

# Common Risk Factors for Non-communicable Diseases in 30 Subjects Aged over 35 in the City of Lubumbashi in the DRC

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**Abstract:** Promoting and protecting health is essential to human well-being and to sustainable economic and social development. This was recognized more than 30 years ago by the signatories of the Alma Ata Declaration, who stated that Health for All would contribute to a better quality of life as well as peace and security in the global scale. Education, housing, food and employment all have an impact on health, which led us to ask ourselves the question of exploring common risk factors for non-communicable diseases. The objective is to determine the prevalence and analysis of knowledge on common risk factors for non-communicable diseases among 30 subjects aged over 35 in the city of Lubumbashi. This is a cross-sectional descriptive study which took place from June 30 to July 30, 2021 in the city of Lubumbashi. The calculations of prevalence and general characteristics were carried out by descriptive analysis. Then followed the analysis of knowledge and risk factors of non-communicable diseases, we used Stata 16.1 and QDA Miner Lite 1.4.3 software. The prevalence of Non-Communicable Diseases was 1 (100%). The age group of 35 to 40 years old constitutes the modal class with 36.70%, the male sex was equal to the female sex with a sex ratio of 1. Respondents consuming less than 4 to 5 fruits per day are represented with only 20 samples out of a total of 30 i.e. 66.67%, consumption of alcoholic beverages in 26 cases, i.e. 86.67%, non-consumption of tobacco is poorly represented 3.33%, physical exercise is practiced less with a number of 21 cases or 70% among the respondents. The modes of contamination of non-communicable diseases are relatively well known among these actors who often cite the use of alcoholic beverages, smoking (tobacco leaf). At the end of this cross-sectional descriptive study, we note the reflection of insufficient health education exposing to the risk of non-communicable diseases, as well as for provide quality care and services to the Lushoie population, sufficient resources must be allocated to nutrition programs for proper awareness of the nutritional transition.

**Keywords:** Risk Factors, Non-Communicable Diseases, Lubumbashi

## 1. Introduction

Nutritional deficiencies are one of the major public health

issues in the world. Undernutrition in people of reproductive age is the underlying cause of 3.5 million deaths, 35% of illnesses in children under 5, and 11% of the world's total adjusted life years on disability (DALY) [1]. Promoting and

protecting health is essential to human well-being and to sustainable economic and social development. This was recognized more than 30 years ago by the signatories of the Alma Ata Declaration, who stated that Health for All would contribute to a better quality of life as well as peace and security in the global scale [1]. Unsurprisingly, in most countries, people also rate health as one of their top priorities, right after economic issues, such as unemployment, low wages and high cost of living. [2]. As governments try to meet people's expectations, health often becomes a political issue. There are many ways to promote and support health. Some of them are outside the boundaries of the health sector. The "circumstances in which we grow up, live, work and age" strongly influence how we live and die [2]. Education, housing, food and employment all have an impact on health. In the Lancet papers, low investment in nutrition in most developing countries has been identified as a barrier to scaling up high-impact interventions in this area [1]. Several Central African countries have strategic plans for nutrition or food and nutrition security. However, very few of these plans are based on the latest science and are budgeted. Each year, nutrition officials, national-level nutrition actors, and their regional and international partners convene the annual Economic Community of West and Central African States Nutrition Forum, under the technical direction of the West African Health Organization (WAHO). In 2010, the forum would have provided an opportunity to disseminate the latest technical information related to the theme of the forum: "Financing and planning nutrition programs in Africa" [1].

In 2009, the UN Fund conducted a nutrition vulnerability analysis that looked at factors such as prevalence of undernutrition, access to iodized salt, level of food insecurity and governance [2]. This analysis has shown, for example, that Burkina Faso, the Central African Republic, Chad, Guinea Bissau, Niger and Sierra Leone have the highest level of nutritional vulnerability in WCA, which would expose them to non-communicable diseases. [3]. The global recommendations on physical activity for people aged 18-64 years aim to provide guidance on the dose-response relationship between physical activity and its health benefits (i.e. tell the frequency, duration, intensity, type and total amount of physical activity needed to improve health and prevent non-communicable diseases) [4]. As in the results promulgated by UNICEF, the UNICEF WCA region, which comprises a total of 24 countries, includes 8 of the 36 countries in which noncommunicable diseases are particularly high, for which an estimate of the financing needs, and 11 of the 32 countries, which could be added to the previous estimates for an additional cost of 6% [1].

