INTERPROFESSIONAL EDUCATION AS A TOOL FOR TEACHING-SERVICE INTEGRATION AND TRANSFORMATION: EXPERIENCE REPORT ON THE STUDY OF ENVIRONMENTAL DETERMINANTS AND RESPIRATORY HEALTH DISORDERS

A EDUCAÇÃO INTERPROFISSIONAL COMO FERRAMENTA DE INTEGRAÇÃO ENSINO-SERVIÇO E TRANSFORMAÇÃO: RELATO DE EXPERIÊNCIA SOBRE ESTUDO DOS DETERMINANTES AMBIENTAIS E AGRAVOS À SAÚDE RESPIRATÓRIA

LA EDUCACIÓN INTERPROFESIONAL COMO HERRAMIENTA DE INTEGRACIÓN ENSEÑANZA-SERVICIO Y TRANSFORMACIÓN: RELATO DE EXPERIENCIA SOBRE EL ESTUDIO DE LOS DETERMINANTES AMBIENTALES Y LOS AGRAVOS A LA SALUD RESPIRATORIA

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ABSTRACT

This experience report analyzes Interprofessional Education as a central strategy within the Curricular Unit of Teaching-Service-Community Integration Practices at the Centro Universitário de Votuporanga, focusing on the study of environmental determinants and their impacts on respiratory health within the territory during the year 2024. Air pollution, intensified by an extreme rate of wildfires in the Midwest region and the transport of smoke to Votuporanga,

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served as the setting for a Project-Based Learning methodology that integrated students and professors from Medicine, Nursing, and Environmental Engineering. The main objective was to investigate the correlation between particulate matter levels (PM10 and PM2.5) and the volume of clinical visits at Emergency Care Units (UPA), training future professionals to identify the impact of climate conditions on acute illness and to provide support for local public management. The methodology consisted of a retrospective and quantitative study that cross-referenced ICD-10 diagnoses, such as acute upper respiratory infections (J00) and cough (R05), with data from CETESB's automatic monitoring network. The results revealed a drastic deterioration in air quality, with PM10 increasing from 17 µg/m³ in January to a peak of 100 µg/m³ in September, accompanied by PM2.5, which reached 47.5 µg/m³ during the same period. Clinically, it was observed that, contrary to the historical pattern in which respiratory diseases decline after winter (May to July), in 2024 the incidence of cases remained high until October, coinciding with the end of the wildfire season. Age-group analysis confirmed the vulnerability of the elderly population, especially individuals over 70 and 90 years old, whose peaks in healthcare visits closely followed the atmospheric pollution curve. It was concluded that interprofessional practice clearly demonstrated the impact of environmental determinants on public health, transcending academic boundaries by providing real indicators that support healthcare actions and future public policies aimed at mitigating the effects of wildfires on population health.

Keywords: Interprofessional Education. Environmental Determinants. Wildfires. Respiratory Health. Air Pollution.

RESUMO

Este relato de experiência analisa a Educação Interprofissional como estratégia central na Unidade Curricular de Práticas de Integração Ensino Serviço e Comunidade do Centro Universitário de Votuporanga, focando no estudo dos determinantes ambientais e seus agravos à saúde respiratória no território durante o ano de 2024. A poluição atmosférica, intensificada por um índice extremo de queimadas na região centro-oeste e o transporte de fumaça para Votuporanga, serviu como cenário para uma metodologia de Aprendizagem Baseada em Projetos que integrou estudantes e professores de Medicina, Enfermagem e Engenharia Ambiental. O objetivo central foi investigar a correlação entre os níveis de material particulado (MP 10 e MP 2.5) e o volume de atendimentos clínicos nas Unidades de Pronto Atendimento (UPA), capacitando futuros profissionais para identificar o impacto climático no adoecimento agudo e fornecer subsídios para a gestão pública local. A metodologia consistiu em um estudo retrospectivo e quantitativo que cruzou diagnósticos da CID-10, como infecções agudas das vias superiores (J00) e tosse (R05), com dados da rede automática da CETESB. Os resultados revelaram uma degradação drástica da qualidade do ar, com o MP10 saltando de 17 µg/m³ em janeiro para um pico de 100 µg/m³ em setembro, acompanhado pelo MP2.5, que atingiu 47,5 µg/m³ no mesmo período. Clinicamente, observou-se que, ao contrário do padrão histórico em que as doenças respiratórias declinam após o inverno (maio a julho), em 2024 a incidência de casos manteve-se elevada até outubro, coincidindo com o término das queimadas. A análise por faixa etária confirmou a vulnerabilidade da população idosa, especialmente acima de 70 e 90 anos, cujos picos de atendimento acompanharam exatamente a curva de poluição atmosférica. Concluiu-se que a prática interprofissional foi inequívoca ao demonstrar o impacto dos determinantes ambientais na saúde pública, transcendendo os muros acadêmicos ao entregar indicadores reais que fundamentam ações de assistência e futuras políticas públicas de mitigação dos efeitos das queimadas na saúde da população.

