Journal of Water & Health

IWA PUBLISHING

Journal of Water and Health Vol 22 No 3, 627 doi: 10.2166/wh.2024.362

Women, water and access: inscribing gender power in and through a place

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ABSTRACT

This paper explores the socio-cultural and gender-based dynamics associated with place values, and their implications for women's access to water through case studies of upland and riverine communities in southern Nigeria. We used a range of fieldwork methods including public meetings, focus group discussions, in-depth interviews, keen observations, key informants and other secondary sources. Our findings show that drinking water sources are a part of the many forms of visible material structures that embody and generate automatic reproduction of gender-based beliefs, attitudes, feelings and practices. The outcome of such practices affects men and women differently in relation to access, workload and capacity for hygiene and other socio-economic practices. In discussing access to essential public goods, social and economic capacities take priority focus over the impact of 'place values' either as standalone or intersectional elements. Research should be expanded to incorporate these elements and their intersectional perspectives in shaping access to water.

Key words: access, gender, Nigeria, places, twin bearing mothers, WASH challenges

HIGHLIGHTS

- Water sources are loaded with values and specific worldviews.
- Such values shape how water sources are accessed and managed.
- Men and women are affected differently under such circumstances.
- Tradition and resource scarcity value reinforce determination for domination and control of places.
- Strong public intervention can minimise challenges of access and achieve inclusive and universal access.

INTRODUCTION

Research findings widely demonstrate and document the many barriers women face in achieving improvement in access to water for sanitary and hygienic living. Among such barriers are powers of places. Places are never neutral; they are loaded with values and specific worldviews, and imply different consequences depending on context of analysis (Macintyre *et al.* 2002). Places can be produced, reproduced and transformed in specific ways depending on factors and processes including historical, material and political practices, administrative processes, environmental/geographical circumstances, social norms, religious beliefs, resource and scarcity values, among others. Underpinning these factors and processes are the dynamics of power relationships – the determining factors of decision processes that shape access to resources and opportunities in and around places. According to Cummins *et al.* (2007) geography, public regulations and intervention and relational network play a critical role in shaping access to public goods. In their submissions, '*access to goods, services and other assets may be dependent partly on the geographical disposition of facilities and their jurisdictions but also on social networks and*

social power, interventions of various actors and degrees of regulation which produce layers of resources accessible to different members of local populations in different ways …' (p. 1828). Religious factors and traditional norms seem to be missing in this consideration, yet they are critical to shaping access to public resources depending on 'place' realities.

Places have hosted traces of meanings, values and ideologies, allowing for tangible expression of power through symbolic traces and transformative practices (Anderson 2010). Such values are reinforced through intentional acts of ordering and bordering and other forms of cultural trace-making, providing justification to protect and defend against transgressional practices. Non-human actors also exert influence through existential, ecological, socio-economic and other forms of support. Geographical/environmental aspects of water resource availability and distribution impact differently on men and women in relation to capacity for access and challenges of every day management routines (van Wijk *et al.* 1996; Ivens 2008; Akpabio & Brown 2012; Wang *et al.* 2019). Akpabio & Brown (2012) and Wang *et al.* (2019) have, in their separate studies, highlighted the challenges women face in accessing water in ecologically difficult or fragile locations (e.g., high mountains, marshy soils, flood risk locations, etc.). The sanitary risks associated with managing waste water at the domestic/private places have also been emphasised.

Places and their meanings have enhanced and reinforced our understanding of gender-based ideologies and their various translations. Who makes decisions on who should have access to (or manage) which places/facilities and their resources, and why, are everyday aspects of gender-based politics of control and domination. Place values and associated exercise of power have regularly featured in everyday acts of access and management of water resources. As Akpabio *et al.* (2017) explains, 'while men have absolute control and entitlements to all productive resources of nature, including land and water; women's rights to such resources … are subsumed in a broader web of their roles as wives, which entitles them to the collection, use and domestic management of water …' (p.63).

Traditions and power relationships are widely perpetuated and expressed through water management practices in view of the perceived role of water in connecting humans with the supernatural. Women have been reported to be severely affected. In Nigeria, Zimbabwe, Rwanda and Congo, women gain access to water on terms set by their men: 'in our land, tradition forbids a woman in her menstrual period from going to stream or river to have her bath …' (Akpabio *et al.* 2017: 64). Place contexts and values mediate and shape community behaviours and associated distribution of power. This carries different implications for men and women. Under such circumstances, women's capacity to secure improvement in sanitary living for themselves and their households is severely limited.

