

Expanding the Pharmacist's Role in Public Health

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Abstract Today pharmacists are using their clinical skills to serve the community through vaccinations, emergency preparedness and response, drug education, health screenings, medication therapy management (MTM), and counseling services. This article provides a summary of why the pharmacist's role should be expanded in the public health arena. It is essential to realize the capability of pharmacists and further expand their role in the public health arena in order to improve the quality of care and control costs of the nation. Pharmacists are more accessible to patients than any other healthcare professional and are well-trained to further advance the mission of public health: to promote health, wellness and prevention.

Keywords Health services, Patient care, Pharmacist, Public health, Multidisciplinary, Collaboration, Education

1. Introduction

The pharmacist's role has evolved greatly over the last few centuries. In the 1800s, pharmacists played the role of apothecary, a medical professional that prepared and sold drugs in earlier times. Towards the end of the 1900s to the present, pharmacists have focused on responding to managed care and new concerns about the quality of patient care [1]. In recent times, the pharmacist's role in public health has evolved. According to a 2011 Gallup Poll, pharmacists were viewed as the second most trusted profession after nurses [2]. Addressing public health concerns has been an issue for many years and the nation is beginning to realize the importance of utilizing pharmacists to improve efforts in this arena. According to the United States Department of Health and Human Services, public health has expanded and the interest in related career opportunities for pharmacists has grown in recent years [3]. In order to address the issues of public health, it is imperative that healthcare professionals work closely together to protect the environment, promote healthy behavior, and monitor the health of the population [4]. A study conducted by the Medical University of South Carolina showed that physicians agreed on the importance of expanding the community pharmacist's role in patient advocacy to help

provide patients with medication information [5]. The cooperation between pharmacists and other healthcare providers continues to grow and the acceptance of patient advocacy through pharmacists continues to improve.

Although the pharmacist's role in public health has increased, it is important to realize that pharmacists have the ability to play an even larger role in the implementation of cost controls and efficiency to lead to better quality of care. Increasing the healthcare workforce through greater utilization of pharmacists may lead to innovative opportunities to coordinate care and work towards improving the health of the entire population [6]. There is extensive literature highlighting the various skills and services that pharmacists may provide, but there is little evidence summarizing the pharmacist's role in public health. This review of the literature aimed to: (1) describe reasons why the pharmacist's role within public health should be expanded and (2) identify potential changes that can be made by pharmacists to assume a greater role in different sectors of public health.

2. Methods

The U.S. National Library of Medicine and National Institutes of Health (PubMed), the Journal of the American Pharmacists Association, and the Cochrane Database were searched for articles from January 1998 to January 2013. This timeframe was selected because the pharmacist's role in public health has emerged faster within the last decade as compared to previous years. Key words used in the search strategy were 'public health,' 'patient care,' 'health services,' 'professional role,' and 'pharmacist.' The bibliographies of retrieved references were reviewed for relevant publications. The quality of articles was assessed by one author and then checked by a second author with regard to the article addressing pharmacist expansion in the public health sector. Additionally, the following subtopics were utilized to summarize results: collaboration, emergency preparedness and response, pharmacists as healthcare providers, prevention, public health education, accessibility, health outcomes, patient advocacy, and adverse drug events.

3. Results

The review of literature suggests that expanding the pharmacist's roles in the public health may have a positive impact by improving relationships between pharmacists, patients, and other healthcare providers, focusing on a patient centered approach and educating current and future pharmacists to promote the importance of public health.

3.1. Building Relationships

3.1.1. Collaboration

Integration of a varying degree of healthcare professionals and organizations is needed in the pursuit of public health. Issues cannot be addressed adequately unless individuals work together. Although a consensus does not exist on the definition of collaboration, common themes among definitions by those addressing public health issues include shared labor, a shared purpose or goal, and joint ownership of the work, risks, results, and rewards [7]. There are many benefits of collaboration such as enhancing the use of scarce resources as many organizations have limited capital, reduction in the duplication of cost and effort by decreasing fragmentation of health services, improving quality by integrating health outcomes for patients, improving communication by considering diverse perspectives on public health issues and increasing trust and understanding among individuals and organizations [7].

Collaboration within pharmacy and public health arenas may provide a platform for evidence based decision making through processes that focus on common problems and build a foundation for decisions. A 2003 Institute of Medicine report, the Future of the Public Health in the 21st Century, noted that the public health infrastructure of the U.S. was not equipped sufficiently to face challenges such as bioterrorism. The report lists the lack of collaboration among health professionals as a barrier to success [8]. In many instances pharmacists have served as the first source for assistance in regards to bioterrorism. During the September 11 attacks and anthrax exposure in 2001, pharmacists helped to distribute medications, counsel patients, and assist other healthcare professionals [9]. Pharmacists are well trained and knowledgeable to advance the mission of public health. They assess individual patients' therapeutic needs, prevent adverse drug events due to medications, manage chronic diseases, and monitor medication adherence. Pharmacists today have expanded roles and responsibilities that serve both institutional and community settings. Opportunities related to public health include immunization programs, emergency preparedness and response, contraceptive services, and prevention and control of infectious diseases, chronic diseases, and injuries [10].

