



From open defecation to environmental and health hazards in the municipality of Ouinhi, Republic of Benin

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Abstract

Achieving the elimination of open defecation (OD) in rural areas has been the goal of several global organizations. In the fight against ODF, the ATPC approach has been implemented, especially in areas where this practice is widespread. However, some localities, despite having latrines, continue to practice open defecation. It is based on this strong observation that the present research was conducted in the commune of Ouinhi in Benin. This research aims to assess the environmental impacts of open defecation as well as the reasons why the population has adopted this practice. To achieve this, qualitative research was conducted to assess the reasons why the population has adopted open defecation. Interviews were conducted with 35 community members and 12 health workers. A direct observation grid was used to supplement the information collected. The study revealed that the population is not always involved in the construction of latrines, resulting in poor maintenance. Similarly, sociocultural reasons force the population to adopt the practice of open defecation, which has harmful consequences for the population. It is therefore urgent to intensify information sessions for households on the importance of latrines.

Keywords: Latrines; Pollution; Open Defecation; Sanitation

1. Introduction

In recent decades, public awareness of environmental issues has increased significantly (Llopiz-Guerra et al., 2024; Simard et al., 2025), but this awareness has not led to significant changes in individual daily behaviors (Améyi, 2025; Fuchs et al., 2025). Despite the proliferation of initiatives to promote more sustainable practices, open defecation remains a major problem, particularly in developing countries.

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As a key indicator for monitoring the Sustainable Development Goals, eliminating open defecation is one of the main objectives of sanitation policies worldwide (Dansou et al., 2025). Indeed, the lack of sanitation systems, combined with inappropriate social behaviors, contributes to environmental degradation through soil, water, and air pollution, promoting the spread of infectious diseases (Freeman et al., 2025). However, an ecological environment is a driving force for the well-being and health of populations (Pronk et al., 2025). Environmental protection is therefore an undeniable part of global public health policies.

In Africa, the issue of environmental degradation is closely linked to the frequency of industrial activities and various social behaviors, including uncontrolled waste disposal and inadequate sanitation practices (Saxena, 2025; Singh & Kaur, 2024). In Beninese communities, access to drinking water and the implementation of basic sanitation measures remain a real concern in both rural and urban areas, despite the efforts made by the state with the support of international partners through the Community-Led Total Sanitation method. This method is based on activities that raise awareness among community members that open defecation is a health risk for everyone. Despite the progress made with this approach, many localities continue to practice open defecation. The municipality of Ouinhi is a good example of the persistence of this phenomenon. Many households do not have latrines in their homes. Although sanitary facilities exist to enable these households to meet this physiological need, many continue to prefer open defecation. This unhealthy behavior, which can be observed in this community, exposes the environment and the health of each member to numerous risks. The availability of toilets is not enough to encourage their effective use (Kabadi et al., 2025; Kafando & Ayassou, 2024). Therefore, a lasting change in behavior is essential, along with the provision of toilets that are adapted to the sociocultural environment of users.

This research therefore examines the social representations that members of the community in the commune of Ouinhi have of community sanitation facilities and the reasons for their persistent preference for open defecation. The objectives of this research are to identify the factors that explain the adoption of open defecation rather than the use of facilities built within the community. It also aims to analyze the environmental and health consequences of this behavior.

2. Methods

2.1. Research framework and type

This is a qualitative cross-sectional study conducted in southern Benin, in the municipality of Ouinhi.

The target population consists of members of the Ouinhi community and health workers. The random selection technique was used to select a sample of 35 community members. A reasoned selection technique was used to select a sample of twelve health workers. They were chosen because, due to their professional position, they are able to provide information on the risks associated with irresponsible behavior among the population and the consequences of open defecation on the environment and health.

2.2. Data collection techniques and tools

For data collection, an interview guide was developed for community members. Another interview guide for health workers was used to collect data on the consequences of open defecation on the environment and the health of the population.

A Techno Camon CX Air cell phone with a voice recorder was used to record the interviews, with the consent of the respondents. Data collection took place over five months, from May to September 2025, with the support of investigators trained by specialists in qualitative data management.

2.3. Data processing

After transcription based on the items contained in the interview guide, the interviews were processed using analysis followed by thematic grouping to compare the responses obtained with the research hypothesis. To do this, the comments collected were transcribed faithfully and in their entirety to focus the interviewees' discourse on different themes defined in advance by the investigators and recorded in an interview guide.

More or less identical responses were classified by area of interest. After carefully listening to the interview recordings, units of meaning were identified in order to give substance to the themes and sub-themes that emerged from all the interviews in line with the objectives. For reasons of confidentiality, no information is given about the identity of the respondents; they are referred to by the initials of the interviewee's name.

3. Results

3.1. Perceptions of the latrine installation project implemented in the municipality of Ouinhi

A saying by GANDHI states that: "Whatever you do for me without me, you do not do for me." Analysis of this saying reveals the idea that any community development project without the full involvement of the population is doomed to failure. It is based on this logic that one interviewee stated the following:

Someone told me that they built latrines for us in the areas. But I don't know when they did that or in which area, I don't know. (Community member E.H.; Female, 55 years old; May 2025).

