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Assessing the Level of Pediatric Cancer Knowledge among Medical Doctors Working in Primary and Secondary Care Centers in Abidjan, Cote d'Ivoire

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Abstract

Introduction: Cancer has become a significant public health concern and a leading cause of child mortality worldwide in low, middle, and high-income countries. Globally, more than 400,000 children are diagnosed with cancer each year, leading to 120,000 deaths. On the Ivory Coast, very few studies are available on pediatrics cancer knowledge among primary and secondary care doctors. **Objective:** We aimed to assess childhood cancer knowledge among medical doctors in regional centers in Abidjan. **Methods:** This descriptive cross-sectional study was carried out among doctors in primary and secondary care health centers in Abobo from 03/01/2023 to 03/31/2023. **Results:** The average age of doctors was 38 years ± 10, made up of 76% men and 24% women. Most of these doctors were general practitioners, *i.e.*, 83% of our total sample. Among these doctors, 74% had less than 10 years of practice. The factors that influenced the level of knowledge of these doctors were age and professional experience. The evaluation score allowed us to establish three levels of knowledge: 7% had a good level of knowledge, 72% had an average level, and 21% had an insufficient level of knowledge. In summary, 93% of doctors demonstrated less than a "good" level of knowledge. **Conclusion:** This study shows that physicians working in Abobo's primary and secondary care centers lack proper basic pediatrics cancer knowledge. This situation could impact early diagnosis and mortality rates; hence, there is an urgent need to implement a more extensive initial training program and continuing education for first-contact medical doctors in early detection of pediatric cancer.

Keywords

Knowledge, Childhood Cancer, Abidjan

1. Introduction

Childhood cancer is rare and, unlike adult cancer, is not linked to lifestyle factors. Thanks to treatment advancements, survival rates for children with cancer have increased considerably in recent decades [1].

Every year, more than 400,000 children worldwide are diagnosed with cancer. Most of these children live in low or middle-income countries, where treatment is either unavailable or unaffordable [2]. As a result, only 30% of children with cancer in LMIC survive, whereas in high-income countries survival rates exceed 80% [2].

In the Ivory Coast, the 2022-2025 strategic plan of the National Cancer Control Program includes pediatric cancer [3]. The success of this strategy depends on a good understanding of the childhood cancer situation at different levels in the health system, particularly in Abidjan, which accounts for almost a quarter of the otherwise young population [4]. The incidence of childhood cancer in the Ivory Coast is 800 new cases per year [3] [5]. To date, two out of three children are diagnosed late, with a mortality rate of 40% [5]. This situation is related to late referrals, which could be explained by a lack of awareness of the cases [6] [7].

To test this hypothesis, we surveyed doctors in urban health centers (level 1) and general hospitals (level 2) in Abobo, one of the most densely populated communes in Abidjan, with a large pediatric population [4].

2. Method

The survey covered the 30 health centers in the municipality. The aim was to determine the doctors' level of knowledge of the main warning signs and types of childhood cancer, and then to analyze their level of knowledge of the treatment circuits and therapies available. We took an exhaustive sample of all the doctors in the health area, *i.e.* 139 people.

The survey ran from 01/03/2023 to 31/03/2023. Data was collected using a questionnaire administered by a single interviewer at various sites. The questionnaire covered knowledge of warning signs, common cancer types and referral pathways. The data were collected using EPI data software version 3.1.0. After briefly explaining the purpose of the survey, the interviewer completed the questionnaire during a five-minute interview.

The data was analyzed and processed using R software version 3.4.2. The univariate analysis consisted of determining the mean, variance and standard deviation of the quantitative variables (age, sex, seniority) as well as the absolute and relative frequencies of the qualitative variables.

To determine the factors likely to influence doctors' level of knowledge about childhood cancer, the chi-square test was used to determine the association between two qualitative variables. This test was used when all the theoretical numbers were greater than or equal to 5. Otherwise, we used the Fischer test. Next, the ANOVA test was used to study the relationship between a qualitative variable and a quantitative variable.

