



## Research Paper

# Life has become more colourful: the social and economic outcomes of community-led sanitation initiatives in the rural Philippines

Rachael Sorcher <sup>a,\*</sup>, Elene Cloete <sup>a</sup>, Ami Dasig Salazar<sup>b</sup>, Elvis Gatchalian<sup>b</sup> and Juanjoe Gonzales<sup>b</sup>

<sup>a</sup> Outreach International, 112 W 18th St., Kansas City, MO 64108, United States

<sup>b</sup> Outreach Philippines, Burgos Street, Sangitan West, Cabanatuan City, Nueva Ecija Philippine 3100

\*Corresponding author. E-mail: r.sorcher@outreachmail.org

 RS, 0000-0002-3603-1234; EC, 0000-0003-2001-2837

## ABSTRACT

This article considers the impact of improved sanitation beyond physical well-being. Based on the experiences of women from three community-based organisations (CBOs) in the rural Philippines, this article expands on documented non-health related outcomes of health, safety and security, cleaner surroundings, and ownership, to also include those linked to household income, livelihood, and CBOs. Drawing from the participatory and qualitative methods of Photovoice and Most Significant Change, semi-structured interviews and individual photo conversations were conducted among 13 CBO leaders and 50 sanitation project participants, respectively. Findings suggest that CBOs enable improved sanitation, and such improvements include a personal and communal change in the form of reformed sanitation and hygiene practices, enhanced independence, privacy, and security, and improved ability to reclaim spaces for personal and public use, cultivation, and economic stimulation. Findings also underscore the idea that people may be more likely to adopt and sustain improved sanitation efforts if they are made aware of the additional non-physical health advantages of doing so.

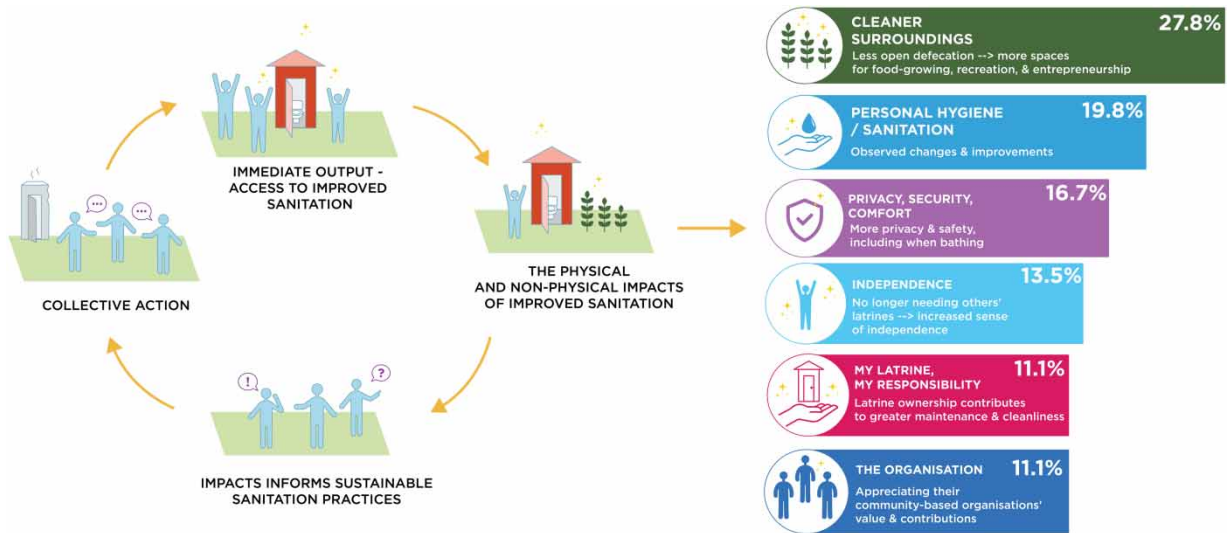
**Key words:** community-led, economic outcomes, rural Philippines, social outcomes, sustainable sanitation, WASH

## HIGHLIGHTS

- Community-led sanitation initiatives are effective and sustainable.
- The social and economic outcomes of sanitation interventions enhance well-being.
- Practitioners can improve the adaptability and sustainability of sanitation interventions by emphasising the non-physical health outcomes during awareness-raising activities.
- This study utilises participatory qualitative methods that enable participants' creativity.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Licence (CC BY 4.0), which permits copying, adaptation and redistribution, provided the original work is properly cited (<http://creativecommons.org/licenses/by/4.0/>).

