

Applying Epidemiological Principles in Nursing Practice to Improve Population and Community Health

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Abstract

The integration of epidemiological principles into nursing practice has become increasingly important in addressing contemporary population and community health challenges. Nurses play a central role in disease prevention, health promotion, and the management of health risks across diverse settings, making epidemiology a critical foundation for effective nursing practice. This article examines how core epidemiological concepts—such as disease surveillance, risk factor identification, and levels of prevention—can be applied within nursing roles to enhance population and community health outcomes. Drawing on contemporary literature, the paper highlights the ways in which epidemiological evidence supports informed clinical judgment, guides community-based interventions, and strengthens preventive strategies led by nurses. The application of epidemiological data enables nurses to identify vulnerable populations, prioritize health needs, and design targeted interventions that address both individual and collective health risks. Furthermore, the article discusses the contribution of epidemiology to evidence-based nursing practice and its role in reducing health disparities and improving health equity. By strengthening nurses' competencies in epidemiological thinking, healthcare systems can enhance the effectiveness of nursing interventions, promote proactive rather than reactive care, and improve overall population and community health outcomes.

Keywords: Epidemiology; Nursing Practice; Population Health; Community Health; Disease Prevention; Public Health Nursing

INTRODUCTION AND BACKGROUND

Healthcare systems worldwide are facing increasingly complex population and community health challenges, including the rising prevalence of chronic diseases, recurring infectious disease outbreaks, aging populations, and widening health inequities. These challenges have shifted the focus of healthcare delivery from primarily individual-based, curative care toward population-focused, preventive, and evidence-informed approaches. Within this context, nursing practice has evolved beyond bedside care to encompass broader responsibilities in health promotion, disease prevention, surveillance, and community engagement. As the largest and most widely distributed group of health professionals,

nurses are uniquely positioned to influence population and community health outcomes through the application of epidemiological principles.

Epidemiology, defined as the study of the distribution and determinants of health-related events in populations, provides a scientific foundation for understanding patterns of disease, identifying risk factors, and informing preventive strategies (Friis & Sellers, 2021). Traditionally associated with public health and medical research, epidemiology has become increasingly relevant to nursing practice as healthcare systems emphasize prevention, early detection, and health equity. Nurses routinely collect health data, observe disease trends, and interact with individuals and communities affected by social, environmental, and behavioral determinants of health. Integrating epidemiological thinking into nursing practice enables nurses to move beyond isolated clinical encounters toward a more comprehensive understanding of population health needs.

The relationship between nursing and epidemiology is particularly evident in community and public health nursing, where population-based assessments guide health education, screening programs, and targeted interventions (Stanhope & Lancaster, 2022). However, epidemiological principles are equally relevant in clinical settings. Infection prevention and control, chronic disease management, and risk stratification all rely on epidemiological evidence to guide nursing decision-making and prioritize care (Merrill, 2020). The COVID-19 pandemic further highlighted the critical role of nurses in disease surveillance, contact tracing, vaccination campaigns, and public health communication, underscoring the need for strong epidemiological competencies within the nursing workforce (WHO, 2020).

Despite its importance, the integration of epidemiology into routine nursing practice remains inconsistent. Gaps in epidemiological education, limited access to population-level data, and heavy clinical workloads may hinder nurses' ability to fully apply epidemiological evidence in practice (Johnson & Webber, 2021). Addressing these gaps is essential to strengthening the contribution of nursing to population and community health improvement.

Accordingly, this article aims to explore how epidemiological principles can be effectively applied in nursing practice to enhance population and community health outcomes. By examining key concepts, practical applications, and implications for nursing education and practice, the article highlights epidemiology as a core component of contemporary, evidence-based nursing practice.

Conceptual Foundations of Epidemiology in Nursing

Epidemiology provides a theoretical and practical framework that underpins population-focused nursing practice. At its core, epidemiology is concerned with understanding the distribution of health-related events and the factors that influence their occurrence within populations. For nursing, this perspective complements traditional clinical approaches by shifting attention from isolated individual cases to patterns of health and disease across communities and population groups. This population orientation aligns closely with the goals of nursing, particularly in prevention, health promotion, and the reduction of health disparities.

From a conceptual standpoint, epidemiology equips nurses with tools to analyze health problems according to **person, place, and time**, enabling a systematic understanding of who is affected, where health events occur, and how they change over time (Friis & Sellers, 2021). These dimensions are highly relevant to nursing assessments, as nurses routinely gather demographic, environmental, and temporal health data during patient and community encounters. By applying epidemiological reasoning, nurses can interpret such

data within broader population contexts, rather than viewing health problems solely as individual clinical phenomena.

