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Abstract

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Keywords

water, Bangladesh, arsenic, woman

Arsenic Poisoning in Rural Bangladesh

An intersectional analysis of impacts on women

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Abstract

Based on a qualitative case study in six arsenic acute villages in southwest Bangladesh, this paper presents the intersectional impact of the arsenic poisoning crisis in rural Bangladesh. Findings indicate that the arsenic poisoning crisis is aggravating existing gender inequalities as well as gender roles and responsibilities. The gender inequalities related to arsenicosis are manifested in the access to health care and in the degree of social stigma: women are the biggest victims, unmarried women in particular. The study shows that multiple axis of oppression as class, disability and age are crucial in determining the magnitude of the arsenic poisoning impacts in rural Bangladesh. Understanding the gendered dynamics in the arsenic poisoning crisis and, in particular its intersectional impact on women informs the debate on disaster management. Consequently, by expanding current knowledge, this case study lays the ground for more comprehensive and gender inclusive policy making in the context of hazardous waterscapes.

Introduction

LITERATURE ON HAZARDS AND NATURAL disasters has paid attention to multiple societal impacts, but persistent gaps remain in undertaking gender analysis and addressing gender concerns (Sultana, 2010). Vulnerability to hazards involves a complex interaction between poverty and gender relations, in which “women are likely to experience higher levels of vulnerability than men” (Cannon, 2002:48; Enarson and Fordham, 2001). Sultana (2010) further states that natural hazards and disasters often reinforce gender stereotypes and roles and that, conversely gender inequalities may exacerbate vulnerabilities to hazards. Thus, social constructions of gender are crucial in determining how people of different backgrounds are affected by and respond to hazards and disasters. Hence, in carrying out a gender analysis of hazards and natural disasters, it is particularly important to pay attention to the various axes of social differentiation that cross-cut and interlink groups of people (Sultana, 2010).

Against this background, this article presents the gender impacts of arsenic groundwater poisoning in rural Bangladesh, studying particularly the position of women. The aim of this work is to examine through the tool of intersectionality how women are impacted by arsenic contamination in rural Bangladesh. The question we ask here is: which is the group of women that are most negatively affected by arsenic poisoning?

Among those feminist scholars that have employed intersectionality, geographers have brought it forward analytically by showing the innate character of space in shaping gender exclusionary dynamics (see Brown 2012;

Nightingale 2011; Sultana 2009; Valentine 2007; Dias and Blecha 2007). Two elements call for a geographical analysis of intersectionality: first, space and place are central in the formation of people’s identity and secondly, daily lived experience is an analytical tool common to both gender and geography research (Valentine, 2007). Sultana (2009) on a study on gender consequences of flooding in Bangladesh stress that while gender is socially and spatially constructed other categories as class, caste, religion, age, etc. make women the worst affected by natural hazards. Undeniably, this work by Sultana (2009) laid the foundation for our research in Bangladesh and inspired our analysis.

This paper is organized into five sections. Section one presents an overview of the arsenic acute situation in rural Bangladesh and describes the present cumbersome gender-water relation as well as the consequences of arsenicosis. Section two outlines the characteristics of the case study, the study site and the methods applied. Section three examines the concept of intersectionality. Findings, in section four, are divided according to the various axes of oppression observed. The fifth and final section discusses the findings with reference to the gendered dynamics of the arsenic poisoning crisis and provides an analysis of their intersectional impact on women.

“The Largest Mass Poisoning in History”

A severe drinking water crisis is currently being faced by rural Bangladesh. Millions of rural citizens lack access to safe potable water. This circumstance is caused by naturally occurring arsenic contaminating groundwater sources. These water sources provide drinking water to 70 million people of whom 35 million in rural Bangladesh are currently directly exposed to arsenic poisoning (Sultana, 2006). The old deltaic plain of southwestern Bangladesh is in particular severely affected by arsenic poisoning with contamination levels of up to 1000-2000 parts per billion ppb, which is more than 500 percent of the recommended safety standard of 10 ppb. This physiographic zone stretches across the border to India. The lack of annual replenishments of the upper aquifer – where both shallow and deep tube wells are installed – is an important factor to the acute arsenic situation in this particular region (Paul and De, 2000).



Image Source: Water (via Flickr)

In rural Bangladesh water is mainly obtained via public or private owned tube wells where groundwater is manually extracted. In the 1990s these tube wells were deemed a health success story. They aimed at reducing morbidity and mortality due to water borne diseases which were killing over 100 000 children each year (Caldwell et al., 2003). Today these tube wells are instead poisoning millions of people, with naturally occurring, tasteless and colorless arsenic. Through government initiatives tube wells were painted: green for those providing safe, arsenic free, water (arsenic concentration below 50 ppb) and red for those providing unsafe, arsenic contaminated water (arsenic concentration above 50 ppb) (Sultana, 2009).

Beyond painting these existing wells, the Department of Public Health (DPHE) of Bangladesh and the United Nations Children's Fund (UNICEF) have increased access to safe water by creating safe water points in a

number of affected communities. Public education campaigns and social mobilization in the form of community participation in arsenic mitigation programs have also been waged to increase awareness on arsenicosis (see for instance Paul, 2004). The progress will not be even, since some areas are more challenging than others (WHO, 2012). Some regions are more crisis-ridden than other regarding arsenic contamination of groundwater and within these regions there are villages that have not been targeted in terms of public education and social mobilization, and sometimes even in terms of increasing access to safe water. The villages in this study are in different degrees examples of these forgotten villages.

Most private owned tube wells contain high levels of arsenic: the only safe water sources are public tube wells located in the center/or just outside the village. Families thus, have to consider whether to fetch safe

water - which is exclusively procured by women - from a public tube well incurring in the risk of being harassed or sexually assaulted or to continue consuming arsenic contaminated water from the private tube well with the risk of being arsenic poisoned. According to Mosler et al. (2010) prevalent social norms influence the choice of what tube well to use: women are for instance expected to not leave the homestead alone. Social barriers for women thus influence arsenic mitigation behavior (Mosler et al., 2010).