## GRAPHICAL ABSTRACT



## INTRODUCTION

Open defaecation negatively impacts people's physical well-being. Studies show a strong correlation between poor sanitation, including open defaecation practices, infectious diseases, malnutrition, and stunting of children (Chambers & von Medeazza 2014; Prüss-Ustün *et al.* 2014). Therefore, it can be understood why the priority of many interventions is to eliminate open defaecation, as exemplified by Sustainable Development Goal number 6 (Kanda *et al.* 2021; UN-Water 2021).

However, given that health is a state of 'complete physical, mental, and social well-being,' scholars have called for a broader understanding of poor sanitation that extends beyond the realm of illness (World Health Organization no date; Jadhav *et al.* 2016). Such related literature, for example, focuses on linking improved sanitation to cognitive development (Orgill-Meyer & Pattanayak 2020), sanitation-related violence and women (Winter & Barchi 2016), and the connection between sanitation-related psychosocial concerns and communal well-being (Sclar *et al.* 2018). This evidence points to sanitation's impact relating beyond physical health to quality of life (Ross *et al.* 2021). Therefore, understanding the non-physical health impacts of sanitation not only helps develop a more accurate picture of people's reality but also as Pearson & McPhedran (2008) argue enables programme designers to identify ways of increasing and sustaining improved sanitation.

In what follows, we respond to Jadhav *et al.* (2016) by expanding on documented non-health-related sanitation outcomes of safety and security, cleaner surroundings, and ownership, to also include those linked to household income, livelihood, and community organisations. To describe this, we consider the outcomes of community-led sanitation interventions of three community-based organisations (CBOs) in the rural Philippines province of Nueva Ecija, Central Luzon.

Between 2015 and 2020, the Philippines was one of the countries that made the greatest progress in achieving basic sanitation, increasing by seven percentage points (United Nations Children's Fund and World Health Organization 2021). The country's government has been active in reaching these goals through several sanitation programmes including the Philippines Approach to Total Sanitation, a programme that creates a structure for post-open defaecation free engagement that encourages higher levels of sanitation and hygiene service, recognising that underserved communities often need external support in using more hygienic sanitation facilities (Robinson & Gnilo 2016; Molina *et al.* 2021). While such programmes have experienced, to various degrees, success in addressing the Philippines' sanitation concerns, the work is not done yet. To reach its 2030 target, a fivefold increase in municipal annual targets is needed (Republic of the Philippines Department of Health, United Nations Children's Fund and World Health Organization 2021). Local efforts such as those taken on by Outreach Philippines Incorporated (OPI), a programme partner of Outreach International, and their community partners are therefore crucial to help the country reach its targets.

Two research questions guided our inquiry: (1) How do people experience the implementation of their own sanitation projects? (2) How has the implementation of such projects impacted them on both a personal and communal level? Our analysis of these questions draws from the experiences of women participating in OPI-facilitated community-led interventions. OPI

supports communities to develop their own CBOs, complete with strong leadership and institutional capacity. Through these CBOs, local communities solve their poverty-related concerns.

To establish such CBOs, OPI practitioners facilitate a community-led development methodology called Participatory Human Development (PHD). The first step in PHD is when community members, during large-scale meetings, start to identify, analyse, and prioritise their poverty-related concerns, such as poor sanitation. Following such analysis, community members facilitate project planning and management meetings, mapping out all activities such as project proposal writing and finalising project implementation and monitoring.

Many community members, who might only have primary education, are often challenged by the idea of implementing and managing their own projects. To this end, OPI practitioners provide leaders with on-the-job training on project planning, implementation, and financial management. OPI practitioners' support to local communities decreases as the CBOs and their leaders gain more experience, with their intervention lasting between 4 and 6 years. Upon exiting a community, they would have supported communities in registering their CBOs, providing guidance in establishing strong networks of support, and strengthening local leadership's capacity to not only sustain existing but also implement new community-led initiatives.