Many preventative activities can be implemented by community pharmacists. In a recent statement by the Joint Commission of Pharmacy Practitioners, it was reported that by 2015, pharmacists will provide patient-centered and population-based care, manage resources to improve therapeutic outcomes, and promote health improvement, wellness, and disease prevention [11]. Furthermore, the 2005

revision of the Accreditation Council for Pharmacy Education Standards for Curriculum emphasizes the importance of public health as one of the outcome expectations for accredited schools of pharmacy [10]. Several sources support the idea that collaborative efforts by pharmacy and public health practitioners may result in long-term relationships with each member of the team, issues and problems being identified and resolved early and continuously, and appreciation of the differences between individuals as being overall necessary and helpful [8].

3.1.2. Emergency Preparedness and Response

In recent years, the United States has encountered numerous tragic events that resulted in injuries and death in large numbers of our population. These include the terrorist attacks of September 11, 2001, the anthrax exposure in 2001, Hurricane Katrina in 2005, and the Boston Marathon Bombing in 2013. In the event of a tragedy, pharmacists play a fundamental role in emergency response.

During the events of natural disasters, industrial accidents or bioterrorist attacks, healthcare facilities are often overwhelmed by the influx of patients. This can lead to inaccuracy or errors in prescribing the proper therapy for a patient because of limited staff with little time to treat. This is when pharmacists play a critical role in individualizing medication therapy regimens to select treatment, increase medication effectiveness, and minimize adverse drug events. Pharmacists are knowledgeable and readily available to patients to answer questions. They have access to credible sources and can determine if a need exists for referral to a physician.

Many pharmacists serve on Disaster Medical Assistance Teams (DMATs) and the Commissioned Corps Readiness Force (CCRF). Duties of pharmacists on these teams may include serving as logisticians or being deployed with the Centers for Disease Control and Prevention's (CDC) Strategic National Stockpile team for immediate assistance and patient counseling [12]. For example, during the anthrax exposure in 2001, U.S. Public Health Service (PHS) pharmacists operated an anthrax prophylaxis clinic to dispense prophylactic antibiotics and provide patient education [13].

Aside from serving at a national level, pharmacists can also be involved in emergency preparedness and respond locally. Pharmacists will undoubtedly respond in the event of a disaster. During the Arizona bioterrorism drill in November 2002, there were 70 pharmacists and 55 pharmacy students from the University of Arizona College of Pharmacy involved in distributing antibiotics and counseling patients [9]. Although the hospital practice setting may be different as compared to a bioterrorism event, pharmacists exhibit similar skills in both environments: dispensing medications, counseling patients, and providing accurate information to the public and other healthcare professionals.

3.1.3. Patient Advocacy

The needs of the community should be appropriately

assessed which requires some level of patient involvement in the assessment to ensure that their concerns are represented appropriately. Lindstrom and colleagues conducted a study in 2006 to examine patient expectations and demands. Community pharmacists collected data related to services that are valued by patients in a grocery store setting. The purpose of the study was to identify the top 3 most important pharmacy services to pharmacy patrons. Results showed that patients identified their 3 most important services as auto refills, 24 hour pharmacy services and 24 hour drug information services. Furthermore, patient advocacy was shown to be an important factor [14].

The services most favored by patients require increased promotion so the general public becomes aware of the importance of utilizing health services. It is also pertinent that patients, pharmacists and providers support and educate others about health policy actions that support the public health system and the expansion of the pharmacist's role at the community and national level. In order for pharmacists to meet the needs of the medically indigent, further efforts are needed to show that the patient's opinion is valued. Many methods can be used to advocate for patients such as participation in community collaborations, partnerships, consumers' rights groups, advocacy groups and nonprofit organizations which bring communities together for action in educating the public and supporting policy changes in public health [8].

Serving as an advocate in the community enforces the public's interest in expanding the pharmacist's role to exhibit the pharmacist's professional responsibility as a trusted healthcare professional. For example, the Ryan White Comprehensive AIDS Resources Emergency Act (CARE) was enacted in 1990 through advocacy groups. As an act of the United States Congress, it is the largest federally funded program in the United States for people living with HIV/AIDS. The act targeted funding to low-income, uninsured and under-insured victims of AIDS and their families to receive care [15]. Advocacy groups may be used to help bring public attention to varying health concerns and pharmacists may serve as leaders to help engage the public.