Access to water is accepted as a human right and is critical to achieving the sustainable development goal (SDG 6) and will impact on other elements of good health and wellbeing (SDG 3), empowering women and girl children by minimising everyday pressure to secure household water, while freeing up time for studies (SDG 4), contributing to the goal of achieving gender equality (Goal 5), among other ancillary and public health benefits. Sub-Saharan Africa failed to achieve the millennium development goals (MDGs) targets of 2015, and is currently moving at a slow pace towards the target of achieving universal access to clean water and sanitation by 2030 as set by the SDG. Part of the challenges to achieving the SDG target are related to deep-seated, disproportionate workload imbalances in the course of provision and management of household water (Sorenson *et al.* 2011; Geere *et al.* 2018; WBG & GWSP 2019; Dickin & Caretta 2022). This paper intends to contribute to the growing literature by exploring the socio-cultural and gender-based issues associated with place values, and their implications for women's access to water, in addition to providing highlights on the forms of progress that are necessary for improved and inclusive access through case studies of two ecologically distinct communities in Nigeria, namely, riverine and upland locations.

Study area and research methods

Our project was conducted in two communities: Mbiabet Ikot Udo and Isotoyo in upland northern and riverine southern Akwa Ibom State, Nigeria, respectively (Figure 1).

Mbiabet Ikot Udo is an upland settlement of about 1,200 people in Ikpe clan in Ini local government area of Akwa Ibom State. It has extensive wetland resources which support rice cultivation although other crops such as cucumber, maize, cassava, pepper, Okra, cocoyam, and water yam are additional sources of food and occasional commercial crops especially during the rainy season with high incidence of waterlogging. Two seasonal extremes (a highly flooded rainy season and a much drier season with desiccated soils) dictate farming practices and water supply dynamics, giving rise to wetland farming and an upland agriculture mostly dominated by oil palm production, which happens to serve as the only source of coping for the local farmers. Mbiabet Ikot Udo is, however, endowed with a first-order stream which, at its source, is

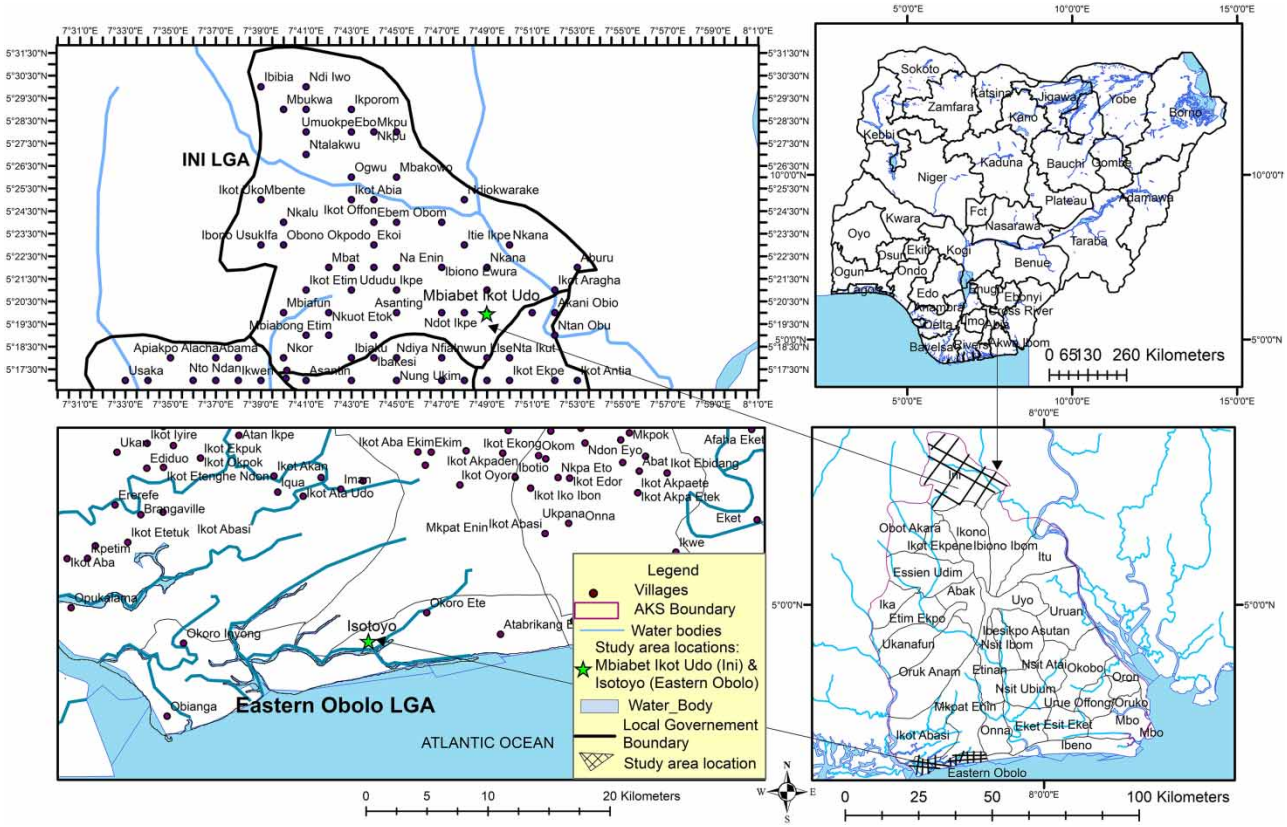

Figure 1 | Study locations: Mbiabet Ikot Udo (Ini Local Government Area) and Isotoyo (Eastern Obolo Local Government Area). Inset: Akwa Ibom State and Nigeria.

