

Behaviour Insight Shadowing: examining daily life settings for the prevention of neglected tropical disease

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Background: Adaptation of daily behaviours can play a significant role in disease prevention. Behaviour Insight Shadowing (BIS) is a novel qualitative methodology, designed and used for the first time in this study, which applies the Behaviour Settings Theory as a framework for interrogating daily life patterns and identifying optimal opportunities for behaviour change.

Methods: Nine participant households were shadowed for a day, in Nigeria, the Democratic Republic of Congo and Guinea Bissau. Shadowing involved close ethnographic observation alongside integrated interviewing techniques, and then followed up with a semistructured cross-examination at the end of the observation period. Real-time insights about the attitudes and behaviours of households at high risk of neglected tropical diseases (NTDs) were then categorised by context and analysed thematically. Themes were then applied to a framework of understanding specific to NTD behaviour change and therefore informing more effective social behaviour change communications (SBCC) design. The methodology is adaptable, simple to replicate and produces in-depth, qualitative ethnographic stories.

Results: Findings highlighted important spatial and temporal aspects of target behaviours, with key differences between private and group activities. Ethnographic stories illustrated hierarchies between economic, social and temporal drivers of behaviour, and highlighted the ways in which health messages were introduced and responded to within and between households. This provided cultural levers for more impactful SBCC interventions that could tie into existing norms.

Conclusions: BIS methodology, as an adaptive ethnographic approach, provides valuable insights that enhance the findings from surveys and focus groups, specifically in the context of NTD prevention. Contextual categorisation of relevant daily behaviours is key to developing culturally appropriate SBCC and in determining whether such intervention needs to be in alignment with everyday routines and attitudes, or in disruption of them.

Keywords: behaviour change, Behaviour Settings Theory, behavioural insights, ethnography, neglected tropical disease, touchpoints.

Introduction

The WHO defines neglected tropical diseases (NTDs) as a diverse group of communicable diseases that prevail in tropical and subtropical environments, affecting >1.5 billion people. The Ascend West and Central Africa programme (hereafter called Ascend)¹ consisted of various research and development projects. This article focuses on the methodology for research to inform the specific component of behaviour change interventions targeting four specific NTDs: trachoma, onchocerciasis, schistosomiasis and lymphatic filariasis. The objective of the research was to

generate in-depth, culturally specific insights to inform targeted content for the development of social behaviour change communications (SBCC).

NTD control initiatives have typically relied on mass drug administration (MDA), morbidity management and disability prevention focused on surgeries in the case of trachoma and lymphatic filariasis. Their success in reducing the incidence and prevalence of NTDs is essential in lowering the burden of disease and reducing transmission. However, the gains made are fragile.² There is a need for sustainable, long-term prevention approaches. Even where water, sanitation and hygiene (WASH) facilities are

improved, they are often underutilised because attitudes and behaviours have not changed. Research shows behaviour change is ‘essential to creating sustainable services and maximising the public health impact of our investment in water and sanitation’.³

Behaviour change communications in the prevention of NTDs

The behaviour change element of NTD prevention is still relatively new and far less standardised in its design and implementation compared with established drug treatment approaches. An additional gap is comparatively less funding invested in evaluation to effectively measure change in behaviour and to make the case for further investment.⁴ However, the narrative is moving towards more holistic approaches to eliminate NTDs. For example, Community Led Total Sanitation has a major behaviour change component.⁵

There is widespread recognition of the importance of WASH in preventing the contraction and spread of NTDs.⁶ WASH is an effective way to reduce exposure to disease vectors. WASH practices such as handwashing with soap and the use of toilet or latrines (rather than defecating in the open) can reduce the risk of infection and spread of NTDs. Furthermore, whereas MDA is primarily a vertical disease management strategy, where each affected person is usually delivered a prescribed drug that works to control a specific disease, WASH approaches may prevent multiple infectious diseases.

However, improving access to WASH infrastructure alone does not necessarily lead to a reduction of disease incidence. Without WASH behaviour change, as WaterAid points out, ‘toilets might not be used, water could still be contaminated, food will continue to be polluted and dignity will be compromised’.⁶ For example, in a nationally representative study conducted in Uganda in 2019, researchers found that improved access to WASH facilities, such as latrines, did not lower the prevalence of schistosomiasis in the community.⁷ Instead, the lower prevalence of schistosomiasis was associated with changing attitudes to open defecation and increased toilet use.

