

DEMOCRATIC REPUBLIC OF CONGO
SOUTH KIVU PROVINCE

PROVINCIAL HEALTH DIVISION
KABARE HEALTH ZONE



PROBLEM ON UNHEALTHY WATER AND ITS IMPACT ON THE
HEALTH OF MOSHO/KABARE PEOPLE.

By

Docteur Murphy KABAMBA

Médecin d'Etat Congolais

CNOM : 26.110

eMail: murphykabambandat04@gmail.com

INTRODUCTION BY THE TRANSLATOR

From French to English with Assistance in local & idiomatic expressions. Fall, 2021

By

THOMAS H. WILKINS, CFA, M.A.

President Wilkins

Foundation, Inc.

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South Kivu Province in the country Democratic Republic of the Congo in Central Africa (see below in the far middle section of a map of the Democratic Republic of the Congo to the right of a map of all of Africa) has the highest mortality rate for enfants and mothers in the entire Democratic Republic of the Congo. That country itself is ranked 11th world-wide in the number of deaths per 1,000 live births of children.¹

“About 88% of diarrhea-associated deaths are attributable to unsafe water, inadequate sanitation, and insufficient hygiene.”² Furthermore, the CDC claims “diarrhea diseases account for 1 in 9 child deaths worldwide, making diarrhea the second leading cause of death among children under the age of 5.”

“ For children with HIV, diarrhea is even more deadly. The death rate for children is 11 times higher than the rate for children without HIV.”³

The Wilkins Foundation started in 2015 its initiative to raise funds for construction of a single building, after learning Bishop Steven Auyle-Milenge buried in one week 25 children who died of malaria.

Doctor Murphy Kabamba’s cutting- edge research shows the challenges ahead in a location near the city of Bukavu, shown on the map below (see downward pointing arrow). Dr. Kabamba’s credibility for this report is enhanced since the government’s authorization below recognized him as the then Medical Director.

Now six years later, the generosity of Wilkins Foundation’s benefactors and Bishop Steven Ayule-Milenge’s vision and hard work have resulted in the Ministry of Health for the South Kivu Province to recognize this project as a “Medical Center.” In the last 8 months, 119 children, without any deaths, were safely born in the Doctor Thomas P. Sculco Building which is now authorized by the Ministry of Health to train medical students.

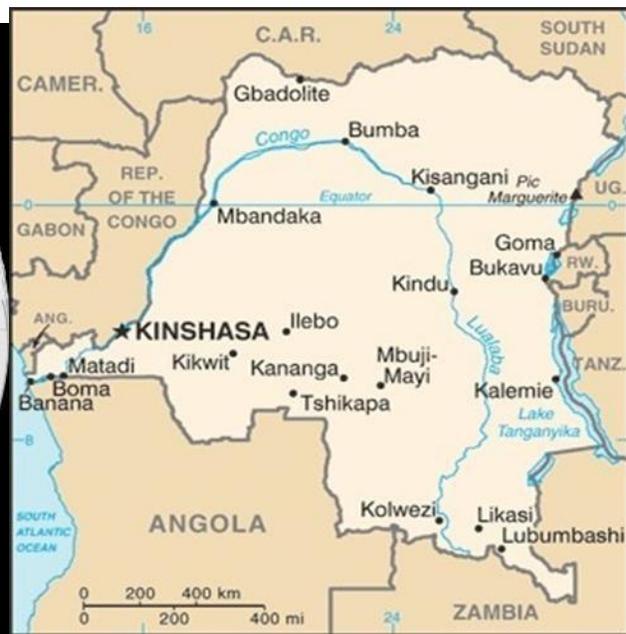
¹ [Source: Central Intelligence Agency, Washington, D.C.

² Source: Centers for Disease Control and Prevention, or CDC

³ ibid



The hospital discussed in this article is near the city of Bukavu on the eastern border (center-right section) of the map on the right below. Sources: Wikipedia & Central Intelligence Agency



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PRESENTATION:

- ⇒ Nature of the health zone. Rural, area 790 square kilometers
- ⇒ Nearest City: Bukavu, South Kivu Province, Democratic Republic of the Congo
- ⇒ Territory : Kabare
- ⇒ Kabare health Zone: There are 16 health areas in the Kabare health zone.