characterised by gentle slope, low water volume, low velocity and narrow stream width. The stream, which goes by the name 'idim Affia', is the only source of water for drinking and other uses. Its main channel is blocked due to deposition of eroded materials of sandy component from the undulating plains. Disruption in its normal flow has rendered the stream stagnant and muddy, encouraging the growth and spread of water hyacinth and algae. It is one such place where women encounter multiple challenges in accessing water, resulting in a dire need for progress in several domains. For instance, the stream is not accessible to women and girls during their menstrual period and by twin bearing mothers. We learned that if this custom is violated, the stream will secrete some irritating substances, making the water not suitable for any use until a sacrifice or traditional incantation is done to appease the gods. Violation of this norm attracts fines involving a goat or other payable items.

Isotoyo is a coastline village settlement in Amasaba clan off the Atlantic Ocean. Amasaba clan is made up of eight villages, namely Isotoyo, Okromobolo, Omobikem, Ama Nglass, Amangbiyi, Ozugbo, Amodula and Bethlehem. It is instructive to note that the present location of Amasaba community is traditionally the home of one of the villages – Isotoyo. The other seven had to relocate from their traditional homes since 2008 having been displaced due to conflict. They speak the Obolo language, though most of the people understand the English language (at least Pidgin) and Ibibio. Over 90% of the people live in houses with the walls and roofs made of thatch mats. Most of the adult men are involved in fishing, a negligible few are employed by oil servicing companies as labourers at oil rigs, while the women are involved in small-scale subsistence farming, periwinkle picking, mat and sheet making, among others, to augment family income. The community depends on a single stagnant pond, which is occasionally affected with high tides, in which case introducing some amount of salt water from the sea. Menstruating and lactating women (of about 3 months of childbirth) are traditionally forbidden from accessing the pond as they are considered spiritually unclean for the gods of the pond. Violation of this tradition will lead to the drying up of the pond until traditional rites are performed to bring it back. Just like in Mbiabet Ikot Udo, the affected women depend on children and relatives to meet their daily WASH needs (Akpabio 2012). When support is not available at the time of need,

they are likely to depend on unclean sources and risky reuse of wastewater, exposing them to water-based, water-borne and water-related diseases (White *et al.* 1972).

While Mbiabet Ikot Udo, to a large extent, depends on pit latrines or open defaecation depending on circumstances, Isotoyo largely depends on various forms of open defaecation on account of poor/marshy soils which do not support the digging of pits, in addition to the absence of publicly funded drinking water facilities. They depend on hanging toilets (designated separately for men and women) which discharge directly into the river. Others defaecate with the aid of locally made wooden boats. Open defaecation is common in the day and night. Women bear the greatest burden because of high cultural values placed on their privacy, imposing on them the daily routine of having to negotiate and engage in risky choices to cater for their sanitation needs (Akpabio & Brown 2012). Our fieldwork interest was focused on the various challenges women face accessing water, sanitation and hygiene (WASH) services and possible remedial options. We explored these issues in a multi-level fieldwork activity that lasted for about 7 weeks beginning from 8 April, 2023, and involved village meetings, in-depth and semi-structured interviews, field observations, focus group discussions, review of secondary and grey literatures and a final workshop and Media chat on the 19 May 2023 and 3 August 2023, respectively. Our first public meetings at Mbiabet Ikot Udo did not achieve much in terms of inclusivity of voices. A similar experience was noticed on the 25 August 2023 at our enlarged community meeting with representatives of Amasaba clan in Eastern Obolo. The meeting at Isotoyo was 98% dominated by men. It was an open session of stories, narratives, clarifications, questions and answers. We later went out in groups on visits to sources of water and toilet facilities. This afforded us the opportunity to get in-depth in our conversations with individuals and groups including women. At the end, 27 individuals were interviewed (18 women and 9 men). Of the 18 women interviewees, seven were mothers of twins. We equally engaged some key informants to have a comprehensive perspective of the issues under investigation. Our workshop involved the representatives of the fieldwork communities, academics, policymakers, the press and the general public. The workshop was used to share the findings, broaden the conversations and seek further inputs from the stakeholders. There were many follow-up meetings and conversations for the two study communities to conclude our month-long fieldwork activities.

Ethics and gender-based power relationship

Unlike Mbiabet Ikot Udo with a relatively fairer representation of about 42% of women, there is strong gender-based domination and control at Isotoyo with 98% male participants. Women's voices are most likely to be suppressed under such conditions. These were reflected during our various conversations and our interest was to seek to extend a further invitation to women. In an enlarged general meeting, women participants were relatively less vocal and open, in small group contexts their voices became clearer, and on one-on-one basis, they were much more open in their communication of their challenges and concerns at Mbiabet Ikot Udo. At Isotoyo, they were highly supervised. Only one woman was nominated to participate in our conversation. Few of our female team members were however granted permission to interview few women. The information gathered was shared, triangulated and collaboratively discussed. Further clarifications were made through the local informants and phone conversations in follow-up interviews. Although our team members tried their best to gain some insights into the issues under study, there were however some 'no-go' areas which were explicitly emphasised by the village authorities. For instance, some aspects of the consequences and ritual practices in response to 'perceived desecration' and violation of traditional norms as well as managing the perceived consequences were 'red flags'. All ethical procedures of anonymity, informed consent, confidentiality and ability to withdraw from participation at any time were observed. Additionally, our team had applied and obtained due ethical approval from the University of Uyo Ethics Committee before proceeding with the study.

