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POPULAR PERCEPTIONS OF NON-COMMUNICABLE DISEASES IN THE COTONOU-ABOMEY-CALAVI URBAN DOUBLET IN SOUTHERN BENIN

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Abstract

In the urban areas of Cotonou and Abomey-Calavi, changing lifestyles and demographic shifts are considered key factors in the rise of non-communicable diseases (NCDs). This research aims to explore people's perceptions of NCDs, based on socio-epidemiological data collected from 761 individuals. The data was processed using computer software, and descriptive statistical analyses were employed to examine associations between variables.

The results reveal that the majority of respondents have a good understanding of the four main NCDs identified in Benin: hypertension (HTA), diabetes, chronic respiratory diseases (CRD), and cancers. Perceptions of these diseases are closely tied to their symptoms. The most commonly cited factors contributing to the increase in cases include irritability (71%) and psychological distress (61%) for hypertension; excessive sugar consumption (85%) and overweight or obesity (33%) for diabetes; air pollution (80%), climate variability (70%), and smoking (40%) for chronic respiratory diseases; and factors related to lifestyle, environmental conditions, and co-morbidities as the primary contributors to cancer risk. However, it is worth noting that nearly 20% of respondents pointed to a lack of knowledge as a factor in the spread of NCDs, emphasizing the need for increased public health awareness and action to address these diseases.

Keywords: *Abomey-Calavi and Cotonou; urbanization; NCD; perception; knowledge*

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Introduction

In Benin, the urban population's growth between censuses is a major factor in the rise of non-communicable diseases (NCDs). According to Natta (2007, p. 20), the urban population is growing rapidly, but with significant spatial disparities across the country. Thus, Benin faces the challenge of a demographic explosion that leads to inevitable changes: environmental pollution, increased food demands, and the proliferation of various types of NCDs. Over recent years, there has been a growing trend in the prevalence of non-communicable diseases within the Beninese population. Among them, four stand out: cerebrovascular accidents, cancers, chronic respiratory diseases, and diabetes (MS, 2018, p. 8).

Following a prospective prevalence survey based on cluster sampling methodology across the entire Beninese population, Djrolo *et al*. (2003, p. 260) reported a diabetes prevalence of 1.1% in 2003. According to K.A. Fagbemi et al. (2017, p. 1092), among NCDs, diabetes is the second most common disease after hypertension in Benin. At the national level, based on hyperglycemia, the prevalence of diabetes was estimated at 1.1% in 2001, 2.6% in 2008, and 12.4% in 2015. It has therefore been steadily increasing in recent years (MS, 2018, p. 16). Factors such as an aging population, rapid urbanization, changes in dietary habits, and reduced physical activity explain the evolution of the disease.

As for cerebrovascular accidents, they are currently the leading cause of hospitalization in neurology and a major cause of chronic disability. Chronic respiratory diseases (CRDs) primarily include asthma and chronic obstructive pulmonary disease (COPD). Air pollution in urban areas, particularly Cotonou, Porto-Novo, and Abomey-Calavi, is one of the main risk factors for respiratory diseases. However, the country lacks the necessary human resources and infrastructure to manage chronic respiratory diseases. Similarly, regarding cancer cases, Benin does not have an appropriate surveillance system, and there is limited data on cancer prevalence.

Non-communicable diseases result from a combination of genetic, physiological, environmental, and behavioral factors. The complexity of addressing these issues within national health priorities lies in the fact that urban Africans remain more vulnerable to infectious diseases throughout their lives and tend to die earlier from non-communicable diseases (Rossier, 2019, p. 2). Sedentarism and Western-style consumption patterns in these cities expose populations to cardiovascular diseases, hypertension, diabetes, etc. (MS, 2018, p. 9). NCDs present real challenges for health systems, and access to quality care for patients with NCDs is very limited in developing countries like Benin.

In the cities of Cotonou and Abomey-Calavi, the evolution of lifestyle changes due to urbanization and shifts in population structure are the primary factors driving the spread of non-communicable diseases. Furthermore, according to Dramé (2021, p. 16), very few studies have been conducted on specific NCDs, such as cancers and chronic respiratory diseases, in the general population. This raises the central question: What are the public perceptions regarding the emergence of non-communicable diseases in the Cotonou-Abomey-Calavi urban area? To address this, the research focused on key parameters of the main NCDs in Benin: risk factors, symptoms, hereditary predispositions, modes of expansion, and vulnerability to these diseases.

The study area, referred to as the "Cotonou-Abomey-Calavi urban area," consists of the city of Cotonou and the municipality of Abomey-Calavi. It is located in the southern part of Benin, between latitudes 6°20' and 6°43' North, and longitudes 2°10' and 2°30' East. In terms of territorial boundaries, it is bordered to the east by the municipalities of So-Ava (Lake Nokoué) and Sèmè-Kpodji, to the west by the municipalities of Ouidah and Tori-Bossito, to the south by the Atlantic Ocean, and to the north by the municipalities of Zè, Sô-Ava (Lake Nokoué). It covers an area of 618 km² (SERHAU SA, 2009, p. 25). Figure 1 presents the geographical location of the urban area.

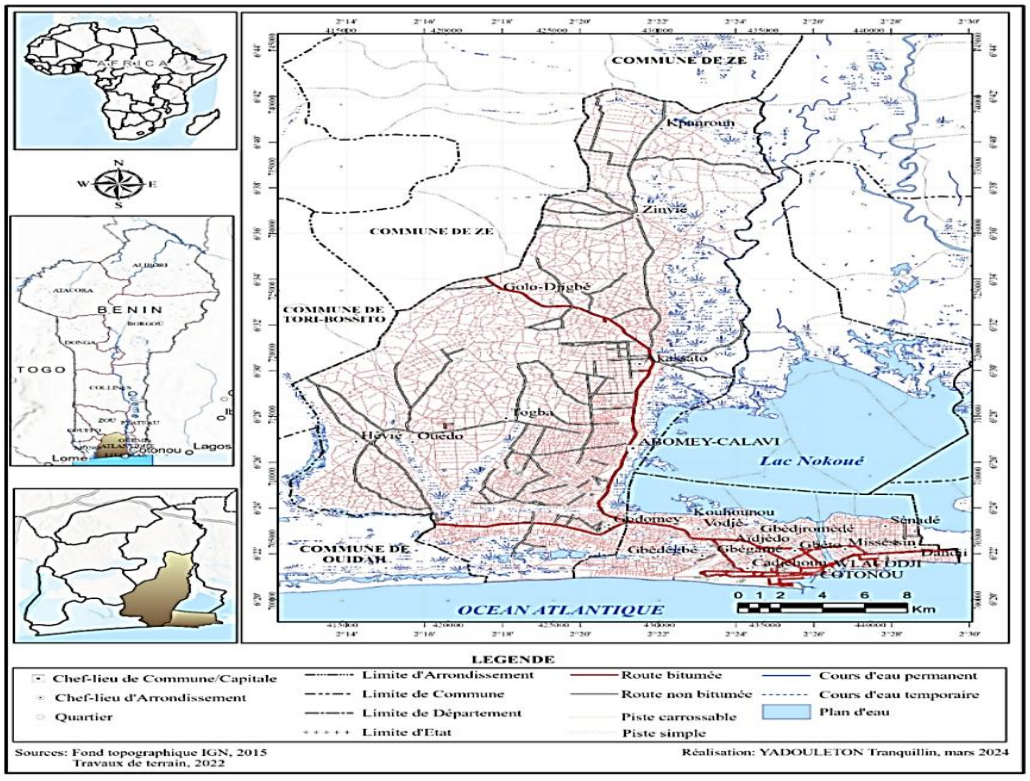

Figure 1: Geographical Location of the Research Area.

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Administratively, the research area includes 22 districts and spans two departments: Atlantique and Littoral. The municipality of Abomey-Calavi represents 20% of the surface area of the Atlantique department, while the municipality of Cotonou corresponds to the Littoral department. Since 2021, with the passing of Law 2021-14 establishing the Territorial Administration Code and Decree No. 2022-319 of June 1, 2022, which sets the criteria for categorizing municipalities, Abomey-Calavi has been elevated to the status of a special-status municipality, like Cotonou. This urban area is the main geographical, demographic, and economic hub of the Republic of Benin.