TABLE 1 Demographics of the Kabare Health Area

Population	Number of Men	Number of women	Total	Data Sources	As of
Age 0 to 11 months old	4,395	4,574	8,869	Counted	<i>December 2019</i>
Ages 12 to 59 months	16,372	17,040	33,412	Counted	<i>December 2019</i>
Ages 15 to 59 years	53,840	56,037	109,877	Counted	<i>December 2019</i>

Population 60 years & Older	35,270	36,710	71,980	Counted	<i>December 2019</i>
Total Population	109,877	114,361	224,238	Counted	<i>December 2019</i>

Source: Dr. Mugisho Safari, Head Doctor of the Kabare zone

As I had just illustrated in the presentation, the Kabare Health Area has 16 health areas. the Centre Médicale Centre Archevêque Mark Haverland (the Archbishop Mark Haverland Medical Center) is located in a village called Mosho with about 15,284 people and which is located in the Bwirembe Health Area.

TO BE DISCUSSED IN THIS ARTICLE

I. WATER

II. PATIENT AWARENESS AND EDUCATION OBSERVED AT THE CENTRE MEDICALE ARCHEVÊQUE MARK HAVERLAND:

- ⇒ How to wash vegetables before preparing them
- ⇒ How to conserve drinking water
- ⇒ What type of water should be used for home needs?

NOTE: This society shows signs of “psychorigidity.” With this term, we mean many are unable to adapt to new situations, refuse to appreciate another person’s point of view and lack the ability to change habits.

III. NEW EPISODE OF GASTROENTERITIS (AND OTHER WATERBORNE DISEASES)

Dysentery Syndrome, which is an infectious disease seen as an inflammation of the intestine, abdominal pain, and diarrhea with stools often with blood. According to the World Health Organization dysentery in underdeveloped countries is a leading cause of child mortality. It is caused by contaminated food and water.

IV. SEVERAL EPISODES OF DIARRHEA >CONSEQUENCES ON NUTRITIONAL STATUS

MALNUTRITION : In Other Words,

- A. The problem of water and its impact on the health of the community inducing about 45% of the cases observed at the Archbishop Mark Haverland Medical Center at Mosho and 9.2% of cases in the whole health zone.
- B. Raising awareness and education of patients who have stayed at the Archbishop Mark Haverland Medical Center regarding:
 - 1. How to prepare vegetables
 - 2. What type of water to use for their home needs?
 - 3. How to conserve water to prevent recurrence of Gastroenteritis that can have an impact on nutritional status.

PROBLEM ON UNHEALTHY WATER AND ITS IMPACT ON THE NUTRITIONAL STATUS OF THE COMMUNITY OF KABARE/MOSHO

To talk about unhealthy water and its impact on the nutritional status of the community of Mosho/Kabare/South Kivu Province in the Democratic Republic of Congo is to deal with a very complex and topical problem.

Can it be said that water used by the inhabitants of Mosho is the main source of most of the waterborne diseases observed at the Centre Médical Archevêque Mark Haverland at Mosho. By what mechanism can we explain a surge and the persistence of cases of malnutrition in the Kabare territory specifically in Mosho? Is there good drinking water coverage in all Kabare health areas? Would the government of the Democratic Republic of Congo and other health partners be involved in the management of waterborne diseases and malnutrition?

These questions will lead us to explain the dangers to which the inhabitants of Kabare and particularly those of Mosho are exposed because of poor water (unhealthy water).

Indeed, being a young medical doctor who has been and worked in different villages for a given period, I consider myself to be responsible for both patients who come to the hospital and those who do not come to see why we go down to the community for awareness sessions. This experience allowed me to divide the community of Mosho into three groups/categories.

GROUP A

This is the smallest group. Its members understand the need for patient care and understand quite well the role that prevention care should play especially for their children. This group includes several leaders and the wealthiest members of their community, in general, they are literate and most of them have small radios to listen to medical news programs: unlike members of the second and third groups. They are rarely exposed to waterborne diseases

because some of them use bottled water, or ground water comes upwards through a water fountain and sometimes bottled water branded as “Regideso” that is only used in the city. They also have sanitary toilets unlike groups B and C.