Study limitations

It is important to acknowledge the many limitations encountered during the fieldwork and data collection processes. First, we were unable to achieve free and equal participation of women across the study areas. Women's, participation level was relatively better at Mbiabet Ikot Udo (about 42%), where some women were able to contribute on general issues. Only one woman participated in our meeting with the community at Isotoyo though without any contribution. Our request to increase the number of women participants was turned down. Following some negotiations with the village authorities, our female members in the team were granted limited access to few women for in-depth interviews, though with some level of supervision. Such opportunity helped us gain relatively deeper insights into some aspects of cultural and gender-based traditions that

influence access to WASH practices. In all cases across the communities, we noticed that we were able to obtain relatively detailed information at individual rather than general group levels.

Second, there were some 'red flags' especially related to details of ritual practices and consequences of traditional infractions. While we were able to achieve relatively open discussions of some consequences of breach of restrictive cultural traditions at Mbiabet Ikot Udo, such areas were 'red flags' at Isotoyo: '… these are the traditional rules and we can't go beyond that …', stated one of the clan elders. Sensitive and related issues of this category were addressed through local informants and diaspora natives who participated in some of our meetings and follow-up discussions.

Health issues and outcomes are central to WASH practices. Our research did not explicitly focus on collecting data on health issues, and surveys particularly on endemic diseases and consequences. We focused strictly on socio-cultural and gender-based factors shaping access to WASH practices. Although we did not explicitly focus on health outcomes of WASH practices, some respondents were able to mention and discuss some health issues associated with WASH practices, which have been reflected in our various discussions.

Finally, our study focused on two communities with contrasting ecologies (riverine and upland). The two communities are of different ethnicities and speak different languages though they are broadly identified as belonging to the Ibibios. Given these geographical differences, our study findings cannot adequately represent the complex and highly culturally diverse state of Nigeria. However, they are useful signposts to further research.

FINDINGS

The case of Mbiabet Ikot Udo

Central to WASH access and associated workload is a single and relatively stagnant stream locally known as 'idim Affia' (reddish brown with impurities), the nature of the hydrogeology (static water level is at >55 meters deep before accessing groundwater), and socio-cultural tradition.

Idim Affia- the main drinking water source at Mbiabet Ikot Udo

'Idim Affia', literally translated as 'white stream', connotes purity and cleanliness even when this qualification is contradicted by its colour transition. The stream is relatively stagnant, encouraging the growth of algae and build-up of debris yet it is the only source of water for drinking, bathing, washing and laundry. Ninety-eight percent of the respondents disapproved of the colour and taste of the stream.

A range of 'dos' and 'don'ts' for accessing 'idim affia' exists such as prohibition from entry in certain market days, restricting women in their menstrual cycle from gaining entry, permanent prohibition of mothers of twin children from entry and use, demarcating different sections for different use purposes. Enforcing these rules, standards and controls as well as managing consequences of breach depend on threat of sanctions, ritual practices, demonstration of evidence of consequences, appealing to the spirit, regular reminders and emphasis on negative consequences and the use of taboos to enforce behavioural conformity. All the mothers of twins interviewed expressed unhappiness over

their fate in relation to the ancestral tradition that prohibits their entry and use of the stream. However, they are unable to help themselves.

Ordering and bordering practices as highlighted above produce different consequences for men and women in relation to access, use and associated workloads. Men are traditionally entitled to full access for drinking and sanitary living; women are not: '*mothers of twins are not allowed to enter 'idim Affia' since the time of our forefathers. If there is violation of such arrangement, the colour of the water normally changes…*' this superstitious belief stems from the fear that the spirits associated with twins could wreak havoc on the entire community if their mothers come into contact with the (sacred) stream. Consequently, these women are denied access to the primary water source, forcing them to rely on alternative, often more unsafe, sources. A mother of twins confided and revealed how they manage the situation: '*This issue can bring quarrels and fights, especially in a household where the male gender is not a cooperative type as you will likely ask him to help you if your children are too young to go to stream, or if you ask him for money to pay someone to help fetch water… but we have to pay, you forgo one and pay for water or you remain like that…*'.