Currently, non-communicable diseases (NCDs), including cardiovascular disease, cancer, obesity and type 2 diabetes, cause each year more deaths than any other cause of death [5]. Four factors in the epidemiology of these diseases are of immense importance in public health: the poor diet, lack of physical exercise, tobacco and alcohol. Fruits and vegetables are a component important part of a healthy diet and, consumed daily in sufficient quantity, they could help prevent

major diseases in subjects aged 18-64, such as cardiovascular diseases and certain cancers. According to The world health report 2002, the low consumption of fruits and vegetables is the causes about 31% of ischemic heart disease and 11% of strokes in the world [5]. Overall up to 2.7 million lives could be saved every year by sufficiently increasing fruit consumption and vegetables [5]. The recommendations in this direction come complement and reinforce other relevant messages, based on known beneficial health effects for a long time, the consumption of fruits and vegetables as dietary sources of fibre, vegetable proteins and protective micronutrients. Recently, the WHO/FAO expert consultation on food, nutrition and the prevention of chronic diseases recommended minimum intake 400 g of fruit and vegetables per day (excluding apples soil and other starchy tubers) in prevention chronic diseases such as heart disease, cancer, diabetes, obesity and to prevent or alleviate several micronutrient deficiencies, especially in the least developed countries [6]. That recommendation reinforces the already solid argument benefits of eating fruits and vegetables for health and paves the way for concrete actions to increase it. WHO has responded to the global rise in the number of cases of non-communicable diseases by granting increasing attention to their prevention and the fight against, most recently, the adoption of the "Global Strategy for diet, exercise and health" at the Fifty-Seventh World Assembly Health, May 22, 2004 [7]. As part of this Strategy, WHO aims to actively promote a increase in global fruit consumption and vegetables. To achieve this goal, she trained with the FAO a partnership on the theme of fruits and vegetables for health. WHO and FAO announced their joint effort at the Third Global Forum on Prevention and control of non-communicable diseases (NCDs), organized in Rio de Janeiro (Brazil) in November 2003, highlighting the health benefits fruit and vegetable consumption [8]. In addition, initiatives must be accelerated to produce and effectively market horticultural products to affordable prices, while ensuring that they are healthy and that there are fewer losses in the chain post-harvest handling. WHO and FAO held their first workshop spouse – Fruits and vegetables for health – at WHO Center for Health Development, Kobe (Japan), September 1-3, 2004 [8]. there are involved specialists in nutrition, health and of agriculture, representatives of the ministries of health and agriculture, advisers on nutrition experts from WHO regional offices [6], experts from the World Food Programme, the United Nations Economic Commission for Europe, the General Secretariat of the Community of Pacific, the International Institute for Research on Food policies and the global community advocating the consumption of 5 fruits and vegetables per day for health [6]. The overall objective of the workshop was to develop a project general framework for the development of interventions cost-effective and efficient, in order to promote adequate consumption of fruits and vegetables in the Member States [1].

Reason why UNICEF wants all of Africa to aspire to achieve food and nutrition security, to say adequate food (quantity,

quality, safety, cultural acceptability) is available, accessible and used satisfactorily by all individuals in order to lead a healthy and happy life [3]. Despite the efforts made by many African countries in the fight against non-communicable diseases, health care and food supply centers suffer from the non-availability and regularity of a healthy lifestyle at their breasts while the Most African countries are prone to nutritional emergencies. However, these dysfunctions do not prevent the hospital or the center from being frequented by subjects aged 18-64. As objectives of this study: Calculate the prevalence of non-communicable diseases among subjects over the age of 35 in Lubumbashi in the DRC, Analyze socio-demographic factors among subjects over the age of 35 in Lubumbashi in the DRC, Identify knowledge and common risk factors among subjects over the age of 35 in Lubumbashi, DRC.

## 2. Methods

### 2.1. Study Framework

The Democratic Republic of Congo is one of the countries most affected by hunger and malnutrition [9]. Its area is 2,345,409 Km<sup>2</sup> with a population of 95,784,841 inhabitants (2019) and a TFR of 6.45 children per woman (2015). The birth rate is 43.69 per 1000 population (2015), female life expectancy is 58.90 years (2016) and death from non-communicable diseases is 28.00% (2016) [10]. GDP per capita growth rate is 4% (2018) [11]. Also, the percentage shares of income for the poorest is about 73% and the richest 27% in 2018 [12].