Identifying high-risk behaviours can also provide evidence to suggest useful ‘touchpoints’. These touchpoints could be described as commonplace moments buried within the fabric of daily routine where SBCC interventions could be effectively deployed to target audiences, to encourage the appropriate habit formation.⁸

WASH behaviours are most likely to be performed where communities inhabit or have access to an ‘enabling environment’. According to UNICEF (United Nations Children’s Fund), at country level an enabling environment for WASH is one that creates the conditions for a country to have sustainable, at-scale WASH services.⁹ Enabling environments consist of good sanitation infrastructure, and close geographic proximity and access to clean water. An enabling environment for WASH might include WASH infrastructure such as access to water, latrines, toilets, waste disposal facility and soap, water sterilisation agents, insect repellent spray, mosquito net and adequate clothing.⁹ These are fundamental features that support positive WASH for local populations. Enabling environments are also heavily influenced by the economic, government and political determinants of a chosen location.

Guiding principles in the development of Behaviour Insight Shadowing methodology

A review of extant literature for this research suggested two key guiding principles for the development of NTD SBCC.⁴ The first guiding principle was that it would be important to improve knowledge alongside optimal habit formation; improving awareness by itself is not powerful enough to shift behaviour or sustain behavioural change. The second guiding principle was that culture can be used as leverage. Emotional triggers help to sustain engagement, and these are likely to be set within cultural contexts, particularly in more collectivist societies where positive aspects of emotion, such as a sense of pride and sense of responsibility, can drive behaviour change.¹⁰

Underpinning methodology with Behaviour Settings Theory

In recent years, Behaviour Centred Design (BCD) put forward a central ethos saying that all behavioural interventions should begin by examining people’s behaviour through primary audience insight rather than attempting to retrofit a programme to a known problem. BCD does this by drawing on the Behaviour Settings Theory, which considers that all behaviours occur in a setting.¹¹ A behaviour setting is comprised of seven components, defined below with examples relevant to this study:

- 1) Stage: location of behaviour (e.g. bathroom, public toilet or river in relation to NTDs).
- 2) Infrastructure: services required and available in the environment (e.g. running water).
- 3) Prop: items that help to perform the behaviour (e.g. soap, mosquito nets).
- 4) Routine: repeated behaviour (e.g. washing face when washing hands).
- 5) Norms: social expectations (e.g. attitude towards open defecation).
- 6) Role: the enactors of the behaviour (e.g. mothers, farmers [those most at risk of NTDs]).
- 7) Competencies: knowledge, compounded by attitudes and beliefs.

The framework, although not exhaustive, does provide a starting point for mapping the presence of these components as they relate to a chosen NTD-prevention behaviour. The framework also affords a high degree of flexibility; any of the target WASH behaviours or disease-prevention behaviours related to NTDs might be viewed through it. There is a degree of overlap between each component. The framework ‘links human and non-human factors together through regulatory forces such as normative rules and the recognition that physical structures and objects are often designed to facilitate particular kinds of behaviour’.¹²

In the case of WASH behaviours, enacting WASH best practice is built on the premise that the enactor of the behaviour has access to the required infrastructure and props (or an ‘enabling environment’) in addition to appropriate knowledge, for example, of adequate handwashing practice or mosquito net usage. The

framework also helps to identify the key components upon which a behaviour change communication programme would be able to impact and exert influence: the routines (daily habits), norms (communal activities), roles (gender differences), competencies (related to knowledge and ability) and props (e.g. wash buckets or face soaps).

Purposefully for this study, Behaviour Insight Shadowing (BIS) was developed as a bespoke qualitative methodology, enabling the use of Behaviour Settings Theory to detail the everyday contexts in which target behaviours may occur. This paper summarises the trialling of this approach in nine diverse settings across Nigeria, Democratic Republic of Congo (DRC) and Guinea Bissau, and demonstrates that BIS can provide valuable contextual insights.