GROUP B:

This group represents between 30% and 40% of the whole community of this area. Those who belong to this group are not very interested in health services unlike the first group. In any case, they make little or no use of preventive services. Economically, they will be less well off than Group A members and have a low education rate. Representing a large part of the whole community; they do not put much emphasis on preventive service. They are more affected by waterborne diseases than those in Group A. Often it is liquid stool emissions in several complicated daily exemptions from dehydration that constitute their main complaint in consultation. Unhealthy water is at the main source of their health problems in this group as there is no good drinking water coverage in all health areas; so, it is the members of Group A who are privileged at this point because to buy a can of 20 Liters of water from a water fountain. They must pay between 200 and 500 Congolese francs⁴; With no other option, the members of this group use rainwater or that of Lake Kivu, which is not safe to drink.

GROUP C

Receive little or no Western-style medical care, for many reasons among which:

- the distance they live from hospitals.
- their poverty
- and the main reason is the fact that they do not understand neither the importance nor the need of a hospital and its role on the health of the members of their families.

Members of this group are most affected by waterborne diseases than those in Group A and B and only notice the presence of the disease in its advanced stages. To have access to this kind of patient, we then carry out field trips not only to make them increasingly aware of the importance of medical care but also to be an apostle of medicine to the most disadvantaged.

Note that in the last module of the consolidated operational action plan of the Kabare health zone,⁵ the two epidemics that often affect the people of group B and C are underlined here below among which:

⁴ Worth about \$0.10 to \$0.25 in U.S. Dollars as of summer, 2021.

⁵ From page 15 of Consolidated operational action plan of the Kabara HealthZzone, updated version October 2018, aligned with the [National Health Development Plan] [PNDS] 2019 until 2022.

- **Cholera**: cholera: the epidemic that was controlled through management and prevention
- **Rubella**: this is an epidemic that began in August 2018 and so far, cases continue to be observed in different health areas. It should be noted that the country does not yet have a strategy to combat this scourge.

Briefly speaking, water is the biggest problem affecting especially the last two groups. Unfortunately, when arriving at the Archbishop Mark Haverland Medical Center the same situation is found. It means that, we observe that there is no drinking water, so the interned patients use rainwater kept in the container or outright. In the dry season, since it no longer rains, they go to get water from

Lake Kivu⁶; this explains many cases of relapse despite several sessions of awareness and education of these and good care. The classic epidemic diarrhea picture is an array of explosive outbreak infection from a common source of either water, milk, or solid foods.

Normally after the rehabilitation of a patient by treating the pathology, we try to meet him to show him the importance of staying in a healthy environment because if this is not respected there will always be cases of relapses and she/he will return to the hospital while in a very complicated situation than at the time of first admission.

THE ISSUES OFTEN ADDRESSED ARE:

HOW TO PREPARE THEIR VEGETABLES

Very often after the interview with women who always cook, we realize that in the past they used to take vegetables directly from their fields and without washing them, they put them in pots and cook immediately without thinking about washing them, thing which is not is not good. That is the reason why we step in by showing them how they should wash their vegetables in hot water and the importance of this act before preparing them.

⁶ Lake Kivu is a large lake which separates the Democratic Republic of the Congo and Rwanda, stretching 56 miles long and 31 miles at its widest location. It surfaced is estimated at some 1,040 square miles and is Africa's eight largest lake. Its deepest location measure 1,558 feet. Lake Kivu contains "methane and carbon dioxide, as a result of lake water interaction with volcanic hot springs. The amount of methane contained at the bottom of the lake is estimated to be 65 cubic kilometers (16 cu miles). If burnt over one year, it would give an average power of about 100 gigawatts (130×106 hp) for the whole period. The lake also holds an estimated 256 cubic kilometers (61 cubic miles) of carbon dioxide which, if released in an eruption event, could suffocate all of the inhabitants of the lakeshore." Source: Wikipedia

WHAT TYPE OF WATER IS USED FOR THEIR HOME NEEDS?