Another foundational concept linking epidemiology and nursing is the recognition of **determinants of health**. Epidemiological models emphasize that health outcomes are shaped by a complex interaction of biological, behavioral, social, economic, and environmental factors. Nursing practice has long acknowledged the influence of social determinants such as income, education, housing, and access to care. Epidemiology strengthens this understanding by providing empirical evidence that explains how these determinants contribute to disease patterns and health inequities (Merrill, 2020). As a result, nurses are better positioned to design interventions that address not only symptoms, but also upstream causes of illness.

The integration of epidemiology into nursing is particularly evident in the concept of **population and community health**. Population health focuses on health outcomes of groups of individuals and the distribution of those outcomes, while community health emphasizes collective actions to protect and improve the health of people within specific communities (Stanhope & Lancaster, 2022). Epidemiology serves as the scientific basis for both concepts by guiding community assessments, identifying priority health issues, and evaluating the impact of nursing interventions at the population level.

Furthermore, epidemiology reinforces **evidence-based nursing practice** by linking research findings to real-world decision-making. Epidemiological studies—such as cohort, case-control, and cross-sectional designs—generate evidence on risk factors, disease prevalence, and intervention effectiveness. When nurses understand these methodological foundations, they are better equipped to critically appraise research and apply findings appropriately in clinical and community settings (Melnyk & Fineout-Overholt, 2019).

In summary, the conceptual foundations of epidemiology in nursing lie in their shared focus on population health, prevention, and evidence-based decision-making. Epidemiology enriches nursing practice by offering structured approaches to understanding health patterns, determinants, and outcomes, thereby strengthening the role of nurses in improving population and community health.

Core Epidemiological Principles Relevant to Nursing Practice

Epidemiological principles form an essential foundation for nursing practice, particularly in population- and community-focused care. These principles enable nurses to understand health patterns, identify risks, and design preventive and therapeutic interventions grounded in evidence rather than isolated clinical observations. By integrating epidemiology into daily practice, nurses enhance their ability to respond effectively to both individual and collective health needs.

One of the most fundamental epidemiological principles relevant to nursing is **disease surveillance and monitoring**. Surveillance involves the systematic collection, analysis, and interpretation of health data to detect trends, outbreaks, and emerging health threats. Nurses play a key role in surveillance through routine patient assessments, reporting notifiable diseases, participating in screening programs, and contributing data to health information systems. Effective surveillance allows nurses to support early detection of communicable diseases, monitor chronic disease prevalence, and evaluate the impact of public health interventions (Friis & Sellers, 2021). In clinical and community settings alike, surveillance supports timely action and prevents the escalation of health problems.

Another core principle is **risk factor identification and assessment**. Epidemiology emphasizes understanding factors that increase or decrease the likelihood of disease, including biological, behavioral, environmental, and social determinants of health. Nurses

routinely assess lifestyle behaviors, occupational exposures, family history, and socio-economic conditions as part of holistic patient care. When informed by epidemiological evidence, these assessments become more systematic and population-oriented, enabling nurses to identify high-risk groups and prioritize interventions accordingly (Merrill, 2020). This approach strengthens preventive care and supports targeted health education initiatives.

The principle of **levels of prevention** is particularly central to nursing practice. Epidemiology classifies prevention into primary, secondary, and tertiary levels. Primary prevention focuses on reducing disease incidence through health promotion and protective measures such as immunization and lifestyle modification. Secondary prevention aims at early detection and prompt intervention through screening and case finding. Tertiary prevention seeks to minimize complications and improve quality of life for individuals with established disease. Nurses are actively involved across all three levels, making prevention a defining characteristic of nursing's contribution to population health (Stanhope & Lancaster, 2022).

A further key principle is **evidence-based practice**, which relies heavily on epidemiological research. Epidemiological studies provide data on disease prevalence, incidence, risk factors, and intervention effectiveness. Nurses who understand basic epidemiological methods—such as cohort and case-control studies—are better equipped to appraise research findings and apply them appropriately in practice. This strengthens clinical decision-making, improves patient outcomes, and ensures that nursing interventions are aligned with the best available evidence (Melnik & Fineout-Overholt, 2019).

