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Nurses' Knowledge, Attitudes, Perceptions, and Practices regarding Influenza Vaccination and Control in Kinshasa and Lubumbashi, in DRC: A Qualitative Study

Connaissances, Attitudes, Perceptions et Pratiques des infirmiers concernant la Vaccination et le Contrôle de la Grippe à Kinshasa et Lubumbashi, en RDC : une Etude Qualitative

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Résumé

Contexte et objectifs. Les déterminants socio-psychologiques du contrôle de la grippe chez les agents de santé en République Démocratique du Congo (RDC) sont peu connus. Notre étude visait à décrire le niveau de connaissance, les perceptions, les attitudes et les pratiques des infirmiers sur la grippe saisonnière et la vaccination. *Méthodes.* Il s'agissait d'une étude qualitative descriptive menée dans deux grandes villes de la République Démocratique du Congo, à savoir Kinshasa et Lubumbashi. Les données ont été collectées en 2022, en utilisant quatre groupes de discussion et analysées à l'aide d'approches thématiques et phénoménologiques. *Résultats.* Les infirmières avaient des connaissances limitées sur la grippe saisonnière. La majorité d'entre eux confondaient la grippe saisonnière avec la COVID-19 en raison de la similitude de leurs symptômes, de leurs modes de transmission et des mesures spécifiques de prévention. En outre, la grippe était perçue comme une maladie bénigne, rarement ou pas du tout grave, et ne constituant pas une menace pour la santé. La plupart des infirmiers avaient une attitude défavorable à la vaccination et avaient recours à l'automédication lorsqu'ils se sentaient malades. *Conclusion.* La présente étude a permis de mieux comprendre les connaissances, les perceptions, les attitudes et les pratiques qui influencent la vaccination et le contrôle de la grippe à Kinshasa et à Lubumbashi. Ces résultats soulignent la nécessité des meilleurs connaissances, attitudes et pratiques sur la maladie

Summary

Context and objectives. Little is known about the socio-psychological determinants of influenza control among health workers in the Democratic Republic of the Congo (DRC). Our study aimed to describe the level of knowledge, perceptions, attitudes and practices of nurses on seasonal influenza and vaccination**.** *Methods.* This is a descriptive qualitative study conducted in two major cities of the Democratic Republic of the Congo, namely Kinshasa and Lubumbashi. Data were collected in 2022, using four focus group discussions and analyzed using thematic and phenomenological approaches. *Results.* Our study revealed that nurses had limited knowledge about seasonal influenza. The majority confused the seasonal flu with Covid-19 because of the similarities in their symptoms, modes of transmission and specific preventive measures. In addition, the flu was perceived as mild, rarely or not at all serious, and not posing a threat to health. Most of the nurses had an unfavorable attitude to the vaccination and resorted to self-medication when they felt sick. *Conclusion.* The present study enhanced our understanding of Knowledge, Perceptions, Attitudes and Practices influencing influenza vaccination and control in Kinshasa and Lubumbashi. These findings underscore the need for health authorities to establish comprehensive training and communication programs to raise nurse's awareness about the risks of mortality, particularly among vulnerable populations.

Keywords: Knowledge, Perceptions, Attitudes, Practices, Influenza

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et la vaccination antigrippale à Kinshasa et Lubumbashi.

Mots-clés : attitudes, connaissances, influenza, pratiques, perceptions

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Introduction

Influenza is an infectious disease caused by the influenza virus, which mainly presents with fever, cough, sore throat, and nasal discharge (1-2). Conditions such as cold weather, dust, and poor hand hygiene promote the transmission of the disease (3-5).

Although it affects everyone, children, the elderly, pregnant women, and individuals with chronic illnesses are more prone to complications (3). In the Democratic Republic of the Congo (DRC), children under five account for the majority of health service visits due to influenza symptoms (6-7).

Regarding the period of outbreak, Influenza occurs in winter as deadly seasonal epidemics in temperate countries, whereas in warmer countries, it is most prevalent during the rainy season, where it is often perceived as mild (8-9). Such a perception of the illness would lead to self-medication (10).

The economic and social burdens of influenza are substantial worldwide, with estimated annual costs of $3.2 billion for outpatients and 8 billion for inpatients in the United States. In Europe, the economic burden is ranged between €6 billion and €14 billion (11).

To mitigate the health and socio-economic impact of seasonal influenza, several preventive and control measures are recommended, including vaccination, barrier measures (such as hand hygiene, mask-wearing, and avoiding contact with infected individuals) (antiviral prophylaxis, and therapeutic interventions (12-15). Among these measures, vaccination remains the most effective strategy for preventing influenza and reducing complications (16).

The success of these measures largely depends on the adoption of healthy behaviors by at-risk populations. Factors influencing such behaviors include mainly knowledge, perceptions, attitudes, practices, self-effectiveness, intention to act, etc. (17-19).