Demographically, the population of the Cotonou-Abomey-Calavi urban area stands at 1,335,370 inhabitants, with approximately 1,138,463 living in urban areas. The average population density is 50 inhabitants per hectare, unevenly distributed across the two municipalities of the urban area (INSAE, 2016, p. 6), indicating that it houses about one-sixth of the national population on less than 1% of the country's total land area. According to the demographic and economic study of Cotonou, the urban population of the Cotonou Agglomeration (including the municipalities of Sèmè-Kpodji and Ouidah) is projected to reach around 2,500,000 inhabitants by 2025 (Cour, 2007, p. 387).

1. Data and Methods

The methodological approach takes into account the collection and processing of data, followed by the analysis of results. Three levels of analysis and two units of observation are used. The first level concerns the two municipalities that make up the urban area, the second level concerns the districts, and the third level focuses on the neighborhoods. The units of observation are healthcare facilities and households.

The target population includes the inhabitants of the Cotonou-Abomey-Calavi urban area. The sample size is calculated based on W. Cochran's formula (1977): $n = z^2 \times p\,(1 - p) / m^2$. A total of 761 people were surveyed, including 409 from households and 352 individuals diagnosed with non-communicable diseases (NCDs). A proportional distribution based on the household population per district was used to determine the number of households to survey in each neighborhood and village. Given the significant differences in population sizes across neighborhoods, the percentage of households to survey in each neighborhood was adjusted according to its population weight. After identifying the number of households to survey per neighborhood, the "random walk" method was used to select individuals to interview (A. Sila, 2022, p. 100). In each household, only one person was interviewed, either the head of the household or their representative.

For individuals diagnosed with NCDs, a list of forty-nine healthcare facilities (both public and private) was compiled to distribute the patients to be surveyed. The principle was to interview ten patients per doctor or specialist (general practitioner, diabetologist, cardiologist, oncologist, nutritionist, etc.) identified in the various healthcare facilities. The "snowball" technique was used to select individuals to interview. For data collection, the questionnaire was digitized using Kobocollect before being administered to the targeted individuals using electronic devices.

The data processing allowed for the calculation of several relevant indicators to better understand the perceptions of the respondents. IBM SPSS 27 software was used to organize the data. Microsoft Excel 2019 was used to perform the analysis. The results presented in this research are those where the association between variables is statistically significant (at the $p < 0.05$ level). The chi-square test was used to examine dependence and compare frequencies. This approach allowed for the presentation of the results, the summary of which is provided in this research.

2. Results and Analysis

2.1 Knowledge of NCDs

Non-Communicable Diseases (NCDs), also known as chronic diseases, encompass several conditions that, in contrast to infectious diseases, are not contracted through a pathogen. During the fieldwork, individuals were asked if they had knowledge of NCDs. Figure 2 presents a summary of the responses obtained...

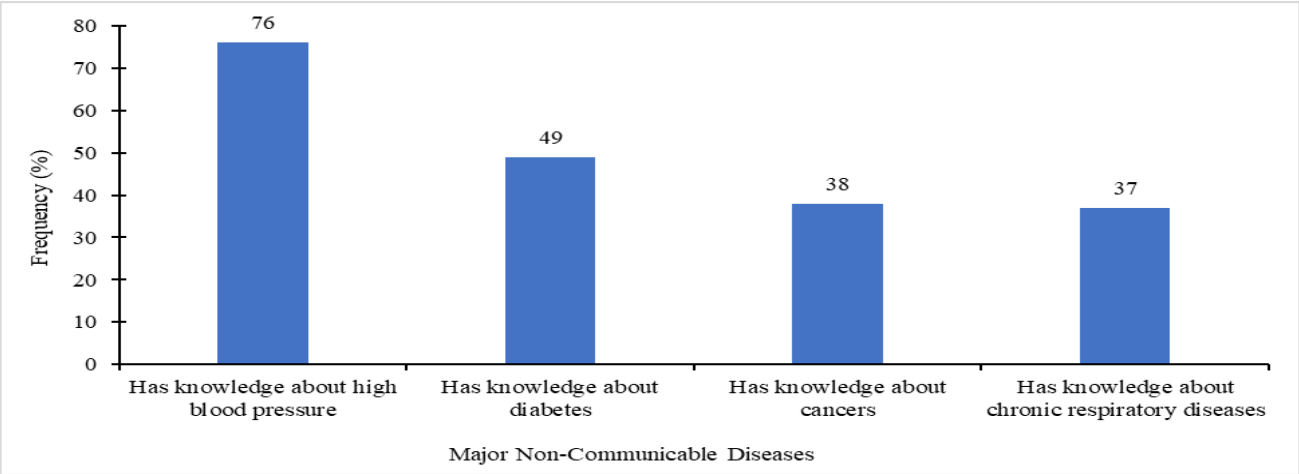

Figure 2: Distribution (%) of respondents according to knowledge of NCDs

Source: Data from field surveys, April 2024.

The results show that overall, more than three-quarters of the respondents (76%) reported having knowledge of hypertension (HTA), 49% had knowledge of diabetes, 38% knew about cancers, and 37% were familiar with chronic respiratory diseases. The proportion of people with knowledge of these various conditions was higher among households than among individuals already diagnosed with NCDs. This may be due to the fact that the latter group is only concerned with the disease they are personally affected by.

2.2 Interpretation and Common Definitions of Main NCDs

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To assess the level of knowledge among the population regarding the risk factors of NCDs, the questions focused on disease definitions, manifestations, and aggravating factors.

In general, respondents associate hypertension with irritability, elevated blood pressure, dizziness, and psychosocial stress. However, responses vary depending on the nature of the respondent (Figure 3).

2.2.1 Hypertension (HTA)

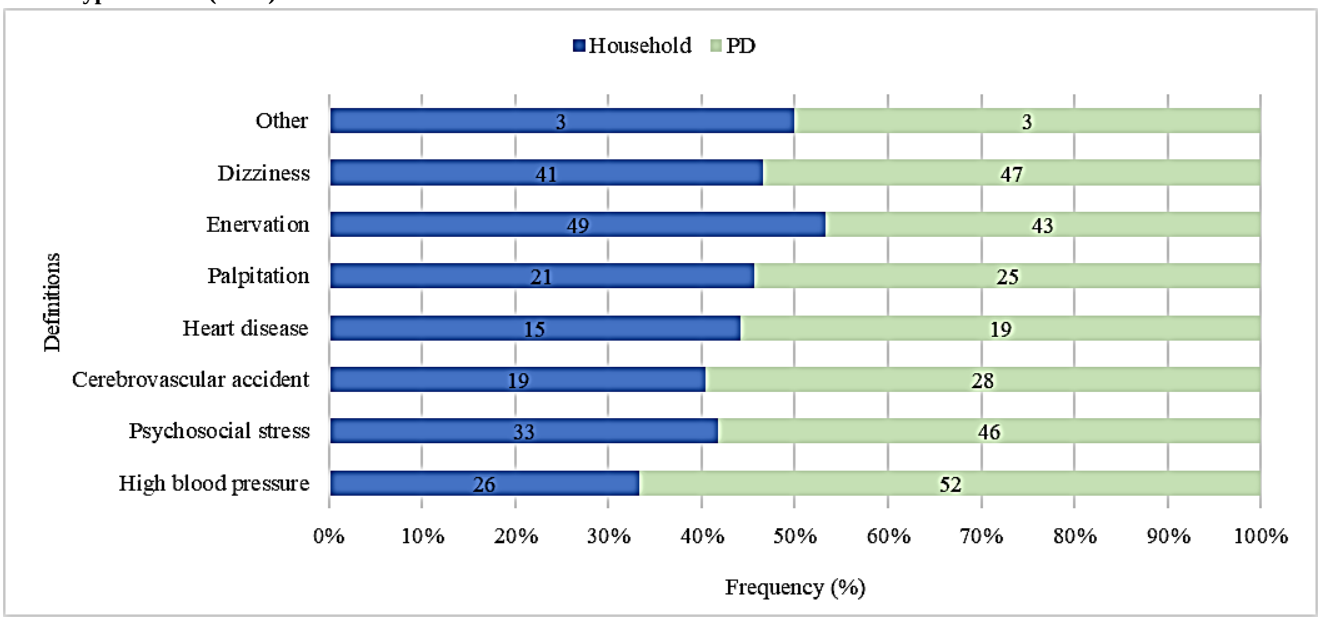

Figure 3: Distribution (%) of respondents according to the definition of high blood pressure

Source: Data from field surveys, April 2024.