WHO calls the arsenic crisis in Bangladesh “the largest mass poisoning of a population in history” (WHO, 2012). Caldwell et al. (2003:136) asserts that “the arsenic crisis is a major public health challenge for Bangladesh and (...) much yet remains to be learnt about it”. Chronic arsenic exposures have serious implications for its victims and their families including social instability, social discrimination, and marriage-related problems. Long term exposure to arsenic in water leads to arsenic poisoning, which is a chronic illness, also called arsenicosis. The health effects of arsenicosis are generally delayed. It can take between 5-20 years for symptoms to break out. Common health consequences in the first stages are skin problems (e.g. acnes, hard patches and color changes of the skin) and skin cancer and internal cancers of bladder, kidney and lung in the latter stages (WHO, 2012). Additionally, developmental disabilities such as physical, cognitive, psychological, sensory and speech impairments are further possible symptoms (Brinkel et al., 2009). Malnutrition is most likely contributing to the development of arsenicosis. Due to its delayed health consequences, reporting has been poor, and the level of awareness in the communities is low (WHO, 2012). There are no appropriate medical treatments available to cure arsenicosis, except some palliative care (e.g. softening ointments) (Sarkar, 2009).


Gender & Water in Bangladesh

Bangladesh has a low human rights record, with particular concern regarding assaults on women (Farouk, 2005). It is a patriarchal society: within the household and through local decision-making, men exercise control over women onto their labor, their sexuality, their assets and their choice of marriage partner. From fathers, through husbands, to sons, women are dependent on men throughout their lives. In addition, men’s authority over women is reinforced by persistent gender-based violence (Baden et al., 1994). A way to retain and reinforce patriarchal norms is through the ‘dowry system’ which consists in transferring large sums of money or jewelry from

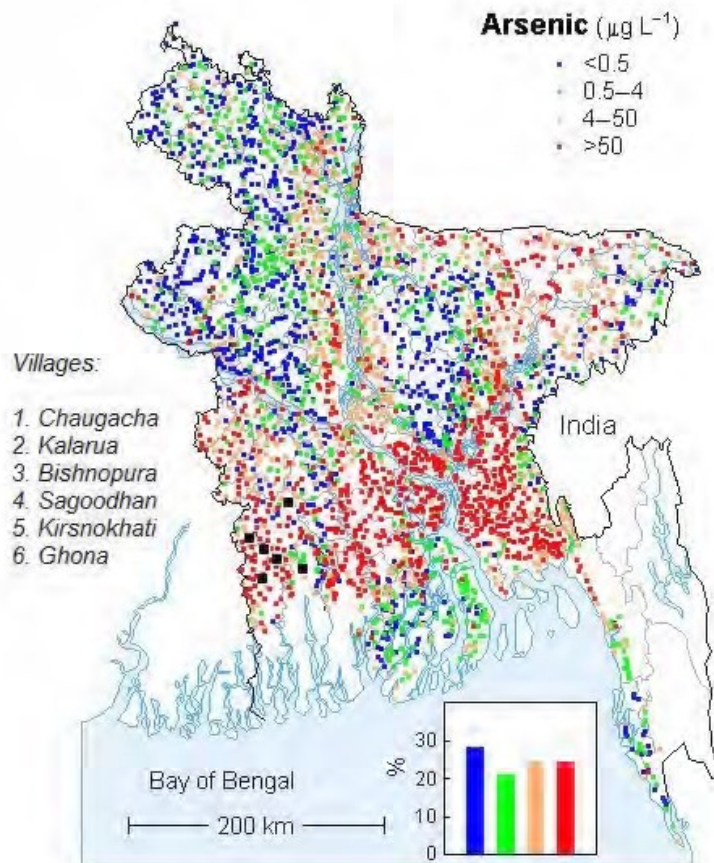
the bride’s family to the groom’s family. The amount of dowry is an indication of the groom’s worth. Therefore, women must have property in order to attract husbands of equal or higher rank. The dowry is considered to be the price parents pay to buy their daughters security, happiness and a good marriage (Chowdhury, 2010). If the desired amount of money is not paid, homicidal violence directed at the wife by the bridegroom’s family may occur in the form of acid attacks (i.e. bride burning) (UNICEF, 2000).

Izzat (honour) and sharam (shame) are social sanctions used in rural Bangladesh to regulate women’s presence in public spaces in order to limit their mobility and to sanction their dress code and their behavior. Appropriate female behavior is in the notions of purdah that is veiling or seclusion (Rozario, 2001). These practices and concepts stemming from sociocultural norms constrain women’s mobility, and unmarried women and brides in particular. Accordingly, marital status and age are important factors in determining who will be burdened the

“The gender-related impacts of the arsenic crisis on women are evident”



humble and laborious task of water fetching. Young unmarried women or daughters-in-law are therefore chosen, by more powerful women in the household, even though it is known to be socially challenging for them to walk in overtly public spaces (Crow and Sultana, 2002). Mobility is often circumscribed within specific spaces and places (e.g. within a bari which is a homestead consisting of a cluster of households around a common courtyard). Consequently, it is more difficult for women and especially young unmarried women to fetch water from sources outside of the bari and in public spaces such as bazaars and mosques, which is where water sources most often are located. The binary gendered constructions of public-masculine and private-feminine come in conflict with each other when women are forced to fetch water from public spaces where the only safe water source



may be. A domestic/feminine task is thus constrained by the spatiality of arsenic distribution and tube well locations that requires crossing the boundaries from private into the public in order to fulfill women's domestic duties. As such, the private space activity of performing a gendered task (provisioning of household drinking water) spills out into the public space, where women may have to venture out into public roads, bazaars, mosques and schools to fulfill their domestic duties in procuring safe water (and thus transgressing socio-spatial norms of purdah. As a result, the private and public spaces collide of the need for water (Sultana, 2009).

There are a number of studies on gender-water issues in Bangladesh (e.g. Sultana, 2011a and 2011b; Truelove, 2011; Sultana, 2009; Sultana, 2006; Faisal et al., 2005; Hanchett, 2004). Yet, further in-depth knowledge extending the current debate on gender-water issues in Bangladesh is needed according to academic scholars and development practitioners (see for instance Sultana, 2006). There are multiple factors interacting

in complex ways and shaping gender-water relations. Drawing from key insights in gender-water studies Sultana (2009) shows that social, spatial and ecological factors are simultaneously determining how people relate to water and how vice versa water affects social relations. Analyzing the social dynamics from a gender perspective can explain how women experience environmental degradation, such as arsenic poisoning, differently than men (Valentine, 2007; Bondi et al., 2002; Longhurst, 2000).