Palavras-chave: Educação Interprofissional. Determinantes Ambientais. Queimadas. Saúde Respiratória. Poluição Atmosférica.

RESUMEN

Este relato de experiencia analiza la Educación Interprofesional como estrategia central en la Unidad Curricular de Prácticas de Integración Enseñanza-Servicio y Comunidad del Centro Universitario de Votuporanga, enfocándose en el estudio de los determinantes ambientales y sus agravios a la salud respiratoria en el territorio durante el año 2024. La contaminación atmosférica, intensificada por un índice extremo de incendios forestales en la región centro-oeste y el transporte de humo hacia Votuporanga, sirvió como escenario para una metodología de Aprendizaje Basado en Proyectos que integró a estudiantes y docentes de Medicina, Enfermería e Ingeniería Ambiental. El objetivo principal fue investigar la correlación entre los niveles de material particulado (PM10 y PM2.5) y el volumen de atenciones clínicas en las Unidades de Atención de Emergencia (UPA), capacitando a futuros profesionales para identificar el impacto climático en el agravamiento agudo de enfermedades y proporcionar subsidios para la gestión pública local. La metodología consistió en un estudio retrospectivo y cuantitativo que cruzó diagnósticos de la CIE-10, como infecciones agudas de las vías respiratorias superiores (J00) y tos (R05), con datos de la red automática de CETESB. Los resultados revelaron un deterioro drástico de la calidad del aire, con el PM10 aumentando de 17 µg/m³ en enero a un pico de 100 µg/m³ en septiembre, acompañado por el PM2.5, que alcanzó 47,5 µg/m³ en el mismo período. Clínicamente, se observó que, contrario al patrón histórico en el que las enfermedades respiratorias disminuyen después del invierno (mayo a julio), en 2024 la incidencia de casos se mantuvo elevada hasta octubre, coincidiendo con el fin de los incendios forestales. El análisis por grupo etario confirmó la vulnerabilidad de la población anciana, especialmente de las personas mayores de 70 y 90 años, cuyos picos de atención coincidieron exactamente con la curva de contaminación atmosférica. Se concluyó que la práctica interprofesional fue inequívoca al demostrar el impacto de los determinantes ambientales en la salud pública, trascendiendo los muros académicos al proporcionar indicadores reales que fundamentan acciones asistenciales y futuras políticas públicas de mitigación de los efectos de los incendios forestales sobre la salud de la población.

Palabras clave: Educación Interprofesional. Determinantes Ambientales. Incendios Forestales. Salud Respiratoria. Contaminación Atmosférica.

1 INTRODUCTION

Air pollution is a critical environmental determinant that directly impacts public health, increasing the incidence of respiratory and cardiovascular diseases. In 2024, the scenario was aggravated by an extreme rate of fires in the central-west region, with severe effects in Votuporanga and surroundings due to the burning of biomass and the transport of smoke by winds. This report details an interprofessional learning strategy that involved students and professors of the Medicine course, during the educational strategy of Project-Based Learning, developed in the curricular unit of Teaching-Service-Community Integration Practices, at the University Center of Votuporanga. This action had the voluntary participation of nursing and engineering professors and students involved with the execution of the project, for the analysis of the impact of the fires on the population, analysis of the health indicators of the emergency care units and analysis of the air quality in the region.

1.1 OBJECTIVE OF THE STUDY

The main objective of this study was to analyze the impacts of interprofessional education and the study of environmental determinants on the understanding of respiratory health in Votuporanga-SP during the year 2024, using the collection of clinical and environmental data as a pedagogical and management tool.

1.2 SECONDARY OBJECTIVES

• Analyze the volume of respiratory care in the UPA and Pozzobon Mini-Hospital during the peak of the fires.

• To investigate the correlation between particulate matter levels (PM 2.5 and PM 10) and ICD-10 diagnoses.

• Train students to identify climatic determinants in acute illness.

• Substantiate the decision-making of health managers and teams with local epidemiological data.

1.3 RESEARCH HYPOTHESIS

Interprofessional practice would confirm that worsening respiratory health between July and October 2024, especially in the elderly, is intrinsically linked to environmental determinants (fires), requiring a coordinated response from the health system.

2 MATERIALS AND METHODS

The experience was based on a retrospective and quantitative study. Data from care at the Pozzobon UPA and Mini-Hospital were analyzed, using specific ICDs such as J00 (acute upper tract infections) and R05 (cough). At the same time, data from CETESB's automatic network for PM10 and PM2.5 were correlated with the epidemiological calendar. The methodology involved the integration of knowledge between the medical area (diagnosis) and environmental engineering (pollutant analysis).