The 2006 constitution, in its article 2, gives the administrative organization of the country into 26 provinces. The provinces are subdivided into cities and territories. Cities (21) are subdivided into urban communes and rural communes (97) and territories (145) into sectors (473), cities (98) and chiefdoms. Urban or rural communes are subdivided into districts. The sectors and chiefdoms will be subdivided into groups (6,713) and the groups into villages. A law on the territorial division within the provinces has been drafted and promulgated, but it has not yet entered into force. [13]. The Ministry of Public Health is structured at three levels, the central with 13 directorates and 52 programs; the intermediary 11 provincial health inspectorates and 52 health districts; the peripheral with 516 Health Zones, 393 HGR, 8504 AS, 8266 CS [11, 14].

### 2.2. General Information on the City of Lubumbashi

The Area is 747 km<sup>2</sup>, its estimated population size is 1,794,118 inhabitants.

From an administrative point of view, the city of Lubumbashi is divided into 7 communes as follows: The Annex commune which is the largest; the commune of Kamalondo which is the oldest; the Kampemba commune, the most industrialized; Katuba Commune; the Kenya commune, the busiest because of its large market and sports stadium; the municipality of Lubumbashi, it contains the city center; Ruashi commune, Each commune is each headed by a

mayor, the city itself is headed by the mayor, assisted by a vice-mayor. The city of Lubumbashi has 9 health zones and 2 special health zones. Sanitary health zones are subdivided into health areas.

According to the cartography of the Provincial Health Division of Haut-Katanga 2019, there are 163 health areas and 597 health facilities. Each health zone is managed by a management team (ECZ).

### 2.3. According to the Quantitative Approach

#### 1. Study population and sampling

The study population consisted of the inhabitants of the city of Lubumbashi whose information was taken from the research questionnaire; the selection process of our sample was done in an exhaustive way, we carried out a random sampling stratified by equal allocation on a size of 30 therefore 15 Men and 15 Women.

#### 2. Target population

The population consisted of men and women aged over 35 who answered the questionnaire.

#### 3. Selection criteria

- a) Inclusion criteria: Data from men and women aged over 35 living in the city of Lubumbashi and having answered the questionnaire during the interval of the study period.
- b) Criteria for non-inclusion: Absence of data from men and women aged over 35 living in the city of Lubumbashi.

#### 4. Description of variables

The following variables were studied: socio-demographic variables such as: sex, age, occupation, highest level of education, membership of a social club, marital status.

#### 5. Data collection technique

The data from our study were collected using a survey questionnaire. The collection took place from June 21 to July 30, 2021.

#### 6. Data processing and analysis

The data collected was entered with Excel software before being exported to Stata 16.1 software. Then we cleared our database before proceeding with the analysis. The latter consisted of:

- 1) Sociodemographic description of the study population
- 2) Description of the prevalence of non-communicable diseases

### 2.4. According Qualitative Approach

#### 1. Study population and sampling

Our study population consisted of inhabitants of the city of Lubumbashi. We proceeded to a reasoned choice sampling of thirty (30) participants who were distributed as follows fifteen (15) men and fifteen (15) women.

#### 2. Target population

Men and women living in the city of Lubumbashi. In this part of our work thirty (30) respondents according to the objectives set for the study and their quality of respondents justified the saturation of the data.

#### 3. Selection criteria

- a) Inclusion criteria: Data from men and women who

gave their verbal and written consent to participate in the study after having learned about the objectives and expected results of the study.

- b) Non-inclusion criteria: Data not collected from men and women who refused to participate in the study and/or to sign the consent form for any reason.

#### 4. Themes

Two main themes: knowledge on non-communicable diseases and common risk factors for non-communicable diseases.

#### 5. Data collection technique

Using a questionnaire, the collection was done by ourselves after mastering the objectives of the study as well as the data collection tools in conducting semi-structured individual interviews with participants.

#### 6. Data processing and analysis

Semi-structured interviews were transcribed on word and then cleaned up. Then we exported the transcripts into the QDA Miner Lite software to perform the analyses. We did horizontal and vertical thematic analysis.

### 2.5. Source of Data, Period and Type of Study

The research questionnaire was the source of data for our cross-sectional descriptive study which took place from June 21 to July 30, 2021 in the city of Lubumbashi. In order to calculate and analyze the prevalence of non-communicable diseases among the inhabitants of Lubumbashi in the DRC and to describe the risk factors.