Finally, **health equity and distribution of health outcomes** represent a crucial epidemiological concern with direct relevance to nursing. Epidemiology highlights disparities in health status across populations based on factors such as age, gender, income, and geography. Nursing practice, grounded in advocacy and ethical care, uses this knowledge to address inequities, support vulnerable populations, and promote fair access to healthcare services. By applying epidemiological principles, nurses contribute not only to disease management, but also to social justice and equitable health improvement.

Collectively, these core epidemiological principles strengthen nursing practice by promoting prevention, informed decision-making, and population-centered care, thereby enhancing the overall impact of nursing on population and community health.

Application of Epidemiological Principles in Nursing Practice

The application of epidemiological principles in nursing practice enhances the ability of nurses to address health issues at both individual and population levels. By integrating epidemiological data into daily practice, nurses move beyond reactive care toward proactive, preventive, and population-oriented interventions. This integration is evident across multiple nursing domains, including community and public health nursing, clinical nursing, and specialized practice settings.

In **community and public health nursing**, epidemiology plays a central role in guiding community health assessments and planning interventions. Nurses use epidemiological data to identify prevalent health problems, vulnerable populations, and priority risk factors within specific communities. For example, data on disease incidence, vaccination coverage, or chronic illness prevalence enable nurses to design targeted health education programs and prevention campaigns. Through community surveys, screening initiatives, and outreach activities, nurses apply descriptive epidemiology to understand health patterns and allocate resources more effectively (Stanhope & Lancaster, 2022). This population-

based approach ensures that nursing interventions are aligned with actual community needs rather than assumptions or isolated observations.

Epidemiological principles are also fundamental to **clinical nursing practice**. In hospital and primary care settings, nurses rely on epidemiological evidence to inform infection prevention and control, patient safety initiatives, and chronic disease management. Surveillance data guide nurses in identifying healthcare-associated infection trends, implementing isolation measures, and evaluating the effectiveness of infection control protocols. Similarly, epidemiology supports risk stratification in chronic disease care, enabling nurses to identify patients at higher risk of complications and prioritize monitoring and education accordingly (Merrill, 2020). By applying population-based evidence, clinical nurses contribute to improved outcomes while optimizing the use of healthcare resources.

In **health promotion and disease prevention**, epidemiology provides a framework for understanding modifiable risk factors and implementing effective preventive strategies. Nurses apply knowledge of primary, secondary, and tertiary prevention to promote healthy behaviors, support screening programs, and reduce disease-related complications. For instance, epidemiological evidence on lifestyle-related risk factors such as smoking, physical inactivity, and poor nutrition informs nurse-led counseling and behavior change interventions. Screening programs for conditions such as hypertension, diabetes, and cancer further demonstrate how epidemiology guides early detection and timely intervention within nursing practice (Friis & Sellers, 2021).

Epidemiology is equally relevant in **school, occupational, and environmental health nursing**. In these settings, nurses apply surveillance and risk assessment principles to monitor injuries, communicable diseases, and environmental exposures. School nurses use epidemiological data to track absenteeism, manage outbreaks, and implement health promotion programs for students. Occupational health nurses rely on epidemiological evidence to identify workplace hazards, assess exposure-related risks, and develop prevention strategies that protect worker health. These applications highlight the versatility of epidemiology across diverse nursing roles (Riegelman & Kirkwood, 2020).

Furthermore, epidemiological principles strengthen **evidence-based nursing practice** by linking research findings to practical decision-making. Nurses who understand epidemiological methods are better equipped to interpret prevalence data, assess intervention effectiveness, and evaluate health outcomes at the population level. This competence enhances professional autonomy and supports collaborative decision-making within multidisciplinary teams (Melnik & Fineout-Overholt, 2019).

Table 1. Application of Epidemiological Principles in Nursing Practice

Epidemiological Principle	Area of Nursing Practice	Practical Nursing Application	Health Outcome
Disease surveillance	Public and community health nursing	Reporting and monitoring disease trends	Early outbreak detection
Risk factor assessment	Clinical and community nursing	Identifying high-risk individuals and groups	Targeted prevention
Levels of prevention	Health promotion and primary care	Screening, immunization, education	Reduced morbidity

Epidemiological evidence	Clinical decision-making	Evidence-based interventions	Improved patient outcomes
Health equity analysis	Community and public health	Addressing vulnerable populations	Reduced health disparities

Overall, the application of epidemiological principles enables nurses to address health problems systematically, prioritize prevention, and contribute meaningfully to population and community health improvement. By embedding epidemiological thinking into practice, nursing becomes more strategic, data-informed, and impactful across healthcare settings.

