

Tackling Water and Public Health Challenges through Participatory Theatre Methodologies: The Iheakpu-Awka Enugu State, Nigeria Example

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Abstract

Theatre has been identified as a powerful instrument of change for preventive medicine as a practical communication tool; various development agencies, United Nations bodies, and Aid groups have used theatre for development strategies to encourage communities to act and take responsibility for continued government insensitivity and irresponsibility in rural communities. This paper analyzes the applied theatre methodologies, including participatory research and action (PRA) and Theatre for Development (TfD) strategies, deployed in the Iheakpu-Awka community in the Igbo-Eze South Local Government Area, Enugu State, Nigeria, to address issues of health occasioned by a lack of water and poor health management facilities. The intervention is premised upon the bedrock of participation, which is considered the most critical factor for sustainable change and development. Anchored on health humanities and TfD as theoretical paradigms, the paper argues for communal dialogue and collective efforts toward the provision of safe potable water and medical care.

Keywords: *Applied Theatre, Public Health, Water, Intervention, Participatory Theatre, Attitudinal Change, Good Health.*

INTRODUCTION

The situation of poverty, corruption, and underdevelopment in Nigeria, occasioned by government ineptitude and insensitivity, is alarming. The lack of safe and potable water in many communities outside of cities has caused numerous diseases and untimely deaths. The need to motivate communities to action and raise needed awareness is highly imperative. This is because local people who are not well educated on health matters regarding water keep making the same mistakes, and since there is little or no knowledge about how to protect the water they use and consume, their poor health situation continues to increase. Since pipe-borne water is desirable but unavailable, they often resort to rainwater, streams, or other means. The health problems resulting from resorting to unsafe water supply sources require interdisciplinary collaboration between health and other community development workers because health issues arise from attitudinal practices based on ignorance among community members. Theatre is a powerful tool for communicating attitudinal values and is considered appropriate for raising consciousness about development issues in local communities (Freire, 1968; Boal, 1985; Ibagere & Osakue, 2010; Obasi et al., 2021).

Theatre, film, and various performing arts media can be solid intervention strategies to tackle health problems. Furthermore, the question posed by Fuchs (2002) 'Who shall live?' no longer has just medical relevance. The humanities, and theatre precisely, have become significant stakeholders in pursuing the wellness and well-being of humanity. The complexity of healthcare provision, considering different illnesses plaguing humanity today, cannot exclude health humanities as a reliable strategy for ameliorating challenges, especially in rural communities. Crawford (2015) notes that, there is a growing need for a new kind of debate at the intersection of the humanities and healthcare, health, and well-being. In the recent past, the field of medical humanities has proliferated. However, it is timely and appropriate to address the increasing and broadening demand from other professions to become involved, accommodate new sectors of the healthcare workforce and the public, and extend 'appliedness' concerning how arts and humanities knowledge and practices can inform and transform healthcare, health, and well-being (p.1).

This suggests that the health humanities domain is concerned with the planned effort of a group of professionals who are knowledgeable on health issues to influence individuals or groups within a particular society to accept a positive attitude toward health behaviour against what has been in practice. Furthermore, Klugman and Lamb (2019) and Klugman et al. (2021) noted that the emergence of health humanities, as a broader term to strengthen the earlier concept of medical humanities, arose out of a recognized need to centralize the methodologies of the humanities, arts, and social sciences in aid of medical education and practice. Thus, health humanities is inherently interdisciplinary (Klugman and Jones, 2021) and easily accommodates arts and humanities methodologies (Michalos, 2005). Suzuki et al. (2010), Ren (2015), and Sandhu et al. (2021) enumerate several successful art-based interventions in community health education and communication across several locations in Japan, the United Kingdom, Australia, South Africa, and Ghana. It is also essential to mention that the objectives are purposeful, aimed at large audiences, and involve an organized set of health activities.

From a global perspective, the recently adopted One Health Initiative presents a different view of addressing health by creating a platform for multidisciplinary efforts locally, nationally, and globally to achieve the best health for animals, humans, and the environment (National Center for Emerging and Zoonotic Infectious Diseases, 2017). As a result, there are increasing efforts to collaborate across disciplines to communicate and promote health and engage often-ignored communities. This approach also enables culturally sensitive, relevant programs. Thus, the methodology taken in this paper to address public health concerns using participatory theatre supported by data and evidence from science and public health investigations offers a multidisciplinary channel for this investigation. Theatre for Development (TfD) is flexible enough to take on any matter/issue, irrespective of its domestic background. Okwori (2013) asserts that TfD is a methodology and a strategy for effecting social change. Abah (2003) also notes the value of TfD for addressing the issues and concerns of the marginalized.

This paper is an investigation of water and public health concerns using participatory theatre approaches in Iheakpu-Awka, Igboezie South Local Government Area, in Enugu State, Nigeria. It identifies a crucial need for further interdisciplinary collaboration between performance studies and health research in Nigeria, in agreement with Abah (1994)'s suggestion that "Theatre should therefore be a practice in search of solution and action" (p. 81). To attain desirable goals with the focus TfD project, the researchers adopted what Abah (2003) referred to as a 'methodological conversation' by drawing from health research approaches.

