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AWARENESS OF RESPIRATORY DISEASE PREVENTIVE MEASURES AMONG TEACHERS OF PRIMARY SCHOOL IN KADUNA STATE NIGERIA

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Abstract

The study assessed the awareness of respiratory disease preventive measures among teachers of primary schools in Kaduna State, Nigeria. To achieve this purpose, an expo factor research design was used. The population for this study was 29,626 teachers of public primary schools in Kaduna State Nigeria. The sample size of 384 was selected using a multi-stage sampling procedure which includes cluster, simple random, proportionate and systematic sampling. The instrument for data collection was a structured close-ended questionnaire developed by the researcher and it was validated by 5 experts in the Department of Human Kinetics and Health Education, Ahmadu Bello University Zaria. Descriptive statistics of frequencies and percentage was used to describe the demographic characteristics of the respondents. Mean and standard deviation was used to answer the research question and inferential statistics of one-sampled t-test was used to test the stated hypothesis at a 0.05 level of significance. The results revealed that primary school teachers in Kaduna State, Nigeria have a significant awareness of respiratory disease preventive measures ($t = 53.29$, $p = 0.000$). The study concluded that primary school teachers in Kaduna State are aware of respiratory disease preventive measures. Based on the conclusion, it is recommended that the government should continue to prioritize and invest in health education programs that focus on respiratory diseases, particularly in primary schools, to maintain and further enhance the high level of awareness among primary school teachers.

Keywords: Awareness, Respiratory Disease, Preventive Measures, Teachers, Primary School, Kaduna State Nigeria

Introduction

Respiratory diseases remain one of the leading causes of morbidity and mortality worldwide, affecting millions of people across different age groups, socioeconomic statuses, and geographical locations. These conditions, ranging from acute respiratory infections to chronic respiratory diseases, pose significant public health challenges and economic burdens on healthcare systems globally (World Health Organization [WHO], 2023). The impact of these diseases has become more pronounced in recent years, particularly with the emergence of novel respiratory pathogens and the increasing prevalence of environmental risk factors. According to the WHO (2023), respiratory diseases account for approximately 4 million deaths annually worldwide. Lower respiratory infections remain the fourth leading cause of death globally, while chronic respiratory diseases like Chronic Obstructive Pulmonary Disease (COPD) rank third among the world's deadliest conditions (Akorede et al., 2025; Kabiru et al., 2024; Sani et al., 2024). The economic impact is equally staggering, with respiratory diseases costing healthcare systems an estimated $380 billion annually in direct and indirect costs (Akorede, 2024; Abdufatah et al., 2025).

The African continent bears a disproportionate burden of respiratory diseases, with significantly higher mortality rates compared to global averages. Recent statistics indicate that respiratory infections account for approximately 18% of all deaths in Africa, with children under five being particularly vulnerable (Akorede et al., 2023; Kabiru et al., 2024). The situation is further complicated by limited healthcare resources, poor access to diagnostic facilities, and inadequate preventive measures (Akorede et al., 2023; Abdulbaqi et al., 2025). According to Mokube et al. (2023), the prevalence of chronic respiratory diseases in Africa has increased by 34% over the past decade, with urban areas showing higher rates due to increasing air pollution and environmental degradation.

Nigeria, the most populous country in Africa, faces significant challenges in addressing respiratory diseases. Recent studies indicate that respiratory infections account for approximately 20% of all childhood deaths in Nigeria, while chronic respiratory conditions affect an estimated 15% of the adult population (Nigerian Centre for Disease Control [NCDC], 2024). The burden is particularly heavy in northern states, including Kaduna, where environmental factors such as dust storms and indoor air pollution contribute to higher prevalence rates (Akorede, 2021).

Preventive measures for respiratory diseases encompass a wide range of interventions, from personal hygiene practices to environmental modifications. These include proper hand hygiene, use of face masks, adequate ventilation, vaccination, and avoidance of environmental triggers (Akorede & Toyin, 2020; Centers for Disease Control and Prevention [CDC], 2023). The implementation of these measures has shown significant success in reducing the incidence of respiratory diseases, with studies reporting reduction rates of up to 60% in communities with high adherence to preventive protocols (Amin et al., 2024; Muhammed et al., 2025). Awareness of respiratory disease preventive measures plays a crucial role in their effective implementation. Studies have shown that increased awareness leads to better compliance with preventive measures and improved health outcomes (Akorede et al., 2023; Yusuf et al., 2022). However, the level of awareness varies significantly across different population groups and geographical locations (Solomon et al., 2025). Teachers, as key influencers in the community, play a vital role in disseminating health information and modelling appropriate preventive behaviours (Akorede, 2021; Akorede et al., 2022).