Considering the respondent category, it can be noted that among individuals who have received a diagnosis of NCDs, hypertension is often considered as elevated blood pressure (52%) accompanied by dizziness or lightheadedness (47%), and associated with stress (46%) or a recurring state of irritability (43%).

2.2.2 Diabetes

In the case of diabetes, the collection of perceptions revealed a connection between the disease and sugar consumption. Diabetes is often identified as the excessive presence of sugar in the blood (67%) or in the urine (45%). This perception is closely linked to the disease's manifestations. However, this refers to a specific type of diabetes that cannot be generalized to the entire population (Figure 4).

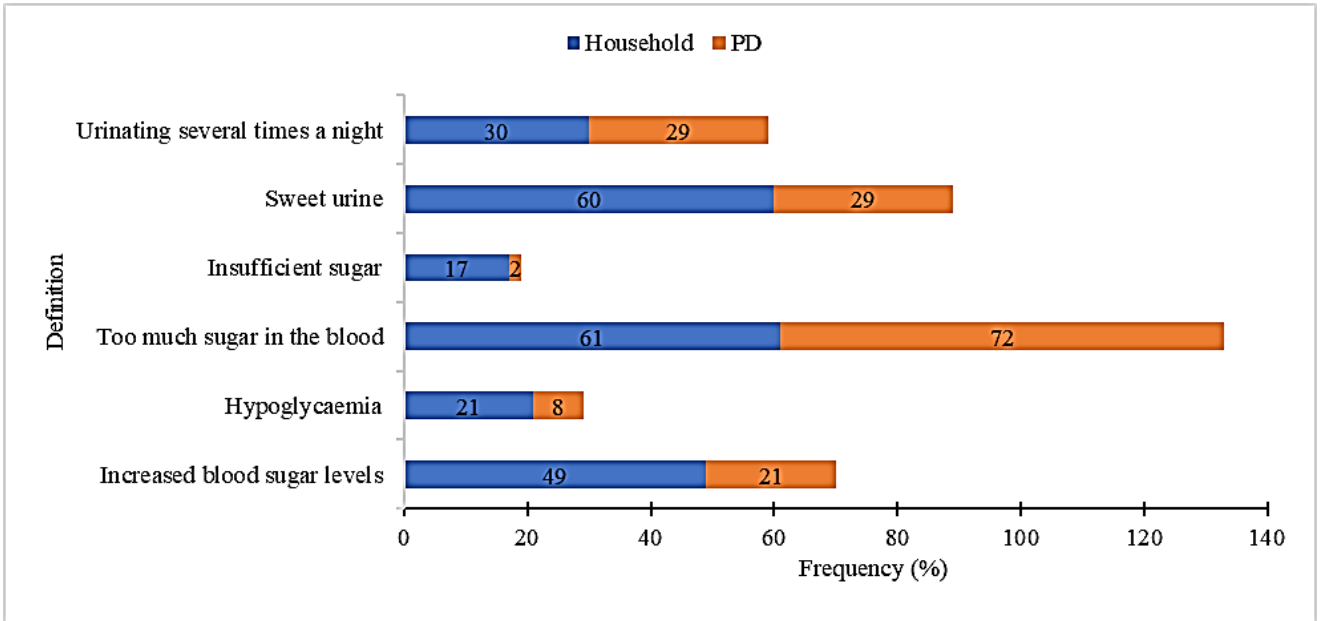

Figure 4: Distribution (%) of Respondents According to the Definition of Diabetes

Source: Data from field surveys, April 2024.

2.2.3 Chronic Respiratory Diseases (CRD)

Chronic respiratory diseases are primarily perceived through breathing difficulties (70%) and wheezing (57%). Figure 5 presents the perceptions collected to define CRD.

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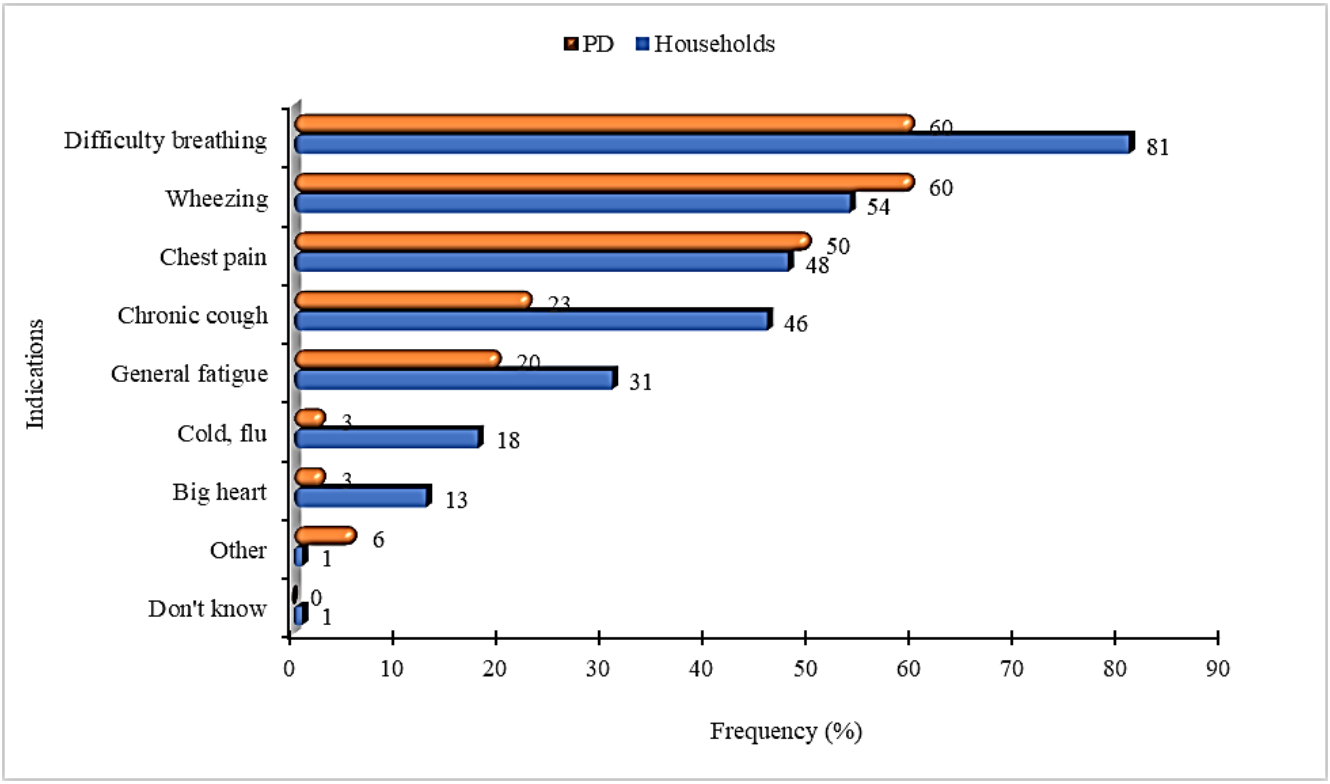

Figure 5: Distribution (%) of Respondents According to the Definition of Chronic Respiratory Diseases (CRD)

Source: Data from field surveys, April 2024.

2.2.4 Cancer

Cancer encompasses several malignant tumors affecting the tissue of an organ, which can then invade neighboring parts of the body and later spread to other organs. This is why the types of cancers vary depending on the organs involved (Figure 6).