Assessment of doctors' knowledge: Knowledge was assessed based on a score of 80% correct response. Doctors with a score of 80% or more were considered to have good knowledge, those with a score of 50% - 80% average knowledge and those with a score of less than 50% insufficient knowledge.

3. Results

Due to administrative boundaries, we visited 22 of the 30 health facilities in the municipality. During the survey period, 58 doctors responded to our questionnaire, giving a participation rate of 41.73%. Most doctors surveyed were men (76%) compared with 24% women, giving a sex ratio of 3.14. The average age of the doctors was 38 ± 10 years, with a minimum of 25 years and a maximum of 65 years.

Most of the doctors surveyed (43%) had less than 5 years' professional experience, followed by 31% with between 5 and 10 years, and 26% with more than 10 years.

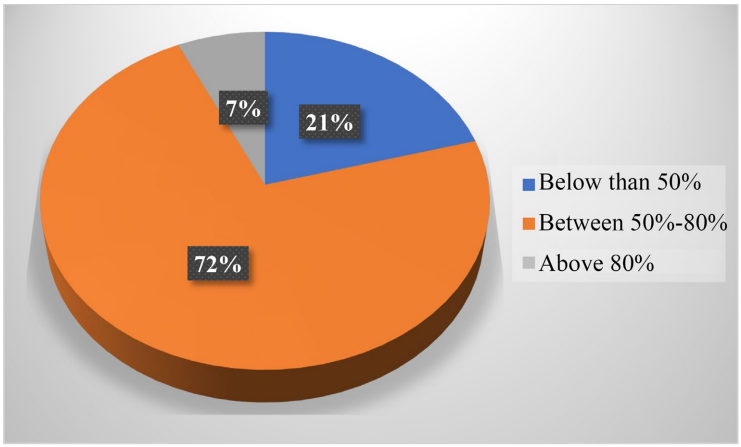
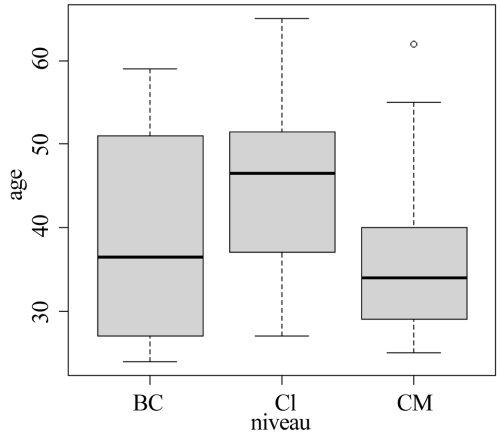


Figure 1. Distribution of doctors according to the score obtained in the assessment of their knowledge of childhood cancers.



BC: Good Knowledge, CI: insufficient knowledge, CM: average Knowledge.

Figure 2. Graph showing the association between age and doctors' level of knowledge.

Table 1. Distribution of doctors according to level of knowledge and gender.

Level \ Gender	Women	Men	Total
Inferior knowledge	2	10	12
Average knowledge	10	32	42
Good knowledge	2	2	4
Total	14	44	58

X = 1.8293, ddl = 2, p-value = 0.4007. Threshold at 0.05, no significant link between level of knowledge and gender.

Table 2. Distribution of doctors according to level of knowledge and professional qualification.

Level of knowledge \ Qualifications	General practitioners	Specialist doctors	Total
Good knowledge	2	2	4
Average knowledge	35	7	42
Insufficient knowledge	11	1	12
Total	48	10	58

X = 3.6854, ddl = 2, p-value = 0.1584. Threshold at 0.05, no significant link between level of knowledge and professional qualification.

Table 3. Distribution of doctors according to level of knowledge and professional experience.

