people-centred needs, stimulating demand for handwashing and sanitation options, delivering satisfaction more effectively and efficiently than competitors, working with local builders and other entrepreneurs, considering consumer preferences and desires)
3. Incorporating elements from psychosocial theory in the promotional approach to handwashing interventions (e.g. a design using social cognitive elements or theoretical elements of behaviour change, such as disgust as a motivator to avoid infectious disease)
4. Using interpersonal communication as part of a communication strategy. Sanitation and hygiene messaging that emphasise one-way communication seems insufficient to achieve a long-term effect on handwashing and sanitation (latrine use, safe faeces disposal and reducing open defecation)

It is difficult to generalise findings on using incentives as part of a promotional approach since we found a limited number of studies that used a wide range of incentives (from soap bars to food over financial subsidies). One study reported promising results when using subsidies as part of a community-based approach in Bangladesh.

Evidence on using elements derived from psychosocial theory was only found in small-scale studies of implementing a handwashing programme. Nevertheless, such promotional elements could be added to a broader programme (e.g. in determining appropriate methods of sustaining hygiene and sanitation behaviours). Determining which elements of psychosocial theory are relevant in a certain context would need to be part of a pre-intervention assessment or pilot phase.

6.2 Implications for programming

Evidence showed that the effects of handwashing and sanitation promotional approaches varied due to differences in contexts and programmes. More in-depth,

formative research during the assessment phase, leading to the selection of the most appropriate promotional elements and adapting a programme to the local context, seems to be a critical step for achieving sanitation and handwashing behaviour change.

There is a lack of standardised behaviour outcome assessment in terms of outcome measures (indicators) and methods of outcome measurement. However, we identified several effective elements of behaviour promotion. Current best practice in the WASH sector is to use a combination of approaches, as we learned from key stakeholders in our stakeholder engagement advisory group (section 6.4).

In addition to the characteristics of a certain promotional approach, a wide variety of influencing factors should be taken into account during implementation. Key enablers and barriers need to be well understood when planning an intervention and selecting the most appropriate combination of promotional approaches:

- The programme environment (funding, partnership and coordination);
- The implementation process or process evaluation factors (acceptability, dose, reach and fidelity);
- Implementer-related contextual factors (leadership, attitude or sex); and
- Participant-related contextual factors (motivation, others showing behaviour, culture and level of education).

We identified key enablers and barriers for each of these approaches, revealing them to be equally critical in selecting successful promotional approaches for influencing hygiene-related behavioural change. These influencing factors are likely to explain the success or failure of a promotional programme.

For **community-based approaches**, having a facilitator, such as a health promoter or community leader who is part of and representative of the community is very important. The implementer's attitude (e.g. being enthusiastic, responsible and providing enough information) seems important, and creating a culture of cooperation facilitates project implementation. Where the implementer is part of the community and thus has a bond with participants, the implementer's sex seems to be important (e.g. women would rather trust a female implementer when they want to discuss female hygiene and private issues, such as birth control).

For **social marketing approaches**, using sanitation loans could result in barriers to implementation in some cases, since this has been seen as a slow process that can be expensive, thus not reaching the poor or people lacking financial knowledge. Additional income generation would be an important enabler for this type of approach.

In **sanitation and hygiene messaging**, commonly called 'hygiene education', it seems key that messages are delivered using active teaching methods and that messaging is innovative and culturally sensitive. In school-based interventions with children, the duration of the intervention and involving parents are positive influencing factors.

Incorporating **elements of psychosocial theory** is a promising approach to promoting behaviour change. Since existing evidence is from studies of pilot interventions, elements should be identified and tested on a smaller scale before incorporating them in a broader promotional approach at scale.

In summary, since contextual elements play a major role in implementation, formative research to assess the context and situation will help to determine which influencing factors to take into account and which elements to include in a promotional strategy. This key implication for programming is reflected in the ToC as a separate 'assessment step' (Figure 2).

6.3 Implications for future research

There is an urgent need to use more uniform methods to measure outcomes (type of outcomes, method and timing of assessment). This will facilitate drawing conclusions on the effects of promotional approaches in the future.

In addition, it is important to further assess the enablers and barriers identified in this review, alongside quantitative analyses of promotional approaches. Well-conducted experimental studies (randomised controlled trials) on the effectiveness of handwashing and sanitation promotional approaches are still lacking. Given the national and global scaling up of approaches such as CLTS, there is an urgent need for more rigorous impact evaluations of the effectiveness of these programmes in different contexts.

A small number of existing studies show that mixed method evaluations of community-based approaches using strong randomised designs, which collect credible data on attitudes and behaviour change over time, can be useful in informing programme design. Impact evaluations can be particularly useful when they test alternate combinations of interventions, or different approaches to implementation, in order to ensure that programmes are implemented in the most effective way possible.

More studies also need to answer controversial policy debates, such as the contexts in which subsidies should be incorporated into sanitation programmes and when they should not.

6.4 Promoting uptake and use of this systematic evidence

We actively engaged with a diverse stakeholder engagement advisory group to inform this review and help create demand for its findings. As champions, they helped promote access to key actors and understanding and using the review findings. As part of that effort, we worked with them to create a specific dissemination and uptake plan for different audiences (researchers, practitioners and policymakers) via different types of documents (e.g peer-reviewed publications, policy briefs and infographics) and communication channels (e.g. conferences, electronic newsletters and social media).

The practitioners in this group valued the systematic identification of enablers and barriers, which enables them to take these into account when designing and implementing programmes in the future.

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