Two perspectives on the potability of '*idim affia*' were observed. The relatively educated respondents expressed concerns on the quality of the stream as their main drinking water source, and in the absence of improvement, they depend on self-remedies including the use of disinfectants to safeguard against water-borne diseases: '*our water is not clean all the time, so we need to use dettol to disinfect it as we store water in clay pots and jerry cans of different sizes…*', noted a woman in her late 40s who is a teacher in one of the public elementary schools. This was corroborated by a few other respondents with relatively educated and exposed backgrounds. On the contrary, a couple of the respondents rarely questioned the quality of the stream as their drinking water source: '*this is our main source of drinking water since we settled here…our forefathers depended on this and never had problem…if we were to have problem, you would not see people here…so we are under divine care…God is wonderful*!', noted a male respondent who should be in his early 70s. The believe that the stream can be managed through spiritual and ritual practices support some normative rules and traditional barriers which have the unintended consequences of limiting certain categories of women from enjoying full access. Physical 'pollution', 'dirt' and every other material practices that are likely to affect the quality of the water rarely attract concerns as the spiritual sources of pollution encapsulated in perceived sanitary taboos of periodic menstrual flow and the perceived abnormality of multiple child birth. These are perceived to be spiritual sources of pollution to the stream's deities.

Toilet systems revolved around pit latrines and open defaecation. Over 90% of the respondents depend on pit latrines and occasionally on open defaecation. Ownership of pit latrines is tied to the availability of land portion within the vicinity of the compound. The smaller the land portion, the closer the pit latrine to human dwellings/kitchens. Over 80% of the compounds visited maintained their pit latrines between 3 and 5 meters away from the house depending on the available land extent: '*…if the compound is small, you may or may not decide to build a pit latrine…*'. In one of the compounds, we observed a pit latrine located a little less than three meters away from the kitchen with makeshift structures. When the landlords were asked about the possibility of disease outbreaks, their responses were mostly based on spiritual explanation and personal experiences: '*…we have lived here under this condition for years and no problem…God protects us…*', argued a landlord in his late 50s. A single pit latrine could serve as many as three households within a compound. Pressure to use the latrine varies depending on the hours of the day. Early morning queues encourage open defaecation especially in emergency cases and for women who are mostly concerned with protecting their privacy.

The case of Eastern Obolo

Access to WASH is much more challenging for the Isotoyo (Amasaba) community in Eastern Obolo on account of poor soils, salinity problem, locational disadvantage (a small island) and absence of publicly funded WASH infrastructures as well as poor socio-economic condition of the population. All villagers depend on stagnant sources of water (pond) for drinking. The soil is marshy, and it will be extremely difficult and costly to sustain ground water services and pit latrine. By all indications, most of the available natural sources of water regularly experience salinity problems, while the only source of drinking water (pond) is of deplorable quality: dark reddish in colour and can hardly qualify for use in cleaning and laundry yet it is what passes as a drinking water source.

Stagnant pond at Eastern Obolo

One of the village Chiefs had this to say: '*…the miracle is that you [referring to us] cannot drink this water and survive…and we have been drinking these sources without any problem…is God not wonderful…*' Occasionally, the available pond gets inundated by salt water from the sea, according to the interviewees.

Different forms of open defaecation were observed including hanging toilet that discharge directly onto the river.

One of the designated toilet places at Eastern Obolo

But in all these men and women maintained separate spots across the muddy soils for defaecation. Rain water and tidal movement occasionally inundate those spots with water, transferring human excreta and other forms of wastes to further pollute the available sources of drinking water: '*…that is what we drink…in the rainy or dry seasons…we have been suffering on account of poor-quality water and sanitation…*', noted an elderly man. Marshy and poorly developed soils make it difficult and extra costly to build and maintain pit latrines and boreholes. As the villagers noted, *it would be very costly to build and maintain water and sanitary structures on account of the soil conditions, and also the cost of transporting materials from the town across the river to the settlements*. Any makeshift arrangements for toilets can easily be overwhelmed during heavy rain and tidal flood. On this account, strong public intervention is quite necessary and urgently needed.

Just as in Mbiabet Ikot Udo (Ini LGA), women in their menstrual flow are not allowed access to the available drinking sources of water. Furthermore, lactating mothers can only access those drinking water sources after 3 months of child birth. They insist it is their tradition and must be upheld. Violation of this norms will cause the drinking water to dry off, and can only be remedied through some rituals and traditional sacrifices, which they were not comfortable explaining further to our team. Just as in Mbiabet Ikot Udo, women victims of these traditional norms depend on children, husbands, relatives or villagers to gain access to drinking water while under the period of restriction. The villagers noted they have many other taboos that mediate access to those ponds but were uncomfortable disclosing further to our team. We gathered as well as inferred that women and children perform over 97% of the daily tasks of provision, utilisation and management of water and sanitation. Unlike Mbiabet Ikot Udo, there is strong gender-based domination and control with women's voices most likely to be highly suppressed and participation in such meetings highly supervised. These were reflected during our various conversations and our interest was to seek to extend the invitation to women to participate in the meeting.

Workload, financial and health implications of findings

Spiritual meanings, cultural values, perceptions and traditional regulations surrounding drinking water sources and places carry different implication for men and women in the perspectives of disproportionate workloads, financial burden, health outcomes, sanitary and hygiene conveniences and family conflicts among other challenges (Table 1).