## 3. Results

#### 1. Flowchart in quantitative Approach

Following our inclusion criteria, we analyzed data for 30 peoples (Figure 1).

#### 2. Prevalence of Non-Communicable Diseases (NCDs)

The general annual prevalence of NCDs was 1 or 100% in a sample of 30 people in 2021 (Table 1).

#### 3. Socio-demographic characteristics

The age extremes of our study were over 52 years old, the modal class was made up of the age group of 35 to 40 years old (Table 2). We note that the male sex was equal to the female sex with a sex ratio of 1 (Table 3). State civil servants were more representative compared to private ones (Table 4). The most represented marital status was that of the married with 83.33% (Table 5). This table shows us that university students predominate with 21 cases or 70%, followed by graduates with 23.33% (Table 6). This table shows us respectively membership in a social club with a workforce of 16 cases or 53.33% and non-membership 14 (46.67%) (Table 7). In this table, respondents consuming less than 4 to 5 fruits per day are represented with only 20 samples out of a total of 30 i.e. 66.67% (Table 8).

This table shows that the consumption of vegetables 7 times and more is in the minority with 5 cases or 16.67% (Table 9). In this table we note consumption of alcoholic beverages in 26 cases, i.e. 86.67% (Table 10). This table shows us that the non-consumption of tobacco is poorly

represented (Table 11). This table illustrates that physical exercise is practiced less with a number of 21 cases or 70% among the respondents (Table 12). This table shows us that the notion of hypertension in the family is more represented with 19 cases (63.33%) (Table 13).

#### 1. Knowledge about common NCD risk factors in qualitative approach:

The analysis of the discourse of the participants in this study shows that the modes of contamination of NCDs are relatively well known (Figure 2) among these actors who often cite food restriction for any purpose, the ingestion of an alcoholic beverage, a addiction to addictive substance, a means by which the individual loses calories, consumption of food in a moderate and balanced way, use of alcoholic beverages, smoking (tobacco leaf), physical activity (of the body) to maintain health as these words show:

*It translates food habits, type or kind or nature of meals that we consume every day, food restriction for any purpose, eating only what the doctor asks. Thus the consumption of alcohol is the fact of drinking alcohol, drinking beer, it is the ingestion of a drink containing alcohol the consumption of alcohol is any use of alcoholic and intoxicating drinks, introduction of an alcoholic drink into the body orally, drinking a beer in a glass or bottle, the way of drinking alcohol, momentary or regular intake of alcohol, it is excessive consumption which exceeds your capacity, consumption of a large amount of alcohol to an abnormal degree, when the alcohol content very high in the blood (alcoholemia), it is the fact of taking alcoholic beverages, taking alcoholic beverages ex: ntay, taking an alcoholic beverage Drinking beer. While the cigarette is a rod containing nicotine that is smoked by an individual, an object that is used to smoke, it is a well refined tobacco rod, the cigarette is the tobacco packaged in a paper envelope and in a box. be painted, it's tobacco, a paper rod containing the cigarette leaves, the cigarette is what we smoke, it's an addiction to an addictive substance, it's an abusive drug to health, any consumption of cigarettes, products made up of cigars and other chemicals or tobacco, substances made from dry tobacco leaves that are smoked, smoking instruments containing tobacco, smoking objects. Speaking of physical exercise: Set of actions that allow an individual to stay physically fit, doing sports, are exercises putting the human body in motion for good shape, movement rhythm of the body exercise involving the muscles for proper functioning of the body. body, a program for physical exercise of his body, set of movements which exercises the body, non-pharmacological treatment to fight against cardiovascular risk, it is a means by which the individual loses calories, any heating or exercise having a effect on the human body, means of moving to exercise the muscles (locomotor function), these are the exercises that engage the human body, it is moving the body, an act that sets the body in motion, playing sports. » are exercises putting the human body in motion for a good shape, movement rhythm of the body exercise involving the muscles for the good functioning of the organism, a program for physical exercise of his body,*