They are shown that the ideal would be to use bottled water under the "Regideso" brand bottled by a public utility founded in 1933 within the Department of Mines and Energy in Kinshasa our capital City. The company's purpose is to deliver water to residential, commercial, and industrial customer. Unfortunately, this bottled water is only provided in Bukavu, some 17 kilometers away from Moshu. As the roads are damaged, there is no public transportation and many Villagers walk long distances, purchase of bottled water is a farfetched option. Also, wealth plays a role in restricting demand. A 0.5 liter of bottle of water costs 600 Congolese francs (about 30 Cents in USA pound) and a 20 liter can of water from the spring costs 200 Congolese francs. We have never succeeded our wish because the population makes it clear that priority is given to food due to the cost and scarcity of bottled water.

Hence the usefulness of increasing the numbers of the fountain terminals which are only three spreads over a distance of 7 kilometers " between the Archbishop Mark Haverland Medical Center from the general hospital of mukongola /kabare. "Perhaps if the number of fountains could be increased, the cost of a 20-litre can would even drop to 50 Congolese francs and that is when the whole community will feel relieved.

HOW TO CONSERVE WATER TO AVOID RECURRENCE OF GASTROENTERITES THAT MAY HAVE AN IMPACT ON THE NUTRITIOINAL STATUS OF THE MOSHO COMMUNITY

Although some people may be able to buy a can of water for 200 Congolese francs, the problem also arises on their ways of keeping it because they use very dirty containers that are not washed regularly and can thus become the source of a new infection. Seen from this angle, we try to show them how to wash their cans using the leaves of the cypresses after which they are given ("Aquatables") tablets to make this water pure.

Then, in trying to analyze the three questions illustrated above we find a certain 'psychorrigidity' on the part of our patients leading to new episodes of Gastroenteritis. Looking at this problem from another prospective there are different problems.

- No global support partner for kabare Health Zone activities
- No mobilization of funding to carry out the Health Zone's activities in 2019.

Apart from that, every stroke of diarrhea too often leads to a new decline in the child's nutrition. As the attacks of diarrhea follow, the child gradually goes from a state

of insufficient growth to a marasmic state as seen in a loss of body tissues, stunted growth, and kwashiorkor doldrums or even a pure form of kwashiorkor caused by protein deficiency.

In many countries pediatricians are now monitoring the nutrition of children with diarrhea very closely. In Iraq, 57% of children with diarrhea fell in the third Degree of the GOMEZ⁷ classification: only 20% of them, compared to 63% in a control group,

⁷ The Gomez score allows us to classify the degree of malnutrition in terms of percentage after considering the ratio "weight for age." An index between 90% and 100% (good nutritional status) is considered normal. We speak of a "slight undernutrition" in a child whose index is between 75% and 89%. We speak of "moderate undernutrition", in a child whose index is between 60% and 74%. We speak of "severe undernutrition" when the index is less than 60%.: you see with me the different degrees that we want to talk about here, so:

- mild undernutrition: first degree (stage 1 malnutrition)
- moderate undernutrition: second degree (stage 2 malnutrition)
- severe undernutrition: third degree (stage 3 malnutrition)

were breast-fed. Diarrhea most often occurs when breastfeeding stops. One study also indicated that while diarrhea commonly occurs early in the weaning period, when the child is still breastfeeding, it is in the last phase of this period, just after breastfeeding has stopped that the death rate is the highest.



Source: Wikipedia

However, in the Kabare health zone there are cases of armed robbery and banditry so some of the families flee to the rural areas and leave behind the vulnerable who cannot afford medical care, mainly the elderly and children.

This community lives mainly on agriculture, the breeding of large and small cattle and small trade. Unfortunately, the cassava that constitutes the basic food has been attacked by mosaic and the banana by the wiethfiel bacterium which ravages all fields. These two diseases, associated with the soil that has become very poor, plunge the community into a state of extreme precariousness with serious consequences on health: malnutrition and the use of highly alcoholic beverages instead of the drink made from banana.