The bulk (roughly over 80%) of tasks and responsibilities related to provision, use and management of water, sanitation and hygiene rests on women and the girl children while men and boy children dominate in construction, regulation and enforcement practices (Table 1). Water fetching responsibilities belong to women (64%), followed by girls (20%) and boys (13%), and only 3% claimed men are also involved in complementary contexts and critically needy situations. As one woman in her early 40s argued: '*…it is not the responsibility of men to fetch water…they can only support where there is no help…or in other circumstances…we the women and our girls are responsible…the boy child is also involved especially when others are busy and or no female child…*' (translated).

The weight of rubber varies from 20 to 25 l of water for each person, and many rounds of fetching are needed depending on the size of the household. On average we learnt about 5 rounds of water could be fetched in an hour depending on location and congestion at the source. Specifically, we were informed women spend about 1 h fetching about five rounds of water, but the frequency of fetching rounds could be reduced if men offered to help, but the children can go for as many rounds as possible, which usually works against the possibility of their engaging in academic and other social activities. A round-trip to obtain water from '*idim affia*' (Mbiabet Ikot Udo) can take about 50 min and can be significantly higher depending on time, season and congestion challenges. For Eastern Obolo, about 8 min for a round-trip. The stream size (as small as less than a square meter) and the need to wait for the settling of impurities stirred up in a single collection makes unusual queues and congestion inevitable: '*…at this point, we can wait for ages as each person takes turn…and usually there has to be a gap to allow for the settling of the impurities before another turn…*' noted a woman in her early 40s.

Other tasks and responsibilities within the exclusive preserve of women involve the use and management of domestic water, sanitation and hygiene. As can be seen in Table 1, the major tasks include domestic water use and management, trash emptying, dish washing/washing and maintenance of water storage facilities, house cleaning/cleaning of toilets and bathrooms, laundry, child hygiene management and care for the elderly and sick. In most cases, these tasks and responsibilities can be delegated to the girl child, and in limited cases to the boy child depending on circumstances. Constructional, regulatory and enforcement roles/tasks are primarily within the masculine domain, and can be delegated to boy children as a form of mentoring/training responsibilities. Table 1 shows 97, 92, 89 and 41% of responsibilities for providing water-related storage facilities, toilet/bathroom construction and maintenance, regulation/enforcement and maintenance of drinking water sources respectively rest on men. The practice of gendering roles/responsibilities is inherently a patriarchal norm

Table 1 | Distribution of water provision, sanitation and hygiene management roles and responsibilities

	Percentage distribution by gender			
Task/responsibility	**Men**	**Women**	**Boys**	**Girls**
Water fetching	3	64	13	20
Domestic water use and management	10	48	18	24
Provision of domestic water storage facilities	97	3	0	0
Maintenance of drinking water sources	41	24	29	6
Regulatory/enforcement responsibilities	89	2	9	0
Trash emptying	4	78	8	10
Washing of dishes and water storage facilities	4	90	2	4
House cleaning	5	85	4	6
Toilet/bathroom cleaning	5	85	2	8
Toilet/bathroom construction and maintenance	92	1	7	0
Laundry	10	75	5	10
Child hygiene management	1	90	3	6
Care for the elderly and sick	3	70	2	25

where girl and boy children are prepared and socialised into clearly defined roles and responsibilities, which are reproduced over generations. Being a man carries the mindset of funding the family and performing tasks that are considered energy demanding and risky. It may look odd to find men taking up responsibilities that are the exclusive preserve of the women and vice versa. Tasks and responsibilities exclusively preserved for men or women can only be encroached in circumstances where a single gender dominates in a household.

The financial implications for securing access to drinking water were quantified mostly for women who opted to buy water for drinking and those traditionally excluded from accessing the available sources of water. What we arrived at are the equivalent of daily, weekly, monthly and yearly spend on securing water barely enough for drinking, sanitation and hygiene. For Mbiabet Ikot Udo, the respondents reported an average of as high as NGN150 (USD 0.33)[1] daily expenditure, translating to weekly spend of NGN1050 (USD 2.30) and a monthly expenditure of about NGN4500 (USD9.83). In a year, an average of NGN54000 (USD117.90) would have been spent to secure water for drinking, sanitation and personal hygiene. For Eastern Obolo, the figure is slightly higher: about NGN200 (USD0.44), NGN1400 (USD3.06), and NGN5600 (USD12.23) respectively for daily, weekly and monthly expenditures. By implication, about NGN67200 (USD146.7) would have been spent yearly on water for drinking, sanitation and hygiene in a country with a monthly minimum wage of about NGN30,000 (USD65.5). In most cases, this presents a huge financial burden for women without any form of assistance and support. Over 90% of the respondents claimed they cannot afford such a huge spend, which imposes the necessity for economical use of available water even to the detriment of achieving basic sanitation and hygiene needs (Langford *et al.* 2017).