## METHODS

The research team was comprised of Outreach International and OPI staff who collaborated at all research phases. Two of the five research team members were not directly involved in the intervention; they are based in the U.S. Also, while these team members are affiliated with the Philippines' authors through shared funding, their etic perspective counterbalanced biases that could have resulted from the team members involved in the intervention. We employed a qualitative descriptive design to understand how access to improved sanitation impacted participants of community-led sanitation projects. We invited a purposive sample of community members to participate based on their interest in the research, availability, and level of project involvement. This included 63 community members – 13 CBO leaders and 50 project participants, i.e., a person that is a CBO member and who, through such membership, accessed a household latrine.

Research participants represented three different rural communities and CBOs. All three CBOs accessed funding for their sanitation projects from the same resource institution and are registered with the Philippines' Department of Labour and Employment. In addition to a community-led sanitation project, they have also implemented other projects (see [Table 1](#)). Before addressing their sanitation concerns, the communities had not received any support for improved sanitation efforts, nor had they implemented community-wide initiatives to address their sanitation concerns. At the time of the study, the CBOs' membership varied between 75 and 100% women, explaining why all but one research participant identified as women.

Data collection occurred between June and August 2021. COVID-19 travel restrictions limited in-person ethnographic fieldwork and interviews. We therefore collected data via Zoom and Facebook Messenger video calls. Our research team members in the Philippines facilitated buy-in for the research from CBO leaders and members by explaining the research intent and purpose. They also made explicit that participants' involvement in the research study is voluntary and independent of their working relationship with OPI. Prior to data collection, our Philippines-based research team members collected written consent from all research participants. All calls took place within research participants' communities ensuring the least disruption to their daily lives. Two Philippines team members travelled to research participants' communities and, in a convenient and safe outside location, set up their cell phones for the virtual calls. The rest of our team joined via Zoom or Facebook Messenger.

**Table 1** | CBO accomplishments

| Community-based organisation accomplishments       | CBO 1        | CBO 2    | CBO 3      |
|--|--------------|----------|------------|
| Formal registration (year)                         | 2018         | 2018     | 2020       |
| Membership in 2021                                 | 72           | 53       | 58         |
| Projects implemented and sustained since formation | 11           | 10       | 13         |
| People benefitting from CBO's projects             | 1,800        | 9,780    | 5,504      |
| Sanitation project's implementation date           | October 2018 | May 2018 | March 2021 |
| Sanitation units built                             | 35           | 41       | 44         |

In response to our first research question, how do people experience the implementation of their own sanitation projects, we conducted 13 semi-structured interviews, 45–60 min each, with community leaders directly involved in overseeing the implementation and management of their CBOs' latrine projects. To collect data on our second research question regarding the sanitation projects' perceived impact, we originally planned to hold focus groups. Yet, due to COVID-19 gathering restrictions, such focus groups were restructured into 50, 15-min individual conversations. Prior to such conversations, participants submitted photos to the research team; during the conversation, participants contextualised their submitted photos, providing our research team the chance to ask any follow-up questions. We asked project participants to take photos that symbolise the most significant individual and community-wide changes they have experienced post-project implementation, drawing from the participatory and qualitative methods of Photovoice (Wang & Burris 1997) and Most Significant Change (Davies & Dart 2005). During both interviews and photo discussions, a team member took verbatim notes. We recorded the conversations to validate note accuracy.

## DATA ANALYSIS

Interviews were coded by separately assigning open codes to segments relevant to the research questions. Codes were deliberated by the research team and collapsed into subthemes and overarching themes. Even though we asked people to describe two photos, we open coded all data, regardless of whether they reflect personal or communal change. Upon review of our final themes, we recognised a clear delineation between participants' perceived personal and community-level change. While some themes (*Independence* and *Privacy and Security*) reflect perceived personal change, the themes *The Organisation* and *Cleaner Surroundings* relate to community-wide change. The two final themes, *Changes in Personal Hygiene and Sanitation Practices* and *'My Latrine, My Responsibility,'* capture a combination of both perceived personal and community-level change. Table 2 highlights the themes' relative frequency. We did such quantification to illustrate the themes' respective weights in terms of data segments. To consider our the trustworthiness of our analysis, we conducted member checks with OPI staff and participants. They agreed with the findings and overarching data synthesis.