Level of knowledge \ Professional experience	Less than 5 years	Between 5 to 10 years	More than 10 years	Total
Good knowledge	2	1	1	4
Average knowledge	3	17	5	25
Insufficient knowledge	20	0	9	29
Total	25	18	15	58

Test de Fisher, p-value = 0.0001277. Threshold at 0.05, significant link between level of knowledge and professional experience.

Most of our samples were general practitioners (83%). In terms of knowledge of the warning signs of childhood cancer, only 14% of doctors said that they did not distinguish between them. Based on the different scores obtained, knowledge was judged to be good (7%), average (72%) and insufficient (21%) (**Figure 1**). On analysis, there was no correlation with gender (**Table 1**) and professional quali-fication (**Table 2**), but there was professional experience (**Table 3**). Furthermore, the average age of doctors with a good knowledge of childhood cancer was lower than the average age of doctors with insufficient knowledge of pediatric cancer. Also, the average age of doctors with average knowledge of childhood cancer is lower than the average age of doctors with insufficient knowledge of pediatric

cancer. The level of knowledge of cancer appears to be lower as the age of doctors increases (**Figure 2**).

4. Discussion

The survey was carried out on a sample of 58 doctors. This low participation rate can be considered as a significant limitation that could introduce selection bias. However, we consider it to be representative because, apart from absences, most of the doctors who responded see children in their practices but do not specialize in pediatrics. So, the sample provides valuable insights while acknowledging a potential limitation. The distribution by age and gender reflects well what is observed in sub-Saharan capitals [8]. The relatively young age of practicing doctors has an impact on professional experience and openness to specialization.

Thus, there is a low level of knowledge of the signs that may suggest cancer in children, namely the discovery of exophthalmos for eye cancers, the presence of a body mass or superficial adenopathy.

This finding contradicts doctors' assertions about their level of knowledge of childhood cancers. Indeed, it was a self-administered questionnaire in which, after choosing their level of knowledge, they had to name at least three pediatric cancers. In fact, the administration of a score gave us an idea of the extent of this lack of knowledge, which concerned almost the entire sample (93% of doctors). This trend was also observed in Bah's study in Mali in 2021. Kissou in Burkina Faso found that 68.7% of healthcare workers in a similar survey had insufficient knowledge. In both countries, the survey population was inclusive and therefore included not only doctors but also other healthcare workers [9] [10].

To understand these findings, we analyzed factors such as age and professional experience. In our case, the age of the doctors and their professional experience are the factors most likely to influence the level of knowledge about pediatric cancer. The ANOVA test enabled us to identify a significant link between the level of knowledge and the age of the doctors. This test shows that the level of knowledge in pediatric cancers among the doctors in our sample is best when their average age is between 35 and 38, average when their average age is between 28 and 30, and poor when their average age is over 55 (**Figure 2**). We think that a potential explanation is the possibility that more recently trained, mid-career doctors have more up-to-date knowledge compared to older physicians. Professional experience, regardless of age, increases doctors' knowledge of pediatric cancers, with each case treated improving their ability to diagnose and refer to future cases. Although childhood cancers are relatively rare [1] [2], various studies show that the incidence of these cancers is increasing [11]-[13].

Our young countries are therefore undergoing an epidemiological transition: with better control of infectious diseases, they must prepare to tackle the health problems associated with chronic non-communicable diseases (obesity, diabetes, hypertension, cancer). Some countries, such as Morocco, have already launched programs to encourage early diagnosis of childhood cancers [14]. The WHO's

Cure All, or Global Initiative for Childhood Cancer, has also sounded the alarm [6]. These programs would benefit from implementation in our context of countries with limited resources, given the inherent costs of treating these conditions [12].

5. Conclusion

The results of this survey of local doctors' knowledge of childhood cancer show a general lack of awareness. Building the capacity of these medical teams could be an effective lever for reversing the upward trend in late diagnosis of pediatric cancers and meeting one of the WHO's objectives, which is to improve survival among these children.

Conflicts of Interest

The authors declare no conflicts of interest relevant to this study.

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