

Special Article

The Role of Nursing Interventions in Promoting Public Health

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Abstract

Public health aims to prevent disease, prolong life, and promote health through organized community efforts. Nurses, as the largest group of healthcare professionals globally, are uniquely positioned to influence public health outcomes. Their interventions extend beyond clinical care to encompass education, prevention, advocacy, and policy development. Nurses deliver evidence-based information on topics such as diet, physical activity, chronic disease prevention, and mental health. They adapt educational strategies to cultural and literacy needs, ensuring inclusivity. Nurses utilize multiple platforms, including face-to-face sessions, group workshops, and digital media, to reach diverse populations. Preventive healthcare is a cornerstone of modern health systems, aiming to reduce disease incidence, improve quality of life, and lower healthcare costs. Nurses play a pivotal role in delivering preventive services, conducting health screenings, and administering immunizations. These interventions are essential for early detection of health risks, prevention of communicable diseases, and promotion of population health. Preventive services encompass interventions that reduce risk factors and promote health. Nurses contribute by providing lifestyle counseling on diet, physical activity, and smoking cessation; educating patients about preventive measures such as safe sexual practices and oral hygiene; and coordinating care for individuals at risk of chronic conditions like diabetes and hypertension. These services are delivered in diverse settings, including primary care clinics, schools, workplaces, and community health programs. Screening is a critical component of secondary prevention, enabling early detection of diseases and improving treatment outcomes. Nurses conduct blood pressure checks, cholesterol tests, and glucose monitoring; perform cancer screenings such as breast exams and Pap smears; and identify individuals at risk and refer them for further evaluation. By implementing systematic screening programs, nurses help detect conditions at an early, more treatable stage, reducing morbidity and mortality. Immunization is one of the most effective public health interventions. Nurses administer vaccines for children, adolescents, and adults, including influenza, measles, HPV, and COVID-19; educate communities about vaccine safety and effectiveness to reduce hesitancy; and participate in mass immunization campaigns during outbreaks and pandemics. Through these efforts, nurses help achieve herd immunity and prevent the spread of infectious diseases. Nursing interventions—structured by population-based frameworks and powered by evidence, data, and partnerships—are indispensable to promoting public health. By combining health education, prevention, surveillance, care coordination, policy engagement, and community organizing, nurses improve outcomes across diseases and life stages, strengthen systems, and reduce inequities.

Key Words: Public Health, nursing, prevention, vaccination, nurses, health promotion

Introduction

Public health is a fundamental pillar of societal well-being, focusing on the prevention of disease, the promotion of health, and the extension of life through organized community efforts. In this context, nursing plays a critical role in bridging the gap between healthcare systems and the populations they serve. Nurses are uniquely positioned to influence health outcomes due to their direct interaction with individuals, families, and communities across diverse settings. Their interventions extend beyond clinical care to encompass health education, disease prevention, advocacy, and policy development. By implementing evidence-based strategies, nurses not only address immediate health concerns but also contribute to long-term improvements in population health (Nies & McEwen, 2018).

The roots of public health nursing trace back to Florence Nightingale, who emphasized sanitation and environmental health as determinants of well-being. Over time, the role has evolved to address complex health challenges such as chronic diseases, infectious disease outbreaks, and social determinants of health (Albert, 2023). Today, public health nurses operate in diverse settings, including schools, community clinics, and disaster zones, applying evidence-based strategies to improve population health outcomes.

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Theoretical background

The concept of public health nursing dates back to the late 19th century, when nurses began working in communities to prevent infectious diseases and improve sanitation. Over time, the scope of nursing interventions has expanded to address chronic diseases, mental health, maternal and child health, and health

disparities. Today, nurses operate within a complex healthcare environment characterized by aging populations, rising chronic disease prevalence, and emerging global health threats such as pandemics and climate-related health risks (Kulbok et al., 2012; Nies & McEwen, 2018).

These challenges underscore the need for proactive, population-focused interventions that go beyond treating illness to promoting wellness and equity. Public health nursing is guided by frameworks such as the Public Health Intervention Wheel, which outlines evidence-based strategies including surveillance, outreach, health teaching, and policy development. These interventions aim to improve health outcomes at individual, community, and systems levels, making nursing a cornerstone of public health practice. Contemporary practice occurs within a complex landscape shaped by demographic aging, multimorbidity, persistent inequities, and cross-cutting threats such as pandemics and climate-related events—realities that demand proactive, population-focused nursing interventions. To guide such work, population-based frameworks like the Public Health Intervention Wheel (also called the Intervention Wheel) delineate evidence-supported actions across three levels of practice (individual/family, community, systems) and interventions ranging from surveillance and screening to policy development and coalition building.

