CHAPTER ELEVEN - SECTION 4: CLIMATE AND HEALTH

Practical Application: Book Activity

Practical Application

Setting the Scene

Climate adaptation and resilience were not recognized as pressing issues for the community of Blacksburg, Virginia. The current leading climate concern, the rising sea level did not seem relevant to the city, which is located more than 300 miles from the nearest coastline. However, when Carol Davis was hired as Blacksburg, Virginia's Sustainability Manager, she set out to develop the town's 2016 Climate Action Plan (PDF), which led to the town being a leader for climate resilience.
The city passed its new Climate Action Plan around the same time as the Global Covenant of Mayors for Climate and Energy. This global alliance dedicated to climate leadership at the local level was spurring communities to develop mitigation strategies to reduce greenhouse gas emissions and adaptation strategies to make our communities more resilient in a changing climate. Using the plan as a starting point, Blacksburg worked to answer this charge.

Carol quickly found that best practices and tools to assess climate vulnerability, adaptation, and resilience were harder to locate for non-coastal communities. She was able to pull from

- the Climate Explorer, a visualization tool that provides graphs and maps of historical and projected climate variables for the contiguous United States at the county level
- key findings from the Fourth National Climate Assessment
- Temperate tool, which provided a concrete, guided process to help her make sense of the data and evaluate the degree to which each potential climate hazard could impact an array of critical community systems

Using these tools, she determined 13 key temperature and precipitation metrics that would be most relevant to Blacksburg. Each of these metrics pointed to potential areas of vulnerability that Blacksburg might need to address.

To further explore which climate metrics might have the greatest adverse impact on the community and bring a variety of experience and expertise to the project, Carol convened a Climate Vulnerability Advisory Team of experts from a variety of disciplines. The team was primarily composed of faculty from the Blacksburg-located Virginia Tech. Members of the Advisory Team provided input on invasive plants, climate trends and ecological processes, energy systems and society, surface water hydrology, extreme weather conditions, climate modeling, food system resiliency, heat stress and public health, transportation, and land use planning, stormwater engineering, climate adaptation planning, water systems and security, civil engineering, hazard mitigation planning, and forest dynamics. This team:

- helped her interpret the best-available climate data and modeling,
- provided critical knowledge on how those changes might specifically impact Blacksburg, and
- provided input on potential adaptation policies that could help Blacksburg deal with new conditions.

With these tools and the Advisory Team's help, Carol was able to direct the project. The group focused attention on anticipated changes to climate by mid-century and end-of-century time scales, with both low- and high-emissions scenarios in mind. The group further examined the interplay between local and national geographic scopes for each of the 13 climate metrics under consideration.

In this way, the team was able to identify and prioritize the top three climate hazards of concern for Blacksburg: hotter summers, warmer winters, and increased precipitation anticipated to occur with changing precipitation patterns.

With these top climate hazards in mind, the team turned its attention to how these hazards might impact local community systems. Grouping the systems into four broad categories — People & Climate, Natural Systems, Economy & Employment, and Infrastructure & Basic Services — the team worked to identify the specific elements and systems critical to the community's functioning and the well-being of the residents.

The team's final assessment, the 2020 Climate Vulnerability Assessment (PDF), included plotting potential areas of vulnerability on a risk matrix to consider the degree of risk for each community system from Blacksburg's primary climate hazards. This drew their focus to the areas of highest anticipated risk and helped them focus their efforts on potential adaptation strategies for the

greatest threats. The assessment is being integrated into the town's policy documents for future action.

Think About It

1. Why was having an Advisory team important to the project? What benefit does having a variety of voices, experiences, and expertise bring to a study?
2. An important outcome of the plan is that Blacksburg's key decision makers are now aware of potential areas of vulnerability and are also equipped with a list of specific actions they can take to foster short- and long-term community resilience. Imagine you are a nurse in Blacksburg. What impact (both direct and indirect) would the plan have on your work? Is there any direct action you would take?
3. Does your local community have a Climate Action Plan, Climate Vulnerability Assessment, or other climate policy? How will this impact your work?
4. Are there any climate issues in your local community that will impact your work as a nurse? What steps can you take to mitigate impact through patient care?

Practical Application: Additional Guidance

Exercise Title

Climate Adaptation and Resilience: A Case Study in Community Health

Objectives

- Understand the role of climate adaptation and resilience planning in local communities.
- Explore the implications of climate change on community health and nursing practice.
- Analyze the benefits of interdisciplinary collaboration in addressing climate-related challenges.
- Apply knowledge of climate vulnerability assessments to nursing practice and patient care.

Preparing for the Exercise

- **Review the Case Study**: Familiarize yourself with the case study details provided. Ensure you understand the climate metrics, the role of the Advisory Team, and the outcomes of the Climate Vulnerability Assessment.

- **Gather Resources**:
  - Collect relevant materials, including textbooks, articles, and online resources.
  - Explore real-world examples (videos, case studies) to ground students' understanding of real world impact of climate change.
- **Set Up the Classroom**: Arrange seating to facilitate group discussions and role-playing exercises. Ensure that any multimedia equipment is functioning if you plan to use slides or videos.