Poor access to improved sources of water, sanitation and hygiene potentially carries serious health consequences. Although our research did not focus exclusively on health consequences, we were able to infer a number of issues and attitudes through our various discussions including popular perception linking poor sanitation to cholera (utoro) outbreak and their variances. No specific instances of morbidity and mortality were discussed as associated with the water they drink or their toilet system. During our public meetings, extremely few speakers were able to link (in)appropriate WASH practices with health outcomes, with cholera and dysentery (unan) attracting frequent mention: '…were you to stay here, you would not drink that water and survive…it is only God that protects us…', noted an elderly man in his 70s. On further interview at Mbiabet Ikot Udo, two women acknowledged having occasionally used Dettol to protect their families against possible water-borne diseases. Our analysis shows that speakers and respondents with some level of education and exposure were able to discuss the link between WASH practices and health outcomes. However, such discussions depended on our probing especially at Mbiabet Ikot Udo. At Isotoyo, there was some level of awareness among participants of possible health impact. Such awareness probably has to do with the benefit of widespread environmental activism and campaigns against ecological and health impact of petroleum products exploration. Activists probably use the health impacts of occasional oil spillage and other forms of water pollution to inform the community and wider public to reinforce calls for compensation. As in Mbiabet Ikot Udo, they were fatalistic - depending on the supernatural being as the only source of protection: '…we have lived here for many years and no one dies for drinking water from these sources…it is only God that protects…', argued a male respondent in his late 50s. One important indicator of dissatisfaction with the condition of WASH across the study areas was repeated call on public authorities and charity organisations for some interventions. As we inferred, this probably had more to do with the necessity to minimise physical suffering and improve on conveniences than address health related risks: everyone seems to be either talking about spending many hours having to look for water or not having enough water to meet daily needs.

DISCUSSIONS

Our findings have demonstrated that drinking water sources (e.g., Idim affia, Mbiabet Ikot Udo and other ponds in Eastern Obolo) are a part of the many forms of visible material structures that embody and generate automatic reproduction of gender-based beliefs, attitudes, feelings and practices to support cultural control. Women's biological circumstances and processes of menstruating and birthing are shrouded and associated with spiritual pollution, dirt and uncleanliness, and should not be allowed close touch with material structures (idim affia and others) that also command spiritual and existential values (Douglas 1966). According to Akpabio (2007, 2012), local ideas and perceptions of water sources depend, to a certain extent, on cultural values and spiritual meanings. A menstruating or lactating woman gaining entry into a perceived 'sacred place' is seen as deviating from established norms and constitutes a source of pollution (Douglas 1966). These, in addition to morbid

[1] As at the time of our fieldwork, 1USD translated to NGN458 at the official rate

fear of consequences by the victims, over the years, have served to achieve spontaneous consent to make life easy probably for the dominant authorities (Gramsci 1971). We have noted in our introductory section that places are saturated with meanings and have hosted traces of values and ideologies, allowing for tangible expression of power through symbolic traces and transformative practices. The traces and narratives around *idim affia* and the rest collectively symbolise an aspect of the various processes for institutionalising patriarchal structures and norms and reproducing the dominating influence and power of men over women.

The character and power of places are directly and indirectly shaped by social and historical practices tied to a range of political, economic, ethnic and religious histories (Anderson 2010). This validates the assumption that place-making is never neutral as societies consciously and intentionally engage in acts of inscribing and reproducing values and ideologies. By taking and making *idim affia* and the rest in line with their values, feelings and beliefs, they continuously work to perpetuate, reproduce and reinforce the ideology of patriarchy. As an act of power, the making and reproduction of values points to who controls the decision power and processes of defining and setting terms. Historically, patriarchal societies mirrored in our study communities invest enormous decision and managerial powers in the male gender, which enables them to inscribe and reproduce their version of realities.

Men command near-absolute control and entitlements to almost all productive resources of nature, while women's rights are applicable by virtue of being wives[2] mostly at the domestic and private arena. Interestingly, women have been forced to accept their position as naturally given and the possibility of change seems highly impossible. In essence, women are forced to conform to such practices for fear of consequences accompanying breaches including excessive and prolonged bleeding and possible loss of the only source of drinking water. In another perspective, appeal to history has also been the basis for compliance. During our discussions, most of the respondents claimed they inherited the practices and values and must be sustained: '*…this is what we came to see…and must be sustained…*', argued a female respondent in her early sixties. Dominating traces and pattern of behaviours that face no competing alternatives or resistance become normalised, enable spontaneous consent, and according to Jordan & Wheedon (1995; 5), '*it is through these [dominating traces] that we learn what is right and wrong, good and bad, normal and abnormal, beautiful and ugly. It is through them that we come to accept that men are better leaders than women…*'