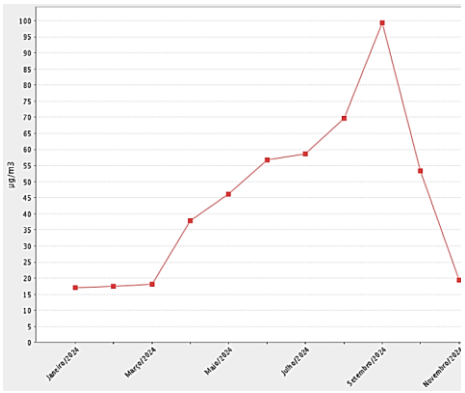
2.1 RESEARCH RESULTS

The results show the seriousness of the environmental scenario in 2024. The concentration of PM10 peaked in September at 100 µg/m³, a dramatic jump from the 17 µg/m³ recorded in January. Fine particulate matter (PM2.5) followed the same curve, reaching 47.5 µg/m³ in September.

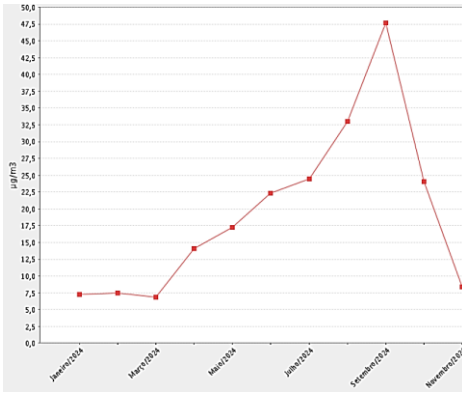
Figure 1

Monthly Evolution of Air Quality (PM10 and PM2.5) in 2024

PM10 - Inhalable Particles (µg/m3)



PM2.5 - Fine Inhalable Particles (µg/m3)

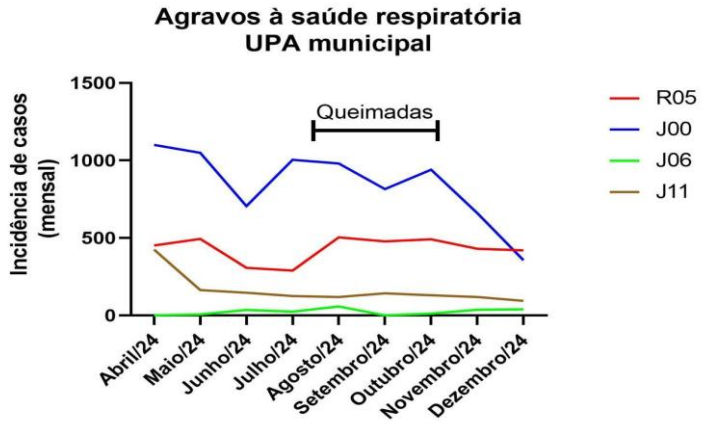


Legend: The atypical peak in the concentration of inhalable particles is observed coinciding with the burning period that intensified in 2024 in relation to the dry season, in previous years. Source: CETESB (Adapted from).

In the clinical sphere, the interprofessional experience revealed that, during the interval between the fires (July and October), there was a significant increase in cases of cough (R05) and upper respiratory infections (J00).

Figure 2

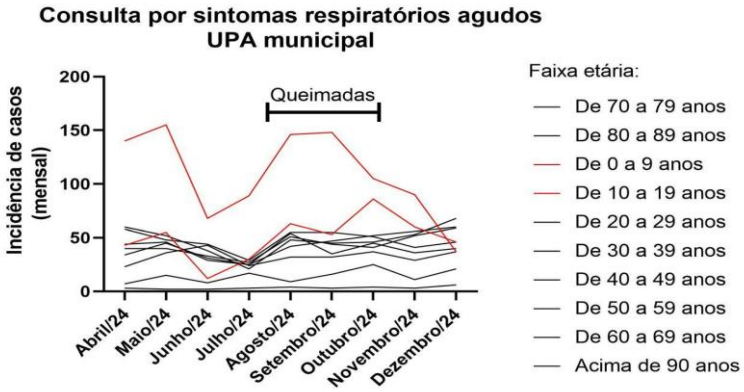
Respiratory health problems in the Municipal UPA



Source: The researchers.

Figure 3

Acute Respiratory Consultations by Age Group



Legend: The analysis by age group confirmed the hypothesis of vulnerability: elderly people in the 70 to 79 age group and over 90 years old showed peaks in attendance that coincide exactly with the period of greatest atmospheric pollution. Source: The researchers.

3 CONCLUSION

This teaching action unequivocally demonstrated the impact of interprofessional education and the study of environmental determinants in the training of more aware and prepared professionals. The integrated analysis of climatic and clinical data allowed the identification of the direct correlation between fires and illness among the elderly population in Votuporanga. Above all, the results of this action transformed and modified the health care environment by providing subsidies for health actions based on real data. By delivering these indicators to the care team and municipal managers, the academic experience transcended the walls of UNIFEV, allowing the improvement of medical care strategies and supporting future public policies for the prevention and mitigation of the effects of fires on public health.

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