Methods

BIS was developed by researchers at M&C Saatchi World Services research team and this study is, as far as we are aware, the first to apply it. It addresses the gap between behaviours reported during a survey or group setting, and the realities of the everyday contexts in which behaviour manifests. BIS was employed as a bespoke approach to understanding 'behaviour in context' through an ethnographical approach with local families. Ethnographic research has been utilised for decades but is often costly due to the lengthy time usually required in the field. Typically, a researcher would immerse themselves in the participant's environment over a substantial period of time, years in some cases. For many research applications, this is impractical.¹³ BIS methodology provides a more acute ethnographic approach, where WASH behaviours intrinsic to daily habits could be observed during 1 d with selected families. In addition, BIS sought to address potential bias. Social desirability bias refers to the tendency of research subjects to give socially desirable responses instead of choosing responses that are reflective of their reality.¹⁴ The added value of BIS was that it enabled the observation of relevant behaviours, within the contexts of everyday lives, but also provided an opportunity to reflect and discuss the observed behaviours with participants in real time, and question the impact of social desirability if necessary.

For this research, BIS methodology was integrated within a mixed methodology study, briefly outlined here. Communities from within three programme countries were purposively selected; three from Nigeria (English speaking), three from the DRC (French speaking) and three from Guinea Bissau (Portuguese speaking). The country selections were made based on the scale of the NTD programme in these countries, the mix of languages and to gain insights from communities with co-endemicity of at least three of the four NTDs—and therefore high-priority areas for intervention. Data were collected throughout February and March 2020. The mixed methods approach included a quantitative cross-sectional household survey with a sample size of 1200 in each country, to establish the prevalent attitudes and experiences within at-risk populations. In addition, 36 qualitative focus group discussions were also conducted across the three countries to probe the cultural contexts relating to WASH and disease-prevention behaviours, through guided discussion and dialogue.

Further details on the mixed method project methodology can be found in the research report.¹⁵

The BIS process

The first stage of BIS methodology required defining the specific behaviours of interest. Formative research, which included a review of extant literature and semistructured interviews with 10 health professionals in the NTD field, directed the research towards specific WASH behaviours that could be most influenced by behaviour change communications.⁴ It provided a basis for the development of BIS field tools, which prompted the research to explore what contexts and attitudes were related specifically to handwashing and facewashing behaviours, as well as specific disease-prevention behaviours, such as using mosquito nets and avoiding certain local water sources. These behaviours, relevant largely to trachoma, schistosomiasis and lymphatic filariasis, were also asked about in the survey and in the focus groups. The BIS methodology was developed to enhance understanding through in-depth illustrative stories about how these behaviours manifested in, and were influenced by, real-time household settings.

The second stage of BIS methodology required shadowing a participant household for a full day. Notes were collected using standardised templates. Criteria for appropriate participant families included those who consented to engaging in the study, with more than one member living in the household, and who could be observed during a typical day. Families with a member who had a physical disability or impairment were also included, to observe how this impacted WASH behaviours. Participant households were purposefully recruited by field managers, who were able to assess suitability while in the field. This could not be randomised, due to the limited number of households that could be shadowed within project resources; instead, within each country the three selected households generally represented a mix of multi-generational families and a combination of rural, semirural and urban households.

Professional researchers were recruited by research managers in each country and were required to be a country national and to speak the local language of the participant family. Researchers were trained in advance to be 'curious observers' through coaching on how to take notes and ask simple questions throughout the day to probe the rationale for specific behaviours, and to make all attempts to understand these behaviours and actions within their natural context.

The third stage of BIS methodology required an end-of-observation semistructured interview with the heads of the household, to examine the norms and drivers for behaviours, and to discuss the observations recorded during the day. Both the male and female heads of households were invited to be interviewed if both were shadowed, as it was understood that differentiated gender roles related to WASH behaviours existed within the home, based on cultural norms and values, and interviewing couples together provided an opportunity to explore this. Through this end-of-observation interview, the researcher was also able to test their own assumptions about what they may have observed during the period of study and check any queries arising. In part, this helped to address researcher bias,