Exercise Components

1. **Discussion**: Begin with a discussion on the importance of climate adaptation and resilience. Focus on the relevance of such plans to nursing and community health.
2. **Role-Playing/Communication Exercise**: Engage students in a role-playing exercise to simulate the process of creating and implementing a climate action plan.
3. **Reflective Practice**: Encourage students to reflect on how climate change might impact their future nursing practice and the steps they can take to address these impacts.

Evaluation and Assessment

- **Participation**: Assess student engagement and participation in discussions and role-playing exercises.
- **Reflection**: Evaluate the depth of students' reflections on the implications of climate change for nursing practice.
- **NCLEX Style Questions:** Use these questions to assess understanding of the content covered in the exercise.

Integration into Curriculum

- **Alignment with Course Objectives**: Integrate evidence-based strategies to address the impact of climate on health into nursing courses.
- **Sequencing**: Determine the appropriate timing and sequencing of the exercise within the course curriculum to complement other content and activities.
- **Integration of Theory and Practice**: Connect the concepts from the exercise to broader nursing practice, particularly in relation to community health and environmental factors.
- **Interdisciplinary Collaboration**: Highlight the importance of working with diverse teams to address complex health issues related to climate change.

Resources and Support

- **Learning Resources**: Provide students with access to relevant literature, articles, and resources on climate change, including
  - U.S. Climate Resilience Toolkit: Provide access to additional resources from the toolkit for further reading.
  - Local Climate Data: Share any local climate data or reports relevant to the students' community
- **Faculty Support**:
  - Offer guidance on how students can incorporate climate considerations into their nursing education and practice.
  - Offer guidance, feedback, and support to students as they engage in the exercise, addressing any questions or concerns they may have about the scenario or related topics.

Conclusion

This guide provides an exercise which will help students understand climate change impacts and the role of nurses in promoting community resilience.

Additional Activities

Role-playing/Communication Exercise

Scenario Title

Community Health Nurse and Climate Vulnerability Advisory Team Meeting

Objective

To practice communicating climate-related health risks and develop collaborative strategies for mitigating these risks.

Roles

- Community Health Nurse: Responsible for understanding and conveying the implications of climate changes on public health.
- Advisory Team Members: Experts in various fields providing input on climate impacts and adaptation strategies.

Scenario Setup

- Set up a mock meeting room where the nurse and advisory team can discuss climate data and its implications.
- Provide each participant with role-specific information and data relevant to their expertise.

Scenario

A community health nurse meets with the Climate Vulnerability Advisory Team to discuss the potential impacts of increased heat stress and changing precipitation patterns on local public health.

Role-Play exercise

1. Pre-Exercise Briefing
    a. Review the case study and role descriptions with participants.
    b. Ensure that all materials (data charts, vulnerability assessment reports) are ready for distribution.
2. Scenario Introduction
    a. Welcome the participants and explain the purpose of the role-playing exercise. Emphasize the importance of interdisciplinary communication in addressing climate-related health issues.
    b. Assign Roles
3. Role-Play Interaction
    a. Participants engage in a role-play interaction of the meeting.
    b. Role-Play Guidelines:

i. Each Advisory Team Member provides an update on their field
ii. The Nurse asks questions to ensure they have the relevant information to support their community

Debriefing and Feedback

After the role-play, conduct a debriefing session where each participant reflects on their experience, provides feedback, and discusses lessons learned.

- The challenges faced in communicating and addressing climate impacts.
- The effectiveness of the strategies proposed.
- Insights gained from interacting with professionals from different disciplines.

Reflective Practice

This activity could occur on a discussion board or by uploading a video using Flip or Canvas Studio.

Reflect on how climate change may affect the health of communities in your area. Consider both direct and indirect impacts, such as heat-related illnesses, vector-borne diseases, and changes in mental health. How can you, as a nurse, address these issues in your practice? What steps can you take to advocate for climate resilience and adaptation in your community?

Interactive Module

Create an interactive escape room using Google Forms that challenges students to solve puzzles related to the chapter topic. These NCLEX-style questions can be a starting point.

1. A nurse in a community with increasing heat waves is educating residents about heat stress. Which of the following should the nurse include in the education plan?

    A. Advise residents to avoid hydration to prevent frequent bathroom visits.
    B. Recommend wearing light, loose-fitting clothing and staying hydrated.
    C. Encourage residents to stay indoors only during peak sunlight hours.
    D. Suggest using fans and air conditioning only during emergencies.

2. During a community health meeting, a nurse learns that the local climate action plan includes measures to address increased precipitation and potential flooding. Which of the following actions should the nurse consider in response to this information?

    A. Focus solely on educating patients about individual health practices.
    B. Develop community outreach programs to raise awareness about flood preparedness.
    C. Ignore the climate action plan as it is unrelated to patient care.
    D. Advocate for the removal of flood prevention measures from the plan.

Simulation

Scenario

Addressing the Health Impacts of Climate Change in Community Health Nursing

Objective

- Assess health risks related to climate change, focusing on vulnerable populations in the community.
- Educate community members on the health effects of climate change, such as heat-related illnesses, respiratory conditions, and waterborne diseases.
- Develop and communicate strategies for preventing and managing climate change-related health issues in the community.