The spatial nature of tube well contamination is reinforcing the notion of femininity: the private and the public gendered spaces collide as a result of

the need for water (Sultana, 2009). Women's entry into traditional masculinized public spaces to fetch safer water reconfigures the notion of femininity, while women's avoidance of such spaces forces them to access contaminated water, which may end up in physical and/or symbolical ramifications (Truelove, 2011; Sultana, 2009). Even though women have gained a more prominent role in arsenic mitigation, Sultana (2006) stresses that it is not fully addressed to what extent different groups of women are affected differently by the arsenic crisis. Given the highlighted research gap in gender and water related issues in Bangladesh, this article presents an intersectional analysis of the impact of the arsenic poisoning in rural Bangladesh. Departing from the gender related differences in the impact of arsenicosis, we present in the reasons and the modalities shaping different groups of women's experience as victims of this natural hazard.

“Arsenic affected people are ostracized and are often barred out of social activities”

Methodology

The empirical material is based on a qualitative case study of six villages in southwest Bangladesh located in the divisions of Satkhira and Jessore during a one month long fieldwork in October 2013. Here arsenic is acutely present in water. The decision to delimitate the study to these six arsenic-affected villages was determined by local university contacts and time constraints. Most importantly, the unstable political situation in Bangladesh restricted travel in the countryside at the time of the field study. The situation aggravated due to the approaching election in January 2014 as well as the increased number of death sentences announces against former soldiers accused for war crimes during the independence war in 1971 (The Daily Star, 2013).

The study covers arsenicosis diseased and non-diseased men and women, both married and unmarried. A total of 49 semi structured interviews were conducted (around 7-8 in each village): 25 with men and 24 with women with regards to how they access water and the problems/fears they face in collecting the water as well as the awareness/problems associated with arsenic poisoned water

and with arsenicosis. Out of these 24 interviewees afflicted with arsenicosis only two unmarried women could be interviewed as unmarried women do not want to reveal they are ill due to the reduced chance of getting married. Male arsenic patients were easier to reach as on the list of arsenicosis patients in the village 90 % of the registered names were males.

Focus group discussions were conducted with women and men separately (i.e. both arsenic affected and non-arsenic affected, both married and unmarried as well as both mothers, fathers and daughters in law were represented in the focus groups). The total number of male based focus groups were 6 (one in each village) and the total number of female based focus groups were 10, out of which 3 were with unmarried (non-arsenicosis diseased) women, separately. The number of focus group participants varied between 7 -13 people, except for the focus groups of unmarried women where the number varied from 3 – 7. In total, participants to focus groups were 113. Gender segregated focus groups aimed at making women feel more confident to share their disease related issues with other women rather than in a mixed group. Questions and discussions in focus groups revolved around men and women’s different experiences with arsenicosis and women’s hardship.

Some of the questions addressed were: what are the worst aspects of being afflicted with arsenicosis? Do you think men and women experience different sufferings of arsenicosis? Do you get medical care for your illness? The first group discussion was conducted with women’s group and afterwards with

the men's group. The reason behind this ordering was to hear the men's reactions on what the women had answered. It was more of a 'hearing the other side's view' rather than having a separate discussion with men. Material from interviews and focus groups were transcribed at the end of each field day. The finalized transcripts along with observations from the field constitute the foundation upon which the analysis is based. Data on gender related differences of arsenicosis as well as of the arsenic poisoning crisis in general were continuously summarized throughout the field work. Findings were categorized according to gender, age and health status of interviewees and the different axis of oppression that appeared during the study.

Intersectionality

Intersectionality was defined by feminist legal scholar Kimberlé Crenshaw (1989, 1991) in her work on rape and domestic violence against black women in the US. With this term she referred to the composite nature of oppression suffered by black women, who are not only the target of rape because of their gender, but also the victims of racial judgments and stereotypes because their skin color.

Because of its origin within black feminisms, the main components of the first intersectional analyses were mostly gender and race. Class was then added, followed by other dimensions as ethnicity, age, disability etc. (Carbin and Eidenheim, 2013; Nash, 2008).

Criticisms towards intersectionality have indeed not been absent. While asserting that intersectionality can become a methodological tool for aid and human rights work, Yuval Davis (2006) warns that its use is often conflated to specific identities because it is based on the experiential analysis of women's oppression. When presenting the experience of women, according to Yuval Davis (2006) intersectional scholars should stress that identities are ever changing as women can and do challenge and win oppression.

Davis (2011) for instance claims that it is not clear whether intersectionality is a theory or a concept and whether it should aim at framing only individual experiences or at theorizing identity. Kwan (1996) goes further by arguing that intersectionality is a

theory of and for marginalized groups. He cites white maleness as a multiple identity which intersectional scholars would not consider as it is not ostracized by patriarchal and hetero normative society. Yet, Davis (2011) concedes that, because intersectionality is vague while at the same time dealing with crucial normative issues within feminist theory and it addresses exclusion and essentialism, it has become so successful (Davis, 2011).

Axes of oppression in Arsenicosis

In this section we present the data collected according to the intersectional dimensions we chose for our study: gender, class, disability and age. These different groups of oppression are chosen according to observations and experiences from the study site during our field study. We chose to not use race or ethnicity in this study as Bangladesh is ethnically a relatively homogenous country (Zaman, 2004).

Gender

When arsenic is found in private owned tube wells, mothers-in-law or older women in the household, who are the decision-makers in relation to household activities, choose whether to fetch safe water from a public safe water tube well located in the village or not. In the first case, they expose a younger woman in the family, often the daughter-in-law, to the risk of being harassed and sexually assaulted (e.g. men shouting bad words or physically approaching women). In the second case, when water is fetched from their privately owned, but contaminated tube well, they continue consuming unsafe arsenic. The effects of arsenicosis may take 2 to 14 years to develop (WHO, 2001). Thus, a slow mass-poisoning of millions is taking place in rural Bangladesh.