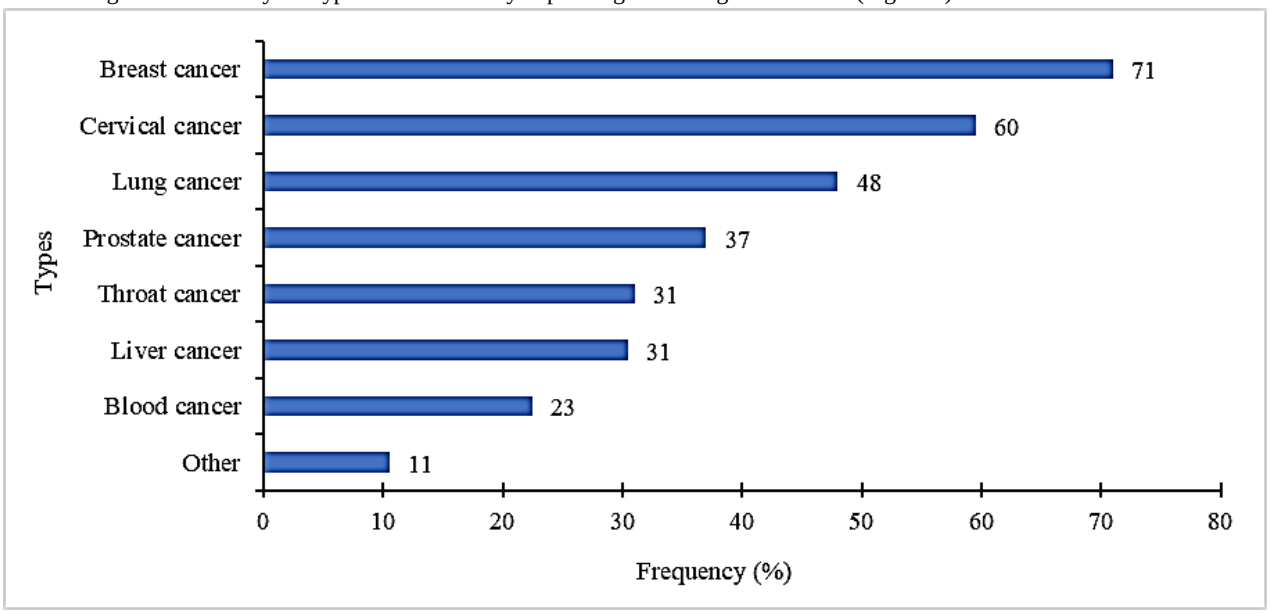

Figure 6: Distribution (%) of Respondents According to the Types of Cancer Mentioned

Source: Data from field surveys, April 2024.

From the analysis of Figure 6, it appears that breast cancer (71%) is the most frequently mentioned by the respondents. It is followed by cervical cancer (60%), lung cancer (48%), and to a lesser extent, prostate cancer (37%).

2.3 Dynamics of NCD Evolution

The interpretations given for these various diseases are somewhat influenced by the perception of their manifestations.

2.3.1 Knowledge Related to the Manifestations and Evolution Dynamics of Hypertension

ϖ Manifestations of Hypertension

Most people with hypertension do not experience any symptoms. However, very high blood pressure can cause headaches, blurred vision, chest pain, and other symptoms (Figure 7).

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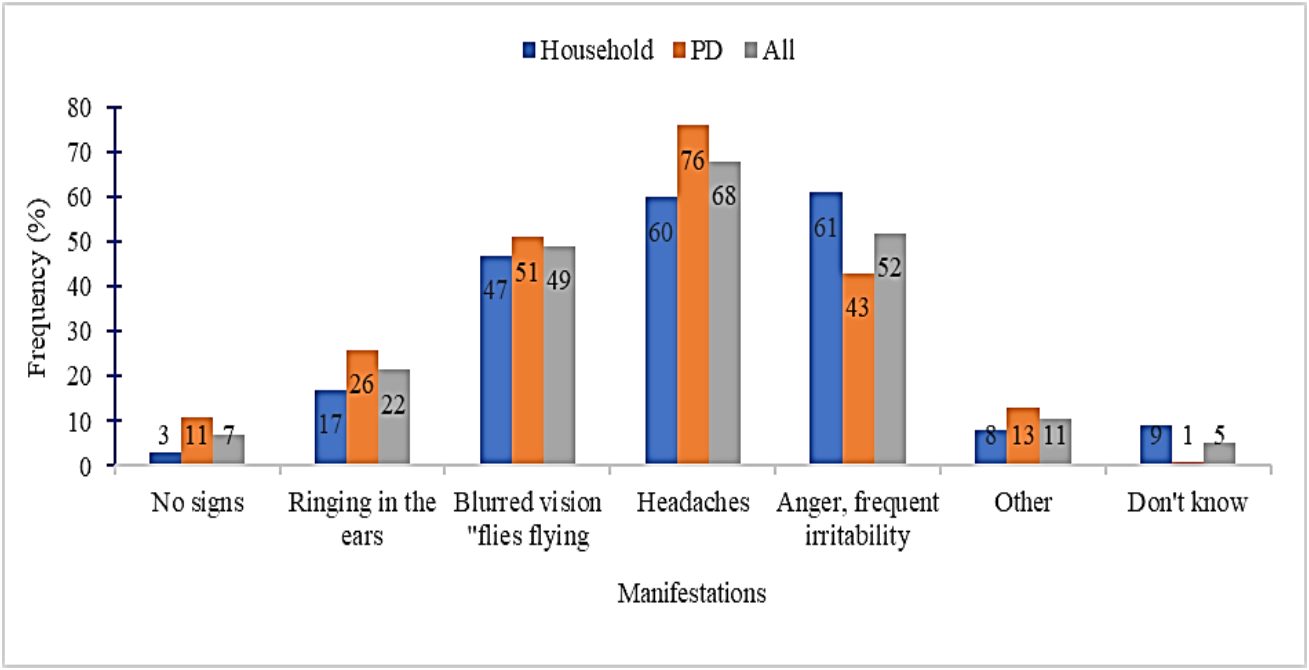

Figure 7: Distribution (%) of Respondents According to the Manifestations of Hypertension

Source: Data from field surveys, April 2024.

The results show that the manifestations of this condition appear to be well known, as only 5% of respondents, primarily from households, stated that they could not identify them. The trend seems to be the same when it comes to knowledge related to aggravating factors.

- **Factors Contributing to the Exacerbation of Hypertension**

Several factors related to sociodemographic characteristics and lifestyle combine to create an environment conducive to the worsening of hypertension cases (Figure 8).