This interviewee's comments show that the population of Ouinhi is not really aware of the sanitary facilities that have been built. Comments from an interview with a health worker in the town of Adamè in the municipality confirm this assertion, as he stated:

Building latrines is one step, but the key is to make the population understand that latrines are available and that it is important to use them. Really, the fact that defecation practices are changing there implies that the population has no idea about latrines. (Health worker T.D.; Doctor, 40 years old; May 2025)

What stands out from this interviewee's comments is the idea that the population is not involved in the construction of latrines. The second reason could be the lack of awareness among the population about the importance of using latrines. Even when latrines are available, other people say they do not have them. This is justified by the comments of one interviewee in this excerpt:

I don't think they built latrines for us, only that some people from the ATPC project came in 2014 and helped us dig large holes, putting wood on the surface, and we defecate in them. But these structures are no longer in good condition. I wonder if it was the local people who caused the damage or if the structures were poorly built (Community member S.C.; male, 28 years old; June 2025).

This interviewee highlights the commendable efforts of the ATPC (Community-Led Total Sanitation) project, which has taken shape in Benin, especially in areas where open defecation is more prevalent. The facilities are sometimes vandalized due to a lack of awareness among certain members of the population.

3.2. Adoption of open defecation by the population rather than the use of latrines.

When asked about open defecation among the population, many of the interviewees responded. One of them revealed:

We don't have many latrines, and the few that we do have are still very far away from us. The holes we dug for defecation are no longer in good condition (Members of the V.R. community; Male, 44 years old; July 2025).

This statement, recorded during an interview with a farmer from the Sagon district in the municipality of Ouinhi, shows that there are not enough latrines. Worse still, the locations where these latrines are installed are far from where people live.

Indeed, sociocultural reasons encourage the practice of open defecation. This is explained by one of the respondents when he says:

I don't defecate in latrines because, according to our panegyric, two holes should not look at each other (Members of the A.E. community; Male, 34 years old, June 2025).

It appears that sociocultural and even traditional constraints push communities to resort to open defecation. Among health workers, one nurse interviewed confided:

Many people prefer to defecate in fields or forests rather than use latrines because latrines are not cleaned. They believe that latrines emit foul odors. In discussions with some community members, others confide that they feel uncomfortable using these facilities. For them, everyone knows that you have been to the toilet, which should not be the case. There is no privacy (Health worker H.J.; Nurse, 32 years old, August 2025).

It is understood that socio-cultural constraints and the lack of privacy or discretion regarding the use of latrines encourage the practice of open defecation.

3.3. Effects of open defecation on the environment and public health in the municipality of Ouinhi

Open defecation is a social practice whereby a community prefers to relieve itself outdoors. A health worker interviewed on this subject replied:

Hmm! We all know that open defecation is not a good thing, but since habit is second nature, people defecate everywhere in these areas. It's bad behavior" (Health worker H.H.; Nurse, 45 years old; September 2025).

This interviewee's reasoning conveys the idea that open defecation is one of the bad habits of the population of Ouinhi. Thus, the practice of open defecation has harmful effects on the environment and, indirectly, on human beings.

The effects of open defecation can be summarized mainly as the foul odors produced by feces, which generally affect the air. After rain, soil pollution is caused by runoff water that carries microbes and bacteria from excrement into waterways. In reference to the environmental consequences of open defecation, a health worker said:

Open defecation has a negative impact on the environment and people's health. In terms of air pollution, the foul odors emitted by areas where feces are deposited are responsible for several diseases. Every year, we record many cases of diarrhea. These diseases are caused by the consumption of food grown in these polluted areas. It is also due to the collection of surface water in which some people defecate (Health Agent G.F.; Doctor, 35 years old; August 2025).

According to this respondent, the episodes of diarrhea that are becoming more widespread each year in the municipality of Ouinhi are due to high consumption of contaminated water, i.e., water from waterways clogged with runoff, which acts as a conduit for microbes to water sources. Some members of the Ouinhi community are aware of the consequences of open defecation. One of the respondents expressed this view, stating:

Open defecation negatively impacts everyone, but especially young children who, when out walking, may find themselves in garbage dumps. On their way to the fields, often barefoot, or during walks, they come into direct contact with excrement, waste, and microbes" (Community member H.J.; male, 48 years old; September 2025).

This interviewee's comments clearly show that open defecation has adverse consequences for all social classes, but especially for young children who are able to move around on their own.

Open defecation causes serious, life-threatening diseases, which are responsible for the decline in population growth rates observed in rural areas. Results from field data collection indicate that open defecation in the localities of the commune of Ouinhi has a negative effect on the health of the population. One interviewee stated:

Malaria and diarrhea are the main diseases my children suffer from (Community member A.E.; male, 48 years old; July 2025).

Another respondent echoed this sentiment, adding:

I really hate it. Especially when I feel sick after drinking water from the springs. The mosquitoes are too much. The mosquito nets we have don't prevent malaria. My children are constantly sick, and that costs me money. If my husband agreed, we could move and go to another community (Member of the Z.A. community; woman, 39 years old; July 2025).

This passage highlights the idea that people are abandoning the area because they are tired of spending money on healthcare.

4. Discussion

4.1. Community perceptions and social logic surrounding the installation of latrines using the Community-Led Total Sanitation approach in the municipality of Ouinhi.

The survey results revealed that the majority of the population in the municipality of Ouinhi has little awareness of the Community-Led Total Sanitation method, which encourages the installation of latrines within the municipality to prevent open defecation. Many people do not pay particular attention to this issue. This perception of Community-Led

Total Sanitation facilities is the result of low involvement of local populations in the design, construction, and management of basic sanitation and hygiene infrastructure. The literature indicates that even when latrines exist, they are rarely or almost never used by populations not involved in the project's inception (Belay et al., 2022). The authors go on to show that latrines are rarely used if social norms do not support their use. The results of research carried out in Ethiopia revealed that households with latrines continue to practice open defecation (Ismail et al., 2024).

Furthermore, this low level of adoption is reinforced by the lack of awareness-raising sessions on the health and social importance of latrines and their use. Without an effective behavior change process, the presence of a latrine does not always promote the adoption of good practices (Ismail et al., 2024). The adoption of a social innovation in a community depends on its ability to fit into individual and collective representations and practices (Aubin et al., 2023). However, in Ouinhi, the latrines installed as part of the Community-Led Total Sanitation approach appear to be facilities whose social significance has not been established with all stakeholders.

It therefore appears that interventions in the field of sanitation, sometimes perceived as imposed practices, are considered as mere material constructions rather than socially invested tools. A participatory and sociocultural approach would enable populations to feel involved and recognize themselves as key actors in the sanitary development of their community.

4.2. Environmental and health effects of open defecation in the municipality of Ouinhi

In the municipality of Ouinhi, data obtained from respondents shows that the persistence of open defecation is the result of practices considered normal and socially acceptable despite the interventions carried out. Recent surveys in sub-Saharan Africa show that open defecation is still practiced even in households with latrines, due to lack of privacy, cultural taboos, beliefs about the impurity of using latrines, or a preference for open spaces (Johnson et al., 2021; Kabadi et al., 2025; Kafando & Ayassou, 2024).

From an environmental perspective, open defecation is a major source of soil and surface water contamination (Belay et al., 2022). Testimonials from health workers and community members surveyed illustrate the effects of excreta on the contamination of crops and water sources. Human feces observed in fields and open spaces outdoors are dispersed in runoff water, contaminating water sources used by the population.

In terms of health, the results confirm that open defecation has serious consequences for the health of populations. These results are confirmed by work carried out in 2021 in Benin in the commune of Zè, which revealed that children are more exposed to the consequences of this bad practice (Johnson et al., 2021). These consequences are correlated with an increased prevalence of malaria, diarrhea, intestinal infections, and other diseases (Gouthon et al., 2018, Kafando & Ayassou, 2024). Furthermore, according to the statements of those surveyed, the high prevalence of malaria and diarrhea demonstrates the relationship between unsanitary conditions and the occurrence of parasitic and waterborne diseases. Sanitation interventions that do not take community dynamics into account are a major factor in environmental degradation and health problems observed in communities such as Ouinhi.

5. Conclusion

The aim of this research was to analyze the reasons for open defecation and its effects on the environment and health of the population of the municipality of Ouinhi. The results of this research revealed low community involvement in the construction of latrines using the Community-Led Total Sanitation method. This low level of community participation is the main reason why the community does not use latrines, thus promoting open defecation in the municipality of Ouinhi. Latrines appear to be exogenous facilities, with little or no integration into the representations and lifestyles of this community.

The research also revealed that open defecation is considered normal and socially acceptable by a significant segment of the community. This practice is perpetuated by sociocultural beliefs and constraints, contributing to environmental degradation and the occurrence of parasitic and diarrheal diseases in this municipality. The results confirm the research hypothesis that the low level of involvement of the population of the municipality of Ouinhi in latrine construction projects encourages the normalized practice of open defecation, thus exposing the community to poor hygiene conditions and significant health risks. It is imperative to strengthen communication strategies through interpersonal communication, social mobilization, and advocacy for the individual and collective adoption of sanitation measures to improve the environment and health of communities.

Compliance with ethical standards

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Disclosure of Conflict of interest

The authors declare no conflicts of interest.

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Authors' contributions

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- Tano Ella Mehso Mylène: methodology, validation, writing – preparation of the initial project, writing – revision and editing, supervision, project administration
- Gbaguidi Gbèdolo Arnaud G: conceptualization, methodology, validation, writing – preparation of the initial project, revision and editing, supervision
- Sèhoubo A. M. Lambert: conceptualization, methodology, methodology validation, supervision, revision, and editing
- Hounsavi Julien: methodology, preparation of the initial project, writing – revision, and editing

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