We facilitated a follow-up discussion with research participants, this time to share which photos and whose direct quotes we chose to include in the article's final draft. During these sessions, we also shared with research participants a copy of the final draft, talking to them through the different sections of the article, the content, and how they and their communities are reflected. During these sessions, participants had an opportunity to object to their photos and voices being used and ask for their removal.

## RESULTS AND DISCUSSION

In the following sections, we elaborate on how people explained the impact of improved sanitation on their personal and community's well-being (see Figure 1 for select study photos).

**Table 2** | Themes, theme frequencies, and subthemes

| Themes   | Frequency (%) | Subthemes   |
|--|---------------|---|
| Cleaner surroundings                                 | 27.8          | Reusing public spaces, including recreational usage<br>Entrepreneurial activities<br>Food growing<br>Better smell   |
| Changes in personal hygiene and sanitation practises | 19.8          | General changes in sanitary practices<br>Changes in health<br>Changes in children's behaviour around sanitation     |
| Privacy, security, comfort                           | 16.7          | Greater privacy for women<br>Greater security for women   |
| Independence   | 13.5          | No more asking permission, shame, or dependency on neighbours<br>Latrine ownership and pride                        |
| 'My latrine, my responsibility'                      | 11.1          | Eagerness to clean<br>Now everybody cleans  |
| The Organisation                                     | 11.1          | Latrines access because of Organisation membership<br>Organisation symbolises unity, solidarity, and better futures |



Photo 1. A man cleaning his yard.



Photo 2. A woman hanging her laundry in an enclosed sanitation structure.



Photo 3. One woman showing a guest to her latrine.

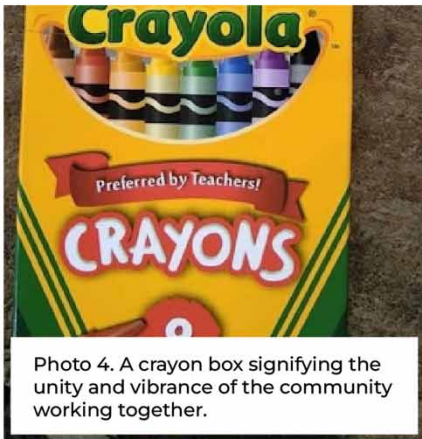


Photo 4. A crayon box signifying the unity and vibrance of the community working together.



Photo 5. Fabric softener signifying the cleaner smelling surroundings.



Photo 6. A woman working in her home-grown garden.



Photo 7. A woman caring for the plants she sells.

**Figure 1** | Montage of selected study photos.

### Communal and personal change

Research participants shared about the interrelated positive impacts a sanitary latrine has on their lives – an impact linked to change on both a communal and personal level and represented by two themes.

### Personal hygiene and sanitation practices

Reference to how their own as well as their communities' sanitation practices have changed appeared across 19.8% of research participants' conversations. They shared how access to tailored sanitation infrastructure, including toilets complete with hand washing and bathing spaces, have increased their knowledge about, ability, and motivation to maintain cleanliness.

Participants explained how their increased knowledge of and changed hygienic practices extends to their children, supporting the findings of numerous child development scholars that families and communities are integral to providing and shaping children's learning processes and promoting their well-being (Ashiabi & O'Neal 2015). Another important factor to children's development of safe hygiene practices, as Rheinländer *et al.* (2015) found, is the investment in basic, functioning home and school WASH facilities. Our participants described that with household sanitation infrastructure in place, the tools that parents need to instill the importance of hygiene among their children, like soap and a latrine bowl, are readily available. And more than out of convenience, children's hygiene and sanitation education has become the parents' responsibility as mandated in CBOs' policies. Community members have witnessed the difference such teaching has made in their children's hygiene practices. As Anlyn explained through the photo she took of her child washing her hands, 'Before [project implementation], the children went [defecated] anywhere, did not wash their hands, or clean themselves. With this project, they have learned to be mindful and clean themselves'.

### 'My Latrine, My Responsibility'

For participants, accessing, owning, and managing their latrines comes with a sense of pride. In fact, one participant, Jasmine, is so proud of her latrine that she has been using tiles to decorate it 'little-by-little.' Yet, latrine ownership comes with another responsibility that is also stipulated in their CBO policies – maintaining their cleanliness. The theme, *my latrine, my responsibility* reflects how participants act to fulfil this responsibility and the broad, positive implications of doing so. Our findings expand upon that of several scholars (see for example Sclar *et al.* 2018) who have concluded that using clean latrines can evoke feelings of comfort, happiness, and pride, while using unclean facilities, like one does in openly defaecating, can stir up feelings of disgust.