Studies identified healthcare workers as a high-risk group for contracting and transmitting influenza to patients and colleagues (20-22). As a result, these studies recommend that healthcare workers receive seasonal and pandemic influenza vaccinations to reduce morbidity, mortality, and absenteeism. Influenza vaccination among healthcare workers serves both as a protective measure for their well-being and as a moral and ethical responsibility toward patients (23) and colleagues.

A systematic review of global influenza vaccination coverage among healthcare workers during the 2009 pandemic revealed significant variability, with rates ranging from 9% to 92% (24). Low vaccination coverage was associated with inadequate knowledge, skepticism regarding vaccine efficacy, and concerns about potential side effects (25-27).

Other studies have shown a correlation between low influenza vaccination rates and lower national income levels, particularly in some African and Southeast Asian countries (28). In the Democratic Republic of the Congo (DRC), with an estimated population of 105,6 million in 2024 (29), seasonal influenza predominantly affects children under five years old, accounting for more than 60% of reported cases. However,

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little is known about the socio-psychological factors that influence influenza control among healthcare workers in the DRC. Therefore, this present study aimed to describe the level of knowledge, perceptions, attitudes and practices of nurses regarding influenza vaccination and control in Kinshasa and Lubumbashi.

Methods

Qualitative approach and research paradigm

In accordance with the interpretivist paradigm, we adopted a descriptive qualitative approach (30) based on the Health Belief Model, which explains and predicts individuals' health-related behaviors through perceived susceptibility to disease, perceived severity, perceived threat, perceived benefits and barriers to action, and the perceived effectiveness of recommended interventions (20). We conducted four focus group discussions to deeply explore nurses' experiences regarding influenza vaccination and control.

Researcher characteristics and reflexivity

The principal investigator, trained in public health and qualitative methods, maintained reflexivity to limit bias and ensure culturally sensitive interpretation.

Context and sites

The study was conducted in 2022, in Kinshasa and Lubumbashi during the COVID-19 pandemic, a more threatening disease with similar symptoms like Influenza (31).

Sampling strategy

A purposive sampling approach was used with four FGDs, resulting in 32 nurses, with eight participants selected from each health facility.

- In Kinshasa, Centre Hospitalier de Mont Amba (Lemba health district) and Kabinda General Hospital (Lingwala health district) were selected.
- In Lubumbashi, Kenya General Hospital (Kenya health district) and Hakika General Hospital (Ruashi health district) were chosen.

Data collection

Prior to each interview, the interviewer explained the study objectives, methodology, and scope, using clear language. Once participants confirmed their understanding, informed consent was obtained through the signing of a standardized consent form. Data were collected during focus group discussions using an adapted CDC interview guide. Each focus group discussion was facilitated by an interviewer and supported by a note-taker. Responses were documented through both written notes and audio recordings. Each session was scheduled at a convenient time and lasted approximately one hour. The following key questions were asked:

1. What is the local term for influenza?
2. What is the causative agent of influenza, and what factors facilitate its transmission?
3. Which age groups are the most affected by influenza?
4. What is the period of influenza outbreak?
5. What are the common symptoms of influenza?
6. Do you know preventive measures against influenza?
7. What are benefit of preventive measures and challenges?
8. Do you think that influenza is a serious illness that poses a threat to health?
9. Do you favor or oppose the introducing influenza vaccination in the DRC?
10. Are you in favor or not to the introducing influenza vaccination in DRC?
11. What steps do you take when you contract influenza?

Data processing

The interview recordings were listened iteratively by the research team to ensure a thorough understanding of the data. Verbatim transcriptions were produced in French using Microsoft Word and were enriched with contextual and non-verbal observations recorded by the note-taker during data collection

Data analysis

The four focus groups were designated using letters A to D, with participants assigned numbers from 1 to 8. Groups A and B represented Focus groups in Kinshasa, while groups C and D corresponded to those in

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Lubumbashi. Data from focus group discussions (FGDs) have been analyzed manually using thematic and phenomenological approach (32). This process involves multiple stages of coding, categorizing, and developing themes.

Ethical considerations

Prior to data collection, the study protocol was approved by the Ethics Committee of the Faculty of Medicine in Kinshasa. Each participant voluntarily and willingly consented to take part in the study by signing the informed consent form after acknowledging and understanding its contents.

Techniques used to enhance trustworthiness

The trustworthiness of the study was reinforced through multiple methodological strategies:

- Credibility by ensuring heterogeneity among participants;
- Dependability through the systematic documentation of research procedures, enabling transparency and auditability;
- Confirmability by employing reflexive practices throughout data collection and analysis to minimize researcher bias;
- Transferability by providing rich, contextualized descriptions of the study setting, participant characteristics, and methodological choices

Results

We have grouped the results of our study according to the following themes:

Theme 1: Sociodemographic characteristics

The Sociodemographic characteristics of the interviewees are shown in **Table 1**.