Water and Community Needs

Water is essential for survival and sustenance, yet 844 million people worldwide still lack essential drinking water services (WHO/UNICEF, 2017). As a result, 159 million people, 58% of whom live in sub-Saharan Africa, still collect drinking water directly from surface water sources, (WHO/UNICEF, 2017). Such water bodies are susceptible to fecal contamination from human and animal origins. Consequently, these water sources are typically associated with poor microbial quality and are often contaminated by pathogens, leading to outbreaks of waterborne infections and related diseases (King-Abia et al., 2017; Pandey et al., 2014; Chigor et al., 2013).

An estimated 2.3 billion people lack essential sanitation services, and 892 million people worldwide still practice open defecation (WHO/UNICEF, 2017). The risk is heightened in Nigeria because the Federal Ministry of Water Resources and UNICEF report that the country ranks top in the global open defecation index (FGN/UNICEF, 2017). Open defecation contaminates water, thus reducing the quantity of clean water available for consumption. Water-borne pathogens are responsible for water-related diseases, such as diarrhea, dysentery, gastroenteritis, cholera, and even wound infections. Diarrhea (passage of three or more loose/liquid stools a day) is usually a symptom of an infection in the intestinal tract. It can be caused by various bacterial, viral, and parasitic organisms, more than 50% of which are ascribable to bacterial intestinal infections (Cabral, 2010). Diarrhea contributes approximately 4.8% of the global burden of disease (Hatami, 2013; Pruss et al., 2002) and is the leading cause of death in children under five years of age (WHO, 2017).

The total volume of water on Earth is approximately 1.4 billion cubic kilometres. About 97.5% of the total volume is saltwater, and only 2.5% is freshwater. Freshwater consists of fresh surface water (0.3%), groundwater (30.1%), ice caps and glaciers (68.7%), and other water (0.9%). This implies that of the total freshwater, more than 68 per cent is locked up in ice and glaciers. Another 30% of freshwater is stored in underground aquifers. Fresh surface water (water in rivers, streams, lakes, dams, ponds, and similar bodies of water) constitutes only 0.3% of the world's freshwater. The distribution of Earth's water is graphically explained in Fig. 1.