The gender-related impacts of the arsenic crisis on women are evident. The patriarchal structure in Bangladesh results in women being more vulnerable to hazards and natural disasters (Sultana, 2009; Enarson and Fordham, 2001). In Ghona, one of our study sites, there are no safe public water tube wells and most households do not have a private tube well. The only provision of water comes from a public tube containing unsafe levels of arsenic.

The well is located far away from the village center which means that young unmarried woman can be harassed, but also potentially kidnapped or



Image Source: Louise Andersson

raped during their long walk. In all other villages researched, except for Kirsnokhati, women expressed fear of walking in public, especially during darkness and during social activities among men (e.g. football games). In an attempt to avoid such incidents, women come together to fetch water – at certain times. On the other hand, in Kalarua, Sagoodhari and Chaugacha, all relatively densely populated villages' women complain of having to wait a long time to fetch water because of the crowd around the public safe water tube well. Such instance speaks for the need to improve and enhance water infrastructure in rural Bangladesh. Having to wait too much time, might encourage women to revert to unsafe wells.

Daughters mostly stay inside the homestead not only to help out with household tasks, but also for safety reasons. Girls complained they could not be out and play with each other, such as boys do. They asserted that they felt imprisoned.

It is women exclusively who collect water, with very little assistance from either men or boys (see also Faisal et al., 2005). When asked, men mentioned that they were occupied with farming and commercial activities to provide for their family. Hence, they argued, they had no time to help women to fetch water, which they considered chiefly a woman's task. At repeated questioning, some boys shook their heads asserting that it was unthinkable for them to collect water. Changes in the local patriarchal structure appeared challenging to encourage. A more open attitude existed in educated, even minimally educated; families where there seemed to be awareness of the inequalities which women are object of.

In addition to the gender aspect, two gender related differences of arsenicosis are notable: (1) the access to health care and (2) the way in which the social stigma of arsenicosis is experienced.

Access to Health Care

All 62 male respondents in the study had better access to health care, i.e. access to hospital, treatment and medicines. The reason why men have better access to a hospital is mainly a result of the lower risk and the higher acceptance of using public transports (e.g. rickshaws). Only few women reported that they were accompanied by their husbands or sons to the hospital to ensure their protection. However, the problem women face to access health care is far more complex than just the issue of reaching the hospital. For instance, Men do not experience uneasiness when communicating their symptoms with medical staff, which primary consists of men. Meeting a male doctor is considered inappropriate according to female respondents who expressed uneasiness at the thought of showing their symptoms and skin lesions to a male doctor.

Hence, there are plural gender-related restrictions that hamper women to access health care. As aforementioned, women suffer verbal and physical

“Arsenicosis is found to be more prevalent among the poor who suffer from malnutrition”

harassment outside their homestead, using public transport to the hospital is not an option, no matter the degree of their diagnosis. Not only do social risk and fear limit the mobility of women, but women’s reproductive responsibilities in the household further dictate their restricted mobility. Arsenic affected women in most villages were adamant that they should stay within their homestead, to cater to their family’s reproductive needs, to avoid risk but also because it is a taboo to be in public spaces and meeting a male doctor.

The Social Stigmatization of Arsenicosis

Both female and male arsenic patients were interviewed about social stigma that they suffer. In the ranking of the worst off among patients are unmarried women. Being afflicted with arsenicosis hampers their chances to get married.

Getting married is crucial for a Bangladeshi woman, as marriage and motherhood is the only source of approved status. Unmarried women refer to being ill with arsenicosis as a shameful condition that destroys their beauty: “It looks very bad on you, having the whole body covered with acnes” (Fatema ,, 15, Kalarua, October 2013).

When asked, villagers seemed to be aware of the presence of arsenic in drinking water, but because of the delayed health effects, they felt that these issues are not of a high priority, which shows why many families continue consuming contaminated water from their own homestead tube well (see also Mosler et al., 2010). The general awareness of arsenic poisoning has increased over the last years, but there still seem to be a belief that arsenicosis is contagious as HIV, which is not the case. Hence,

the likelihood for single arsenicosis diseased women to get married further dims. Unmarried women afflicted with arsenicosis tend not to reveal their shameful condition and hide in their homes. They are not visible to the local communities. There is in fact a tendency among people in villages to isolate people who are affected. Unaffected people are scared of arsenicosis, therefore they tend to avoid arsenic victims (Brinkel et al., 2009). Arsenic affected people are thus ostracized and are often barred out of social activities. Additionally they face rejection, sometimes even by family members (Hassan et al., 2005). Consequently, interviews with unmarried young arsenic affected women were only two in our study: a sign that disclosing one’s health condition equals wearing a scarlet letter. It is thus fair to assume that the number of arsenic poisoned unmarried women is higher than what is believed.



Image Source: Adam Jones (via Flickr)



Economic Status

Arsenicosis is found to be more prevalent among the poor who suffer from malnutrition, who have no alternatives sources of safe drinking water, and who are unable to get proper treatment because of financial constraints. Most of the poor remain untreated due the financial constraints. Hence, Arsenicosis is both a cause and an effect of the economic burden of the poor (Brinkel et al., 2009).

Based on the empirical data it can be stated that the negative effects of arsenic poisoning are related to the economic status of the six villages. We take here the cases of Ghona and Kirsnokhati. Both Ghona and Kirsnokhati are situated in Satkhira district and Kirsnokhati in the upazila- sub-unit of a district - of Tala. Ghona is significantly bigger with a total population of 3423 whereas Kirsnokhati has a total population of 492 (i.e. Ghona is almost seven times bigger than Kirsnokhati) (BBS, 2014).

Ghona is particularly badly affected by arsenic. According to Hassan et al. (2005) 99 % of the tube wells were contaminated by arsenic in 2005. The situation has not improved. Hassan et al. (2005) reported surprisingly few arsenicosis affected in 2005, which may have its explanation in that medical service at that time had not yet developed for diagnosis and the general awareness about arsenicosis was low (Hassan et al., 2005). Years have passed from this study, and the number of arsenicosis sufferers have increased severely, possibly due to long incubation of the disease. Ghona has no access to safe water. Such situation creates a reinforcing loop: poverty, the underlying cause of the lack of safe water in the first place, is enhanced by the lack of safe water. In addition, the majority of the men are unemployed; hence they spend their time lingering in the streets often exposing women to harassments and general uneasiness. Almost all villagers are to some extent affected by arsenic poisoning. Ghona did not have a public

safe water tube well installed: many household do not own a private unsafe water tube well. Hence, women of Ghona are subjected to the highest social risk of walking in public areas (e.g. kidnapping/rapes).

