

The Burden of Fetching Water for Women

A Cross-Sectional Study in Informal Settlements of the Ouagadougou - Health and Demographic Surveillance System (Burkina Faso)

Stéphanie Dos Santos, Madeleine Wayack-Pambe

Introduction

When a household does not have a water source on the premises (either in the compound or house itself) and when it is not possible to purchase water from a mobile water vendor, water needed for basic domestic purposes must come from an external source (Dos Santos and Le Grand 2013). In cities in sub-Saharan Africa, water access is seen as relatively good, especially when compared to water access in rural areas. Nonetheless, in this context, more than one in two people is forced to use a collective water source, usually a standpipe, a pump, or less frequently, a well (WHO/UNICEF 2013). When using an external source, water for household use needs to be collected by one or more persons from the household, who spend a large amount of time on the various steps involved to accomplish the task: traveling to the water collection point, waiting at the water source, transporting the water and storing it. The containers used for storage also often require specific management and maintenance. Together, these activities related to the collection and storage of water make up the tedious chore of water collection. The situation also sharply contrasts to the comfortable conditions of households that have direct access to water through faucets on the premises where water collection requires no effort. Because of increasing urbanization and the development of informal settlements that do not have access to basic urban services such as water, it is important to discuss conditions of water access outside the residence for dispossessed populations (Mitlin and Satterthwaite, 2013).

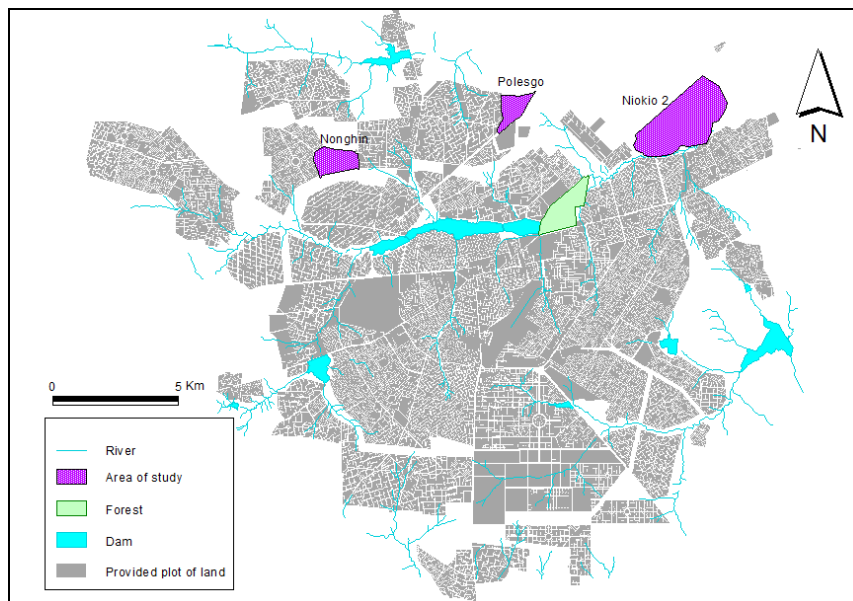
In African households that collect water outside their residence, the burden reflects in the division of labor along gender lines within the households (Dos Santos 2012). In line with socially-constructed gender roles, the burden of water collection and storage usually falls on the women and girls of a given household. In sub-Saharan Africa, it is estimated that women and girls spend about 40 billion hours per year transporting water (UNDP 2006).

Since the 1980s, international conferences on water have called for the incorporation of gender in policies and programs relating to water. Thus, the majority of key international declarations on gender equality have insisted on the importance of water access. However, literature on the causes and consequences for women who have poor access to water focuses on conditions in rural areas. Furthermore, until recently, the literature was mainly concentrated on theoretical aspects and only gave estimations from grey literature (Sorenson et al. 2011). Therefore, the study of this phenomenon in informal urban settlements still needs to be explored. More precisely, the objective of this communication is to use original data to document factors at the household level (socio-economic and related to water) that could explain the fact that the person responsible for water collection is a woman, in comparison to households where the person is a man.

Methods

Data. The study was conducted in three informal settlements of the Ouagadougou – Health and Demographic Surveillance System (Ouaga-HDSS) field site (Rossier et al. 2012) (Figure 1) in February 2013. In total, the sample was composed of 1,272 households: 417 households in Nonghin, 426 in Nioko 2, and 429 in Polesgo.

Figure 1: Location of study sites, Ouagadougou Health and Demographic Surveillance System, 2011



The household questionnaire consisted of seven modules addressing issues as varied as the types of water supply (main and alternative type), the conditions of collection and storage of water, the cost of water, various domestic water uses and a section on persons responsible for fetching water (the primary and the helper).

Statistical Analysis. Descriptive statistics were used to summarise the study variables. We then estimated multivariate logit models to assess the effects of different factors (demographic, socioeconomic and related to water access) on the probability that the primary person responsible for fetching water is a women. Households involved in the study were those which reported that the main source of water was outside the courtyard. We also focused the analysis on adults aged above 16 years old. Given the correlation between the outcome and the fact that the household was constituted by just one person, we excluded from the analysis all households of just one person. All data were analysed using Stata v.11 statistical software. We also used the cluster option included in the software to calculate robust standard errors to account for the fact that the observations are clustered into neighbourhoods and that the observations may be correlated within neighbourhoods, but would be independent between neighbourhoods.

Preliminary Results

Descriptive results. In the settlements surveyed, three households in four were obligated to fetch water outside their courtyard. The main source of water was piped water from a standpipe located in a nearby formal neighbourhood (52%). One household in four obtained water from a hand pump located in the neighbourhood. The rest (25%) obtained water from other sources, mainly from door-to-door vendors.

These results hide a great heterogeneity among the three neighbourhoods under study. In particular in Polesgo, most households (53%) reported that they used hand pumps as the main source of domestic water, whereas only 25% said they used tap water from the municipal council via standpipes. In this neighbourhood, the low proportion of households that used piped water from a standpipe was understandable, because these households reported that the

nearest water standpipe was far from their home (more than 2 kilometres). In Nonghin, the use of hand pump was very rare (2% of the households); the vast majority of the household (70%) used water from standpipes. In Nioko 2, the use of hand pumps was more frequent (13%) than in Nonghin, the use of standpipes being then less common (61%). We therefore observed a clear contextual effect, justifying the calculation of robust standard errors in multivariate analyses.

The three third of the primary persons responsible for fetching water outside the courtyard was a women aged above 16 years old (Figure 2); 13% was a man aged above 16 years old. In one household in ten, this person is a child aged 16 years old or less, and especially a girl.

Figure 2. Transportation of water, informal settlements, Ouaga-HDSS, 2012



Multivariate results. The estimated odds ratios from the multivariate analysis are presented in Table 1. Examination of the results revealed that, as expected, factors related to water access had a significant effect on the probability that the primary person responsible of fetching water is a women aged above 16 years old. This is particularly the case for the main source of drinking water, the type of container used for fetching water, the time needed to go to the water source, the waiting time at the water source before having water and the gender of the person in the household that helps occasionally the primary person responsible for fetching water.

Household socioeconomic status differentials were also observed, specifically the residential status of the head of household and the economical status of the household. To take into account for the composition of the household, one proximate variable was included in the model: the number of residents in the household. This variable was significantly associated to the fact that this is a woman who is responsible for fetching water in the household. Surprisingly, the gender of the head of the household was not statistically significant.

Table 1. Factors associated with the gender of the primary person responsible for fetching water outside the courtyard (Logit Model, $\exp(X_i\beta_i)$), taking into account for the fact that the data are clustered by neighborhood

| Variables ⁽¹⁾ | OR ⁽²⁾ |
|---|-------------------|
| Main source of drinking water (standpipe) | |
| Hand pump | 1.59 *** |
| Type of container (big - 200 liters) | |
| Small - 20/50 liters | 2.06 *** |
| Walk time from the water source (< 10 minutes) | |
| > 10 minutes | 0.53 ** |
| Waiting time at the water source (10-60 minutes) | |
| < 10 minutes | 0.48 |
| > 60 minutes | 2.19 • |
| Gender of the helper for fetching water (male) | |
| No helper | 2.81 *** |
| Female | 2.61 *** |
| Gender of head of household (male) | |
| Female | 0.83 |
| Economic status of household (low) | |
| Medium and high | 2.15 *** |
| Residential status (owner) | |
| Other (mainly free accommodation) | 0.53 *** |
| Number of residents in the household (2-4 residents) | |
| 5-9 residents | 1.39 *** |
| 9 and over | 0.91 |

(1) Reference category in parenthesis.
(2) Significance levels. *** : p<0.01 ; ** : p<0.05 ; * : p<0.10 ; • : p<0.15.

Perspectives

These preliminary results are the first step of a more sophisticated study. We are working on refining the measure of the composition of the household. In particular, the marital status of the head of the household and the sex ratio observed in the household are planned to be included in future analyses. Furthermore, original data on the time use for women responsible for water collection will be used in order to document the weight of the burden and possible constraints to develop other potentially emancipating activities. Until recently, accurate data to measure the burden of water collection were not available (Ray 2007; Sorenson et al. 2011).

This study provides additional evidence that measures must be taken to enhance access to water in African informal settlements through the development of piped water on the premises that avoid the burden of fetching water outside the courtyard, a duty usually allocated to women.

References

Dos Santos, S. (2012). *Le rôle des femmes selon la GIRE: regard sur le troisième principe de Dublin en Afrique au sud du Sahara*. In F. Julien (Ed.), *La gestion intégrée des ressources*

- en eau en Afrique subsaharienne. Paradigme occidental, pratiques africaines (pp. 135-164). Montréal: Presses de l'Université du Québec.
- Dos Santos, S. & Le Grand, T. K. (2013). *Is the tap locked ? An event history analysis of piped water access in Ouagadougou – Burkina Faso*. *Urban Studies*, 50(6), 1262-1280.
- Ray, I. (2007). *Women, Water and Development*. *Annual Review of Environment and Resources*,(32), 421-449.
- Rossier, C.Soura, A.Baya, B.Compaoré, G.Dabiré, B.Dos Santos, S., et al. (2012). *The Ouagadougou Health and Demographic Surveillance System*. *International Journal of Epidemiology*, 41(3), 658-666
- Sorenson, S. B.Morssink, C. & Abril Campos, P. (2011). *Safe access to safe water in low income countries:Water fetching in current times*. *Social Science and Medicine*, 72, 1522-1526.
- UNDP. (2006). *Human Development Report 2006. Beyond scarcity: Power, poverty and the global water crisis*. Pp. 440. New York: UNDP.
- WHO/UNICEF. (2013). *Progress on sanitation and drinking water - 2013 Update*. Geneva: WHO/Unicef.