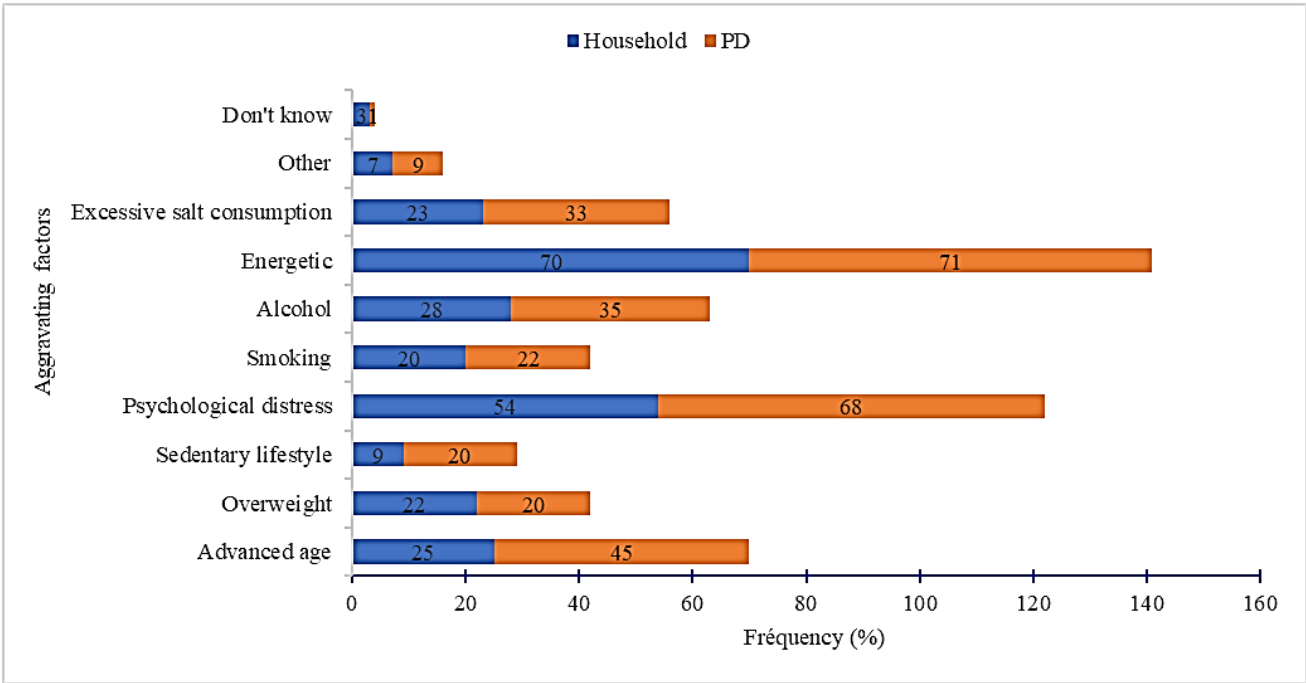

Figure 8: Distribution (%) of Respondents According to the Aggravating Factors of Hypertension

Source: Data from field surveys, April 2024.

Considering all respondents, it can be noted that the main factors contributing to the resurgence of cases are, in order: irritability (71%), psychological distress (61%), advanced age (35%), alcohol abuse (32%), excessive salt consumption (28%), smoking (21%), overweight (21%), and sedentary lifestyle (15%).

- **Knowledge Related to the Expansion and Vulnerability to the Disease**

In general, 53% of respondents believe that the number of people affected by hypertension is significantly increasing. Several factors are cited to explain the rise in hypertension cases.

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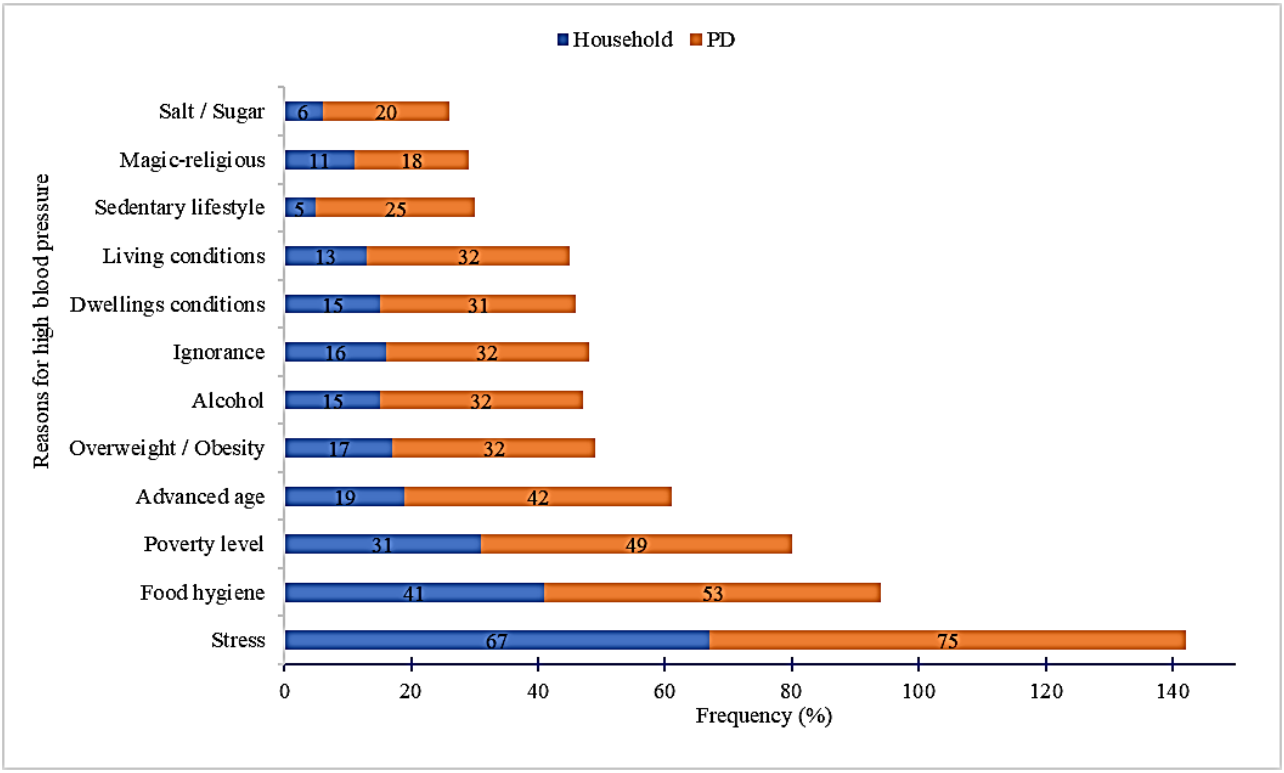

Figure 9: Distribution (%) of Respondents According to the Reasons for the Increase in Hypertension

Source: Data from field surveys, April 2024.

Figure 9 shows that the main reasons cited for the increase in hypertension cases are stress (71%), poor dietary habits (47%), poverty level (40%), and to some extent, advanced age (31%). It follows that the growing proportion of adults and elderly individuals in the population will contribute to the increased prevalence of hypertension.

2.3.2 Knowledge of Risk Factors and Symptoms of Diabetes

- **Symptoms of Diabetes**

For most respondents, diabetes is associated with the presence of sugar in the urine or blood. The results indicate that the symptoms of diabetes seem to be well-known, as only 9% of those surveyed stated they could not recognize them (Figure 10).

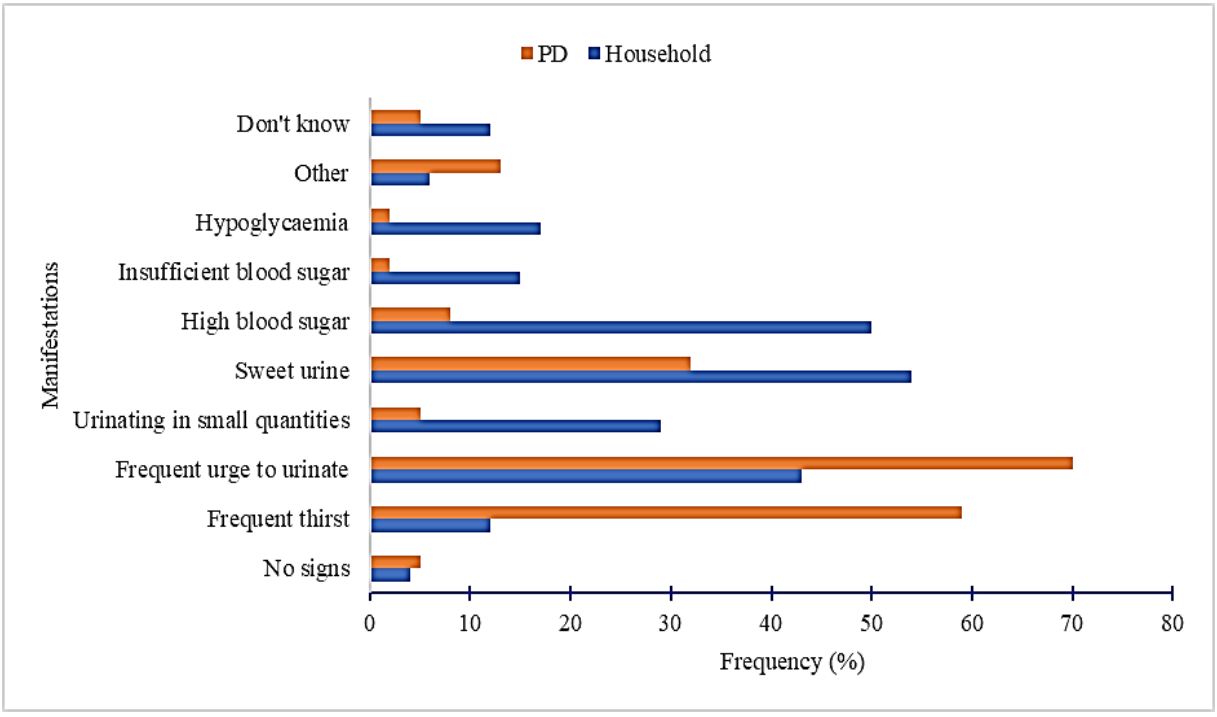

Figure 10: Distribution (%) of Respondents According to the Symptoms of Diabetes

Source: Data from field surveys, April 2024.