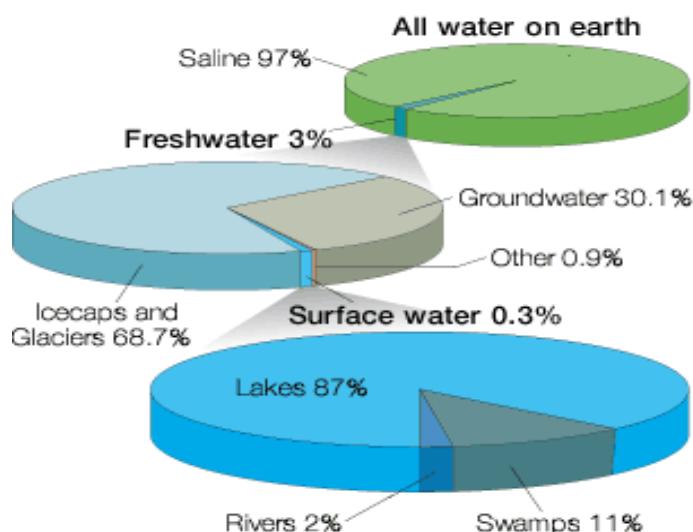


Fig 1: Distribution of the Earth's water

Source: <http://ga.water.usgs.gov/edu/earthwherewater.html>

It is clear from the above that the total usable freshwater supply for ecosystems and humans is less than 1% of all freshwater resources. Consequently, even though a more significant percentage of the Earth is covered by water, there is very little accessible. Surface waters, including dams, rivers, and streams, serve drinking, domestic, agricultural, recreational, industrial, and other purposes, including transportation and hydroelectricity. However, freshwater sources are vulnerable to pollution (Shuval, 1990; Azizullah et al., 2011; Chigor et al., 2012) and are continually being impacted by rapid population growth, land development in the river basin, agriculture, urbanization, and industrialization, which increase the demand for surface water both as sources of water for different uses and as disposal channels for treated or untreated wastewaters (Suthar et al., 2010; Solaraj et al., 2010). Thus, Samuel Coleridge's *The Rime of the Ancient Mariner* comes to mind: "Water, water, everywhere; nor any drop to drink. The very deep did rot: O Christ!" (P.1798). The vulnerability of surface water bodies to pollution, especially in developing countries, with decomposable organic matter and pathogenic agents and the use of raw/treated wastewater for irrigation may constitute serious public health risks (Shuval, 1990; Obi et al., 2004; Igbinosa & Okoh, 2009; Chigor et al., 2010a, Chigor et al., 2010b; Gemmell & Schmidt, 2012). Pathogenic agents (including bacteria, viruses, fungi, protozoa, and helminth eggs) can contaminate water and cause non-portability, possibly resulting in the transmission of water-related diseases to swimmers, agricultural workers, and consumers of crops irrigated with polluted water (Shuval, 1990). Faecal pollution also affects ecosystems and aquatic life, causing economic losses from the closure of aquatic food harvesting areas, bathing restrictions, and diseases (Pruss et al., 2002; Gourmelon et al., 2007). The water supply in Nigeria is still grossly inadequate to meet the needs of the ever-growing population. The rural areas are the worst hit. Due to the epileptic nature of the potable water supply, residents resort to other means (including surface water) to meet their water needs. Unfortunately, surface waters are constantly being polluted indiscriminately. In Nigeria, water resources consisting of surface and groundwater are abundant. However, these water systems are significantly impacted by human activities, leading to their degradation. Although the government (at the state level) is charged with providing portable water supply to residents (Idu, 2015), access to it remains a problem in every state of the country. Consequently, some people use surface water for drinking and other domestic purposes. Such surface water sources are susceptible to contamination, posing grave public health risks. Every year, an estimated 124,000 Nigerians, including children under the age of 5, die because of diarrhea, mainly due to unsafe water, sanitation, and hygiene. Furthermore, seventy (70) million Nigerians do not have access to clean drinking water (Federal Government of Nigeria and UNICEF (FGN/UNICEF), 2017), and a more significant percentage resorts to surface water.

Research Question

How can TfD be utilized as an effective action and participatory research tool for reducing water and sanitation hygiene issues in Nigerian local communities?

Key Objectives

- Investigate the health challenges a selected community in Nsukka, Southeast Nigeria, faces, using purposively selected applied theatre research methods: Community dialogues, interviews, and surveys.
- Test/utilize the TfD model of Methodological Conversation developed by Steve Abah as a behavioral change action tool using water and sanitation as a paradigm.
- Identify challenges associated with W.A.S.H. within the selected community.

Research Design

The Department of Theatre and Film Studies at the University of Nigeria, Nsukka selected Iheakpu-Awka community in the Igbo-Eze South Local Government Area, Enugu State, Nigeria for the TfD research project. Before this selection, five communities were considered within the Nsukka Local Government Area, and after consulting with the University Team (Prof. Benjamin Ozumba, Vice-Chancellor; Dr. Uche Nwaozuzu, Head, Department of Theatre and Film Studies; the Heads of the Research Team: Jonathan Eze, Dr Ikechukwu Erojikwe, Dr Ndubuisi Nnanna, Dr Cindy Ezeugwu, and Prof. Vincent Chigor suggested Iheakpu-Awka after proper security and geographical considerations.

A meeting was held with student facilitators (43 persons) to discuss the modalities and expectations of the intended visit. Four students were then selected to join Eze, Erojikwe, and Nnanna to visit the community for ethical approval. The **preliminary visit** involved familiarization and advocacy with gatekeepers (initial contact with the community). The first task was an introductory visit to the *Igwe* (traditional ruler of Iheakpu-Awka), led by an intermediary.

The core researchers requested the *Igwe* to support the proposed project. He asked the team to return in a fortnight. This enabled him to involve his council and other stakeholders since he could not make decisions alone. This preliminary visit conformed with the ethical requirements of the Community Dialogue method of health humanities research.

As agreed, the team returned and informed the council and stakeholders of the proposed TfD project for their community. For security reasons, every issue with the project was explained in detail. For example, the number of people coming, the purpose of the visit, the duration, etc. The *Igwe*, members of his council, and stakeholders (women leaders, youth leaders, and representatives from the Christian and traditional institutions) welcomed and approved the proposed project and promised to work with the team to achieve desirable results.

The two groups (the host community and the research team from the University of Nigeria, Nsukka) agreed that the 'visitors' should not violate existing customs and traditions. The Community Dialogue enabled the researchers to gather information about the norms and value system of the host community. It empowered participants with knowledge about the significance of the TfD project for tackling the community's water-related health challenges.

A team of 43 students and three lecturers from the University of Nigeria, Nsukka, arrived at Iheakpu-Awka on the appointed date. The team announced its arrival with music and dancing. The community members came out, and initial interactions began, thus establishing a warm and interactive atmosphere for the research. With the support of the community leaders, a mapping of the environment with details of strategic locations was developed, after which the transect (reconnaissance) engagement was conducted to assist the team in the familiarization process.