Arsenic poisoning in Ghona is, despite the total lack of safe water, also a consequence of not being able to afford health care. For instance, young women suffering from early stages of arsenicosis could be cured by vitamin supplements and by consuming safe water, but in Ghona none of these alternatives exist. These young women become victims of arsenicosis: chances to get married decrease and as poor families cannot afford to pay for their daughters' dowry making these young women even less attractive on the "wedding market".

On the contrary, in Kirsnokhati the economic and social situation was better with an improved access to safe water. Men farm or are involved in commerce while women work in the household. The effects of the arsenic crisis on women did not appear to be as serious as in Ghona. Women could walk around quite freely in public spaces and without fear when collecting water from the safe water point situated in the outskirts of the village. Lack of unemployment and thus no men on the streets to harass women is probably an important factor to the safer village atmosphere.

Families in Kirsnokhati could to a higher extent also pay for medicines and health care provided by the nearest hospital; positive effects that spill over on to women in the families. Such findings are in line with Crow and Sultana (2002) who show that class in rural Bangladesh differentiates access to domestic water: more prosperous households generally own deep tube wells, providing cleaner water: wealthier women have better access to cleaner water than poorer women (Crow and Sultana, 2002).


Disability

Women who are afflicted with arsenicosis are often too sick to take care of the household or to fetch water. The symptoms and the impairments caused by arsenicosis are another factor that further aggravates women's already constrained mobility and ability to procure household tasks and cater to their family. Walking and gripping disabilities are the direct effects of the swellings of palms and soles (Sarkar,

2009). These swellings give a burning feeling. Besides skin lesions, common symptoms are fatigue and fever. For instance at the time of fieldwork:

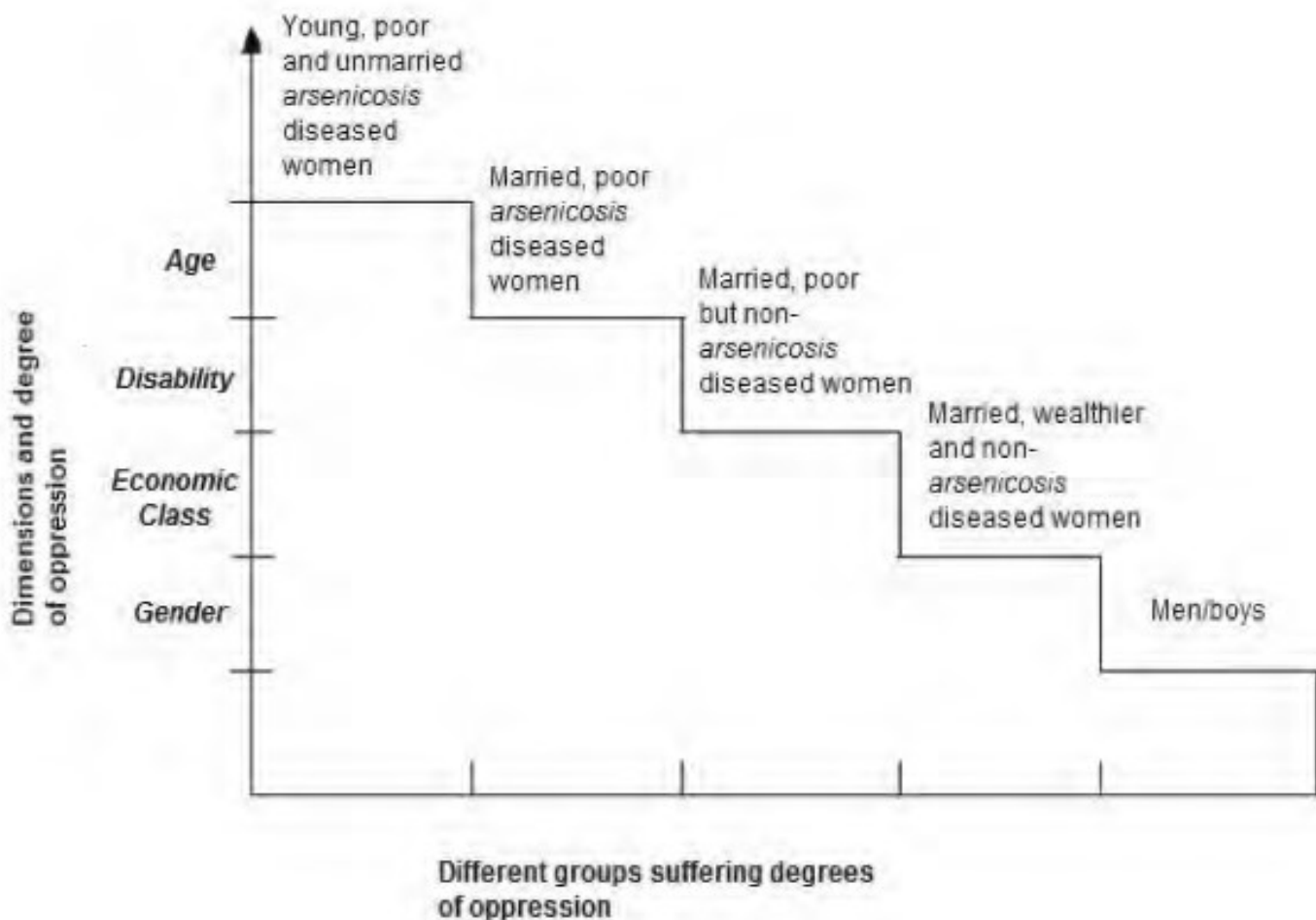
Nazma, a married woman has reached a difficult stage of arsenicosis, and was diagnosed with skin cancer. She cannot walk outside of the house because the sunlight was too painful on her skin. Her swollen palms and soles in combination with feelings of weakness and tiredness make her mostly stay in bed. She is living alone with her two teenage daughters,

“The social stigma associated with arsenicosis intensifies the already oppressing nature of being a woman”



as her husband died a year before from liver cancer (an effect of arsenicosis). Nazma is not only severely sick, she is also very poor and can therefore not afford any medical treatment that would ease her pain or reduce her fatigue. She is very worried about the future, and especially about her daughters' future. She has no means to pay any dowry for them. She hopes her daughters one day will be able to move into the city, earn their own money and thus not have to be dependent on a man (First author's notes from semi-structured interview, Kalarua, October 2013).