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The Intervention Wheel conceptualizes public health nursing as population-based practice that is grounded in community assessment, addresses determinants of health, emphasizes prevention, and intervenes at multiple levels (Keller et al., 2004). Its 17 interventions—such as surveillance, disease and health event investigation, outreach, screening, case finding,

referral and follow-up, case management, health teaching, counseling, consultation, collaboration, coalition building, community organizing, advocacy, social marketing, policy development, and policy enforcement—provide a common language for practice, education, and evaluation (Keller et al., 2004). Two decades of international use and updates confirm the Wheel's relevance and evidence base (Schaffer et al., 2021).

Core nursing interventions that promote public health

Health promotion, education, and counseling

Health promotion is a fundamental aspect of modern healthcare, aiming to empower individuals and communities to take control of their health and improve overall well-being. Nurses, as the largest group of healthcare professionals, play a pivotal role in implementing health promotion strategies through education and counseling. These interventions not only prevent disease but also enhance quality of life and reduce healthcare costs (Murdaugh et al., 2018). The concept of health promotion gained prominence with the Ottawa Charter for Health Promotion (1986), which emphasized enabling people to increase control over their health. Nurses have since become central to this mission, integrating health education and counseling into clinical and community practice. Their roles extend beyond treating illness to addressing social determinants of health, fostering behavioral change, and advocating for healthier environments (Hubley et al., 2021). Health promotion involves proactive measures to prevent illness and maintain wellness. Nurses contribute by assessing health risks and identifying modifiable behaviors, designing wellness programs such as exercise initiatives, nutrition counseling, and smoking cessation campaigns, and collaborating with communities to create supportive environments for healthy living. Nurses apply theoretical models like Pender's Health Promotion Model, which emphasizes individual characteristics, perceived benefits, and self-efficacy in adopting healthy behaviors (Murdaugh et al., 2018).

Health education is a structured process that enhances health literacy and empowers individuals to make informed decisions. Nurses deliver evidence-based information on topics such as diet, physical activity, chronic disease prevention, and mental health. They adapt educational strategies to cultural and literacy needs, ensuring inclusivity. Nurses utilize multiple platforms, including face-to-face sessions, group workshops, and digital media, to reach diverse populations (Pereira et al., 2023). Effective health education improves knowledge, attitudes, and behaviors, reducing the incidence of preventable diseases and promoting long-term wellness. Health education is a cornerstone of public health nursing. Nurses provide evidence-based information to individuals and communities, enabling them to make informed decisions about their health. Educational interventions cover topics such as nutrition, physical activity, substance abuse prevention, and mental health awareness (Orte et al., 2021). By improving health literacy, nurses empower people to adopt healthier lifestyles, reducing the incidence of chronic diseases such as diabetes and cardiovascular disease.

Counseling complements education by addressing personal barriers to behavior change. Nurses provide individualized guidance for managing chronic conditions like diabetes or hypertension, use motivational interviewing to enhance readiness for change, and offer emotional support for patients coping with stress, mental health issues, or lifestyle adjustments (Rahman et al., 2022). Counseling fosters trust and strengthens the nurse-patient relationship, which is critical for sustained health improvements. Nurses use health teaching and counseling to increase health literacy, support behavior change, and empower self-care—using techniques like motivational interviewing, teach-back, and culturally responsive materials (Nies & McEwen, 2018). Systematic reviews and scoping reviews show that nurse-led education in settings ranging from schools to community clinics improves lifestyle behaviors and reduces risk factors for noncommunicable diseases (Kemppainen et al., 2013; Orte et al., 2021).

Preventive services, screening, and immunization

Preventive healthcare is a cornerstone of modern health systems, aiming to reduce disease incidence, improve quality of life, and lower healthcare costs. Nurses play a pivotal role in delivering preventive services, conducting health screenings, and administering immunizations. These interventions are essential for early detection of health risks, prevention of communicable diseases, and promotion of population health (Nies & McEwen, 2018).

Preventive services encompass interventions that reduce risk factors and promote health. Nurses contribute by providing lifestyle counseling on diet, physical activity, and smoking cessation; educating patients about preventive measures such as safe sexual practices and oral hygiene; and coordinating care for individuals at risk of chronic conditions like diabetes and hypertension. These services are delivered in diverse settings, including primary care clinics, schools, workplaces, and community health programs (Hubley et al., 2021).

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Public health nurses conduct screening (e.g., for hypertension, diabetes, cancers) and lead or support immunization programs, improving uptake and early detection among hard-to-reach populations (Nies & McEwen, 2018). These measures lower morbidity and avert downstream costs by preventing complications and hospitalizations (Kemppainen et al., 2013).