The next step, **Community Research**, is essential to the success of any TfD project. For this purpose, the researchers adopted the health humanities methods of interviews and surveys to understand the lived experiences of community members. This approach permitted emic and etic interpretations and followed the six steps recommended by Klugman and Lamb (2019):

- i. **Defining the Research Question** (How can TfD be utilized as an effective action and participatory research tool for reducing water and sanitation hygiene issues in Iheakpu-Awka, Igboeze South Local Government Area, Enugu State, Nigeria),

- ii. **Designing the interviews** (the researchers, in consultation with the participants, opted for a closed and semi-structured format to accommodate varied literacy levels and occupational variables);
- iii. **Applying for Institutional Review Board Approval** (the interview questions were drafted and sent to the *Igwe* and his council of chiefs and stakeholders, the Local Government Chairperson, and the leadership of the Department of Theatre and Film Studies, University of Nigeria, Nsukka) for approval,
- iv. **Data Collection:** The team used various approaches to obtain information from the community members. These approaches were key informant interviews (KII), in-depth interviews (IDIs), and focus group discussions (FGDs). A total of 4 FGDs, 5 KII, and 20 IDIs were generated. The form and content of the agenda for the entire exercise were determined from within the community and by the community members themselves. The average number of participants per FGD was 8. The participants were randomly selected. The minimum criteria were that the participants:
 1. Must have lived in the community for at least three years
 2. Should have an interest in the proposed project

The participants were selected with the assistance of community leaders. The groups were organized according to age and gender for data clarity.

IDIs were conducted within the 15 villages in the community, while the KII was conducted with *key* community and government leaders, as well as staff of the Local Health Centre. Discussions were recorded by the student facilitators in Igbo and Pidgin English and later transcribed into standard English. The KII corresponded to various facets. For instance, the facilitators were warned about dress codes and time movements due to a masquerade festival taking place during the research period. Some of the participants in the IDI believed that we had brought Nollywood (the Nigerian Video Film industry) to them, an impression that was corrected immediately.

(Of the 48 FGD participants, 24 were female, 16 were male, and 8 were children, who had the permission of their parents/guardians to participate).

- v. **Analyzing the data:** the unanimity observed was health-related. Most community members were worried about the prevalence of health challenges in their community, but often attributed those to superstition. Some were aware of the consequences of consuming contaminated water and unhealthy practices, but attributed their unwillingness to take positive action to poverty. Many community members blamed the government for almost everything.
- vi. **Communicating the Findings:** The researchers assembled the participants and openly shared the results of the interviews. There was a consensus that the findings were correct and that most participants were validly identified. The meeting involved interactions, familiarization, trust building, and empathy. This encouraged trust and confidence between both parties. The meeting also provided a forum to conduct a survey, a valid research method in the health humanities. The survey involved sharing actual narratives of real experiences by community members and asking carefully constructed questions, mainly requiring yes/no answers in an interactive and relaxed atmosphere. This approach enabled the researchers to collect critical, descriptive data on prevalent opinions on key health issues in the community.

Prevalent health issues:

Participants were asked to discuss the predominant health problems in the community. Various answers and reasons were given. Some believed that with improved lifestyles, good health and well-being would be sustained, while others were ignorant of the reason for their poor health.

'I do not go for a test. I buy drugs from the pharmacy. However, it is mostly stooling and vomiting.' (female participant).

'It is mostly typhoid and malaria that we suffer' (male participant).

'Our enemies poison us' (female participant).

'The government refuses to bring development and clean water' (female participant).

Water concerns

The team discovered that the lack of safe water was a primary concern of most community members. The sources of water in the community include rainwater, streams, and local groundwater wells. These are often stored in locally baked earthenware pots and locally fabricated tanks. The two pictures in Fig. 2 show some of the different methods of water storage in the community. The first picture shows earthenware pots (local pots made from clay), and the second picture shows a water storage tank made from fabricated metal sheets.



Fig 2: Water storage facilities

'I get my water from a borehole, but it is a long distance' (male participant).

'I do not have water, so I use any available one. I do not consider whether it is dirty or not. We must drink after eating' (female participant).

'We buy tank water, which is very expensive' (male participant).

Many community members had solid preferences for open defecation without knowledge of its consequences. They believed the procedure was safe as long as they did not sustain any physical injuries in the bushes. A remarkable number said they had never been to the community health centre due to the incompetence of staff and the lack of drugs.



Fig 3: A focus group session

Figure 3 above is a picture of an interactive session between the research team (facilitators) and community members discussing the most pertinent problems that required immediate intervention. Using the **problem tree** analysis method, the group agreed on the problems, their causes, and consequences. The discussions were interactive, and everyone was allowed to contribute.

The problem tree figuratively included branches and fruits related to many concerns, such as bad roads, poor health care, water-related diseases, poverty, unemployment, distance from water bodies, inconsistent rainfall, ignorance, myths, and superstition. After in-depth analysis and discussion, the lack of and high cost of clean and safe water, as well as government insensitivity, were identified as the root causes of the problems.

EFFECTS (Water-related diseases, poor health care)

PROBLEMS (lack of clean/safe water, high cost of water, bad roads).

CAUSES (poverty, government insensitivity, unemployment, distance from water bodies, inconsistent rainfall, ignorance and poor sanitation culture, myths, and superstition).