The story of Nazma's is not unique. Arsenicosis diseased widows like Nazma whose husbands already have died due to arsenic poisoning can be found in all six villages in the study. No matter marital status, women afflicted with arsenicosis, stand at the intersection of not only gender and class oppression, but also of oppression in terms of physical disability.



Although widows and single women are most vulnerable and worst affected single women are particularly vulnerable due to a larger negative impact in terms of future outlooks. In fact single women are generally younger than widows and because they are not married yet, they are more vulnerable to harassments.

Age

Oppression in terms of age was not as evident as gender, but it does exist as there is a hierarchy in the household depending on age. Household activities such as the collection of water are exclusively governed by mothers and mothers-in-law, who are the decision-makers in this regard. It is generally the daughters-in-law or the daughters who fetch water, since they have a lower status in the family hierarchy and collecting

water is considered an unskilled task (see also Crow and Sultana, 2002). Mothers are busy with other household activities as cooking and cleaning. In many cases mothers diseased by arsenicosis are too sick to go and fetch water. According to the household hierarchy, young unmarried women face the highest risk of walking in public spaces when fetching water. Crow and Sultana (2002) further state that since it is the young girls who are responsible for collecting water several times a day, the education of young women may be adversely affected. Daughters to the poorest families in all investigated villages, except for Kirsnokhati, did not go to school because they needed to help in household activities. Interviewees argued that keeping daughters and daughters-in-law within the homestead is not only a matter of assisting in household activities but also a matter of protection.

As aforementioned arsenic contamination was widespread in the study sites, but in different degrees. The dissemination of arsenicosis was most prevalent in Ghona, where even young people were affected. The only two young arsenic affected women who participated in the study asserted their devastation and reported all the social negative effects a young unmarried arsenic diseased girl has to suffer, besides the physical symptoms associated with the illness: “I have no hopes and dreams about the future, because there is no future for us” (Sifat, 14, in focus group discussion with authors, Ghona, October 2013). Due to the social stigma associated with arsenicosis, it is fair to believe that these two young women are part of a quite large group in Ghona. Young unmarried girls are the worst affected by the arsenic water contamination in Bangladesh. In the best case scenario they suffer street harassment when they go to fetch water, in the worst case scenario they fall ill with chronic arsenic poisoning and their chances to get married vanish. They do not only become socially stigmatized and end up living segregated in their family compounds, but they also become a burden to their often poor family who can hardly maintain them, let alone cure them (see also Sultana 2012).

Rohima, 15, is newly married and has recently moved into the house of her husband and his parents. She has not yet collected water to the household as she just moved in, but it will soon be one of her duties.

Rohima’s destiny depends on her parents’ ability to produce a dowry. As Rohima’s parents are poor, there are reasons to believe that Rohima’s husband and his parents are poor too, as they have accepted the dowry so far. Rohima is afraid her parents are not going to be able to pay the rest of the dowry, as there is a high risk she will then face harassment and verbal abuse by her in-laws. And if this was not enough, her skin has started to show signs of arsenicosis. Where there are dots on her skin, there is a burning feeling. She struggles to keep the dots hidden with her clothes. She thinks that this will soon be impossible, if she does not get medical treatment and, as she understands, stops drinking arsenic poisoned water. But she has no other alternative than to drink and fetch the water, as decided by her new family. (First author’s notes from semi-structured interview, Chaugacha, October 2013).

The gender-age relation is thus possibly the strongest and most crucial determinant to the oppression on women in the arsenic acute situation of southwestern Bangladesh. Being a woman and in

addition of young age, implies being worst struck by the social consequences of arsenicosis, and is thus experiencing the most cumbersome lack of freedom (see figure 2).

Halima, 19 years old living in Ghona is unmarried and arsenic poisoned. She collects unsafe water three times a day from the public tube well, situated 800-1000 meter from her home. She is afraid when making this walk: she can never be sure if the shouting from men and boys are going to turn into physical approaches. Her skin has started to show signs of arsenic poisoning: dark metallic dots on her hands, arms and under her feet. They are itching and burning, she says. She is showing the first signs of the initial stage of arsenicosis. A cure is still possible for her: she needs to stop consuming arsenic poisoned water and eat nutritional food. Her first thoughts are not about the cure, however. The physical problems are not yet burdening Halima as much as the social stigma caused by having parts of her skin covered with dots. She worries about her chances of getting married and her health. Her family cannot afford medicines and she is very well aware of other older men and women in the village that are severely sick or that died because of arsenicosis. Her aunt is one of them. (First author’s notes from semi-structured interview, Ghona, October 2013).

Figure 2 illustrates how both Halima and Rohima are experiencing all the different intersectional dimensions of oppression in a reinforcing manner. All of these axes of oppression in combination pushes these women to a more vulnerable position. Hence, Halima and Rohima belong to the most vulnerable group of being young, poor and arsenic poisoned. Being unmarried is a social burden, but at the same time getting married means being the lowest in the family hierarchy and hence subjected to harassment by in-laws.

Discussion

Bangladesh has made impressive strides in achieving gender parity. Educational attainment for women was in 1990 among the lowest in the world, while today the completion rates in primary school are higher for girls than for boys in both primary and secondary

levels. Nevertheless, the percentage of girls' attendance has begun to decline in later secondary levels due to marriage and childbearing (Schurmann, 2009). Other exclusionary factors that keep girls in Bangladesh from education are: harassment, poverty, teenage marriage and early childbirth. Secondary education is an important goal in development. Increasing access to secondary education has great potential to counter social exclusion for girls, whose traditional gender responsibilities have kept them from full economic and social participation. It should be noted that even though the gender parity in school enrollment has made progress, the percentage of girls acquiring the final diploma is lower than boys (400 000 girls are dropping out between grades 6 and 10 of secondary school) (UNDP, 2013). In fact, girls attendance decreases all along secondary school.