Table 1: Sociodemographic characteristics of interviewees

Respondent characteristics to FG	**n=32 (%)**
Age	
<25 years old	3 (9)
25 - 30 years old	14 (44)
30 and over	15 (47)
Sex	
Male	11 (34)
Female	21 (66)
Marital status	
Single	6 (19)
Married	26 (81)
Educational level	
A2 Technical secondary	18 (56)
A1 college	12 (38)
A0 college	2 (6)
Seniority	
<5 years old	4 (12)
5 - 10 years old	18 (56)
>10 years old	10 (31)
Services	
Internal Medicine	16 (50)
Pediatrics	16 (50

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A2 Technical secondary level is a four-year nursing training program at a technical secondary school; A1 college level is a three-year nursing degree at a college; A0 college level is a five-year advanced nursing degree at a college.

This table shows that participants were mostly women, aged 30 and above, married, and held an A2-level nursing qualification.

Theme 2: Knowledge of Seasonal Influenza

Awareness of Local Terminology for Influenza

In Kinshasa, where the majority of the population speaks Lingala, respondents were divided between the terms "KOSUKOSU" (meaning cough) and "MIYOYO" (meaning snot). In contrast, in Lubumbashi, where Swahili is predominantly spoken, the flu was referred to as "HOMA," (originally meaning fever but here considered as flu) or occasionally as "KIKOHOZI," (meaning cough).

Knowledge of the Causative Agent and Factors Facilitating Transmission

As for factors that might facilitate viral transmission, dust, cold, young age, and old age were frequently mentioned, often without distinction.

"Exposure to dust or cold can cause someone to catch the flu, even if one takes precautions"[Male, 33, Lubumbashi].

Knowledge of the Most Affected Groups.

The nurses in this study acknowledged that children under five and the elderly people are the most affected by influenza.

"*I believe that age affects susceptibility to the flu, with children and the elderly being more likely to become infected*"[Female, 35, Kinshasa].

Period of Influenza Outbreak

The nurses reported that influenza cases were more prevalent during the dry season, which spans from June to September.

Knowledge of Influenza Symptoms

Respondents frequently mentioned the following symptoms of influenza, in order of frequency: cough (thirty-two mentions), fever (twenty-nine mentions), runny nose (twenty-eight mentions), chills (twenty-two mentions), headache (twenty-two mentions), sneezing (twenty mentions), body pain (eighteen mentions), fatigue (sixteen mentions), lack of appetite (twelve mentions), and itchy eyes (two mentions).

Preventive Measures for Seasonal Influenza

When asked about preventive measures, nurses identified handwashing with soap, the use of hydro-alcoholic solutions, and wearing masks as key strategies. Additional measures mentioned included wearing protective clothing (such as blouses and gloves), maintaining physical distance, disinfecting equipment and surfaces, and using waste bins for disposal.

Theme 3: Perceptions of Influenza

Perceptions of Seriousness and Threat

The nurses did not perceive seasonal influenza as a significant health threat, regarding it as a mild and infrequently fatal illness. However, the emergence of COVID-19 altered this perception, as any influenza-like symptoms were subsequently viewed as a potential health risk due to their clinical resemblance to COVID-19.

"*Seasonal influenza is typically not regarded as a significant health threat, as it is not commonly feared. However, when its symptoms align with those of COVID-19, concerns emerge—individuals begin to fear contracting the illness and the potential for severe consequences, including death. As a result, influenza is then perceived as a more substantial and urgent health threat"*[Male, 42, Lubumbashi].

Perception of the Benefits and Obstacles to Implementing preventive measures

In terms of the benefits and challenges associated with preventive measures, all participants agreed that the primary benefit is the preservation of health. The barriers they identified included the cost of supplies such as masks, gloves, hand sanitizers, handwashing stations, and digital thermometers. A few participants also highlighted challenges such as ignorance, misinformation, false beliefs, rumors, and the discomfort of wearing masks.

"Maintaining good health is unquestionably the primary benefit of preventive measures. Health is fundamental to overall well-being, and without it, achieving personal and professional goals becomes increasingly challenging" [Female, 29, Lubumbashi]

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Theme 4: Attitude towards Vaccination

The majority of the nurses interviewed had an unfavorable attitude to vaccination against influenza, believing that there were already too many vaccines in circulation and that influenza was a mild disease for which one cannot risk the side effects of vaccination

"The introduction of a new flu vaccine seems excessive, even overly so. Vaccines have increasingly been seen as the solution to every illness—one for this, one for that. However, the flu is a relatively mild disease and, in our country, does not warrant the need for a vaccine"[Male, 38, Kinshasa].