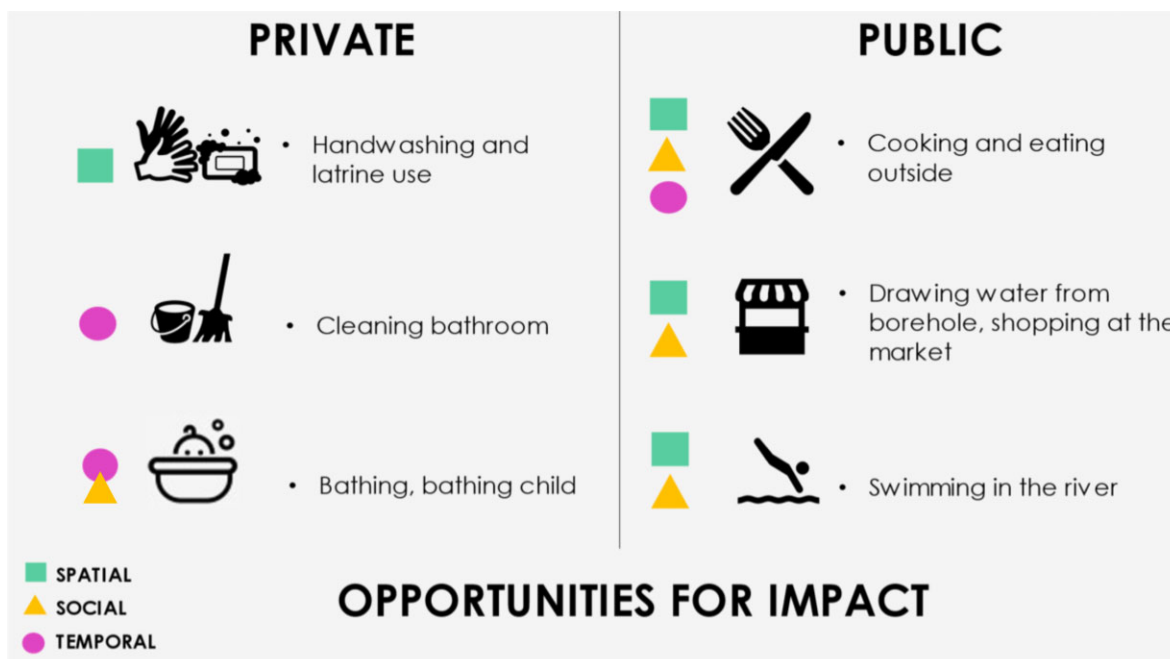


Figure 1. BIS behaviour categorisation.

Table 1. BIS-identified behavioural settings relative to NTD prevention

1. Stages	Family yard, neighbours' yard, kitchen, latrine, veranda, marketplace.
2. Infrastructure	Family well, neighbours' yard, family borehole, public borehole, shared latrines.
3. WASH props	Soap bars, detergents, multi-purpose colour-coded buckets, water bottles, ash, bleach.
4. Routines	Mealtimes, domestic chores (washing dishes, washing clothes), Islamic ablutions, making tea, visiting the market, children's bathing, adult bathing, evening TV time, relaxing outside.
5. Norms	Women socialise with other women; children socialise with other children. Gender roles shape household roles. Mealtimes provide temporal milestones throughout the day; families and often neighbours gather for meals.
6. Roles	Clear gender roles for females (women's domestic activities, children fetching water), mothers or other adult females in the family drive daily routines and are the main actors within domestic household settings.
7. Competencies	Domestic cleaning (of clothes, dishes, etc.) is frequent, prioritised and soap is used; personal cleaning of hands is often done without soap. Bathing is for both cleanliness and for comfort. General hygiene includes covering food and cleaning latrines. Disease prevention is typically articulated as utilisation of mosquito nets and treatment of drinking water, although this is not always consistent from day to day.

where the research may have misinterpreted something they observed based on their subjective experience.¹⁶

Analysing qualitative BIS data

Photos from the field, researcher observation notes and end-of-observation interviews provided qualitative BIS data. These data were utilised to identify high-risk behaviours and prevention behaviours, which in turn enabled the identification of moments where NTD intervention could be effectively targeted and deployed. In SBCC terms, these intervention moments can be considered 'touchpoints', that is, opportunities whereby SBCC

messaging can be delivered to target audiences (the enactors or potential enactors of high-risk behaviours).¹¹ Figure 1 presents real examples of WASH behaviours and disease-associated behaviours, and how they were categorised as touchpoints within the study. At one level, the behaviours were characterised as public or private (household members only), and this was cross-referenced with whether the behaviour was defined as spatial (relating to a physical place) and/or temporal (relating to a specific time of day). Categorisation was constructed in this way to highlight the most opportune moments for intervention.