Immunization is one of the most effective public health interventions. Nurses administer

vaccines for children, adolescents, and adults, including influenza, measles, HPV, and COVID-19; educate communities about vaccine safety and effectiveness to reduce hesitancy; and participate in mass immunization campaigns during outbreaks and pandemics (Galanis et al., 2022a; Galanis et al., 2022b; Galanis et al., 2023; Katsiroumpa et al. 2023; Katsiroumpa et al. 2025). Through these efforts, nurses help achieve herd immunity and prevent the spread of infectious diseases.

Communicable disease control: surveillance and investigation

Nurses implement surveillance and disease and health event investigation to identify outbreaks, trace contacts, and implement control measures—core capacities highlighted during epidemics and seasonal surges (Keller et al., 2004).

Nurses are often the first to identify signs of communicable diseases. Their responsibilities include monitoring symptoms and reporting suspected cases to public health authorities, collecting and analyzing data for disease trends in communities, and participating in contact tracing to prevent further transmission (Abadian et al., 2024).

Education is a key strategy in disease control. Nurses teach individuals and communities about infection prevention measures, such as hand hygiene, safe food handling, and respiratory etiquette. They provide accurate information during outbreaks to reduce fear and misinformation and promote behavioral changes that reduce transmission risks (Rebmann & Carrico, 2017).

Vaccination is one of the most effective tools against communicable diseases. Nurses administer vaccines in routine immunization programs and mass campaigns, educate the public about vaccine safety and benefits to combat hesitancy, and implement infection control protocols in healthcare and community settings.

Nurses provide direct care to infected individuals and ensure adherence to treatment regimens, especially for diseases like tuberculosis and HIV/AIDS. They monitor

patient progress and manage side effects, offer counseling and psychosocial support to patients and families, and coordinate referrals for specialized care when needed

During epidemics or pandemics, nurses participate in screening and triage at healthcare facilities, support quarantine and isolation measures, and assist in mass testing and vaccination drives (Rebmann & Carrico, 2017). Chronic disease management and self-management support through case management, referral and follow-up, and consultation, nurses coordinate services and coach patients in self-management, improving quality of life and reducing readmissions (Nies & McEwen, 2018).

Informatics, data, and evidence-based public health

Modern public health nursing is data-driven. Nurses use electronic health records, registries, dashboards, and geospatial tools to target outreach, monitor outcomes, and refine programs, consistent with evidence-based public health principles (Jacobs et al., 2012; Schaffer et al., 2021). Evidence-based public health emphasizes best available evidence, practitioner expertise, and community preferences in decision-making (Jacobs et al., 2012; Nies & McEwen, 2018).

Other interventions

Public health and school nurses promote maternal-child health through prenatal education, breastfeeding support, immunization, developmental screening, and chronic condition management in schools (Nies & McEwen, 2018).

Interventions such as collaboration, coalition building, community organizing, and advocacy help nurses confront upstream drivers of health—housing instability, food insecurity, environmental exposures, and structural inequities (Kulbok et al., 2012). Nurses participate in policy development and social marketing to shape environments that make healthy choices easier—e.g., smoke-free ordinances, safe routes to school, and vaccination requirements—while policy enforcement ensures consistent application of

public health protections (Keller et al., 2004). Nursing contributions span planning, surge staffing, risk communication, and community education for hazards ranging from pandemics to extreme weather (Nies & McEwen, 2018).

Measuring impact and demonstrating value

Evaluation is essential to demonstrate effectiveness and secure support. Useful indicators include immunization coverage, screening uptake, incidence and hospitalization rates, control of clinical measures (e.g., blood pressure), service utilization, and equity gaps (Jacobs et al., 2012). When randomized trials are not feasible, robust observational designs and transparent reporting help assess impact credibly (Clarke et al., 2019; Jacobs et al., 2012).

Conclusions: Despite their importance, nurses face challenges such as time constraints, limited resources, and varying levels of confidence in delivering health promotion interventions. Future strategies should focus on enhanced training in health education and counseling, integration of technology such as telehealth to expand reach, and policy support to prioritize preventive care in healthcare systems (Hubley et al., 2021).

Key frontiers include integrating social care and health, leveraging community health workers in nurse-led teams, scaling precision public health with real-time data, expanding school and workplace health, and centering equity in all interventions. Sustained investment in the nursing workforce and academic-practice partnerships will be critical to meet emerging challenges (Kulbok et al., 2012; Schaffer et al., 2021).

Nursing interventions—structured by population-based frameworks and powered by evidence, data, and partnerships—are indispensable to promoting public health. By combining health education, prevention, surveillance, care coordination, policy engagement, and community organizing, nurses improve outcomes across diseases and life stages, strengthen systems, and reduce inequities. As public health challenges evolve,

nursing's adaptable, community-embedded approach will remain central to healthier and more resilient societies (Nies & McEwen, 2018).

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