Participants took photos of others sweeping the sanitation units and supplies such as mops and bleach to showcase their dedication to cleaning. Importantly, many described how this cleaning set in motion a ripple effect. First, because participants have access to a latrine, they do not have to use insufficient disposal methods such as tying up waste in a plastic bag and throwing it in the yard. As Angel described, this means their surroundings are cleaner and smell better, increasing their motivation to clean not only their latrines but their homes and yards too. Secondly, with such ease, participants and even children became more industrious in cleaning. As people changed in this way, they noticed how their community followed suit. For example, in describing her photo of a man cleaning their yard with a broom, Tala said, 'even my neighbours are doing this [cleaning their yards]. Sometimes we clean each other's yards, and because of that, we no longer smell bad odours' (photo 1). Tala's comment also points to the theme of *cleaner surroundings* as discussed later.

### Personal change

On a personal level, participants' discussion involved how the latrine projects provided them with a newfound sense of privacy and security (16.7%) and independence (13.5%). The significance of these feelings is best summarised by Christine who said, 'the latrine project gave us peace of mind which can't be paid by any amount of money.'

### Privacy and security

The theme *privacy and security* reveals the many situations in which participants felt unsafe before the latrine project and how their current access to safe sanitation generates contrasting conditions. First, the concrete latrines have roofs and do not flood. And, just as the latrines keep out the rain, they also keep out onlookers. Participants described how previously, their latrine walls were filled with holes or did not have doors, so they were 'prone to get peeked at' (Reyna). This experience was especially fear producing for women and girls. But now, such spaces allow participants, sometimes for the first time, to bathe privately and unclothed. Additionally, as Flora describes when showing a photo of someone hanging clothing to dry in a latrine structure, the project enables them to do their laundry inside so that it does not get stolen (photo 2).

Their latrine projects also gave participants an enhanced sense of security – not having to openly defaecate means that participants are no longer exposed to potential violence. For Mary Joy, this is important because people in her community throw stones during the day and night, and now with a household latrine, she and her family are put at reduced risk of such danger.

Mary Joy's experience mirrors existing literature detailing the specific importance of improving sanitation to enhance women's well-being (Kayser *et al.* 2019; United Nations Women *et al.* 2021). Specifically, Abdul Azzez *et al.* (2019) find that women who openly defaecate may face many forms of violence when walking to and from the field such as sexual harassment, verbal abuse, or rape attempts. While it does not resolve such threats, access to safe sanitation limits women's exposure to violence.

### Independence

Having to share toilets can contribute to people choosing open defaecation, mostly because of extreme shame and embarrassment on the part of those asking permission to use their neighbours' toilets (Abebe & Tucho 2020). For research participants, dependency on their neighbours in the past made them embarrassed, and when asked to use their latrine at night, neighbours would even scold them. Subsequently, participants often did not invite guests over before the latrine projects' implementation. The theme of *independence* corresponds with the participants shedding such feelings of shame because they are no longer dependent on their neighbours. Participants are now proud to have visitors, as showcased by Erica's photo of a visitor at her latrine's door (photo 3).

### Community-wide change

The themes, *the organisation* and *cleaner surroundings*, provide insight into the factors that enable the latrine projects to have broad community impacts that extend beyond physical health to social and economic well-being.

### The organisation

Participants made strong connections between community changes, latrine project implementation, and their CBOs, as reflected in the 11.1% frequency of codes for this theme. The CBOs shaped their latrine projects, but they also led participants to understand their capabilities in terms of enacting community-wide change. For example, when describing a photo of kids eating at a table, Ligaya compared her experiences of becoming a mother and a CBO member, each resulting in increased knowledge and self-confidence. Through attending frequent CBO meetings, she said their 'minds were moulded.'