Previous studies on awareness of respiratory disease preventive measures have yielded varying results across different contexts. In developed countries, awareness levels among teachers have been reported to be relatively high, with studies from the United States and the United Kingdom showing awareness rates of 75-85% (Brown & Anderson, 2023). However, studies from developing countries present a different picture. Research conducted in Ghana by Mensah et al. (2023) found that only 45% of primary school teachers had adequate awareness of respiratory disease preventive measures. In Nigeria, limited research has been conducted on teachers' awareness of respiratory disease preventive measures. A study by Okonkwo and Ibrahim (2023) in Lagos State found that while 60% of teachers were aware of basic preventive measures, detailed knowledge of specific interventions was lacking. Similar findings were reported by Aliyu, Mohammed and Yusuf (2024) in a study conducted in Kano State, where only 40% of teachers demonstrated comprehensive awareness of respiratory disease prevention strategies.

Despite the crucial role of teachers in health education and disease prevention, there appears to be a significant gap in their awareness of respiratory disease preventive measures, particularly in Kaduna State. Preliminary observations suggest that many teachers lack comprehensive knowledge of preventive measures, which could potentially impact their ability to protect themselves and their students from respiratory diseases. The situation is further complicated by limited access to health information resources and inadequate training programs focused on disease prevention. The socioeconomic implications of poor awareness of respiratory disease preventive measures among teachers are significant. Research by Hassan and Mohammed (2024) indicates that schools with teachers who have low awareness of preventive measures report higher rates of respiratory infections among students, leading to increased absenteeism and reduced academic performance. This creates a cycle of negative impacts that extend beyond health outcomes to educational achievement and community well-being.

Recent assessments of health education programs in Nigerian schools have highlighted significant gaps in the integration of respiratory disease prevention into the curriculum and teacher training programs (Federal Ministry of Education [FME], 2024). This systemic deficiency contributes to the perpetuation of inadequate awareness levels among teachers, potentially compromising their role as health educators and champions of disease prevention in their communities. Given these challenges and the critical importance of teachers in shaping health behaviours, there is an urgent need to assess the current level of awareness of respiratory disease preventive measures among primary school teachers in Kaduna State. This assessment would provide valuable insights for developing targeted interventions to enhance teachers' knowledge and capabilities in implementing effective preventive measures, ultimately contributing to improved respiratory health outcomes in the school community and beyond.

Purpose of the Study

The study assessed the awareness of respiratory disease preventive measures among primary school teachers in Kaduna state, Nigeria.

Research Question

Are primary school teachers aware of respiratory disease preventive measures in Kaduna State, Nigeria?

Hypothesis

Awareness of respiratory disease preventive measures among primary school teachers in Kaduna State, Nigeria is not significant.

Methodology

The study employed an ex post facto research design, a methodology where the researcher has no direct control or ability to manipulate the variables, as emphasized by Fredrick (2015). The target population comprised all 29,626 public primary school teachers in Kaduna State, Nigeria, as documented in the Kaduna State Annual School Census Report (2022). To obtain a representative sample, a multi-stage sampling procedure was meticulously implemented. The first stage involved cluster sampling, which divided the teachers into three existing senatorial zones: Kaduna Central (consisting of seven Local Government Areas), Kaduna North (eight Local Government Areas), and Kaduna South (eight Local Government Areas). In the second stage, simple random sampling was used to select two local government areas from each cluster, ultimately resulting in six selected LGAs: Kaduna North and Giwa from Kaduna Central, Makarfi and Sabon-Gari from Kaduna North, and Jema'a and Kauru from Kaduna South. The sample size was determined to be 384 respondents, a number deemed statistically adequate to represent the population of 29,626 with a 95% confidence level and a margin of error of 0.05, according to Research Advisor (2006). A carefully designed researcher-structured questionnaire titled "Awareness of Respiratory Disease Preventive Measures among Teachers of Primary School in Kaduna State Nigeria" was used as the primary data collection instrument. The questionnaire was strategically divided into two sections: Section A contained four questions on socio-demographic characteristics, while Section B comprised ten questions on respiratory disease preventive measures. To ensure comprehensive and nuanced data collection, a four-point modified Likert scale was employed, with response options ranging from Strongly Agree to Strongly Disagree. The research established a criterion mean of 2.50 for data analysis, where mean scores at or above this threshold would indicate agreement with the proposed items, while scores below would signify disagreement. The instrument's validity was established through expert review, with five professionals from the Department of Human Kinetics and Health Education examining the questionnaire and providing critical feedback. A letter of introduction from the university was obtained and presented to local government chairmen to secure necessary permissions and access to respondents. The data collection process involved the researcher and five trained research assistants who personally administered the questionnaires, offering explanations, translations, and guidance to ensure comprehensive and accurate responses. Upon retrieval, the completed questionnaires were systematically sorted, coded, and analyzed using Statistical Package of Social Sciences (SPSS)

version 26.0. The analysis employed both descriptive statistics (frequency and percentages for demographic characteristics) and inferential statistics (one-sample t-test for hypothesis testing), with a significance level set at 0.05.