Relative to the aims of this study, if targeted behaviours were private and spatially static, the communications would likely be

Table 2. Examples of complementary data behind WASH insights

Summary insight	Quantitative survey data	Qualitative BIS data
1. Good knowledge of germs and parasites as a cause of NTDs was strongly associated with better WASH behaviours	(DRC) When asked about causes of NTDs, without prompting, 43% mentioned dirty water; only 22% mentioned germs, parasites, flies and mosquitoes. Behaviours such as using a latrine (15%), sleeping under a net (12%) or controlling insects (12%) were seldom first thought of as disease-prevention measures.	Where germs and parasites were identified as a cause of NTDs (without being prompted) there was significantly more awareness of insect bite avoidance and handwashing practices, compared with those who did not make the connection between NTDs and parasites. For example, people covered their food to prevent flies from contaminating it.
2. However, behaviour often does not match knowledge	(Nigeria) 96% felt it was important to wash their hands. However, 43% felt that washing without soap was fine, and only 67% said handwashing after using the toilet was important.	Families often told us about the importance of soap, and clearly understood its importance in disease prevention, but failed to use it consistently. Soap use after using the latrine was particularly poor. This was largely attributed to the cost of hand soap. Cheaper alternatives, such as detergents and ash, were referred to. Admitted complacency was common.
3. Mothers/women drive household WASH routines. WASH competencies were mostly demonstrated by the female head of the household	(Nigeria) 50% of women said they made decisions regarding water use in the household (compared with a significantly smaller 33% of men). The reverse was true for decisions about health in the household; 51% of men said they made decisions, compared with just 25% of women.	Females make daily decisions about how water is used in the home; they direct children to wash hands and fetch water; they do the cooking and cleaning. Households do not approach disease prevention holistically; while women are largely responsible for the use of water in the household, men make decisions about healthcare. There were few joint decisions made between spouses.
4. Temporal aspects of WASH often revolve around mealtimes and prayer times	(Nigeria) 39% cited religious activity as a trigger for handwashing. (Guinea Bissau) 91% felt that washing hands before eating was important.	WASH routines, dining routines and religious adherence are temporal: same time of day, every day. Spontaneous handwashing or facewashing was seldom enacted, and was done largely for comfort, not disease prevention.
5. Spatial aspects of WASH largely involve the yard outside the home	(Guinea Bissau) People in the city were significantly less likely to wash their hands after using the toilet: 36% compared with 56% of those in the rural area. 75% shared a toilet with other households.	Toilets are often shared and located outside the home, impacting handwashing. Routines, including WASH practices, are largely conducted outside of the home (e.g. a lack of indoor kitchen space meant food was prepared and cooked outside in the yard).

better targeted at personal drivers for individual impact. If the behaviour was a group activity at a certain time, the communications might be more impactful addressing social norms and collective responsibility, for example, posters situated around a local well, or stickers on communal buckets. This aspect of BIS is completely adaptable to the topic being studied. The BIS methodology discussed here was shaped specifically with the aim of informing SBCC development to prevent NTDs.

Results

Data from nine BIS ethnographies were analysed. The behavioural settings identified through the household survey were somewhat limited by the survey design and the need for multiple-choice questions with predetermined responses. An advantage of BIS data was that they brought attention to behaviour settings that were not included in the survey, such as the veranda as a



Figure 2. Behaviour Insight Shadowing: a day in Kano, Nigeria.

physical stage, where meals and chores were sometimes shared, and household cleaning detergents that were used as substitutes for hand soap. This broader range of behavioural settings is listed in Table 1.

Further insights were gained comparing the qualitative survey findings with BIS data, such that survey findings were supported and reinforced by the data where they matched, or survey findings were able to be viewed from multiple contexts because BIS gave an idea of the environmental limitation, the social settings or the attitudinal drivers. Table 2 demonstrates specific examples of the wider insights gained from the complementary methodologies.