Role of Nurses in Improving Population and Community Health Outcomes

Nurses play a pivotal role in improving population and community health outcomes through their close engagement with individuals, families, and communities, as well as their expanding responsibilities in prevention, health promotion, and public health action. As frontline healthcare professionals, nurses are uniquely positioned to translate epidemiological evidence into practical interventions that address both immediate health needs and broader determinants of health.

One of the primary contributions of nurses to population and community health is **health promotion and disease prevention**. Nurses design and deliver education programs that encourage healthy behaviors, such as physical activity, balanced nutrition, tobacco cessation, and adherence to vaccination schedules. These initiatives are often informed by epidemiological data that identify priority health risks within specific populations. By aligning health education with population needs, nurses enhance the effectiveness of preventive strategies and contribute to reductions in preventable morbidity and mortality (Stanhope & Lancaster, 2022).

Nurses also play a critical role in **early detection and management of disease**. Through screening programs, routine assessments, and community outreach, nurses contribute to secondary prevention by identifying health problems at earlier stages. Epidemiological evidence guides nurses in selecting appropriate screening tools and targeting high-risk groups, thereby improving early diagnosis and treatment outcomes. In chronic disease management, nurses use population-based data to monitor disease trends, support self-management, and prevent complications, ultimately improving quality of life for individuals and communities (Merrill, 2020).

Another essential role of nurses lies in **reducing health disparities and promoting health equity**. Epidemiology highlights unequal distributions of health outcomes across populations based on socioeconomic status, gender, age, and geographic location. Nurses, guided by ethical principles and a commitment to social justice, use this knowledge to advocate for vulnerable and underserved populations. Community health nurses, in particular, address barriers to care by facilitating access to services, supporting culturally appropriate interventions, and collaborating with community organizations to address social determinants of health (Friis & Sellers, 2021).

Nurses further contribute to population health through **participation in surveillance and public health response activities**. During outbreaks and public health emergencies, nurses are involved in disease reporting, contact tracing, vaccination campaigns, and risk communication. Their direct contact with communities enables them to provide accurate information, reduce misinformation, and promote adherence to public health measures. The recent global experience with infectious disease emergencies has underscored the

importance of nursing leadership in strengthening community resilience and public trust in health systems (World Health Organization, 2020).

Additionally, nurses influence population and community health outcomes through **interprofessional collaboration and leadership**. Working alongside physicians, public health professionals, social workers, and policymakers, nurses contribute clinical insight and population-level perspectives to health planning and decision-making. Their involvement in program evaluation and quality improvement initiatives ensures that health interventions are responsive to community needs and supported by epidemiological evidence (Melnyk & Fineout-Overholt, 2019).

In summary, nurses improve population and community health outcomes by integrating epidemiological knowledge with compassionate, patient-centered care. Through prevention, early detection, advocacy, surveillance, and collaborative leadership, nurses serve as key agents in advancing public health goals and fostering healthier communities.

Strategies to Strengthen Epidemiology Integration in Nursing

Strengthening the integration of epidemiological principles into nursing practice is essential for enhancing population and community health outcomes. Although nurses routinely engage in activities closely aligned with epidemiology, deliberate strategies are needed to embed epidemiological thinking more systematically across nursing education, practice, leadership, and health systems.

One key strategy is **integrating epidemiology more effectively into nursing education and curricula**. Undergraduate and graduate nursing programs should emphasize epidemiological concepts as core competencies rather than supplementary content. This includes training in disease surveillance, interpretation of population health data, and critical appraisal of epidemiological studies. Embedding real-world case studies and community-based learning experiences can help nursing students translate theory into practice and appreciate the relevance of epidemiology to everyday nursing roles (Stanhope & Lancaster, 2022).

Continuous professional development and lifelong learning represent another critical strategy. Practicing nurses often face rapid changes in disease patterns, healthcare technologies, and public health priorities. Providing accessible continuing education programs, workshops, and online modules focused on applied epidemiology can strengthen nurses' competencies and confidence in using population-level data. Such initiatives are particularly important in clinical settings, where time constraints and workload pressures may limit opportunities for independent learning (Merrill, 2020).

The use of **digital health technologies and health information systems** is also central to integrating epidemiology into nursing practice. Electronic health records, disease registries, and public health surveillance platforms generate large volumes of data that can inform nursing decision-making. Training nurses to effectively use these systems enables them to identify trends, monitor outcomes, and contribute to data-driven quality improvement initiatives. Digital tools also support real-time surveillance and enhance nurses' roles in early detection and public health response (Friis & Sellers, 2021).