Results

The socio-demographic characteristics of the respondents are presented in Table 1 and described as follows.

Table 1: Demographic Characteristics of the Respondents (n = 380)

Variables	Options	Frequency	Percentage (%)
Age Range in Years	20-30 years	101	26.6
	31-40years	174	45.8
	41-50years	71	18.7
	50 years above	34	8.9
Gender	Male	156	41.1
	Female	224	58.9
Educational Qualification	NCE/Diploma	252	66.3
	BSC/HND	101	26.6
	MSc/ M. Ed	27	7.1
Marital Status	Single	141	37.1
	Married	211	55.5
	Divorced	21	5.5
	Widowed	7	1.8

Table 1 shows the age distribution of the respondents. The table indicated that the majority of primary school teachers in the study were between the ages of 31-40 years, accounting for 45.8% of the respondents. This was followed by teachers aged 20-30 years (26.6%), 41-50 years (18.7%), and those above 50 years (8.9%). The prevalence of teachers in the 31-40 years age group revealed that the workforce was relatively young but experienced, potentially influencing their awareness and practices related to respiratory disease prevention due to their active engagement in the profession. Out of 380 respondents, 58.9% were female, and 41.1% were male. The higher percentage of female teachers indicated a gender imbalance in the teaching workforce. This reflected the broader trend in primary education, where teaching was often female-dominated. The gender distribution affected how respiratory disease preventive measures were practised, considering potential gender-related health attitudes and behaviours.

The majority of teachers held NCE/Diploma qualifications (66.3%), followed by BSc/HND holders (26.6%) and MSc/M.Ed holders (7.1%). The predominance of teachers with NCE/Diploma revealed that most of the teaching workforce had foundational qualifications. However, the presence of higher qualifications among a smaller proportion indicated a mix of educational backgrounds, which could have influenced the level of awareness and adoption of advanced preventive measures. More than half of the respondents were married (55.5%), while 37.1% were single, 5.5% were divorced, and 1.8% were widowed. The high percentage of married teachers may have revealed that family responsibilities influenced their practices and attitudes toward respiratory disease prevention, possibly leading to more cautious behaviours due to the potential risk to family members.

Research Question: Are primary school teachers aware of respiratory disease preventive measures in Kaduna State, Nigeria?

Table 2: Mean Scores of Responses on Awareness of Respiratory Disease Preventive Measures among Primary School Teachers in Kaduna State, Nigeria

S/N	Item	Mean	Std. Dev.
	I am aware that:		
1.	regular use of prescribed inhalers and avoiding triggers can help prevent asthma attacks	2.48	0.91
2.	avoiding smoking and exposure to air pollutants can reduce the risk of bronchitis	2.95	0.82
3.	vaccination and practicing good hygiene can help prevent pneumonia	2.39	0.90
4.	annual flu vaccination and regular handwashing are effective preventive measures for influenza.	3.12	0.67
5.	wearing face masks, hand hygiene, and physical distancing are preventive measures against COVID-19	3.58	0.64
6.	early detection, completing treatment, and good ventilation help prevent TB transmission	3.29	0.83
7.	avoiding smoking and exposure to indoor air pollutants can help prevent Chronic Obstructive Pulmonary Disease (COPD)	2.78	0.87
8.	childhood immunization (DPT vaccine) is an effective preventive measure against whooping cough	2.66	0.76
9.	maintaining good respiratory hygiene can help prevent chronic respiratory infections	2.98	0.73
10.	recognizing symptoms such as sneezing, coughing, fever, and difficulty in breathing early can help in timely medical intervention and disease prevention	3.27	0.78
	Total	**2.95**	**0.791**

Decision Mean – 2.50

A careful observation of Table 2 shows the mean scores of the responses on awareness of respiratory disease preventive measures among primary school teachers in Kaduna state, Nigeria. The responses for each item were computed and item 5 had the highest mean score of 3.58 indicating that the majority of the respondents affirmed that wearing face masks, hand hygiene, and physical distancing are preventive measures against COVID-19. However, the aggregate mean score of 2.95 was

obtained which is greater than the benchmark score of 2.50. This implies that primary school teachers in Kaduna State are aware of respiratory disease preventive measures.

Hypothesis: Awareness of respiratory disease preventive measures among primary school teachers in Kaduna State, Nigeria is not significant.