Idim affia has historically inserted its existential value to the communities in context of persistent water scarcity and absence of public water services. To allow the continued performance of its ecological, spiritual and existential functions, the necessity for control, policing and protection seems to support cultural acts of ordering and bordering which affect men and women differently. Obviously, the scarcity challenge has reinforced a range of spiritual attachment and cultural practices that are intentionally designed to protect the only sources of drinking water for the people. Water resources availability or lack there of remains critical to the flourishing of social and traditional institutions with a mission to provide the necessary structures for the reproduction of values, ideologies and practices. Obviously, the study communities are confronted with everyday challenges associated with limited water resources availability. According to Ghosh & Bandyopadhyay (2009) and Akpabio (2012), it is the scarcity value of water that commands user interest and encourages intentional mechanisms of management and control. Water scarcity forces communities to invent regulatory control practices and develop norms to protect their resources and sustain their services/functions. According to Saleth (2004), water institution is shaped and largely dependent on the nature and characteristics of the available water resources. Drawing from these theoretical positions, we argue that limited availability of water in time, space, quantity and quality forces the two communities to mobilise all suitable social and cultural resources to regulate access and sustain their capacity for existential and ecological functions. We have noticed that the evolving social and traditional institutions disproportionately affect women than men. Such differences have been explained through the patriarchal perspective.

Possible areas for intervention

Access to water in the right quantity and quality is critical to improvement in sanitation and hygiene for improved health outcomes. The SDG envisages full access to water and sanitation by 2030, and our findings mean there are many barriers to cross. What forms of progress and interventions do we need and whose duty is it to provide water, minimise gender-based discrimination and promote inclusive access? At the moment, it may be difficult to achieve universal and inclusive access

[2] As wives, every aspect of domestic water management-food production and preparation, care of domestic animals, household hygiene, washing and disposal-depends on them and in most cases this comes at a cost to other socio-economic engagements.

unless there is strong public intervention through massive and sustainable infrastructures. It is highly capital-intensive to develop sustainable and enduring water infrastructures due to high water level, marshy soils and vulnerability to salt intrusion for the riverine locations. The communities can ill afford such capital-intensive investment. The appropriate sub-national government can leverage on the corporate social responsibility (CSR) plans of the oil multinationals operating in the region, in addition to private interest to explore the possibility of building water transfer infrastructures and functional boreholes for the affected communities.

The second angle depends on the software approach, namely legal structures and remedies. Currently local communities depend on social and traditional institutions for managing available resources. Modern laws and policies on gender mainstreaming have not been in place. Rural areas tend to face difficult challenges relative to the urban areas where public and private interests in water services are relatively stronger. There is an urgent need to evolve appropriate laws that promote inclusivity in access to available water resources and services. However, our study findings equally note that laws and policies will hardly produce the desired results unless systematic efforts are in place to cultivate and develop water supply infrastructures to reap the social and economic benefits of improved and universal access (Hutton *et al.* 2007).

Still related to the software angle is the need for massive awareness campaigns and public education on the public health values of improved drinking water, proper sanitation and sound hygiene. Poor knowledge of WASH–public health nexus limits the capacity of the affected communities to seek improvement options. As the interviewees rarely linked access to improved WASH services with improved health outcomes, the scope for behavioural changes will continue to be narrow. Intense public engagement and media campaigns are clearly necessary to weaken some discriminatory cultural tradition and improve access to water, sanitation and hygiene for women.

CONCLUSIONS

Places have different meanings and values, and shape perception and attitudes to their uses and management. Our study sets out to explore how socio-cultural and gender-based values are reproduced in places, and their impact on access, use and management of available resources and associated externalities, namely water and sanitation with specific reference to women in Nigeria. Our findings reinforce the idea of non-neutrality of places as physical and material entities. Places are produced, reproduced and transformed in line with specific cultural values and worldviews and this shapes how resources and associated externalities are perceived, used and managed. We situate our analysis in relation to gender-based factors shaping access to water places. Our findings demonstrate that women face different levels of challenges and barriers negotiating access to water for domestic and personal use purposes on account of socio-cultural traditions that reinforce unequal gender-based power relationships. The biological circumstances of lactation and menstruation, and the socio-cultural ideology of 'being under men's control' entail different layers of barriers which impact their daily workloads, personal hygiene, finance and health. Finally, in discussing access, interest is excessively focused on capacity to gain benefits but less on the impact of place attributes and values: physical and social distance effects, ecological circumstances and social meanings. Place contexts, social values and public investment intersect to influence who gains access to what facilities and resources. Research should be expanded to incorporate these elements and their intersectional perspectives in shaping access to water.

ACKNOWLEDGEMENTS

The IHE-Delft Water and Development Partnership programmes, financed by the Dutch Ministry of Foreign Affairs, provided support to our WASH-Gender project. Our ideas received substantial inputs during our special session at the XVIII IWRA World Water Congress, Beijing, China (11–15 September 2023). We acknowledge the benefits of their inputs and suggestions in strengthening this paper. We appreciate the following individuals and communities for their effort and cooperation that enhanced the success of our fieldwork activities. They include Unyime Saturday, Eme Eteke, Joan Imaisong, Karen Abraham, Itohowo Sam, Akanimo Ekpo, Saviouir Udoh, Victory Dennis as well as Mbiabet Ikot Udo and Isotoyo community members. We thank the anonymous reviewers for their efforts and insights that contribute to further strengthening the quality of this manuscript. The ideas are, however, those of the authors.

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.

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First received 4 November 2023; accepted in revised form 5 February 2024. Available online 15 February 2024