Another important strategy involves **strengthening nursing leadership and policy engagement**. Nurse leaders and managers play a vital role in fostering a culture that values evidence-based, population-focused care. Encouraging nurses to participate in public health planning, research activities, and policy discussions ensures that nursing perspectives are represented in decisions that shape health systems. Leadership support is particularly important in allocating resources, promoting interdisciplinary collaboration, and

institutionalizing epidemiological practices within healthcare organizations (World Health Organization, 2020).

Finally, **interprofessional collaboration** is essential for sustainable integration of epidemiology in nursing. Working closely with epidemiologists, public health professionals, statisticians, and policymakers allows nurses to exchange knowledge, share data, and co-develop interventions that address complex health challenges. Collaborative approaches strengthen the link between population-level evidence and frontline care, ultimately improving the effectiveness of health interventions (Melnyk & Fineout-Overholt, 2019).

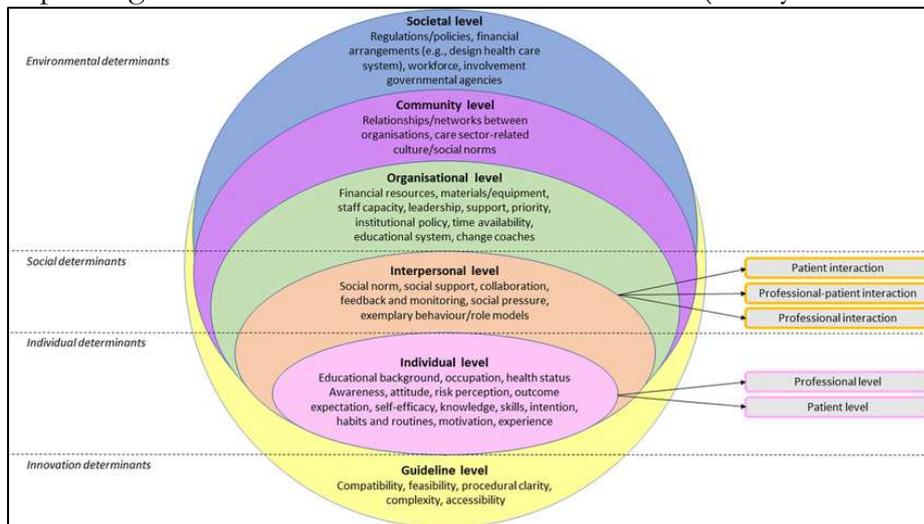


Figure 1. Strategies for Integrating Epidemiological Principles into Nursing Education, Practice, and Leadership

Collectively, these strategies support the systematic integration of epidemiology into nursing practice, education, and leadership. By strengthening epidemiological competencies, nursing can more effectively contribute to preventive, equitable, and evidence-driven population and community health improvement.

DISCUSSION

This article highlights the critical importance of integrating epidemiological principles into nursing practice as a means of strengthening population and community health outcomes. The discussion synthesizes key insights from the literature and underscores how epidemiology enhances the scope, effectiveness, and impact of nursing roles across healthcare settings. By adopting a population-based perspective, nurses are better equipped to respond to contemporary health challenges that extend beyond individual patient encounters.

One of the central themes emerging from this review is that epidemiology provides nurses with a **systematic framework for understanding health patterns and priorities**. Rather than relying solely on clinical intuition or isolated case experiences, epidemiological data enable nurses to identify trends in disease distribution, recognize emerging risks, and anticipate future health needs. This strengthens clinical judgment and supports proactive, preventive care, which is increasingly emphasized in modern healthcare systems (Friis & Sellers, 2021). The findings suggest that nursing practice informed by epidemiology is more aligned with public health goals, particularly in disease prevention and health promotion. The discussion also reinforces the role of nurses as **key agents in translating epidemiological evidence into practice**. Nurses operate at the intersection between health systems and communities, positioning them uniquely to apply population-level evidence in culturally appropriate and context-specific ways. Whether through community

outreach, screening programs, or chronic disease management, nurses use epidemiological insights to tailor interventions to the needs of specific populations. This translation of evidence into action is a defining strength of nursing and contributes to improved health outcomes and more efficient use of resources (Stanhope & Lancaster, 2022).