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The analysis of Figure 10 reveals that for individuals diagnosed with NCDs, the most common symptoms are frequent urination (70%) and frequent thirst (59%). For other respondent categories, the most common symptom is sweet-smelling urine (54%), followed by elevated blood sugar levels (50%) and frequent urination (43%).

- **Factors Contributing to the Development of Diabetes**

The factors contributing to the worsening of diabetes are mainly related to lifestyle. Advanced age is cited by 18% of respondents as a determining factor in the development of diabetes (Figure 11).

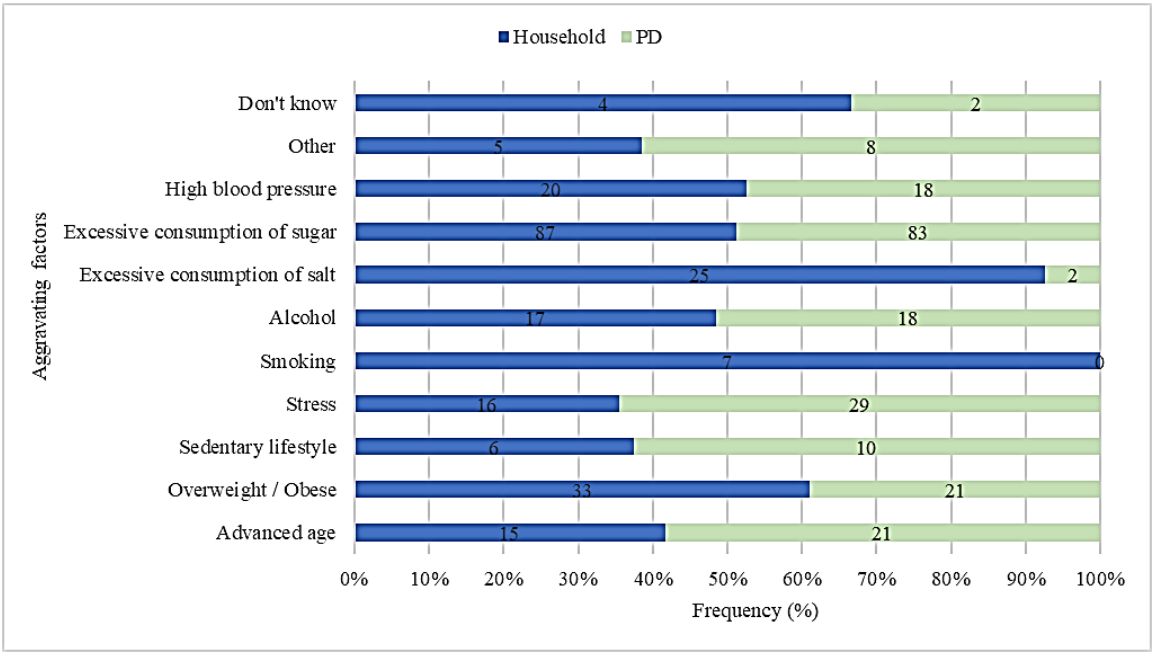

Figure 11: Distribution (%) of Respondents According to the Factors Aggravating Diabetes

Source: Data from field surveys, April 2024.

The analysis of Figure 11 shows that respondents confirm the link between sugar and diabetes. Following that, overweight or obesity (33%) is cited by households, stress (29%), and advanced age (21%) are mentioned by those diagnosed with NCDs.

- **Knowledge Related to the Increase in Cases and Vulnerability**

Diabetes is one of the most commonly discussed NCDs. Over 47% of respondents stated that it is a condition with a rapidly increasing number of cases. Several reasons are provided to explain the rise in diabetes cases (Figure 12).

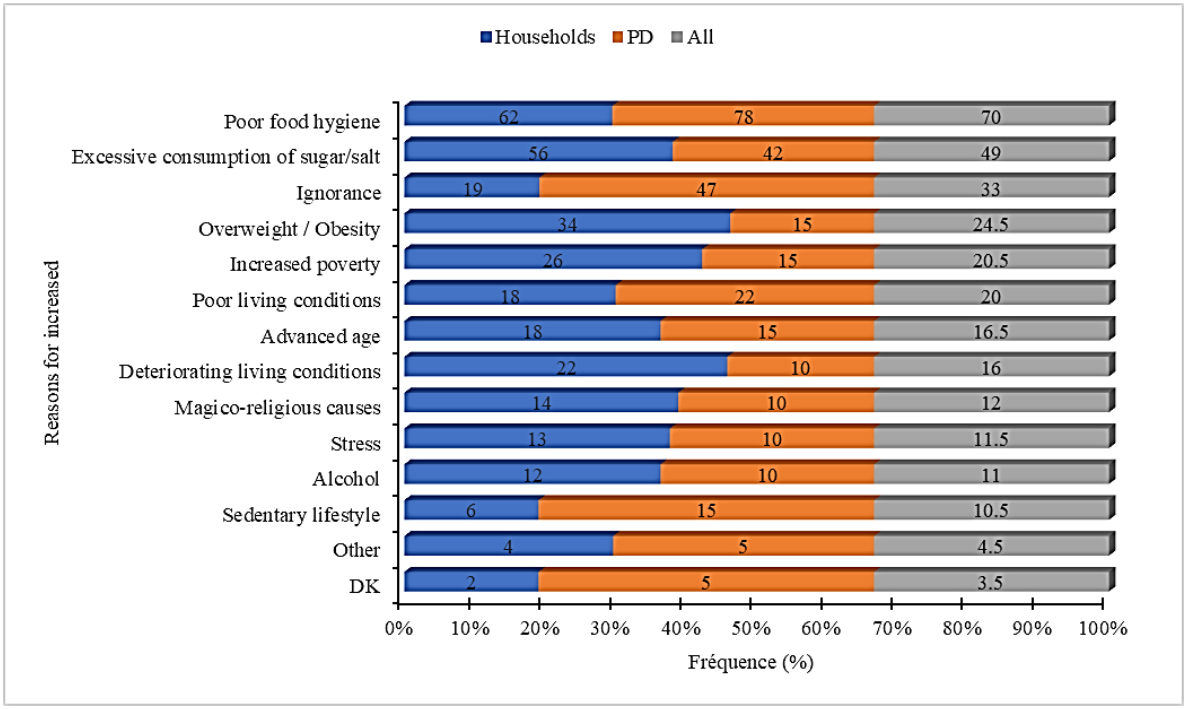

Figure 12: Distribution (%) of Respondents According to the Reasons for the Increase in Diabetes

Source: Data from field surveys, April 2024.

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The analysis of Figure 12 shows that, according to informants, the increase in diabetes cases is primarily linked to poor dietary habits (70%), especially in urban settings, and excessive sugar consumption (49%). Ignorance is mentioned by 33% of respondents as a cause for the growing number of cases.

2.3.3 Knowledge of Risk Factors and Manifestations of Chronic Respiratory Diseases

Chronic respiratory diseases encompass a range of conditions that affect the lungs and airways. Common types include asthma, chronic obstructive pulmonary disease (COPD), bronchopneumopathy, emphysema, cystic fibrosis, lung cancer, and sleep apnea.

- **Manifestations of Chronic Respiratory Diseases**

Most of the manifestations mentioned by respondents correspond to the defining characteristics mentioned earlier. In fact, breathing difficulties and wheezing are the most frequently cited symptoms (Figure 13).