Note: gastroenteritis, anemia etc. are significantly associated with chronic malnutrition; this explains why in many developed countries pediatricians closely monitor the nutrition of diarrheal children.

Chart II MORBIDITY-BASED PATHOLOGIES IN THE KABARE HEALTH ZONE ⁷

Number	Pathologies	Number of cases	Percentages
1	Malaria	17,553	36%
2	Respiratory infections	7,936	16,2%
3	Diarrhea diseases	4,527	9,2%
4	Malnutrition	3,691	7,6%
5	Urinary tract infections	3,636	7,4%

⁷ Footnote: "Morbidity Rate" is used for a given population and thus indicates the number of people with a specific condition during a given period, usually for a year, but not necessarily. The morbidity rate is the number of cases observed normally per 100,000 inhabitants.

Chart III: DOMINANT PATHOLOGIES LEADING TO MORTALITY IN THE KABARE HEALTH ZONE⁸

Number	Pathologies	Number of casses	Percentages
1	Malaria	22	48, 8%
2	Malnutrition	18	40%
3	Respiratory Infections	1	2,2%
4	Meningitis	1	2,2%
5	Chronic diseases: diabetes, high blood pressure, liver cirrhosis 3 6, 6%	3	6, 6%

Chart IV: OTHER EPIDEMIC DISEASES OR OTHER SPECIFIC HEALTH PROBLEMS OF PARTICULAR PUBLIC HEALTH INTEREST

Number	Pathologies/health problems	Number of cases
1	Cholera	497
2	Aids	
3	Tuberculosis	
4	Diabetes	34

Comments related to the epidemiological situation:

1. Malaria is a major public health problem in the kabare health zone. It is the leading cause of consultation with 36% of cases and is the leading cause of proportional mortality with 48% of cases.
2. Malnutrition is a scourge that decimates children under the age of five, is on the rise and mortality is increasing because of the irregularity of the supply of malnourished aids.

⁸ Footnote: "Mortality Rate" is expressed primarily through a percentage and is the annual number of deaths due to a cause compared to the number of inhabitants of the area considered.

3. The health zone has experienced two cholera outbreaks in which 497 cases were registered in “a neighboring district of Mosho” and rubella epidemic that is still going on.

In conclusion, let us say that unhealthy water is the biggest problem on the Kabare community and particularly that of Mosho because being the source of several pathologies such as diarrhea diseases leading gradually to an alteration of the nutritional status especially in children under five years of age, because they constitute the most vulnerable age group. It is desirable that anyone interested in the problems shown here above can help us to assist this community neglected by the government of our country, in which the number of deaths is skyrocketing because of malnutrition being an alarm but unfortunately our authorities remain in the dark, about developing the following programs:

- In the construction of hygienic latrines in Mosho as well as the neighboring districts.
- In the construction of the other standpipes because we only counted three over 7 kilometers.
- In nutritional rehabilitation with the following target: children, pregnant women and the elderly.
- In the construction of a literacy school for adults because most of the women and men in the territory of kabare precisely in Mosho have not been educated.

REFERENCES :

- ⇒ Consolidated Operational Action Plan of the Kabare Health Zone, updated version October 2018, aligned with the *National Health Development Plan*, 2019 until 2022, [PNDS].
- ⇒ Democratic Republic of Congo, *National Protocol for the Integrated Management of Acute Malnutrition* [PCIMA], Kinshasa April 2012. 82 pages + 39 pages of annexes.
- ⇒ AROLE, Rajanikant and Arole, Mabel, Comprehensive Rural Health Project, Macmillan, New York, 1st edition November 28, 1994. Available from Amazon. See also www.jamkhed.org.

- ⇒ *Recommendations for Management of Common Childhood Conditions*, World Health Organization, Second edition 495 pages.
https://apps.who.int/iris/bitstream/handle/10665/44774/9789241502825_eng.pdf,
last updated June 25, 2021

- ⇒ COOK, R.J, *Is Hospital the Place for the Treatment of Malnourished Children?*
Journal of Tropical Pediatrics, Volume 17, Issue 1, March 1971, page 15-25.