Participants described the characteristics of the CBOs that made them successful, such as their ability to work quickly to accomplish their goals. One reason for this was that many different people worked together to reach a common goal as Marisol explained through a photo of crayons,

*'After having this organisation, our life has become more colourful and vibrant...in the box, there are many colours that represent members of the organisation. Even if they are different people, they belong to one organisation. And because of that organisation, it is not just themselves or their own families that have become colourful, but the whole community.'*  
(photo 4)

Participants also discussed how unity contributes to the CBOs' strength, in that they work better, together. Such unity not only equips participants to advance their latrine projects but boosts their confidence to implement projects that tackle other poverty-related challenges. As similarly explained through the *'my latrine, my responsibility'* theme, Marisol's explanation points to community growth.

Hickling (2019) suggests that the presence of new or existing community groups can prevent a community's reversion back to open defaecation, because such groups provide people with the support needed to sustain their improved sanitation practices. Moreover, in mapping the sustainability challenges emerging from community-led sanitation efforts, Mehta & Movik (2010) ask if sanitation interventions should focus only on sanitation, or could they address broader community development ideals, such as empowerment and capacity building? The participants' explanations of their personal and organisational capacity development and ability to implement projects that extend beyond sanitation to other domains is a rather positive response to Movick and Mehta's question.

### Cleaner surroundings

The final theme, which represents 27.8% of codes, highlights how participants noticed the improved cleanliness, and subsequent cleaner smelling air, of most everything around them – their yards, kitchens, and even themselves. To describe this, Rubilyn took a photo of fabric softener (photo 5). She said, 'because of (the) toilets, the air is no longer foul smelling. [Fabric softener is] a symbol of long-lasting good smell.'

Cleaner surroundings also allow for participants to reclaim their space – for personal and public use, cultivation, and economic stimulation. In doing so, community members produce and capitalise on new social and economic opportunities.

Regarding personal and public spaces, participants described how new and efficient walking paths have been created through fields that were once unwalkable due to human waste. Besides this, participants were eager to discuss the new, clean play spaces available to their children as exemplified through Benilda's photo of children playing in her newly cleaned backyard.

Just as kids can reclaim their play space, adults are able to reclaim cultivation areas. Participants discussed how they have turned yard spaces that used to be overrun by human waste into gardens, growing an extensive list of produce including okra, guava, cassava and more, showcased by Erica's photo of her home-grown vegetables (photo 6). Participants describe how they see this same motivation reflected in their neighbours, and such changes encourage sharing. As Nicole said, 'if the neighbours ask for veggies, I will give them veggies. So, the change is not only for us, but also for the community.'

Participants also sell their produce. In this way, cleaner surroundings have led to entrepreneurial spaces that bolster their income and stimulate the community's economy. For example, as Amor showed a photo of her backyard garden, she explained how she started a business selling colourful indoor and outdoor plants after the latrine project's implementation (photo 7). Her business has flourished as she sells both via Facebook to an expansive online community and manually by the road. And her at-home business not only provides income, but the flexibility to take care of her 6-year-old child.

The latrine project's implementation has also led to business improvements. Bituin explained how she provided hairdressing home services before receiving her own latrine. Since the project's implementation, Bituin has gained the confidence necessary to open her own hairdressing place; now when customers need to use the latrine, they can use hers close by. For Angelica, a latrine in her sari-sari shop has lengthened the amount of time customers spend in her store now that they can try on clothes and relieve themselves on-site. Furthermore, for both business owners, the latrine project has helped to entice and maintain customers, meaning that community members do not have to go into town for these services. Such entrepreneurial pursuits have therefore stimulated the local economy while building individual capital.

It is important to note that when disaggregating the themes across CBOs, we found a similar breakdown to that of the overarching themes previously presented. Although, there were some nuances in the extent to which people described the impact of sanitation with regards to clean surroundings. For example, two of the three communities made explicit mention of vegetable gardening. Additionally, even though we described people's perceptions in terms of different themes, they are interwoven. For instance, participants' descriptions of cleaner surroundings were closely accompanied by perceptions of improved health or a greater sense of independence. And such perceptions correspond to people's increased motivation to keep their latrines clean. This points to not only the complexity of sanitation concerns, but also the interconnectedness of sanitation outcomes.