Another important consideration is the contribution of epidemiology to **health equity and social justice** in nursing practice. Epidemiological evidence consistently demonstrates that health outcomes are unevenly distributed across populations due to social, economic, and environmental factors. The discussion emphasizes that nurses, guided by professional ethics and advocacy roles, are well positioned to address these inequities. By using epidemiological data to identify vulnerable groups, nurses can prioritize interventions, advocate for equitable access to care, and support policies that address social determinants of health (Merrill, 2020).

Despite these benefits, the discussion acknowledges ongoing **challenges in fully integrating epidemiology into nursing practice**. Limited epidemiological training, time constraints, and restricted access to population health data can hinder nurses' ability to apply epidemiological principles consistently. These challenges highlight the need for stronger educational preparation, institutional support, and leadership commitment to evidence-based, population-focused care. Without such support, the potential contribution of nurses to public health improvement may remain underutilized (Melnik & Fineout-Overholt, 2019).

Overall, this discussion emphasizes that epidemiology should not be viewed as a separate or specialized discipline distant from nursing practice, but rather as a foundational component of contemporary nursing. Integrating epidemiological thinking enhances nurses' capacity to contribute to prevention, improve community resilience, and support health system sustainability. Strengthening this integration has important implications for nursing education, practice, and policy, and represents a critical step toward achieving improved population and community health outcomes.

CONCLUSION

This article has demonstrated that the integration of epidemiological principles into nursing practice is essential for improving population and community health outcomes in contemporary healthcare systems. As health challenges become increasingly complex and influenced by social, environmental, and behavioral factors, nursing practice must extend beyond individual patient care to embrace population-based, preventive, and evidence-driven approaches. Epidemiology provides nurses with the scientific foundation needed to understand disease patterns, identify health risks, and prioritize interventions that address both immediate and long-term health needs.

Through the application of core epidemiological concepts—such as disease surveillance, risk assessment, and levels of prevention—nurses are able to contribute effectively to health promotion, early detection of disease, and the management of chronic and communicable conditions. The findings discussed in this article highlight how epidemiology strengthens clinical decision-making, supports targeted community interventions, and enhances nurses' roles in reducing health disparities and promoting health equity. By linking population-level evidence with patient-centered care, nurses serve as a critical bridge between public health goals and frontline healthcare delivery.

Despite the recognized value of epidemiology in nursing, challenges related to education, resource availability, and institutional support remain. Addressing these challenges requires deliberate strategies, including strengthening epidemiological content in nursing curricula,

expanding continuing professional development opportunities, and fostering leadership environments that prioritize evidence-based and population-focused practice.

In conclusion, epidemiology should be regarded as a core component of modern nursing practice rather than an adjunct discipline. Strengthening the integration of epidemiological principles empowers nurses to play a more strategic role in prevention, public health response, and community health improvement. Such integration is vital for building resilient healthcare systems and achieving sustainable improvements in population and community health outcomes.

References

9. Friis, R. H., & Sellers, T. A. (2021). *Epidemiology for Public Health Practice* (6th ed.). Jones & Bartlett Learning.
10. Melnyk, B. M., & Fineout-Overholt, E. (2019). *Evidence-Based Practice in Nursing & Healthcare* (3rd ed.). Wolters Kluwer.
11. Merrill, R. M. (2020). *Introduction to Epidemiology* (8th ed.). Jones & Bartlett Learning.
12. Riegelman, R. K., & Kirkwood, B. R. (2020). *Public health 101: Improving community health* (3rd ed.). Jones & Bartlett Learning.
13. Stanhope, M., & Lancaster, J. (2022). *Public Health Nursing: Population-Centered Health Care in the Community* (11th ed.). Elsevier.
14. World Health Organization. (2020). *State of the world's nursing 2020: Investing in education, jobs and leadership*. WHO Press.
15. Beaglehole, R., Bonita, R., Kjellström, T., & Paim, J. (2020). *Basic epidemiology* (3rd ed.). World Health Organization.
16. Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273–285. <https://doi.org/10.1037/ocp0000056>
17. McQueen, D. V., Jones, C. M., & McQueen, D. V. (2018). *Global handbook on noncommunicable diseases and health promotion*. Springer. <https://doi.org/10.1007/978-3-319-95646-3>
18. Shi, L., Johnson, J. A., & Stevens, G. D. (2019). *Foundations of the U.S. health care system* (4th ed.). Jossey-Bass.
19. Whitehead, D. (2020). Exploring health promotion and health education in nursing. *Nursing Standard*, 35(1), 59–66. <https://doi.org/10.7748/ns.2020.e11582>