*set of movements which exercises the body, treatment non-pharmacological to fight against cardiovascular risk, it is a means by which the individual loses calories, any heating or exercise having an effect on the human body, a means of moving to exercise the muscles (locomotor function), these are the exercises that involve the human body, it is to move the body, act putting in movement the organism, to do sport. » are exercises putting the human body in motion for a good shape, movement rhythm of the body exercise involving the muscles for the good functioning of the organism, a program for physical exercise of his body, set of movements which exercises the body, treatment non-pharmacological to fight against cardiovascular risk, it is a means by which the individual loses calories, any heating or exercise having an effect on the human body, a means of moving to exercise the muscles (locomotor function), these are the exercises that involve the human body, it is to move the body, act putting in movement the organism, to do sport. » body, a program for physical exercise of his body, set of movements which exercises the body, non-pharmacological treatment to fight against cardiovascular risk, it is a means by which the individual loses calories, any heating or exercise having an effect on the human body, a means of moving to exercise the muscles (locomotor function), these are the exercises that engage the human body, it is moving the body, an act that sets the body in motion, playing sports. » body, a program for physical exercise of his body, set of movements which exercises the body, non-pharmacological treatment to fight against cardiovascular risk, it is a means by which the individual loses calories, any heating or exercise having an effect on the human body, a means of moving to exercise the muscles (locomotor function), these are the exercises that engage the human body, it is moving the body, an act that sets the body in motion, playing sports. » way to move to exercise the muscles (locomotor function), these are the exercises that engage the human body, it is to move the body, act putting the body in motion, doing sport. » way to move to exercise the muscles (locomotor function), these are the exercises that engage the human body, it is to move the body, act putting the body in motion, doing sport. » Men aged 35 and over, EIH, Lubumbashi.*

*is the set of food that the selected to maintain its state of health, it is the set of what one desires to eat. Alcohol consumption means; taking alcohol, consuming drinks in large doses, is the consumption of a drink that contains a certain percentage of alcohol, taking alcohol is drinking alcohol, it is activity psychotropic drug called drunkenness or alcohol intoxication, a risk of addiction called alcoholism, use of alcoholic beverages, drinking products containing at least 3% alcohol, means taking at least one bottle of alcohol (beer, wine), taking of alcoholic beverages, it is the taking of alcohol, the habit of consuming alcohol, it is the taking of alcohol, it is an alcoholic drink, take alcoholic drink. The cigarette is the tobacco, what makes it possible to smoke? Smoking (tobacco leaf), smoked is a cylinder of paper a few centimeters long filled with combustible material, most often chopped and treated tobacco leaves as well as additives,*

*paper filled with leaves, rod containing nicotine products and tar, it's a drug, it's the tobacco stalk, cigarette it's an object that we use to smoke, it's an object of pleasure, it's the legalized drug containing nicotine, thing allowing To smoke. Regarding physical exercise: Physical activity, sport, the exercises that allow us to be in shape, is a bodily exercise that a person does to exercise the muscles, to do gymnastics, it is to do sports, to maintain one's health on a daily basis, physical activity (of the body) to maintain one's health, any exercise enabling the human body to move, physical exercises which lead to the expenditure of energy rapidly, any exercise which one does to maintain one's form and health, physical exercise is what man applies as an effort for health, it is the movement made by means of a sport, it is the gymnastics that one does for good health, to exercise physically, to do sports to be in shape.» is what man applies as an effort for health, it is the movement done by means of a sport, it is the gymnastics that one does for good health, to exercise physically, to do sport for be in good shape.» is what man applies as an effort for health, it is the movement done by means of a sport, it is the gymnastics that one does for good health, to exercise physically, to do sport for be in good shape.» Women aged 35 and over, EIF, Lubumbashi. These results are shown in the figure 2.*

## 4. Discussion

The present study aimed to study the knowledge of common risk factors for non-communicable diseases among subjects over 35 years old in Lubumbashi in the DRC.

## Limits of Our Study

Our study was carried out using primary data from a cross-sectional survey. Therefore, we can only establish an association between the occurrence of non-communicable diseases among people living in Lubumbashi in the DRC and the different explanatory variables, but not make a causal attribution to the different factors used. The cross-sectional nature of the study makes it impossible to establish temporal associations between the observed relationships. Secondly, the data from this survey are essentially based on declarative answers which strongly depend on the sincerity of the respondents.

Notwithstanding these limitations, we believe that selection bias probably did not affect our results due to the high response rate during collection which was 99%. However, the methodology and the quality of the data allowed us to obtain fairly reliable information on the suggestion of etiological hypotheses for non-communicable diseases. These results will contribute to a better understanding of risk factors and to the implementation of promising strategies to strengthen nutrition programs in the DRC.