Fig. 4 is a graphic illustration of a problem tree. It provides insight into how the facilitators engaged the community members to identify problems, their causes and effects in the process of achieving desirable goals. With the appropriate use of community involvement skills and dialogue, the problem tree analysis and pairwise ranking methods yielded expected outcomes.

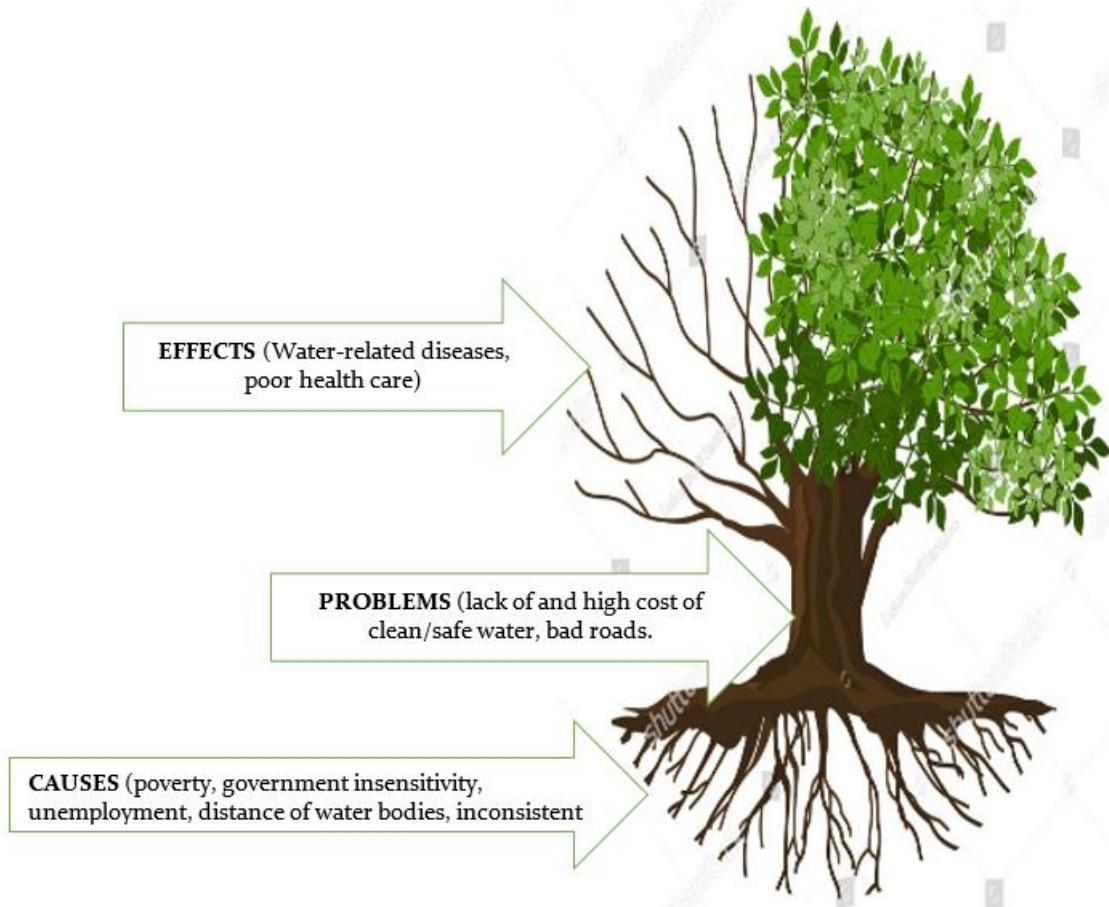


Fig 4: Problem tree

Pairwise ranking: This is a participatory learning and action research tool used effectively during the project. The team adopted it because it functions as a scale of preference or ranking system. This approach helped identify the community's priorities and preferences, demonstrating the democratic process of theatre for development, where community members oversee decisions and control their development process. The facilitators used symbolic objects to represent items on the chart for clearer communication. An object symbolized each item in the chart to clarify the voting process. Therefore, each item was represented by stones, empty plastic bottles, rope, paper, or sticks.

The community members carried out the entire process with minimal supervision from the facilitators. To foster participation and enjoyment, women members sang songs in which everyone joined. Along with this, some dancing helped create a relaxed atmosphere free from tension, which facilitated functioning, with participants feeling at ease and asking questions about their concerns.

The entire process was smooth and fair, with keen attention given. The community members carried out effective mobilization to achieve active participation. The person recording information on the chart drawn on plain white paper differed from the person collating numbers, and each person tallied smoothly. The table below displays community

concerns in order of priority, from the most pressing to the least, which is referred to as pairwise ranking. The results of the pairwise ranking are shown as follows:

Table 1: Pairwise Ranking Chart

Items	Number of times preferred	Rank
Bad roads	7	4
Lack of money	3	5
Distance of water bodies	5	3
Government insensitivity	3	5
Poor health care	5	3
Lack of clean, safe water	12	1
Sanitation	8	2

At the end of the exercise, the facilitators presented the results in detail. It was agreed that creating the scenario for the drama would prioritize the most preferred items: the lack of clean, safe water; poor sanitation, and bad roads. The community members were concerned that the bad roads had already caused many mortalities.