Additionally, the broader goal of promoting gender equality and empowering women has certainly not been achieved, despite equal gender parity in school enrollment. Hence, a differentiation should be made between progress in school enrollment and between educational outcomes (Schurmann, 2009).

Girls' school attendance is general shorten than boys. For this reason, girls are less exposed to knowledge in relation to their rights and their possibilities beyond the patriarchal system existing in Bangladesh. Hence, among other reasons, limited and shorter school attendance might not lead to the development of the critical sense or agency needed to challenge the family hierarchy or the social stigma of visiting a male doctor, for instance.

These circumstances make women completely dependent on their husband when they get sick. The man can in fact access medical care directly, while the information women get about arsenicosis is constantly mediated through their husband, who might require a cure which might not be apt given that the doctor could not visit the woman. Unmarried women are instead dependent on their fathers in the access to health care. A patriarchal societal structure which sees women as subordinate thus limiting their access to education and health and dictating their household tasks, is an example of structural intersectionality because "it is the consequence of one burden which interacts with pre-existing vulnerabilities to create yet another dimension of disempowerment" (Crenshaw, 1991: 1249). Rephrasing Crenshaw (2001 in Yuval-Davis, 2006: 196) we could say that "intersectionality is what happens to a woman from a village in Bangladesh when she tries to reach the tubewell....the main road

is "harassment road". One cross street can be family hierarchy, then Patriarchy street....she has to deal not only with one form of oppression but with all forms."

Husbands and fathers in general do want to mitigate the problems their wives and daughters are facing – and to protect them - but they are facing too many barriers of prevention (e.g. work burden/occupancy and the overall livelihood management of the family).

The livelihood management depends on both the man and the woman's activities mutually, which explains the difficulty for a husband or a father to accompany their wives and/or daughters to the hospital, in the same way as their wives and daughters are restrained to their household activities and in addition feel uneasiness when being visited by a male doctor. These explanations in combination often results in women not accessing medical care.

Our results show that different categories of oppression build on one another in a reinforcing manner: gender subordination shapes household tasks which put women on the front line of arsenicosis and street harassment. Consequently, they become targets of physical and verbal violence and subsequently victims of social stigma which greatly casts doubt on their marriageability. Moreover, if they get ill with arsenicosis, they become physically and socially disabled as they cannot perform daily tasks and potential grooms shy away from them. While the category of disability has been deemed unclear and composite, it does nonetheless present the ordinariness from which all disabled people are left out of. In this case study, the normality of a married life with children is precluded to women who are poisoned by arsenic.

Women, and particularly young unmarried women, who fall ill embody the arsenic crisis in rural Bangladesh. They physically and emotionally incarnate the different axes of oppression that they are under. As feminist theory has long conceptualized the control over and the use of the female body as yet another manifestation of patriarchal societies (Davis, 1997), so does intersectionality have a bodily dimension (Jensen and Elg, 2010). The embodied nature of intersectionality reminds us of the experiential and practical dimensions of women's everyday lives, which is fundamental in showing the concrete character of gender inequality (Villa, 2011).

Arsenicosis causes not only physical pain, but also sentiments of embarrassment, rejection and fear which force women to remain within their compound.



Arsenicosis. Image Source: Anita Ghosh/REACH

There is, in this sense, also a hierarchy of suffering as young women are the ones that most often carry out the task of fetching water and experience the emotional pain of harassment and the physical pain of pumping and carrying water (see also Sultana, 2011b). Young unmarried girls aged 11 to 18 in focus group discussions expressed a distinct fear of having to walk in public to fetch safe, arsenic free, water. They were afraid of “bad men” and of what they could either do or shout at them.

Women suffering from arsenicosis expressed feelings of unhappiness, hopelessness and anxiety. Besides bearing with the physical pain of the actual disease, the emotional suffering from the social stigmatization associated with arsenicosis is burdensome for already poor and oppressed women, and for unmarried women in particular: “It’s so shameful, not only does the disease make you look ugly, everybody also believes it’s contagious, who wants to marry you then?” (Hafiza, 18, in interview

with first author, Kalarua, October 2013).

In a more in-depth study in the experience of hardship among women associated with both the process of fetching water and with the risk of/and of being poisoned, Sultana (2011) argues that the associated emotional pain has effects on both personalities and relationships. As emotional distress becomes a part of both the process of obtaining water and of actually being arsenic poisoned, the emotional perspective should not be underestimated.

Struggles over water are manifested in multiple ways, both privately and collectively (Sultana, 2011a). Focus groups discussions conveyed dissatisfaction not only regarding distance to safe water but also regarding user rights and the monthly cost in some communities that each household had to pay in order to access safe water. Many household simply did not afford to pay this. There seem thus to be multiple hardships and various forms of suffering, regarding access to safe water in rural Bangladesh: participants

articulated their sufferings both in terms of poisoned, unsafe water and of both physical and mental pain/stigmatization associated with it - and in terms of the actual access of safe water (e.g. cost and distance). Many household do not let their women fetch safe water, due the social risk associated with it, resulting in a slow mass poisoning in rural Bangladesh. Hardship and suffering have both a private and collective dimension.

Our study confirms that the location of contaminated and safe tube wells condition women's movements. Space plays a major role in triggering the arsenic crisis in rural Bangladesh. If safe wells are far, families might prefer to take a chance and drink contaminated water in order for their daughter or daughter in law not to become the target of harassment. Yet, if young girls fall ill with arsenicosis their chances of getting married simply vanish and they are relegated to a life of social stigma. Hence, the distance to safe water coupled with the economic status of her family is a crucial determinant of a girl's future outlook. Finally, while an intersectional analysis is valuable in identifying the group of women that is worst affected by the current arsenic crisis in rural Bangladesh, a spatial analysis is equally fundamental to highlight the connection between the production of space and the production of women's marginalization (see also Sultana, 2011a and 2009).