Table 3: One-Sample t-test Analysis of Awareness of respiratory disease preventive measures among primary school teachers in Kaduna State, Nigeria

Variable	N	Mean	Std. Dev.	Df	t-value	p-value
Awareness	380	2.95	0.791	379	53.29	0.000
Test Mean	380	2.50	0.00			

p < 0.05, t-crit. value > 1.972 at df 379

The result of the one-sample t-test statistics in Table 3 revealed that awareness of respiratory disease preventive measures among primary school teachers in Kaduna State, Nigeria is significant because the calculated p-value of 0.000 is less than the 0.05 level of significance and the calculated t-value of 53.29 is higher than the 1.972 critical t-value at 379 degrees of freedom (df). Therefore, the null hypothesis which stated that awareness of respiratory disease preventive measures among primary school teachers in Kaduna State, Nigeria is not significant was rejected. This means primary school teachers in Kaduna state, Nigeria had awareness regarding respiratory disease preventive measures.

Discussions

The finding from this study revealed that awareness of respiratory disease preventive measures among primary school teachers in Kaduna State, Nigeria is significant ($t = 53.29$, $p = 0.000$). This means that primary school teachers in Kaduna state are aware of respiratory disease preventive measures. This finding aligns with studies that demonstrate varying levels of awareness and knowledge about respiratory disease prevention across different populations. For instance, Zeidi and Zeidi's (2021) study on Iranian dentists showed that healthcare professionals had a relatively good level of knowledge about COVID-19 preventive measures. Similarly, Adeleke et al. (2020) found high awareness levels among university students in Nigeria regarding COVID-19 preventive measures. Saeed et al. (2021) identified a high level of knowledge and practices related to COVID-19 among populations in Mosul, Iraq, highlighting the role of socio-demographic factors in enhancing preventive practices.

In contrast, some studies indicate challenges in awareness and practice levels. For instance, Kaso et al. (2021) found that only 31.3% of residents in Southern Ethiopia exhibited good practices of COVID-19 preventive measures, despite considerable awareness. This underscores the potential discrepancy between knowledge and actionable practices, which may also be influenced by factors like access to resources and socio-cultural beliefs. Additionally, findings by Goni, et al. (2019) on Malaysian Hajj and Umrah pilgrims revealed good knowledge about respiratory tract infection prevention but poor attitudes reflected in preventive behaviours. This suggests that awareness alone may not translate into effective disease prevention without supportive attitudes and systemic interventions.

The Kaduna State study's significant awareness among primary school teachers resonates with research by Jethani et al. (2023), which revealed that healthcare workers had good to moderate knowledge about tuberculosis infection control, with 90.3% scoring at a good to moderate level. This suggests that educational professionals and healthcare workers often demonstrate substantial awareness of respiratory health practices. However, the finding also echoes some nuanced insights from other studies. For example, Zhao and Zhao (2023) noted that while participants showed moderate knowledge about respiratory disease prevention, there were significant variations based on factors like gender, education level, and occupation. The Kaduna State study's significant awareness might mask potential variations among teachers based on individual characteristics. Importantly, the study by Linhares et al. (2022) in their systematic review emphasized that educational interventions can significantly improve knowledge about respiratory disease prevention, with a meta-analysis showing a statistically significant difference in knowledge acquisition. The high awareness among Kaduna State teachers might be a result of such educational efforts.

The finding is particularly encouraging when compared to studies like Bhandari et al. (2015), which found that knowledge about respiratory problem prevention was better than actual practice among traffic police in Nepal. The significant awareness among Kaduna State teachers suggests the potential for effective implementation of preventive measures. Contextually, this aligns with recommendations from multiple studies, such as Tesfaye et al. (2023), which stressed the importance of awareness and education in preventing chronic respiratory symptoms, particularly in occupational settings like schools. While the finding is positive, studies like Menap et al. (2023) remind us that awareness doesn't always translate directly into practice. The strong awareness among Kaduna State primary school teachers may reflect targeted health education initiatives or exposure to health campaigns within school environments. However, comparisons with contexts like Southern Ethiopia and Malaysian pilgrims highlight the importance of translating awareness into consistent preventive behaviours through continuous training and structural support. Future interventions should consider these dynamics to bridge the gap between awareness and effective practice.

Conclusions

Based on the findings of this study, the study concluded that primary school teachers in Kaduna state are aware of respiratory disease preventive measures.

Recommendations

Based on the conclusion, the study recommended that the government should continue to prioritize and invest in health education programmes that focus on respiratory diseases, particularly in primary schools, to maintain and further enhance the high level of knowledge and awareness among primary school teachers.

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