The significance of the BIS findings is that they provide qualitative insights about the what and the why of everyday behaviour. For example, regarding the spatial aspects of WASH, when participants were observed cooking outside with their neighbours, and were asked why, they described sharing bottled water for cooking porridge in the morning. This was considered by participants to be a cheaper and safer alternative to collecting water from the local well early in the morning, when it was considered unsafe. This was categorised as an economic driver, with a secondary driver based on safety. Previously, this behaviour was largely seen as having a social driver, which may also be true, but BIS methodology allowed deeper insight into the spatial, economic and safety aspects of shared water use across households.

Other behaviours, such as facewashing, were explored through the BIS methodology and enabled an understanding of

this behaviour as driven by comfort and personal hygiene, rather than disease prevention. For SBCC design, this insight prompted consideration of the decision-making process that targets audiences, illustrated when assessing familiar activities, and ultimately led to justification for the promotion of collective behaviours, rather than solo behaviours, to avoid disease, because of the lack of direct association between facewashing and NTD prevention in the minds of the target audiences, compared with other WASH activities.

Figures 2 and 3 illustrate how one of the BIS ethnographies from a household in Kano, Nigeria (a large urban location), included a detailed case study of how, where and why WASH behaviours were enacted. All nine BIS ethnographic outputs were delivered via this highly visual format of 'ethnographic story', which included pictures of communal infrastructure, family members demonstrating WASH activities and quotes from the end of observation interviews that highlighted specific knowledge and attitudes around disease prevention. Presenting the data in this way provided a more holistic delivery of research findings; the statistical data satisfied the need for robust figures and nationally representative evidence, and the ethnographic stories, alongside focus group data, provided real-life examples articulated and demonstrated by participants that represented members of the target audiences. This provides SBCC creators with content to visualise their interventions within real-life examples and make an initial assessment of their suitability, cultural relevance and placement.

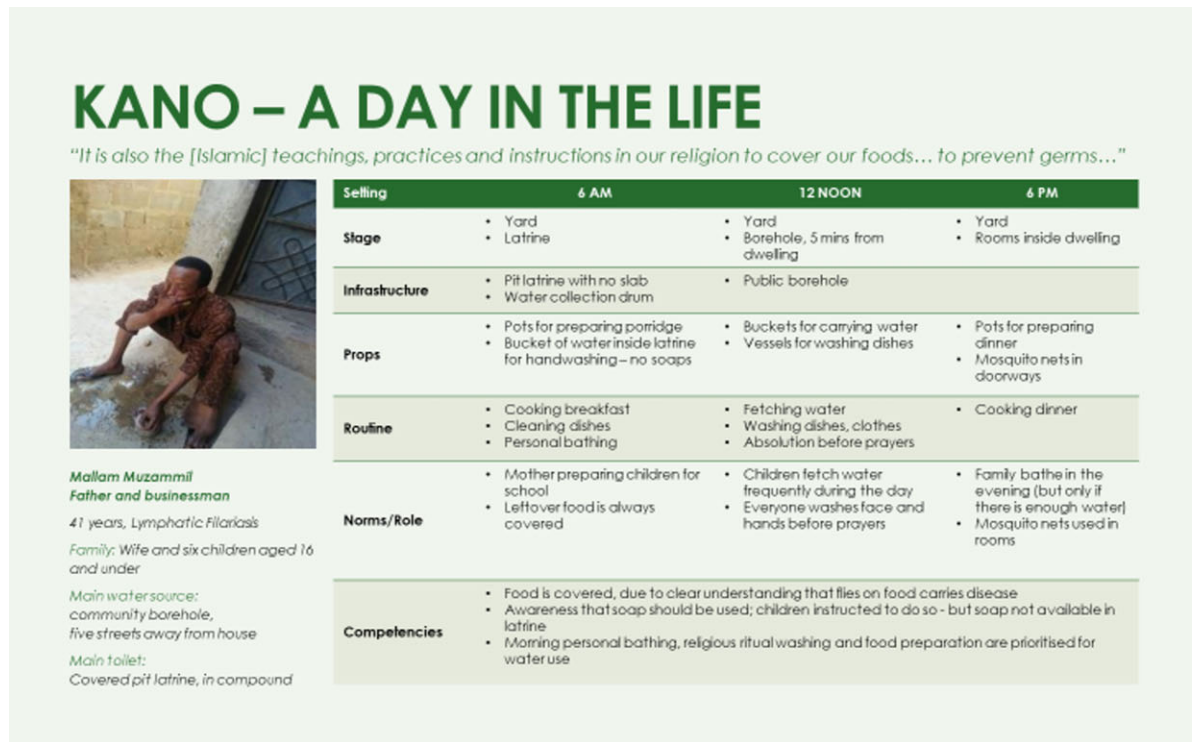


Figure 3. Behavioural settings: a day in Kano, Nigeria.