Discussion

Knowledge of the causative agent and factors that may facilitate transmission

Regarding the factors that promote influenza infection, the nurses cited cold, dust, and age. While these factors are not inaccurate, the World Health Organization emphasizes personal hygiene and close contact as major contributors. Additionally, dust is more associated with rhinitis, chronic allergy, and obstructive lung diseases (3). However, some qualitative studies conducted in sub-Saharan Africa have highlighted that dust is frequently perceived by local populations as a causal factor of influenza, independent of the biomedical understanding centered on the influenza virus. For example, a study carried out in Kenya among parents living in both urban and rural settings revealed that many participants associated the onset of influenza with exposure to dust, particularly in occupational environments such as construction sites and poorly maintained dwellings (4). These findings are consistent with observations from another qualitative study conducted in Malawi, where residents frequently identified dust, particularly that raised during household chores like sweeping unpaved earthen floors, as the primary cause of influenza (5). Although these community perceptions do not align directly with the viral etiology of influenza, they underscore the importance of integrating local knowledge and sociocultural representations into public health communication and prevention strategies, in order to strengthen community engagement and adherence to influenza control interventions.

Knowledge of the most affected group

Nurses identified children under five years of age and elderly individuals as the age groups most affected by influenza. Similar findings have been reported in studies conducted in the DRC, showing that approximately 40% of influenza cases in healthcare settings occur in children under five years old (6-7).

Period of flu outbreak

Our study found that influenza outbreaks often occur during the dry season. This contradicts previous studies in the DRC, which have shown that seasonal influenza outbreaks typically occur during the rainy season (6-7). These studies suggest that outbreaks during the dry season may not be caused by the influenza virus but are more likely linked to dust and other pathogens (23).

Knowledge of most flu symptoms

The most commonly reported symptoms — including cough, fever, runny nose, chills, headache, sneezing, body aches, fatigue, loss of appetite, and itchy eyes — have also been documented in other studies (13-14).

Knowledge about flu preventive measures

Preventive measures mentioned in our study included: washing hands with soap, using hydro alcoholic hand rubs, and wearing masks. Some respondents also mentioned measures such as wearing lab coats, gloves, maintaining physical distance, disinfecting equipment and surfaces, and using waste bins for disposal. Similar results were found in qualitative studies conducted in Switzerland (15) and in Hong Kong (16) that focused on the practical measures taken by nurses to prevent infections, including influenza, in clinical settings. They also highlighted the challenges faced in effectively implementing these measures

Perceptions of seriousness and threat

The nurses in our study did not perceive the flu as a serious illness or a threat. This aligns with findings from other studies in warm regions (17-18).

Perception of benefits and barriers to applying control measures

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When nurses successfully applied preventive measures, they considered them effective and more beneficial than the barriers, as suggested by the HBM theory (20). Therefore, their actions were more closely tied to the lessons learned from COVID-19 than to the seasonal flu. A comparable situation was reported in Cyprus in 2021, where fear of COVID-19 prompted nurses to strengthen their adherence to preventive practices (31).

Practices to treat seasonal flu

Participants generally reported practicing self-medication with Paracetamol. Conversely, data from a study conducted by Carrat *et al*. in France (19) showed that medical consultation remained the most frequent recourse to care. Although self-medication was also practiced, it was largely undertaken on the advice of the pharmacist emphasizing his role in guiding therapeutic choices without a prescription.

Limitations of the study

This study has several limitations inherent to qualitative research. First, the findings are based on a purposive sample of 32 nurses from only two cities—Kinshasa and Lubumbashi—and thus may not be generalizable to all healthcare workers across the Democratic Republic of the Congo. Second, data collection through focus group discussions may have introduced social desirability bias, as some participants may have been influenced by group dynamics or may have responded in a way, they believed to be socially acceptable. Finally, the study was also conducted during the COVID-19 pandemic, which may have affected participants' perceptions and attitudes toward respiratory illnesses such as influenza.

Despite these limitations, the study provides valuable insights into nurses' experiences and beliefs regarding influenza and its prevention, and it contributes to understanding the socio-behavioral factors influencing vaccine acceptance in the DRC.

Conclusion

This study enhanced our understanding of knowledge, perceptions, and attitudes towards influenza vaccination and the practices of nurses in two large cities in the DRC, to enable health authorities to develop and implement risk communication strategies for the reduction of the burden of disease. Based on these findings, it is essential to train nurses on the differences between COVID-19 and seasonal influenza and raise awareness about the risks of mortality, particularly among vulnerable populations.

Conflict of interest

The authors declare no conflicts of interest regarding the publication of this paper.

Contribution for authors

SMK wrote the first draft of the manuscript; SKM, MNT, PLA organized the data; SMK, MNT, NBD, TKA, PLA, LBP carried out data analyses and interpretation of results. All authors contributed to the revision of the manuscript; TKA and LBP coordinated the writing work.

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