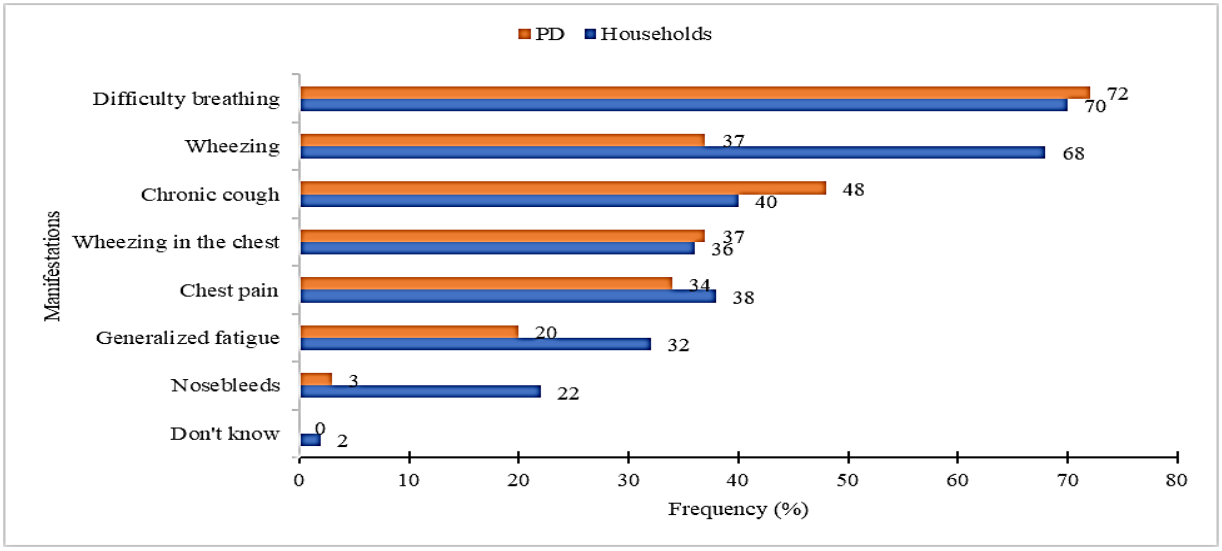

Figure 13: Distribution (%) of Respondents According to the Manifestations of Chronic Respiratory Diseases

Source: Data from field surveys, April 2024.

- **Factors Contributing to the Proliferation of Chronic Respiratory Diseases**

Chronic respiratory diseases are increasingly prevalent in society, particularly due to environmental conditions.

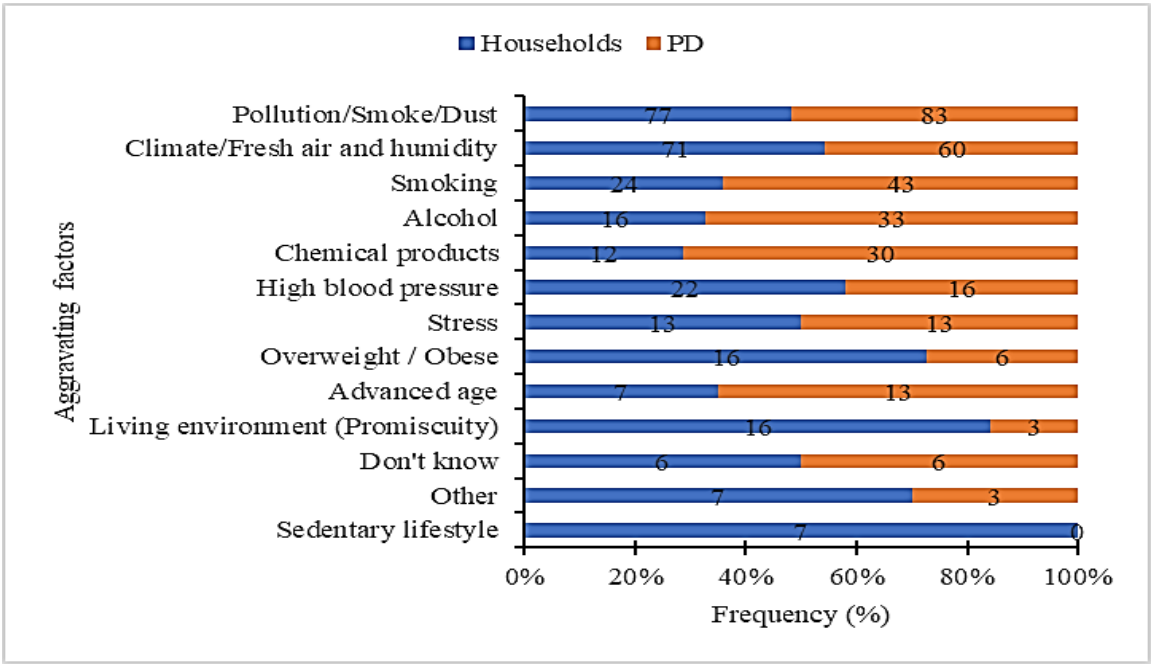

Figure 14: Distribution (%) of Respondents According to the Factors Aggravating Chronic Respiratory Diseases

Source: Data from field surveys, April 2024.

The analysis of Figure 14 shows that the main factors exacerbating cases of chronic respiratory diseases are, in order: air pollution from smoke and dust, climate variability (coolness and humidity), and smoking. For other factors, people diagnosed with NCDs emphasize alcohol consumption and the use of chemicals, while other respondents mention the increase in blood pressure.

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- **Knowledge Related to the Increase in Cases and Vulnerability**

The severity of risk factors linked to lifestyle and urban overcrowding influences the progression of chronic respiratory disease cases. However, in general, the respondents believe that these diseases are not significantly increasing at present. Only 14.5% of respondents reported an increase in the number of chronic respiratory disease cases. Several reasons are given to explain the rise in cases of chronic respiratory diseases in the study area. These primarily include poor environmental (78%) and housing conditions (38%).

2.3.4 Knowledge of Risk Factors and Symptoms of Cancer

- **Symptoms of Cancer**

Cancer symptoms are highly variable, and in some cases, may even be nonexistent. The symptoms discussed in this research represent some general signs, meaning they appear as vague clinical changes that do not provide much help in accurately diagnosing a specific type of cancer.

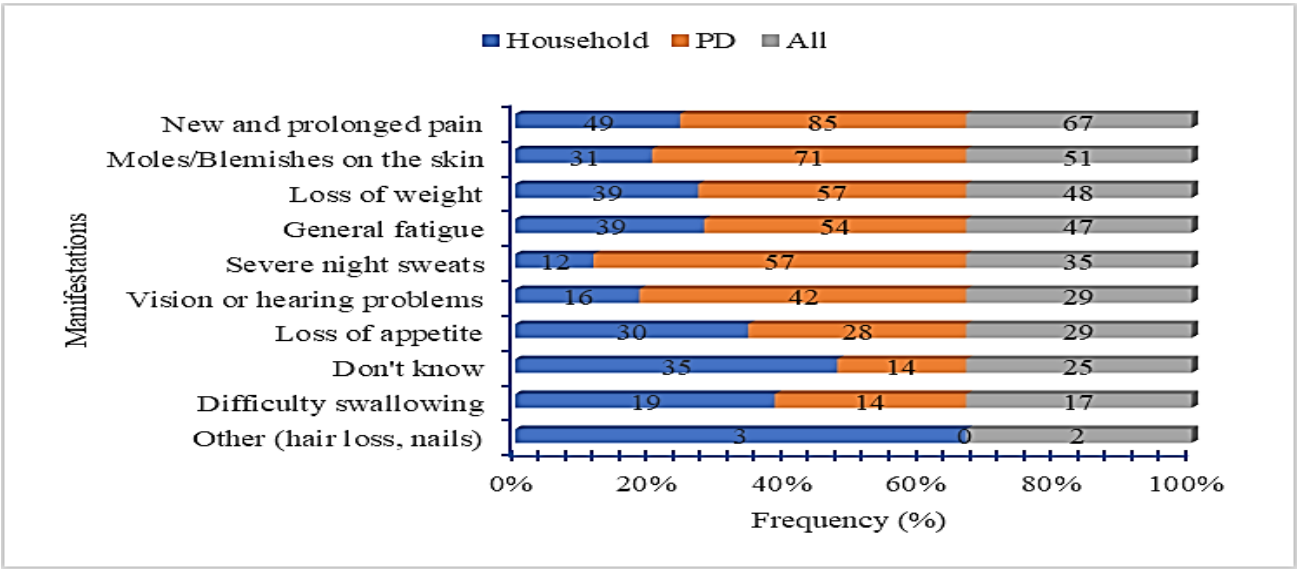

Figure 15: Distribution (%) of Respondents According to Cancer Symptoms

Source: Data from field surveys, April 2024.

