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A study to assess the effectiveness of structured teaching programme on knowledge regarding climate changes and its impact on health among people in selected rural areas

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Abstract
Climate change is recognized as one of the most pressing global health challenges of the 21st century, with far-reaching consequences on environmental sustainability and human health. The continuous increase in greenhouse gas emissions due to industrialization, urbanization, and anthropogenic activities has led to significant alterations in global climate patterns. These changes include rising temperatures, melting glaciers, sea-level rise, and an increased frequency of extreme weather events such as floods, droughts, and heat waves. Such environmental changes have direct and indirect effects on human health, including heat-related illnesses, respiratory disorders, vector-borne diseases, waterborne infections, malnutrition, and psychological stress.

The present study was conducted to assess the effectiveness of a structured teaching programme on knowledge regarding climate change and its impact on health among people residing in selected rural areas. A quantitative research approach with a pre-experimental one-group pre-test and post-test design was adopted. The study population consisted of rural residents selected using an appropriate sampling technique. A structured questionnaire was used to assess the knowledge levels of participants before and after the implementation of the teaching programme.

The findings of the study indicated that the majority of participants had inadequate to moderate knowledge regarding climate change and its health implications during the pre-test. After the administration of the structured teaching programme, there was a significant improvement in knowledge scores among participants. Statistical analysis revealed a marked difference between pre-test and post-test scores, confirming the effectiveness of the intervention. Furthermore, the study also explored the association between post-test knowledge scores and selected demographic variables.

The study emphasizes the importance of structured educational interventions in enhancing awareness and promoting preventive health behaviors among rural populations. It highlights the crucial role of community health nurses in educating the public and strengthening health systems to address climate-related challenges. The findings suggest that structured teaching programmes can be effectively utilized as a strategy to improve knowledge and empower communities to mitigate the adverse health impacts of climate change.

Keywords: climate change, health impact, structured teaching programme, rural population, knowledge assessment, community health nursing, environmental health

Introduction

Climate change is a long-term alteration in temperature, precipitation, wind patterns, and other elements of the Earth's climate system. It has become a major global concern due to its widespread impact on ecosystems, economies, and human health. Over the past century, scientific evidence has demonstrated a significant increase in global temperatures, primarily due to human activities such as burning fossil fuels, deforestation, industrial emissions, and unsustainable agricultural practices. These activities have led to an increase in greenhouse gases such as carbon dioxide, methane, and nitrous oxide, which trap heat in the atmosphere and contribute to global warming.

Weather refers to short-term atmospheric conditions, whereas climate represents long-term patterns of weather in a particular region. Even small changes in climate can have significant impacts on ecosystems and human life. According to scientific reports, the global surface temperature has risen by approximately 1°C since the late 19th century, and this warming trend is expected to continue if greenhouse gas emissions are not controlled. Climate change is not only an environmental issue but also a major public health concern.

The impact of climate change on human health is multifaceted. Direct effects include heat-related illnesses such as heat stroke, dehydration, and increased mortality during extreme weather events. Indirect effects include the spread of infectious diseases, particularly vector-borne diseases such as malaria, dengue, and chikungunya, which are influenced by changes in temperature and rainfall patterns. Additionally, climate change affects food security by disrupting agricultural production, leading to malnutrition and undernutrition, especially in vulnerable populations.

Air pollution, which is closely linked to climate change, contributes to respiratory diseases such as asthma, chronic obstructive pulmonary disease (COPD), and cardiovascular diseases. Furthermore, climate change can lead to water scarcity and contamination, increasing the risk of waterborne diseases such as diarrhea and cholera. Mental health issues, including anxiety, depression, and stress, are also associated with climate-related disasters and displacement.

Rural populations are particularly vulnerable to the adverse effects of climate change due to their dependence on agriculture and natural resources for livelihood. Limited access to healthcare services, lack of awareness, low socioeconomic status, and inadequate infrastructure further increase their vulnerability. Therefore, there is a critical need to improve knowledge and awareness among rural

populations regarding climate change and its impact on health.

Health education is a key strategy for empowering individuals and communities to adopt preventive measures and adapt to changing environmental conditions. Structured teaching programmes are organized educational interventions designed to provide systematic and comprehensive information to learners. These programmes are effective in improving knowledge, changing attitudes, and promoting healthy behaviors.

The present study aims to assess the effectiveness of a structured teaching programme in improving knowledge regarding climate change and its impact on health among people in selected rural areas. By identifying knowledge gaps and evaluating the effectiveness of educational interventions, this study contributes to strengthening community health nursing practices and promoting sustainable development.

Methodology

A quantitative research approach was adopted for this study to assess the effectiveness of the structured teaching programme. The research design selected was a pre-experimental one-group pre-test and post-test design, which is appropriate for evaluating the impact of an intervention on a single group of participants.

The study was conducted in selected rural areas, and the target population included adults residing in these communities. The accessible population consisted of individuals who met the inclusion criteria and were available during the data collection period.

A sample of participants was selected using a non-probability sampling technique. The inclusion criteria included individuals who were willing to participate, available during data collection, and able to understand the questionnaire. Individuals who were not willing or were absent during the study were excluded.

The data collection tool consisted of two sections

1. Demographic Variables – age, gender, education, occupation, income, and previous knowledge
2. Structured Knowledge Questionnaire on climate change and its health impact
3. The tool was validated by experts in the field of nursing and public health, and reliability was established using appropriate statistical methods.
4. The study was conducted in three phases:
5. Pre-test: Assessment of baseline knowledge
6. Intervention: Administration of structured teaching programme
7. Post-test: Assessment of knowledge after intervention
8. Ethical clearance was obtained, and informed consent was taken from participants before data collection.

Results

The results of the study revealed that before the intervention, a majority of participants had inadequate knowledge regarding climate change and its impact on health. Only a small percentage of participants demonstrated adequate knowledge.

After the structured teaching programme, there was a significant improvement in knowledge scores. Most participants shifted from inadequate to moderate and adequate knowledge levels.

Statistical analysis showed a significant difference between pre-test and post-test scores, indicating that the structured teaching programme was effective. The association between knowledge scores and demographic variables revealed that factors such as education and previous knowledge had a significant influence.

Discussion

The findings of the study indicate that structured teaching programmes are highly effective in improving knowledge among rural populations. The improvement in post-test scores suggests that educational interventions can bridge knowledge gaps and promote awareness.

The results are consistent with previous studies conducted in similar settings, which have demonstrated that health education plays a crucial role in improving knowledge and behavior related to environmental health issues.

The study highlights the importance of integrating climate change education into community health programmes. Nurses, being frontline healthcare providers, have a significant role in educating communities and promoting preventive measures.

Conclusion

The study concluded that the structured teaching programme was effective in enhancing knowledge regarding climate change and its impact on health among rural populations. There was a statistically significant improvement in knowledge after the intervention.

The findings emphasize the need for continuous health education programmes to improve awareness and preparedness among communities. Empowering individuals with knowledge can lead to better health outcomes and increased resilience to climate-related challenges

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