### 1. Prevalence of non-communicable diseases

The overall prevalence was 100%. This prevalence is higher than that found par Arzel B, Golay M, Zesiger V, et al. [6] 71% in 2005; by Black R, Victora C, Walker S [1], 6% in

2013 [1]. It is once again higher than that observed by WHO 30% [2, 3, 15]. The prevalence rates that we report in our study could be explained by the impact of the sample size and the period of our study.

### 2. Socio-demographic characteristics

Our study found the age range of 35 to 40 years old constituting the modal class with 36.70%. The results of our study showed the male sex (50%) equal to the female sex (50%) with a sex ratio of 1. These results do not agree with those of NDAGIJIMANA D. [16] in 2014 in Burundi, where the female sex predominated at 54.9% of the respondents against 45.1% for the male sex [16]. The reason that could explain this female predominance is that according to the results of the general population and housing census of 2008, the female population of Burundi predominated at 52.25% against 47.75% for the male sex. [17] as for our results, the size would explain this difference. Respondents consuming less than 4 to 5 fruits per day are represented with only 20 samples out of a total of 30 i.e. 66.67%, our results diverge with those found by the WHO STEPS approach [2, 3, 15]. Consumption of alcoholic beverages in 26 cases, i.e. 86.67%, non-consumption of tobacco is poorly represented 3.33%, physical exercise is practiced less with a number of 21 cases or 70% among the respondents. The size would explain our results which diverge with those found by the WHO STEPS approach [2, 3, 15]. Focusing on health education could prevent non-communicable diseases; this can be done through awareness and information campaigns.

### 3. Knowledge of common risk factors

Our study shows that the modes of contamination of NCDs are relatively well known among the inhabitants of Lubumbashi who often cite "dietary restriction for any purpose, ingestion of an alcoholic beverage, addiction to an addictive substance, *a means by which the individual loses calories, the consumption of food in a moderate and balanced way, the use of alcoholic beverages, smoking (tobacco leaf), physical activity (of the body) to maintain health*". These results are similar to this reported by the WHO STEPS approach [2, 3, 16]. Our study therefore has the merit of revealing that in this environment, the Congolese state must ensure that products are placed on the market, the development of water points, psychosocial awareness on the nutritional transition, physical exercise a magic solution, consultation through information on non-communicable diseases and measures to hygiene who suffer in the city of Lubumbashi.

## 5. Conclusion

At the end of this cross-sectional descriptive study, the overall NTM prevalence was 100%. This result may reflect the existence of NCDs, insufficient health education and a low level of psychosocial awareness exposing to the risk of infection of chronic diseases by these factors. The male sex with 50% is equivalent to the female sex, i.e. a sex ratio of 1. The age group of 35 to 40 years old constitutes the modal

class with 36.70%. Respondents consuming less than 4 to 5 fruits per day are represented with only 20 samples out of a total of 30 i.e. 66.67%, consumption of alcoholic beverages in 26 cases, i.e. 86.67%, non-consumption of tobacco is poorly represented 3.33%, physical exercise is practiced less with a number of 21 cases or 70% among the respondents.

As a conclusion of our study on common risk factors for non-communicable diseases among 30 subjects aged over 35 in the city of Lubumbashi, we can make a number of observations. Food restriction for any purpose, the ingestion of an alcoholic beverage, an addiction to an addictive substance, the use of alcoholic beverages, smoking (tobacco leaf) are noted as factors most cited by the interviewees. Thus, in particular to implement integrated and inclusive prevention, treatment and support services, it is necessary to guarantee: "An inclusive approach to the needs of Lushois, a global approach, an inclusive psychosocial approach".

## Abbreviations

ACC/SCN: Administrative Committee on Coordination/ Sub-Committee on Nutrition, DALY: Disability-Adjusted Life Years, EIF: Individual interview for women, EIH: Individual Interview for Men, CAM: Foods and Agriculture Organizations, IFPRI: International Food Policy Research Institute, DTM: Non Communicable Diseases, UN: United Nations, WHO: World Health Organization, WAHO: West African Health Organization, Ground floor: Democratic Republic of Congo, UNICEF: UNICEF.

## Author Contributions

Study design and tools: ANK, DMK, analysis and interpretation: ANK, MKE, ONN, AMM, NN, JCTM, EMS; manuscript: all. All authors have read.