Rural women are more vulnerable than urban women who have for instance better access to mass media and information media and hence are more aware about the risks connected with arsenic contaminated water (Rahman, 2009). Not only are literacy rates among rural women low, in addition: "rural women belong to the most deprived section of the society facing adverse conditions in terms of social oppression and economic inequality, and a visible majority of them are being extremely poor" (Parveen and Leonhäuser, 2004:1). In order for rural women to achieve empowerment, they need better access to household resources through greater ownership of assets which will ensure their ability to control assets and to enjoy benefits accrued from them. Moreover, rural women need to be able to participate in household decision-making to challenge existing gender inequality and discrimination against women (Parveen and Leonhäuser, 2004). Given their lack of empowerment, it is not surprising that the majority of the women in our study expressed helplessness and passivity. They simply do not know their rights. Overarching and inclusive family discussions are more frequent among urban women and in urban families. In rural families, first priority is food on the table.

Drawing on existing literatures concerning the reinforcement of gender stereotypes and aggravating inequalities as a result of natural hazards and disasters (e.g. Sultana, 2010; Cannon, 2002), our study confirms that these arguments are valid in the context of the arsenic poisoning crisis in rural Bangladesh. This water-related disaster has gendered impacts in ways that push women, and unmarried women in particular, further into poverty and away from society. The social stigma associated with arsenicosis intensifies the already oppressing nature of being a woman. Hence, the quest for safe, arsenic free, water is associated with gender dynamics and an intensifying notion of femininity as it forces women to enter public spaces, which are seen as masculine (Sultana, 2011a). Additionally, the emotional pain women suffer in the process of obtaining water, due to harassments and sexual assaults, should gain more attention and thus enrich development research.

Conclusion

The aim of the study was to investigate the gender-related differences in suffering from arsenicosis, as well as to analyze the intersectional impact of arsenic poisoning on women. Data was gathered in arsenic contaminated villages in southwest Bangladesh which can be seen as a snapshot of a larger arsenic acute situation which affects almost the entire rural Bangladesh (WHO, 2012). The huge effects of arsenic on physical and mental health make the arsenic issue a critical public health issue (Brinkel et al., 2009).

According to the empirical results there are two distinct gender related-differences in the impact of arsenicosis: one is the access to health care and the second is the experience of social stigmatization. These two gender-related differences are the most important ones, as they seriously affect an individual's life and future: health and marriage likelihood. While health care should be accessible for everyone, empirical results indicate a distinct gender-related difference in the access to health care where women are the biggest victims, as opposed to men who are mobile and can openly show their symptoms to male doctors.

The bodily manifestations of arsenicosis in terms of severe skin lesions are another gender-related difference. Experiencing severe acnes caused by arsenicosis means being socially marked: these acnes are marks of a sickness that is considered both contagious as well as ugly. In a country where women's beauty is judged by skin complexion (Jensen, 2013) and where arsenicosis is believed to be contagious, the effects of arsenicosis result in

the stigmatization of women, especially unmarried ones. The shame of being a victim of arsenicosis makes unmarried women social outcasts, thus they were difficult to engage in this study. The health related impacts of arsenicosis, as well as its stigmatizing effects, are playing along gender lines because they limit women's capability to fulfill socio-culturally defined gender roles and responsibilities, i.e. household and family maintenance activities. Being physically sick and in addition, socially stigmatized, represents a challenge both in terms of daily reproductive tasks and social acceptance. Yet, studying gender as a sole factor would distort reality as there are multiple differences among women. The intersectional analysis of this study thus shows how gender intersects and is expressed in complex ways with the following axes of oppression: class, disability and age.

Based on the data gathered, it emerges that few women in the case study locations tend to fetch water from a safe public tube well located in the village, despite the fact it produces safe, arsenic free, water. Gendered spatial practices, such as reproductive responsibilities within the private household domain, force women to thus challenge social norms in order to fetch safe water. Along with gender oppression, the majority of women in the six villages also stand at the intersection of class oppression. A female villager representing a lower social and economic stand faces more discrimination than a female villager from a wealthier household. Wealthier households can to a higher extent pay for livelihood necessities, such as food, health care and transportation. At its peak, wealthier households may also be able to afford deeper tube wells that can access safe, arsenic free, water from the deep aquifer (see also Sultana, 2009). Lower nutritional status and inaccessible medical care facilities leave the poor grappling with the toxic effects of arsenic (Sarkar, 2009). The bodily manifestations of arsenicosis are reason for isolation and restricted mobility among women in the six villages studied. Severe stages of arsenicosis also cause physical weakness which results in bed confinement. Thus, those women are physically disabled, as they cannot carry out household tasks, and fetching safe water from long distance is of course not an option. A woman suffering from this kind of disability from lower class, with no alternatives to seek health care, stands at the intersection of three lines of oppression: class, gender and disability.

Another factor that further increases the negative impact of the arsenic crisis on women is age. Younger women represent the lowest rank in the household

hierarchy, as older women are in charge. Younger women do more burdensome activities, as fetching water which means facing the highest social risk of walking in public. The gendered spatial activities are deeply rooted, and for that to be changed will take efforts and time by encouraging school attendance (UNDP, 2013) and reducing school drop due to gendered responsibilities (Schurmann, 2009).

In the patriarchal setting of Bangladesh, scarcity of water complicates and intensifies the social construction of gender roles and responsibilities. In addition, water contamination implies the risk of being severely sick and socially stigmatized. Accordingly, access to safe water is not only a problem of scarcity; it is also a matter of gender. Sultana (2011) states that the gender analysis of what has been called the largest mass poisoning in history, has been largely neglected (Sultana, 2011a). Against this backdrop, this study sheds particular light on the conditions of arsenicosis affected young unmarried women who suffer from numerous oppressive axes making their acceptance within their local communities and the improvement of their lives practically unattainable.

We argue that an intersectional geographical analysis is an essential tool in disaster planning. Further nuanced and constructive analysis can expand current knowledge on gender-water issues, as well as on gender-natural hazards/disaster issues, especially, but not only, in the context of the arsenic poisoning in rural Bangladesh. Women's political voices are barely heard in Bangladesh. Hence, we claim that for a more comprehensive and robust policy making procedure, utilizing an intersectional analysis will lead to more inclusive political decision making processes.

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