The information gathered from the field during the research and the villagers' views strongly corresponded. This step is essential because the data collected would provide materials for the scenario creation. Prioritizing the concerns within the community was considered imperative to the research project's success.

Theme identification and scenario creation: The facilitators began creating drama skits with the information gathered from the research, using the problem tree as a guide. The team, comprising the villagers and community members, created exciting, engaging, and enthralling performances. This was accomplished using dance, drama, and music with indigenous registers.

Rehearsals: Interested villagers and participants in the scenario creation joined the team in rehearsals. The rehearsals were always adjusted so the team and community members could work together conveniently. This was to facilitate the development process. The project began to take shape because of the active participation of community members. These interactions and synergy led to the 'learning process' being interactive, informative, and exciting. Fig. 5 below is a picture of the rehearsals with community members in attendance.



Fig 5: Rehearsals with community members

Production and Post-Production: This was the last rehearsal. The community and the researchers from the University of Nigeria, Nsukka, gathered at the village square.

In the final performance, the first scene shows a young woman who is ill, and whose family runs around trying to get medication for her condition. A narrator reports that the cause of the ill health is the contaminated water she had been drinking, and during the narration, the sick woman takes her last breath. With this turn of events, the orchestra sings a dirge as the son of the deceased who had gone to fetch water for her to take her medication rushes into the scene and sees his dead mother.

The second scene depicts a car accident (an exciting representation with a human, not an actual car) involving two children on their way to the stream. They are taken to the nearest health centre. Unfortunately, the facility is closed. A call-response session between the narrator and an audience member affirms that their roads were indeed bad and that their water supply sources were deplorable, with possible severe contamination and illnesses such as typhoid waiting to happen. Another audience member spontaneously broke into the arena and lamented that the community needed boreholes and potable water supply. The respondents unanimously affirmed that government neglect had resulted in a high mortality rate from unattended ailments in their community.

The narrator agreed with the audience members but advised that they must not rely on the government alone, but rather resort more to self-help and community action for their well-being by maintaining clean and healthy environments. Therefore, sanitation was imperative to community members' health and safety.

One of the project's resource persons took over from the narrator and said they must try their best. He urged the young people in the community to get off their backs. He stated that in the primary school where the researchers were working, they had already refurbished toilets with a small amount of money and teamwork. The community members were surprised at how little effort was required to make a huge change.

The resource person spoke about setting up a monitoring and evaluation committee to sustain the theatre for development project, while stressing the importance of teamwork. Volunteers were called upon to form the committee. The next scene showed a young man defecating in a bush. A snake suddenly bites him, and he limps away. Other groups of people are shown using a toilet without cleaning it after use, even though they are uncomfortable with the horrible smell. The pictures displayed in Fig. 6 represent scenes from the performance.



Fig 6: Performance scenes



Fig 7: Animateurs with community members and resource persons from the Water and Public Health Research Group (WPHRG).

Monitoring and Evaluation

To ascertain the impact of the TfD project, IDIs were used after a three-month baseline. Below are some of the feedback received:

A respondent noted a "reduction in sicknesses like diarrhoea."

Another respondent captured the reason for this: "There is the provision of water. Most people have changed their toilets. Good personal hygiene by the youths." Another respondent provided the following information: "Efficacy of the medical personnel in the health centre improved because the government got someone else to replace the arrogant medical personnel." Another respondent noted, "Poor hygiene, i.e., drinking rainwater without boiling it, has reduced, but we do not all have toilets; some of us still use the bush system; there is no money to build a good toilet." The highway in Iheakpu-Awka is now graded following the research project.

CONCLUSION AND RECOMMENDATIONS

The objectives of the TfD project were, as already stated, to investigate the health challenges faced by the selected community using purposively selected health humanities research methods—Community Dialogs, Interviews, and Surveys—to test/utilize the TfD model of Methodological Conversation developed by Oga S. Abah as a behavioural change action tool using water and sanitation as a paradigm and to identify challenges associated with W.A.S.H within the selected community.

The project effectively appropriated health humanities research methods, which readily adapted to the adopted Theatre for Development approach to investigate the health challenges of the selected community and communicate attitudinal and social change dynamics that encouraged community action and resulted in the desired change in a timely manner. Similarly, with regard to W.A.S.H., which is a vital health concern and a significant focus of the Water and Public Health Research Group, the project improved attention given to sanitation and hygiene and reduced the prevalence of open defecation.

The establishment of a committee to ensure the continuity of the project's vision, with sustained M&E, will hopefully lead to further positive outcomes. If the problems of ignorance and naivety are tackled with a follow-up project, the maximum objective could be achieved. In addition, parallel TfD projects could be carried out in other communities around Iheakpu-Awka, which face similar development problems.

