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Strengthening Health Systems: Lessons from Nursing, Public Health, and Pharmacy During Epidemic Outbreaks

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Abstract

Epidemic outbreaks, including the COVID-19 pandemic, have exposed vulnerabilities in global health systems and emphasized the need for collaborative efforts among healthcare professionals. This review examines the pivotal roles of nursing, public health, and pharmacy during epidemic responses. By synthesizing evidence from recent outbreaks, it highlights key contributions, identifies systemic challenges, and proposes actionable strategies for strengthening health systems. The findings underscore the importance of interdisciplinary approaches, equitable resource allocation, and workforce sustainability to enhance preparedness and response capabilities for future crises.

Keywords: Epidemics, Health Systems, Nursing, Public Health, Pharmacy, Interdisciplinary Collaboration, Pandemic Preparedness

Introduction

Global health systems face immense pressure during epidemic outbreaks, often revealing critical gaps in preparedness and response. Nursing, public health, and pharmacy professionals have played indispensable roles in mitigating the impact of epidemics through patient care, population health management, and pharmaceutical interventions. This review synthesizes evidence from recent outbreaks to extract lessons that can inform strategies for health system strengthening[1].

Health system basics

Any strategy for strengthening health systems needs a basic shared perception of what a health system is, what it is striving to achieve, and how to tell if it is moving in the desired direction[2].

• What is a health system?

A health system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health2. This includes efforts to influence determinants of health as well as more direct health-improving activities. A health system is therefore more than the pyramid of publicly owned facilities that deliver personal health services. It includes, for example, a mother caring for a sick child at home; private providers; behaviour change programmes; vector-control campaigns; health insurance organizations; occupational health and safety legislation. It includes inter-sectoral action by health staff, for example, encouraging the ministry of education to promote female education, a well known determinant of better health[3.]

• Guiding values and principles

The directions set out for WHO in this document are determined by the values and goals enshrined in the Alma Ata Declaration; WHO's commitments on gender and human rights[3].

• Health system goals Health systems have multiple goals. The World Health Report defined overall health system outcomes or goals as: improving health and health equity, in ways that are responsive, financially fair, and make the best, or most efficient, use of available resources. There are also important intermediate goals: the route from inputs to health outcomes is through achieving greater access to and coverage for effective health interventions, without compromising efforts to ensure provider quality and safety[4.]

HEALTH SYSTEMS CHALLENGES AND OPPORTUNITIES

Health systems have to deal with many challenges. As the spectrum of ill-health changes, so health systems have to respond. Their capacity to do so is influenced by a variety of factors. Some operate at a national or sub-national level, such as the availability of financial and human resources, overall government policies in relation to decentralization and the role of the private sector. Some operate through other sectors. Increasingly, however, national health systems are subject to forces that affect performance, such as migration and trade factors, operating at an international level[5].

Some health policy challenges are primarily of concern to low-income countries. However, despite national differences, many policy issues are shared across remarkably different health systems. Concerns such as the impact of aging populations, the provision of chronic care or social security reform are no longer the concern of industrialized countries alone. Similarly, the threat posed by new epidemics, such as avian or human pandemic influenza, requires a response from all countries rich and poor. The differences lie in the relative severity of challenges being faced, the way a particular health system has evolved, and the economic, social and political context – all of which determine the nature and effectiveness of the response[6.]

Managing multiple objectives and competing demands

In the face of fierce competition for resources, governments worldwide have to manage multiple objectives and competing demands. As they strive for greater efficiency and value for money, they must seek ways to achieve more equity in access and outcomes and to reduce exclusion. They are under pressure to ensure that services are effective, of assured quality and safe, and that health providers are responsive to patients' demands[7.]

Progress in one direction may mean compromise in another. For example, the pressure to increase access to HIV/AIDS care and treatment, which has helped bring visibility to the human resources crisis in Africa, brings its own pressures on the capacity of the health system to handle other causes of ill-health. Progress in increasing staff retention in the public sector through better pay packages may mean compromise in containing costs[8.]

Competition for resources may be between hospitals and primary level care; between prevention and treatment; between professional groups; between public and private sectors; between those engaged in efforts to treat one condition versus another; between capital and recurrent expenditures. This means health system strengthening requires careful judgement and hard choices. It can be better informed by evidence and by the use of technical tools, but ultimately it is a political process and reflects societal values[9.]

A national health sector strategy is one way to reconcile multiple objectives and competing demands. To be robust, a sector strategy requires sound logic and sufficient support. Plans need to be costed; budgets have to balance ambition with realism. The necessary processes have to be managed in an inclusive way, and linked with national development planning processes such as poverty reduction strategies. These, together with transparent systems to track effects, are the key to unlocking more resources[10].

A significant increase in funding for health

Health systems are a means to the end of achieving better health outcomes. In many countries, resources for health have increased from both domestic budgets and, in lower- and middle-income countries, from external development partners as well. There is growing interest in the array of domestic financing mechanisms that can be drawn upon to move towards universal coverage, including tax-based funding, social health insurance, community or micro-insurance, micro-credit and conditional cash transfers. All of these mechanisms make major demands on managerial capacity. On the other hand, where providers depend largely on out-of-pocket payments for their income, there is over-provision of services for people who can afford to pay, and lack of care for those who cannot[11.]