The analysis of Figure 15 shows that new and prolonged pain (67%) are the main symptoms of cancer. Other significant symptoms include bumps or growths on moles (51%), weight loss (48%), generalized fatigue (47%), and heavy night sweating (35%). Additionally, 35% of the households surveyed reported being unaware of the symptoms of at least one type of cancer. This suggests that the majority of the community remains under-informed about this non-communicable disease.

- **Factors Increasing the Risk of Cancer**

Several physiological, environmental, sociodemographic, and behavioral factors can increase the relative risk of developing cancer (Figure 16).

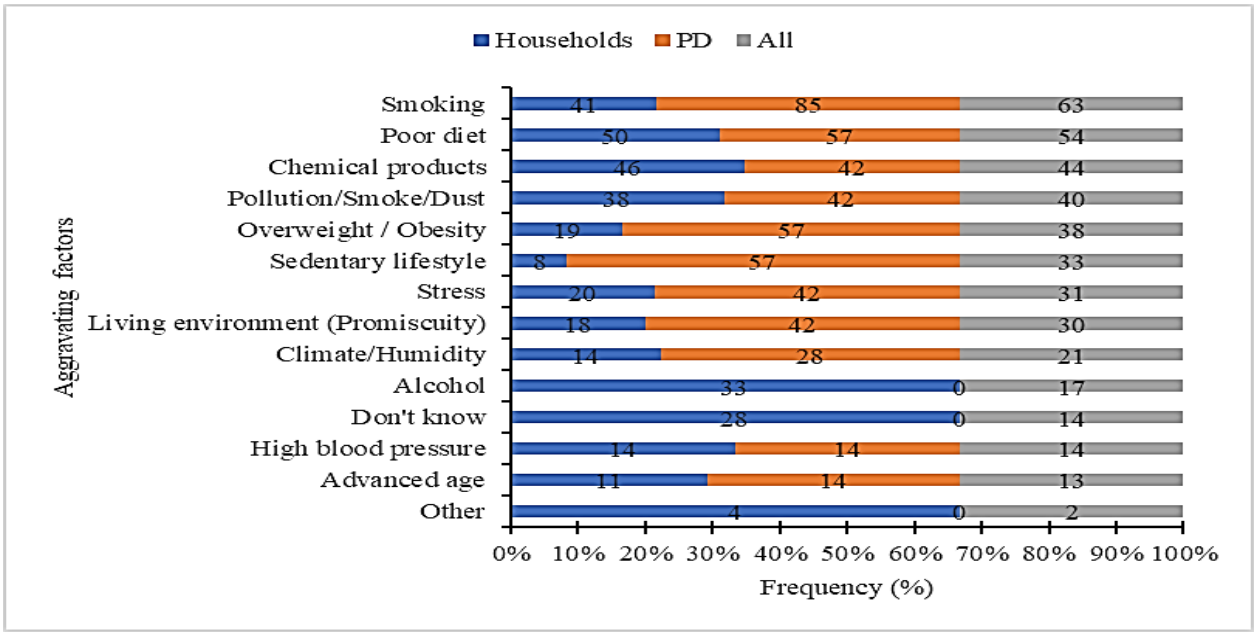

Figure 16: Distribution (%) of Respondents According to Factors Contributing to Cancer Risk

Source: Data from field surveys, April 2024.

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The analysis of Figure 16 reveals that lifestyle-related factors are the most significant contributors to increased cancer risk. These primarily include smoking (63%), poor diet (54%), chemical exposure (44%), and physical inactivity (33%). In terms of environmental factors, the deterioration of air quality (40%), poor living conditions (30%), and bioclimatic conditions (21%) are factors that could increase cancer risk. Additionally, certain comorbidities or health risks increase the likelihood of cancer: overweight or obesity (cited by 57% of those diagnosed with NCDs), stress (31%), and hypertension (14%). Furthermore, advanced age is also mentioned by 14% of respondents as a potential aggravating factor. With aging, the number of lesions that may accumulate in cells increases, along with the risk of abnormal cell formation, which can lead to the development of tumors.

- **Knowledge Regarding the Increase in Cancer Cases and Vulnerability**

Overall, the results show that 63% of respondents are unsure whether cancer cases are increasing today compared to before. Four main factors contribute to the spread of the disease: smoking (54%), poor environmental conditions (48%), poor living conditions (46%), and ignorance (45%). Contrary to what might be expected, namely that the elderly would be the most frequently mentioned group, it is observed that adults (28%) and young people, especially girls, are particularly cited. This suggests the impact of breast cancer, which is the most commonly mentioned cancer in the study area. However, it should be noted that 21% of respondents were unable to clearly identify the groups vulnerable to cancer, highlighting once again the need to prioritize cancer in public health agendas.

3. Discussion

Non-communicable diseases (NCDs) are very common in urban areas and are sometimes poorly understood by the affected populations. In the case of hypertension, the findings of this research show that the respondents have a good understanding of hypertension. These findings on the contributing factors confirm those made by Niakara et al. (2003, p. 221) in Ouagadougou, while the level of knowledge of the condition is much lower in Ouagadougou. Age is identified in this research as the main demographic determinant of hypertension prevalence. These results confirm the conclusions of Milouchi et al. (2019, p. 128), who showed that age is a continuous risk factor that progressively increases the incidence of complications related to the condition and heart failure.

Regarding diabetes, the perception survey among field actors revealed a link between diabetes and sugar consumption, as diabetes is often associated with excessive sugar in the blood or urine. This aligns with the conclusions of Bornand et al. (2010, p. 13) in Benin, where the population perceives the disease as affecting those who have a sweet tooth and primarily associates it with complications such as amputations and blindness. The results showed that advanced age can be considered a factor in the increased number of diabetes cases. This confirms the work of Gning et al. (2007, p. 608), who mentioned the aging population as one of the main causes of the disease's comorbidity. Akré et al. (2021, p. 440) also highlighted that the risk of developing the disease increases with age. Thus, changes in the age structure of the population will have effects on the prevalence of diabetes.

In terms of chronic respiratory diseases, the main aggravating factors identified were air pollution caused by smoke and dust, variability in weather conditions (coolness and humidity), and smoking. These results support those of V. Chateaux and Spitz (2007, p. 168), who demonstrated in France that children and their parents identify the same causes for asthma. Furthermore, a significant portion of the informants associates the progression of chronic respiratory disease cases with the aging population. This perception aligns with the conclusions of APC (2013, p. 1), which discussed chronic obstructive pulmonary disease (COPD).

The analysis of perceptions related to cancer in the urban area of Cotonou–Abomey-Calavi revealed that the majority of the community remains under-informed about this NCD and is only vaguely aware of its manifestations. This confirms the findings of Amekoudi (2020, p. 180), who also found that in the urban area of Lomé and various health facilities, there is much misinformation circulating about cancer, highlighting a lack of information and communication about the disease. The respondents had a fairly clear understanding of the importance of certain risk factors, such as tobacco, diet, and alcohol, which are prioritized as factors that aggravate and increase the number of cancer cases. This result is consistent with findings from the French National Cancer Institute, which showed in the 2021 barometer that over 91% of the French population considers alcohol consumption to be a cancer risk factor (INC, 2023, p. 7).

Conclusion

The analysis of perceptions related to NCDs allowed for an exploration of the population's knowledge about these diseases, their risk factors, manifestations, hereditary predispositions, modes of expansion, and vulnerable groups. In general, there is a good understanding of NCDs, influenced by sociodemographic, behavioral, and environmental factors. The results highlight the importance of awareness, information, and education to better understand and prevent these diseases...

Références

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