## CONCLUSION

Through the experiences of women from the rural Philippines involved in community-led development sanitation efforts, we learned that improved sanitation has personal and communal impacts. In the province of Nueva Ecija, participants described how access to improved sanitation infrastructure provided by the CBOs' latrine projects has not only motivated them to positively change their hygiene and sanitation practices, but that of their children as well. Such improved sanitation infrastructure as adapted for the communities' specific needs has also enhanced participants' independence, privacy, and security; participants can now do their business and bathe without onlookers or risking their safety, and they no longer must experience shame when using their neighbours' latrines. Improved sanitation has also manifested in the participants' ability to reclaim their spaces – for personal and public use, cultivation, and economic stimulation. In doing so, participants enjoy benefits such as increased economic capital. As participants described, the CBO is the enabling factor that underlies the breadth of the latrine projects' impacts through unifying participants, strengthening their skill sets, and building their confidence in carrying out the latrine and concurrent projects.

We conclude by arguing that non-physical aspects of sanitation are integral outcomes to sanitation interventions. As Jadhav and colleagues, *Ross et al. (2021)*, and other sanitation scholars argue, such factors are often overlooked in developing and implementing interventions. They are however essential to improving community members' quality of life. Our findings underscore this idea and build on the work of *Pearson & McPhedran (2008)* to explain how people may be more likely to adopt and sustain improved sanitation efforts if made aware of the additional non-physical health advantages of doing so.



This is exemplified through Dolores' experiences as she described, 'The latrine project has given light to my children and me. Our home has become brighter because of the project. Our lives have become better, it has given us relief.'

## FUNDING

We received no external funding for this research project.

## DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

## CONFLICT OF INTEREST

The authors declare there is no conflict.

## REFERENCES

- Abebe, T. A. & Tucho, G. T. 2020 *Open defecation-free slippage and its associated factors in Ethiopia: a systematic review. Systematic Reviews* **9** (1), 252. <https://doi.org/10.1186/s13643-020-01511-6>.
- Ashiabi, G. S. & O'Neal, K. K. 2015 *Child social development in context: an examination of some propositions in Bronfenbrenner's bioecological theory. SAGE Open* **5** (2), 2158244015590840. <https://doi.org/10.1177/2158244015590840>.
- Chambers, R. & von Medeazza, G. 2014 *Reframing Undernutrition: Faecally-Transmitted Infections and the 5 As*. Institute of Development Studies. [Preprint]. Available from: <https://www.ids.ac.uk/publications/reframing-undernutrition-faecally-transmitted-infections-and-the-5-as/> (accessed 1 February 2023).
- Davies, R. & Dart, J. 2005 *The 'Most Significant Change' (MSC) Technique: A Guide to Its Use*. <https://doi.org/10.13140/RG.2.1.4305.3606>.
- Abdul Azzez, E. P., Negi, D. P. & Mishra, A. 2019 *Women's experiences of defecating in the open: a qualitative study. Indian Journal of Gender Studies* **26** (1–2), 160–170. <https://doi.org/10.1177/0971521518808098>.
- Hickling, S. 2019 *Tackling Slippage*. IDS. <https://doi.org/10.19088/SLH.2020.004>.
- Jadhav, A., Weitzman, A. & Smith-Greenaway, E. 2016 *Household sanitation facilities and women's risk of non-partner sexual violence in India. BMC Public Health* **16** (1), 1139. <https://doi.org/10.1186/s12889-016-3797-z>.
- Kanda, A., Ncube, E. J. & Voyi, K. 2021 *Effect of sanitation interventions on health outcomes: a systematic review of cluster-randomized controlled trials in rural communities of low- and middle-income countries. International Journal of Environmental Research and Public Health* **18** (16), 8313. <https://doi.org/10.3390/ijerph18168313>.
- Kayser, G. L., Rao, N., Jose, R. & Raj, A. 2019 *Water, sanitation and hygiene: measuring gender equality and empowerment. Bulletin of the World Health Organization* **97** (6), 438–440. <https://doi.org/10.2471/BLT.18.223305>.
- Mehta, L. & Movik, S. 2010 *The Dynamics and Sustainability of Community-led Total Sanitation (CLTS): Mapping Challenges and Pathways*. STEPS Centre. [Preprint]. Available from: <https://steps-centre.org/publication/the-dynamics-and-sustainability-of-community-led-total-sanitation-clts-mapping-challenges-and-pathways/> (accessed 1 February 2023).
- Molina, V., Sison, O., Medina, J. R., Lumangaya, C., Ayes, C. N., Joe, J. A. & Belizario Jr, V. 2021 *Water, sanitation and hygiene practices in the Philippines: meeting national and global targets at the local level. Journal of Environmental Science and Management* **24** (1). [https://doi.org/10.47125/jesam/2021\\_1/01](https://doi.org/10.47125/jesam/2021_1/01).
- Orgill-Meyer, J. & Pattanayak, S. K. 2020 *Improved sanitation increases long-term cognitive test scores. World Development* **132**, 104975. <https://doi.org/10.1016/j.worlddev.2020.104975>.
- Pearson, J. & Mcphedran, K. 2008 *A literature review of the non-health impacts of sanitation. Waterlines* **27** (1), 48–61. <https://doi.org/10.3362/1756-3488.2008.005>.
- Prüss-Ustün, A., Bartram, J., Clasen, T., Colford Jr, J. M., Cumming, O., Curtis, V., Bonjour, S., Dangour, A. D., De France, J., Fewtrell, L. & Freeman, M. C. 2014 *Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries. Tropical Medicine & International Health* **19** (8), 894–905. <https://doi.org/10.1111/tmi.12329>.
- Republic of the Philippines Department of Health, United Nations Children's Fund and World Health Organization 2021 *Five-fold Increase in Municipal Targets Needed to end Open Defecation by 2025*. Available from: <https://www.unicef.org/philippines/press-releases/five-fold-increase-municipal-targets-needed-end-open-defecation-2025> (accessed 1 February 2023).
- Rheinländer, T., Samuelson, H., Dalsgaard, A. & Konradsen, F. 2015 *Teaching minority children hygiene: investigating hygiene education in kindergartens and homes of ethnic minority children in northern Vietnam. Ethnicity & Health* **20** (3), 258–272. <https://doi.org/10.1080/13557858.2014.921887>.
- Robinson, A. & Gnilo, M. 2016 *Beyond ODF: a phased approach to rural sanitation development*. In: *Sustainable Sanitation for All*. Practical Action Publishing, pp. 1–336. <https://doi.org/10.3362/9781780449272>.