Developmental projects using health humanities methods for water and public health education have become imperative for ameliorating the dangers of a lack of safe water and poor hygiene in local communities. The authors find a need to test such an approach further, and this pilot project has the potential to provide greater stakeholder awareness around health issues. As noted earlier, further interactions with community members in subsequent projects could create room for better engagement. This paper concludes that improved and better collaboration with community members through monitoring and evaluation would enhance and sustain the results obtained from the field. The researchers recommend a concerted effort in community engagement and sustained use of the TfD approach to manage health challenges and water concerns in rural communities.

This paper has presented a successful TfD project, using a methodological conversation with health humanities, focused on W.A.S.H., a significant component of the Sustainable Development Goals. Governments and development organisations could adopt the approach used here for practical community health development projects.

Ethics statement

The study protocol was approved by the Igbo-Eze South Local Government Council in Enugu State, Nigeria. Freely-given, informed consent to participate in the study was obtained from all participants (or their legal guardians).

Data Availability Statement

The datasets generated and/or analyzed during the current study are not publicly available because they contain sensitive information and are not being shared, but are available from the corresponding author on reasonable request.

References

- 1) Abah, S. O. (2003). Methodological conversations in researching citizenship: Drama and participatory learning and action in encountering citizens. In S. Abah (Ed.), *Geographies of Citizenship in Nigeria* (pp.114-143). Tamaza Publications.
- 2) Azizullah, A., Khattak, M.N., Richter, P. and Hader, D.P. (2011). Water pollution in Pakistan and its impact on public health: A review. *Environment International*, 37, 479-497.
- 3) Boal, A. (1985). *Theatre of the oppressed*. Theatre Communications Group.
- 4) Cabral, J.P.S. (2010). Water microbiology: bacterial pathogens and water. *International Journal of Environmental Research and Public Health*, 7, 3657-3703
- 5) Centre for Disease Control and Prevention (CDC), Nigeria report 2013. <https://www.cdc.gov/globalhealth/countries/nigeria/why/default.htm> (accessed 17 June 2016).

- 6) Chigor, V. N., Sibanda, T. & Okoh, A.I. (2013). Studies on the bacteriological qualities of the Buffalo River and three source water dams along its course in the Eastern Cape Province of South Africa. *Environmental Science and Pollution*, 20(6), 4125-4136.
- 7) Chigor, V.N., V.J. Umoh & Smith, S.I. (2010b). Occurrence of *Escherichia coli* O157 in a river used for fresh produce irrigation in Nigeria. *African Journal of Biotechnology*. 9, 178–182.
- 8) Chigor, V.N., Umoh, V.J., Okuofu, C.A., Ameh, J.B., Igbinosa, E.O. & Okoh, A.I. (2012). Water quality assessment: Surface water sources used for drinking and irrigation in Zaria, Nigeria, are a public health hazard. *Environmental Monitoring and Assessment*, 184, 3389–3400.
- 9) Chigor, V.N., V.J. Umoh, Smith, S.I., Igbinosa, E.O. & Okoh, A.I. (2010). Multidrug resistance and plasmid patterns of *Escherichia coli* O157 and other *E. coli* strains isolated from diarrhoeal stools and surface waters from selected sources in Zaria, Nigeria. *International Journal of Environmental Research and Public Health*, 7, 3831-3841.
- 10) Coleridge, S.T. (1969). *The Rime of the Ancient Mariner*. In J. Boulger (Ed.), *Twentieth Century Interpretations of —The Rime of the Ancient Mariner* (pp. 73-91). Spectrum Books.
- 11) Crawford, P., Brown B., Baker, C., Tischler, V., & Abrams, B. (2015). *Health Humanities*. Palgrave Macmillan.
- 12) Federal Government of Nigeria and UNICEF (FGN/UNICEF) (2017). *Making Nigeria Open-Defecation-Free —A National Road Map*. (pp 1-72). UNICEF.
- 13) Freire, P. (1968). *Pedagogy of the oppressed*. Seabury Press.
- 14) Fuchs, R. V. (2002). *Who Shall Live? Health Economics and Social Choice*. World Scientific Pub. Co.
- 15) Gemmell, M.E. & Schmidt, S. (2012). Microbiological assessment of river water used for the irrigation of fresh produce in a suburban community in Sobantu, South Africa. *Food Res. Int.*, 47, 300–305.
- 16) Gourmelon, M., Caprais, M.P., Ségura, R., Le Mennec, C., Lozach, S., Piriou, J.Y. & Rince, A. (2007). Evaluation of two library-independent microbial source tracking methods to identify sources of faecal contamination in French estuaries. *Applied and Environmental Microbiology*. 73, 4857–4866.
- 17) Hatami, H. (2013). Importance of water and water-borne diseases: On the occasion of the world water day (March 22, 2013). *International Journal of Preventive Medicine*, 4(3), 243–245.
- 18) Ibagere, E., & Osakue, S.O. (2010). The democratisation process and the Nigerian theatre artiste. *Studies of Tribes and Tribals*, 8(2), 67-75.
- 19) Idu, A.J. (2015). Threats to water resources development in Nigeria. *Journal of Geology and Geophysics*, 4(3), 1-10.
- 20) Igbinosa, E. O. & Okoh, A. I. (2009). Impact of discharge wastewater effluents on the physico-chemical qualities of a receiving watershed in a typical rural community. *International Journal of Environmental Science and Technology*, 6, 175-182.