## Ethical Approval and Consent to Participate

Ethical approval was obtained from all participants who provided written informed consent before participating.

## Competing Interests

The authors declare that they have no competing interests.

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## Appendix

*Table 1. Breakdown of data in 2021.*

Year	Number	Prevalence
2021	30	1
Total	30	100

*Table 2. Distribution of data according to age groups.*

Age groups	Number	Percentage (%)
35 to 40 years	11	36.70
41 to 46 years	7	23.30
47 to 52 years old	6	20.00
Over 52	6	20.00
Total	30	100.00

*Table 3. Breakdown of data by sex.*

Gender	Number	Percentage (%)
Male	15	50.00
Female	15	50.00
Total	30	100.00

*Table 4. Distribution of data according to the type of occupation of the persons.*

Occupancy	Number	Percentage (%)
State	23	76.70
Private	7	23.30
Total	30	100.00%

*Table 5. Breakdown of data by marital status.*

Marital status	Number	Percentage (%)
Married	25	83.33
Single	5	16.67
Total	30	100.00

*Table 6. Breakdown of data by level of study.*

Educational level	Number	Percentage (%)
University	21	70.00
Secondary	7	23.33
Primary	2	6.67
Total	30	100.00

*Table 7. Distribution of data according to membership of a social club.*

Membership	Number	Percentage (%)
Yes	16	53.33
No	14	46.67
Total	30	100.00%

*Table 8. Distribution of data according to the number of fruits consumed per day in a week.*

Fruit consumed/day	Number	Percentage (%)
Less than 4 to 5	20	66.67
4 to 5 and more	10	33.33
Total	30	100.00

*Table 9. Distribution of data according to the frequency with which vegetables were consumed per day in a week.*

Frequency of consumption	Number	Percentage (%)
Less than 3	6	20.00
4 to 6	19	63.33
7 and over	5	16.67
Total	30	100.00

**Table 10.** Breakdown of data according to consumption of alcoholic beverages.

Alcoholic beverages	Number	Percentage (%)
Yes	26	86.67
No	4	13.33
Total	30	100.00

**Table 11.** Distribution of data according to tobacco consumption.

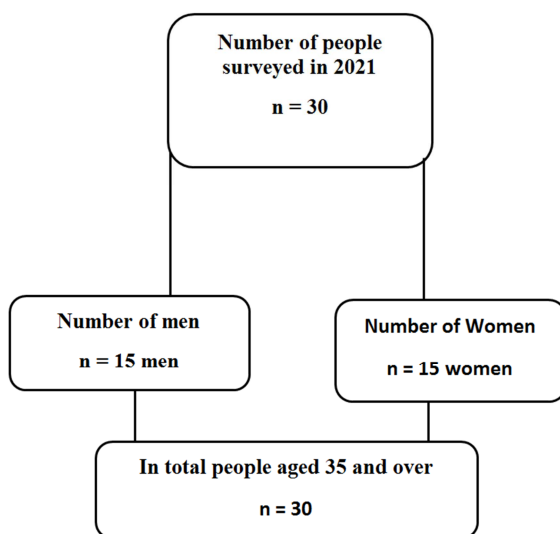
Tobacco	Number	Percentage (%)
Yes	29	96.67
No	1	3.33
Total	30	100.00

**Table 12.** Distribution of data according to the frequency of physical exercises per day in a week.

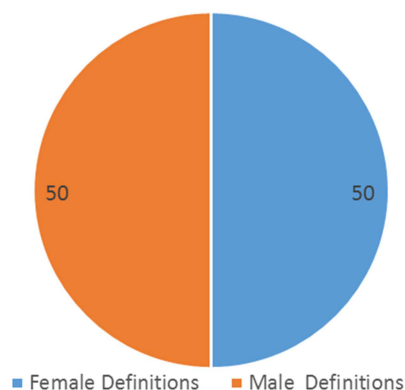
Frequency of physical exercises/day	Number	Percentage (%)
Less than 3	21	70.00
4 to 6	7	23.33
7 and over	2	6.67
Total	30	100.00

**Table 13.** Distribution of data according to cases of hypertension noted in the family.

HTA	Effective	Percentage (%)
Yes	19	63.33
No	11	36.67
Total	30	100.00



**Figure 1.** Flow diagram of the sample surveyed in Lubumbashi, 2021.



**Figure 2.** Frequency of knowledge of NCD factors among men and women living in Lubumbashi.

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