- Encourage community engagement by promoting sustainable practices and emergency preparedness for extreme weather events.

Overview

You are a public health nurse working in a community clinic in a region experiencing increasingly severe weather patterns, including heatwaves, poor air quality, and frequent flooding. Today, you are hosting a community education session to discuss the health effects of climate change and offer strategies to mitigate its impact on the vulnerable populations in the area, such as older adults, children, and individuals with chronic respiratory conditions.

Roles

- Nurse(s)
- Community Member(s) – played by participant or instructor

Setting

Community health clinic or a local community center where residents have gathered for an educational session led by the public health nurse.

Background and Preparation

- Review the health effects of climate change, including heat-related illnesses (e.g., heat stroke), exacerbation of respiratory conditions (e.g., asthma, COPD due to poor air quality), and increased risk of vector-borne diseases (e.g., West Nile virus, Lyme disease).
- Understand the role of public health nurses in disaster preparedness, community education, and advocating for policies to reduce climate impacts.
- Target Population
    - The community includes elderly residents, children, individuals with respiratory conditions, and families in flood-prone areas.
    - Review the community's specific environmental challenges, such as heatwaves, air pollution, and flooding.
- Communication Skills:
    - Focus on clear, culturally appropriate communication.

- Be prepared to address concerns, answer questions, and offer actionable advice for community members.

Simulation Outline

1. **Part 1: Opening the Session (10 minutes)**

    a. **Task:** Introduce the topic of climate change and health, emphasizing its relevance to the community.
    b. **Script:** "As we've all seen over the past few years, our weather patterns have been changing, with more intense heatwaves, worsening air quality, and flooding events. These changes are affecting the health of our community, especially for our older adults, children, and those with health conditions like asthma or heart disease. Today, I'd like to talk about how climate change is impacting our health and what steps we can take to protect ourselves and our loved ones."
    c. **Nurse's Goals**

        i. Introduce the topic of climate change in a relatable and non-alarming way.
        ii. Establish a connection with the community by referencing recent local events (e.g., heatwaves, floods).
        iii. Ask open-ended questions to gauge the community's current understanding of climate change and health risks.

    d. **Community Member Role**

        i. Ask questions like: "Is this really because of climate change?" or "What can we do about it?"

2. **Part 2: Discussing the Health Effects of Climate Change (15 minutes)**

    a. **Task:** Provide specific examples of how climate change can impact health, focusing on vulnerable populations in the community.
    b. **Key Points to Address**

        i. Heat-related Illnesses
        ii. Air Quality and Respiratory Issues
        iii. Flooding and Waterborne Diseases

    c. **Nurse's Goals**

i. Educate about the direct and indirect effects of climate change on health.
ii. Offer practical advice on preventing and managing heat-related illnesses, respiratory conditions, and waterborne diseases.
iii. Highlight the increased risk for vulnerable populations and suggest specific precautions for them.

d. **Community Member Role**

i. Raise concerns or share personal experiences, such as: "My father has COPD. What should he do on those bad air quality days?" or "What should we do if we get caught in a flood?"

3. **Part 3: Prevention Strategies and Community Engagement (10 minutes)**

a. **Task:** Engage the community in developing action plans to mitigate health risks related to climate change.
b. **Key Points to Address**

i. Personal Protection
ii. Sustainable Practices
iii. Emergency Preparedness

c. **Nurse's Goals**

i. Empower the community to take preventive actions and make their homes safer during extreme weather.
ii. Encourage sustainable behaviors that promote long-term environmental health.
iii. Promote community resilience through disaster preparedness and collective action.

d. **Community Member Role**

i. Ask about emergency preparedness or ways to get involved: "What should I include in an emergency kit?" or "How can we help our elderly neighbors during a heatwave?"

4. **Part 4: Reflection (10 minutes)**

a. **Task:** End the session with a summary and a call to action.
b. **Key Points to Address**

i. Personal Protection
ii. Sustainable Practices
iii. Emergency Preparedness

c. **Nurse's Script:** "Climate change is a challenge, but together we can take steps to protect our health and reduce its impacts. Check on your neighbors during heatwaves, make a plan for emergencies, and stay informed. If we work together, we can build a stronger, healthier community."
d. **Nurse's Goals**

i. Summarize key points from the session.
ii. Motivate community members to take action.
iii. Provide resources for further information (e.g., local emergency management, public health websites).

e. **Community Member Role**

i. Express appreciation or ask for clarification on any final points: "Thanks for this information—where can we get more resources?"

Debriefing and Feedback

After the simulation, conduct a debriefing session where each participant reflects on their experience, provides feedback, and discusses lessons learned.

- How effectively they communicated health risks related to climate change.
- The appropriateness of the advice provided for specific populations (e.g., children, elderly).
- How they encouraged community engagement and preventive actions.
- Areas for improvement in delivering clear and actionable information.

Students should reflect on how they can integrate climate change awareness into their community nursing practice and empower patients to adapt to a changing environment.