21) King-Abia, A. K., Schaefer, L., Ubomba-Jaswa, E. & Le Roux, W. (2017). Abundance of pathogenic *Escherichia coli* virulence-associated genes in well and borehole water used for domestic purposes in a peri-urban community of South Africa. *International Journal of Environmental Research and Public Health*, 14, 320 – 331.

22) Klugman, C.M., Bracken, R.C., Weatherston, R.I., Konefal, K.B., & Berry, S.L. (2021). Developing new academic programs in the medical/health humanities: A toolkit to support continued growth. *Journal of Medical Humanities*, 42, 523-534.

23) Klugman, C.M. & Jones, T. (2021). To be or not: A brief history of the health humanities consortium. *Journal of Medical Humanities*, 42, 515-522.

24) Klugman, C.M. & Lamb, E.G. (Eds.) (2019). *Research methods in health humanities*. Oxford University Press.

25) Michalos, C. A. (2005). Arts and quality of life: An explanatory study. *Social Indicators Research*, 71, 11–59.

26) Muhammad, F., Abdulkareem, J., & Chowdhury, A. (2017). Major public health problems in Nigeria: A review. *South-East Asia Journal of Public Health*, 7(1), 6-11. <https://doi.org/10.3329/seajph.v7i1.34672>

27) National Center for Emerging and Zoonotic Infectious Diseases. (2017). *Saving lives by taking a One Health approach*. <https://www.cdc.gov/onehealth/pdfs/OneHealth-FactSheet-FINAL.pdf>

28) Obasi, N.T., Okpara, V.C., Okpara, F.T., Itiav, J.V., & Gever, C.V. (2021). Effect of theatre for development as a communication intervention strategy on behavioural intentions toward painting, weaving and fashion and design among victims of conflict in Nigeria. *Africa Security Review*, 30(2), 139-151.

29) Okwori, J. Z (2013). Footsteps of a ‘Methodological Conversationist’: Ogah Abah, Theatre and Research. In S. Kafewo. T. Iorapuu & E. Danudaura (Eds.), *Theatre Unbound: reflections on Theatre for Development and Social Change. A Festschrift in Honor of Oga Steve Abah*. (pp.160-174). Society of Nigerian Theatre Artists.

30) Pandey, P.K., Kass, P.H., Soupir, M.L., Biswas, S. & Singh, V.P. (2014). Contamination of water resources by pathogenic bacteria. *AMB Express*, 4, 51- 67.

31) Prüss, A., Kay, D., Fewtrell, L. & Bartram, J. (2002). Estimating the burden of disease from water, sanitation, and hygiene at a global level. *Environmental Health Perspectives*, 110(5), 367-542.

32) Ren, G. (2015). The usage of theatre workshop in the field of medical and nursing education, Communication-Design (in Japanese). *Osaka University Knowledge Archive*. 13, 57–61.

33) Sandhu, H., Hirose, N., Yui, K., & Jimba, M. (2021). Community theatre for health promotion in Japan. In J.H. Corbin, M. Sanmartino, E.A. Hennessy, & H.B. Urke (Eds.) *Arts and health promotion: Tools and bridges for practice, research, and social transformation*. Springer. https://doi.org/10.1007/978-3-030-56417-9_7

34) Shuval, H.I. (1990). *Wastewater Irrigation in Developing Countries: Health effects and technical solutions: A summary of World Bank technical paper No. 51*. (pp. 1-19). The World Bank.

- 35) Solaraj G., Dhanakumar, S., Murthy, R.K. & Mohanraj, R. (2010). Water quality in select regions of Cauvery Delta River basin, southern India, with emphasis on monsoonal variation. *Environmental Monitoring and Assessment*. 166. 435–444.
- 36) Suthar, S., Sharma, J., Chabukdhara, M. & Nema, A.K. (2010). Water quality assessment of River Hindon at Ghaziabad, India: Impact of industrial and urban wastewater. *Environmental Monitoring and Assessment*. 165, 103–112.
- 37) Suzuki, A., Nakase, T., Yoshioka, S., & Sasaki, M. (2010). The enlightenment of action on stroke patients to the local populace and the prehospital emergency medical system (in Japanese). *Japan Journal of Stroke*, 32, 680–683.
- 38) World Health Organization (WHO) and United Nations Children's Fund (UNICEF) (2017). Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines.