



# PERCEPTION OF INHABITANTS IN URBAN SLUMS OF BOUAKE (COTE D'IVOIRE) ABOUT THE HEALTH RISKS OF UNSANITARY ENVIRONMENTS

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## ABSTRACT

Throughout the world, one-third of the urban population continues to dwell in unplanned neighborhoods mostly located within unhygienic slums. The impact on their health could be far-reaching. The present study, which was cross-sectional, examined the perception of people in urban slums of Bouaké, Cote d'Ivoire vis-à-vis the attendant health risks. Majority of respondents selected for the study had lived within the study area for at least 2 years. Two persons per household were selected for the study; including the head of the household and any other occupant within the ages of 8 and 15 years. Overall, 423 people were interviewed. The median age was 21 years, with an average residency of 14 years. A total of 98.8% of the respondents agreed strongly that living in slums exposed inhabitants to grave health risks. However, only 2.9% agreed that an unsanitary environment contributed to pollution of ambient air. The perception of health risks related to exposure to unsanitary slums was statistically associated with the age ( $p = 0.0152$ ) and the number of years of residency ( $p = 0.0156$ ). Although, the survey suggested that living in urban slums exposed inhabitants to health risks especially disease epidemics, the fact that these residences had subsisted for very long periods within these slums changed their perception about acceptability.

**Keywords:** environment, health risks, perception, unsanitary, urban slums, Cote d'Ivoire.

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## INTRODUCTION

The environment is a set of physical, chemical, biological and socio-economic, moral and intellectual likely to have a direct or indirect, immediate or future development of ecosystems and human activities (Clerc *et al.*, 2017; Urbandt, 1963). To avoid the negative effects of a polluted-environment on health, people should keep it clean. Indeed, health and wellbeing require a clean and harmonious environment in which physical, psychological, social and aesthetic take their rightful place (Hayward *et al.*, 2015).

However, a third of the global urban population continues to reside in unsanitary slums (Clerc *et al.*, 2017). Poor hygiene in these areas offers bio-ecological conditions for the development of germs and pathogens responsible for many diseases (Gaisie, 1980). In 2012, 12.6 million deaths worldwide (13% to 34% of all deaths) were because of modifiable environmental factors including unsanitary. Also, in the group of children under five years, 16 to 38% of deaths could be avoided if the health risks because of polluted-environment were eliminated (Prüss-Üstün *et al.*, 2016).

A quarter of the global disease burden and more than a third of that of children were because of unsanitary environments that could be eliminated (Prüss-Üstün *et al.*, 2006). In many African countries, studies on the etiologies of unsanitary revealed the deficit of environmental hygiene management services and the obliviousness of the population and the lack of eco citizen's behavior (Ngnikam *et al.*, 2007; Sy *et al.*, 2014). To the causes are added the non-involvement of the people to different programs about unsanitary and the neglecting or the lack of knowledge on the negative impacts induced (Ngnikam *et al.*, 2007). The ignorance of the negative impact of unsanitary violates the actions of the promotion of environmental hygiene. However, the morbidity and mortality related to environmental degradation have a significant cost to the community and its leaders. This shows the need for the support of all to environmental preservation policies. (Prüss-Üstün *et al.*, 2016). Thus, this study aims to determine the perception of health risks by the inhabitants of urban slums in Cote d'Ivoire for finding strategies to solve unsanitary environment issues.

## MATERIALS AND METHODS

This study was conducted in Koko, Djamourou, Dar-Es-Salaam, and Sokoura the urban slums of the city of Bouaké, Cote d'Ivoire. These areas are classified as urban slums because of the huge unsanitary environments, overcrowding and faulty arrangement. They are among the largest and most densely populated of the country (Djéké, 2015). The study population residents in these urban slums for at least one year. In this study, two persons per household with at least two years of residency were selected to make up the sample. These two persons were the head of the household and any child of that same household within the eight to 15-year age bracket. This cross-sectional study was conducted for a month from February 26 to March 26, 2017. The sample size selected for the study was 423 people. For equal allocation, 53 heads of households and 53 children were interviewed per urban slum. A total 423 people, including 211 children and 212 heads of household were interviewed. A purposive sampling was conducted by visiting households near unsanitary places such as garbage dumps, sewage, and clogged gutters. Each of the two people surveyed per household was interviewed by a questionnaire. Data collected analyzed using STATA MP 12.0 software

for statistical analysis. Quantitative data were described by the mean, standard deviation, range, while qualitative by proportion. The multivariate analysis for the definition of the model of the perception of health risks was performed with the statistical test of chi-square, the odds ratio and logistic regression with a significance level of 5%.

## **RESULTS**

A total of 423 people were included in the study with a median age of 21 ranging between 9 and 79 years. These people lived in urban slums for an average of 14 years. Artisans were the group with the highest proportion (35.7%) followed by the pupils and students who were 35.5%. The population of civil servants and service employees were 8.5% of the sample. Regarding the level of education, the group of secondary level had the highest proportion (45.2%). According to the marital status, the single people made up 55.1% of respondents, while the group of widowing and divorced had the lowest proportion of 6.4% (table 1) (Table 1).

Approximately all the respondents (98.8%) claimed that living in unsanitary conditions exposed to health risks. For these people, the occurrence of diseases and epidemics represented the major threats (93%). Against, a small proportion (2.9%) of them expressed that the unsanitary environments had a major negative impact on the pollution of the ambient air. In addition, 5.2% considered that living in this unsanitary environment could have a negative effect on the quality of life and 1.2% estimated that life expectancy could decline (Table 1).

**Table 1:** Sociodemographic characteristics of the population surveyed and their perception of health risks related to exposure to unsanitary in urban slums of Bouaké, 2019.

<b>Demographics</b>	<b>Children</b> (No. = 211)	<b>Householders</b> (No. = 212)	<b>Overall</b> (No. = 423)
<b>Age (years)</b>			
Means (range)	13.8 (9-15)	42.4 (21-79)	28.2 (9-79)
Standard Deviation	± 1.4	± 10.9	± 16.3
Median	14	42	21
<b>Seniority in the urban slums (years)</b>			
Means (range)	10.2 (1-15)	17.9 (1-74)	14.0 (1-74)
Standard Deviation	± 4.3	± 12.1	± 9.8
Median	11	16	12.5
<b>Gender</b>			
	<b>No.(%)</b>	<b>No.(%)</b>	<b>No.(%)</b>
Male	130 (61.6)	135 (63.7)	265 (62.6)
Female	81 (38.4)	77 (36.3)	158 (37.4)
<b>Profession</b>			
Crafts	47 (22.3)	100 (47.2)	147 (35.7)
Unemployed	24 (11.4)	66 (31.1)	90 (21.3)
Civil servants & Employees	1 (0.5)	35 (16.5)	36 (8.5)
Pupils / Students	139 (65.8)	11 (5.2)	150 (35.5)
<b>Marital status</b>			
Married	6 (2.8)	157 (74.1)	163 (38.5)
Single	202 (95.7)	31 (14.6)	233 (55.1)
Widow(er) / Divorced	3 (1.4)	24 (11.3)	27 (6.4)
<b>Education level</b>			
Superior	1 (0.5)	35 (16.5)	36 (8.5)
Secondary	109 (51.6)	82 (38.7)	191 (45.2)
Primary	56 (26.5)	40 (18.8)	96 (22.7)
Illiterate	45 (21.4)	55 (26)	100 (23.6)
<b>Perception of health risk related to exposure to unsanitary</b>			<b>No.(%)</b>
Diseases / epidemics			389 (93)
Impact on life quality			22 (5.2)
Air pollution			12 (2.9)
Lack of social consideration			10 (2.4)
Declining of life expectancy			5 (1.2)

The perception of health risks related to exposure to unsanitary was statistically associated with being a child or a head of household. The perception of health risks by children was 30% lower compared to adult heads of households ( $p = 0.04$ ). There was a statistical link between the profession and the perceived comfort living in precarious neighborhoods ( $p = 0.035$ ). Compared to the group of civil servants and service employees, the health risks perception of exposure to unsanitary was 60% ( $p = 0.031$ ) lower with artisans and 70% lower with the unemployed ( $p = 0.024$ ) (Table 2).

**Table 2:** Perception of health risks by populations exposed to unsanitary in urban slums of Bouaké according to socio-demographic characteristics, 2019.

Variables	Perception of health risks related to the exposure to unsanitary		OR*	p
	Yes (No., %)	No (No., %)		
<b>Category (n = 423)</b>				
children	76 (36.0)	135 (64.0)	0.7	<b>0.04</b>
Householder	97 (45.8)	115 (54.2)		
<b>Seniority in the urban slums (n = 423)</b>				
<13 years	169 (80.1)	42 (19.9)	0.8	0.40
≥ 13 years	162 (76.4)	50 (23.6)		
<b>Gender (n = 423)</b>				
Male	115 (43.4)	150 (56.6)	1.3	0.176
Female	58 (36.7)	100 (63.3)		
<b>Education level (n = 423)</b>				
Illiterate	49 (49.0)	51 (51.0)	1	
Primary	36 (37.5)	60 (62.5)	1.6	0.104
Secondary	75 (39.3)	116 (60.7)	1.5	0.11
Superior	13 (36.1)	23 (63.9)	1.7	0.183
<b>Profession (n = 423)</b>				
Pupils / Students	53 (35.3)	97 (64.7)	0.6	0.242
Civil servants/Employees	7 (24.1)	22 (75.9)	1	
Crafts	88 (45.4)	106 (54.6)	0.4	<b>0.031</b>
Unemployed	25 (50.0)	25 (50.0)	0.3	<b>0.024</b>
<b>Marital status (n = 423)</b>				
Single	87 (37.3)	146 (62.7)	0.8	0.807
Married	83 (45.9)	98 (54.1)	0.6	0.461
Widow (er)/Divorced	3 (33.3)	6 (66.7)	1	

\* Crude OR.

The logistic regression shows that the perception of health risks associated with exposure to unsanitary was statistically associated with the age of the population ( $p = 0.0152$ ) and the number of years of residence ( $p = 0.0156$ ) in urban slums (Table 3).

**Table 3:** Logistic model of the perception of health risks related to the exposure to unsanitary and socio-demographic characteristics of the inhabitants, Bouaké, 2019.

Variables	OR*	CI95%	p-value
Age	1.0536	1.0101 to 1.0989	<b>0.0152</b>
Seniority in urban slums	0.9513	0.9136 to 0.9906	<b>0.0156</b>
Child / Householder	0.3996	0.1334 to 1.1967	0.1012
Gender (Yes / No)	0.6610	0.3965 to 1.1018	0.1122
Profession	0.9601	0.7394 to 1.2466	0.7597
Marital status	0.7087	0.4202 to 1.1954	0.1967
Education Level	0.9687	0.7392 to 1.2695	0.8176
Seniority (Yes / No)	1.1346	0.6081 to 2.1167	0.6915
Constant	-	--	0.0001

\* Adjusted OR

## DISCUSSION

These studies were designed to determine the perception of health risks by people living in urban slums. The results showed that perception was related to age and length of residency in these slums. Seniors who lived for a time in these areas had a better perception of the health risks facing unsanitary. People have claimed that living in unsanitary conditions could lead to diseases and epidemics. By cons, seniors who have spent more time in urban slums have become accustomed to this unsanitary living. More people earn in age and living for a long time in these urban slums, their level of perception of health risks decreases. This shows the plausibility of acclimatization to unsanitary by people with long-term residence in the slums. Thus, in most cases, this familiarization leads to ignorance by these populations of the sources and effects of environmental degradation and health risks (Kassoum, 2007). Moreover, in this study, almost all unaware that unsanitary could pollute the air and therefore lead to respiratory diseases. Most respondents did not know that living in unsanitary conditions could negatively impact life quality and reduce life expectancy. This evidence has been identified in other works which stipulated that urban slums dwellers mostly ignored the voice and the factors of disease transmission and medium- and long-term consequences (Harpham and Stephens, 1991; Patz *et al.*, 2004).

In this research, the occupation and education level were respectively related to the perception of comfort living in unsanitary urban slums. For example, poor people like artisans and unemployed perceived less unsanitary and his effects in urban slums. These findings are consistent with the works which showed that the level of education and occupations of individuals are the most important determinants of the perception of health risks related to the exposure to household and environmental waste (Deza, 2017; Djéké, 2015; Sanni *et al.*, 2016). Approximately all the respondents (98.8%) in the study perceived that living in urban slums exposed to the risk of diseases developing. For in urban slums, poor people live in poor shelter, crowded, without access to public services (water, electricity, sanitation) that are the etiologies of many diseases that occurred.

Similarly, there is a lack of provision for waste disposal, excreta, and others so that people often live among rotting waste and unhygienic in a fetid atmosphere. Commonly these slums are infested with rodents and insects that disseminate diseases (Kassoum, 2007). Also, the prolonged exposition to bad smells, to solid and liquid waste increases the risk of diseases developing (Nsengiyumva, 2013). This is the consequence of rapid and uncontrolled urbanization of cities in developing countries, particularly in Africa (Harpham and Stephens, 1991). Unsanitary is the basis of the poor health of the people living in these urban slums.

## CONCLUSION

This study showed that more people are aging with long-term residence in urban slums no longer they perceived the unsanitary as a factor that can affect their health. Also, this bad perception of unsanitary was linked to poor education and ignorance of voices and factors of disease transmission and the health consequences generated. In this context, information education and communication activities on risk-awareness have to be undertaken for residents of urban slums especially to the older ones. These actions can help them improve the health of their environment even the lack of public services (water, electricity, sanitation).

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