Discussion

BIS is a novel and adaptive approach, with the advantage of structuring the examination of daily life settings and presenting them in a contextual and visually accessible way. The methodology is less resource intensive than typical ethnographies and the findings can complement and enhance data from other sources in a mixed method study. There is substantial evidence to suggest that addressing knowledge, attitudes and beliefs can assist in targeting implementation strategies to positively affect behaviour change.^{17–20} This supports a holistic approach to change. BIS methodology allows SBCC design to be informed through analysis of exactly how people apply their knowledge, attitudes and beliefs to everyday behaviour patterns, as articulated by the participants themselves. In the context of NTDs, this is key to understanding how WASH behaviours can be influenced, and whether such influence needs to be in alignment with everyday routines and attitudes or in disruption of them.

BIS is not new in promoting qualitative research to validate quantitative data or to provide a different viewpoint on social findings.²¹ However, BIS methodology for SBCC design is clearly able to add novel value in this way. For example, in the household survey, many correctly identified the most effective times for handwashing in order to prevent disease (after using the latrine and before eating). In the DRC, urban participants were significantly less likely to say they washed their hands after using the toilet compared with those in the rural area. BIS data further highlighted that this is often a consequence of having to use a shared toilet, where facilities were often inadequate and unclean and generally undesirable for the cleansing of hands. Survey data supported that there was a higher proportion of shared toilet fa-

cilities in the DRC urban sample, which prompted further investigation into the issue. Extant literature also reported that shared toilets have been linked to poorer health outcomes.²² The implication for SBCC was that promoting handwashing in urban areas with high levels of shared toilet facilities would be unlikely to have the desired impact, as the issue is largely one of infrastructure.

Regarding methodological shortcomings, the limitations of BIS exist with all ethnographic approaches. There is still an element bias to be expected; people may act differently due to researcher presence, particularly where there may be value judgements about personal hygiene and household cleanliness.¹⁶ Cultural sensitivities must be taken into account, especially where African cultures are analysed through a non-African lens. The duration of the observation must be considered carefully, if, for example, an atypical day skews the data related to everyday behaviour patterns. The research must be clear on whether it needs to capture what is the norm or what lies outside of the norm, in order to inform how SBCC intervention might operate alongside it.

Conclusions

BIS methodology can add substantial value to SBCC development for NTD prevention. It presents opportunities to test assumptions about the drivers behind common WASH behaviours and it helps provide justification for targeting specific behaviours within specific environments. In this study, BIS also helped to identify behavioural settings that had not previously been considered. Mainly, BIS effectively informs an understanding of ‘touchpoints’ or opportunities for impact, at a spatial level, temporal level and across public and private domains. One could identify touchpoints

through a survey; however, a survey would be unlikely to explore and give insight on the full context in which that touchpoint exists. BIS provides a richly textured understanding about the intricacies of people's lifestyles, which is crucial for the development of effective behaviour change communications rooted in the existing culture and appropriate to the environment.

An effective SBCC programme needs to take into account the social elements of an 'enabling environment' (influence of family, wider community and social norms, etc.), as well as the physical elements, such as household props or external infrastructure available to target audiences. BIS methodology provides this holistic approach to researching these elements within their normative social settings, everyday environments and cultural contexts.

Authors' contributions: SP and the Research, Insight and Evaluation Team at M&C Saatchi World Services designed the study protocol, managed the field research and were responsible for the analysis and interpretation of these data. RA, ND and colleagues at Sightsavers critically revised the manuscript for intellectual content. All the authors read and approved the final manuscript. Sightsavers and M&C Saatchi World Services are guarantors of the paper.

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Data availability: None.

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