- Ross, I., Cumming, O., Dreifelbis, R., Adriano, Z., Nala, R. & Greco, G. 2021 [How does sanitation influence people's quality of life? qualitative research in low-income areas of Maputo, Mozambique](#). *Social Science & Medicine* **272**, 113709. <https://doi.org/10.1016/j.socscimed.2021.113709>.
- Sciar, G. D., Garn, J. V., Penakalapati, G., Alexander, K. T., Krauss, J., Freeman, M. C., Boisson, S., Medlicott, K. O. & Clasen, T. 2018 [Exploring the relationship between sanitation and mental and social well-being: a systematic review and qualitative synthesis](#). *Social Science & Medicine* **217**, 121–134. <https://doi.org/10.1016/j.socscimed.2018.09.016>.
- United Nations Children's Fund and World Health Organization 2021 *Progress on Household Drinking Water, Sanitation and Hygiene, 2000-2020: Five Years Into the SDGs*. Geneva. Available from: <https://data.unicef.org/resources/progress-on-household-drinking-water-sanitation-and-hygiene-2000-2020/> (accessed 1 February 2023).
- United Nations Women, Burt, Z., Nelson, K. & Ray, I. 2021 *Towards Gender Equality Through Sanitation Access*. <https://doi.org/10.18356/25216112/12>.
- UN-Water 2021 *Summary Progress Update 2021: SDG 6 – Water and Sanitation for all*. Available from: <https://www.unwater.org/publications/summary-progress-update-2021-sdg-6-water-and-sanitation-all> (accessed 1 February 2023).
- Wang, C. & Burris, M. A. 1997 [Photovoice: concept, methodology, and use for participatory needs assessment](#). *Health Education & Behavior* **24** (3), 369–387. <https://doi.org/10.1177/109019819702400309>.
- Winter, S. C. & Barchi, F. 2016 [Access to sanitation and violence against women: evidence from Demographic Health Survey \(DHS\) data in Kenya](#). *International Journal of Environmental Health Research* **26** (3), 291–305. <https://doi.org/10.1080/09603123.2015.1111309>.
- World Health Organization. no date *Constitution of the World Health Organization*. Available from: <https://www.who.int/about/governance/constitution> (accessed 4 February 2023).

First received 25 February 2023; accepted in revised form 17 May 2023. Available online 30 May 2023