'Scaling-up' is not just about increasing spending

It is increasingly recognized that scaling-up is not just about increasing investment. Close scrutiny of what is involved points to a set of health systems challenges, most of which are equally pertinent in higher as well as low-income settings. Countries both rich and poor are looking for ways of doing more with existing resources. In many health systems, existing health workers could be more productive if they had access to critical material and information resources, clearly defined roles and responsibilities, better supervision and an ability to delegate tasks more appropriately. Changes in overall intervention-mix and skillmix could create efficiencies[12.]

In many instances, extending coverage or quality cannot be achieved simply by replicating existing models for service delivery or focusing only on the public sector. In addition, decisionmakers seek innovative ways to engage with communities, NGOs and the private sector. Promising experiences, such as working with informal providers to expand TB care, the social marketing of bed-nets or contracting with NGOs, need to be shared. It is important to take note of what did and did not work in the past. Careful analysis is needed about which local initiatives are genuinely amenable for replication and expansion. Multiple barriers cannot all be addressed or overcome at once. Judgements have to be made between pushing to quickly get specific outcomes and building systems and institutions. Managing the tension

between saving lives and livelihoods and starting the process of re-building the state is a particular challenge in fragile states[13.]

Health systems: a short history

Health systems of some sort have existed as long as people have tried to protect their health and treat disease, but organized health systems are barely 100 years old, even in industrialized countries. They are political and social institutions. Many have gone through several, sometimes parallel and sometimes competing, generations of development and reform, shaped by national and international values and goals[14.]

Primary Health Care as articulated in the Alma Ata Declaration of 1978 was a first attempt to unify thinking about health within a single policy framework. Developed when prospects for growth in many countries were bright, Primary Health Care remains an important force in thinking about health care in both the developed and developing world. The financial optimism of the 1970s was soon dispelled in many parts of the world by a combination of high oil prices, low tax revenues and economic adjustment. Countries seeking to finance essential health care were faced with two difficult prescriptions: focus public spending on interventions that are both cost-effective and have public good characteristics, and boost financing through charging users for services[12.]

Whilst many governments started to levy fees, most recognized the political impossibility of focusing spending on a few essential interventions alone. The results were predictable. The poor were deterred from receiving treatment and user fees yielded limited income. Moreover, maintaining a network of underresourced hospitals and clinics, while human and financial resources were increasingly pulled into vertical programmes, increased pressures on health systems sometimes to the point of collapse[14.]

Health system challenges: a few facts and figures

- Globally, health is a US$3.5 trillion industry, or equal to 8% of the world's GDP.
- Large health inequalities persist: even within rich countries such as USA and Australia, life expectancy still varies across the population by over 20 years.
- Recent essential medicines surveys in 39 mainly low- and low-middle-income countries found that, while there was wide variation, average availability was 20% in the public sector, and 56% in the private sector.
- Each year, 100 million people are impoverished as a result of health spending. • Extreme shortages of health workers exist in 57 countries; 36 of these are in Africa.
- In over 60 countries, less than a quarter of deaths are recorded by vital registration systems.
- An estimated 50% of medical equipment in developing countries is not used, either because of a lack of spare parts or maintenance, or because health workers do not know how to use it.
- Private providers are used by poor as well as rich people. For example, in Bangladesh, around ¾ of health service contacts are with non-public providers.
- In 2020, less than 1% of publications on Medline were on health services and systems research.
- Globally, about 20% of all health aid goes to support governments' overall programmes (i.e. is given as general budget or sector support), while an estimated 50% of health aid is off budget.
- There has been a rapid increase in global health partnerships. More than 80 now exist, of which WHO houses over 30.

The health systems agenda is not static

Patterns of disease, care and treatment are changing. Eighty per cent of non-communicable disease deaths today are in low- and middle-income countries. Systems for managing the continuum of care – be it for HIV/AIDS or hypertension – pose different demands from those needed for acute intermittent care. New delivery strategies may create new demands on the health system. For example, the shift from traditional birth attendants to skilled birth attendants has implications for staffing, for referral systems, and in terms of upgrading facilities to deliver emergency obstetric care. New approaches to mental health and non-communicable diseases emphasize primary prevention, community care and well-informed patients, all of which entail shifts from the traditional focus of institutional care[15.]

Contributions of Nursing, Public Health, and Pharmacy

Nursing, public health, and pharmacy are vital to managing epidemic outbreaks. Nurses provide frontline care, public health professionals ensure surveillance and community engagement, and pharmacists manage medication supply and accessibility. Collaborative approaches among these disciplines are crucial for effective epidemic response[16.]

Challenges Faced During Epidemics

Despite their critical roles, these disciplines encounter significant barriers such as resource constraints, workforce burnout, and equity issues. Addressing these challenges is essential to build resilient health systems[17].

Lessons Learned and Recommendations

1. Strengthen Workforce Resilience: Implement mental health support and surge capacity plans.
2. Build Robust Infrastructure: Invest in digital health technologies and strengthen diagnostic capabilities.
3. Promote Equity in Healthcare Access: Prioritize underserved populations and invest in rural health systems.
4. Foster Interdisciplinary Collaboration: Institutionalize training programs and enhance communication across sectors.

Conclusion

The contributions of nursing, public health, and pharmacy during epidemic outbreaks are invaluable for protecting populations and stabilizing health systems. By addressing systemic challenges, promoting interdisciplinary collaboration, and ensuring equitable healthcare delivery, global health systems can become more resilient and prepared for future crises.

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