3.2. Patient Centered Approach

3.2.1. Prevention

In 2011, the U.S. health spending reached approximately \$2.7 trillion and is projected to grow 3.8% in 2013 and 6.2% annually over the period of 2015 to 2021 [16]. It has been proven that preventing disease among patients is more cost effective than treating patients. According to William C. Weldon, the CEO of Johnson & Johnson, the company invests in resources for prevention because it finds a reduction of healthcare costs of more than \$4 returning for every dollar invested in the health of the company's employees [17]. In addition, the rate of absenteeism decreases and productivity increases. By investing more in health prevention, companies can maximize their benefits and minimize spending on employees' healthcare coverage.

Utilization of preventive strategies results in patients being more aware of their health status. Patients seek preventive care rather than having to pay more for treatment of their medical conditions. Preventing diseases has been key to the mission of public health and pharmacists have the expertise to carry out this mission.

According to the U.S. Public Health Service in 2011, over 250 million people in the United States visit pharmacies each week [18]. Pharmacists are educated to provide services including clinical skills to prevent, control, and treat diseases through medication therapy. Pharmacists can provide immunizations to the public without requiring patients to make an appointment. Many specialty pharmacies offer smoking cessation programs, weight management and nutrition wellness sessions, strep throat screening programs, and disease state management programs for asthma, cholesterol, diabetes, hypertension, peptic ulcer disease and anticoagulation. By identifying and preventing diseases before they occur, Americans will remain healthier, businesses will reduce long-term healthcare costs, and pharmacists will experience greater job satisfaction.

3.2.2. Improving Health Outcomes

The mission of pharmacists is to help people achieve optimal health outcomes [19]. Similarly, the mission of public health specialists is to promote physical and mental health and prevent disease, injury, and disability [20]. There is overlap in the two mission statements with respect to achieving optimal health outcomes. Allowing pharmacists to contribute to public health will help the nation to achieve optimal health outcomes. Pharmacists are able to promote and provide information on healthy lifestyle changes. These patient-pharmacist interactions increase the patient's awareness of their health status. Additionally, pharmacist provided value-added services can help to significantly improve a patient's well being by keeping the patient informed and educated on lab results and the follow up process. For example, the American Pharmacist Association's Academy of Student Pharmacist's Operation Heart program had approximately 5,700 pharmacy students deliver services to almost 42,000 patients and also provided education outreach to about 1,850,000 patients [21]. An additional benefit of increasing the pharmacist's role in patient care is that physicians can be provided with an opportunity to improve health outcomes. Increasing patient interaction with pharmacists may result in physicians having more time to focus on critically ill patients, which improves the satisfaction of the patient as well as the provider.

In the Diabetes Ten City Challenge, a study aimed to achieve improvement in hemoglobin A1c, low-density lipoprotein (LDL), and blood pressure. Findings revealed that patients were able to reduce their average hemoglobin A1c levels by 5.2%, LDL by 3.1%, systolic blood pressure by 2% and diastolic blood pressure by 2.5%. There was also an 18% increase in patients receiving their seasonal influenza vaccination. Several other studies have also shown positive outcomes with regard to pharmacist intervention in

the public health system [22].

The services that pharmacists are able to provide will enhance efforts to provide patients with comprehensive services. Furthermore, studies have shown that the utilization of pharmacists with expanded roles resulted in decreased hospital and ER admissions and a decreased number of specialty physician visits [23]. Finally, studies reveal that pharmacist driven improvement in health outcomes results in a decreased number and cost of drugs.

3.2.3. Accessibility

Patients who seek healthcare face many barriers, which include lack of transportation, high cost of care, and lack of coverage [24]. One solution to address these issues relates to expanding the pharmacist's role in public health. Increasing access to meet patient's health needs and providing them with appropriate care such as preventive services are areas in which a pharmacist can contribute. Expanding the pharmacist's role in public health is also directly related to an increase in life expectancy. Additionally, detection and treatment of health conditions and an increase in quality of life allow for early prevention of diseases and also benefit the patient's overall physical, social, and mental health status [24].

Currently, in the event of an emergency or crisis, patients are encouraged to access hospitals, doctor's offices and clinics. Pharmacists can be beneficial in the event of a disaster by assisting in emergency response through mass medication distribution, surveillance, clinical management of medications and medication related investigations [10]. Pharmacists are one of the most accessible members of the healthcare team and would be beneficial in assisting patients considering that a pharmacy and one or more pharmacists are within 5 miles of most households [25].

Many pharmacies are open 7 days a week and some are available 24 hours a day. By allowing pharmacists to become more involved in public health, communities can be provided with the necessary and affordable resources that help meet patients' needs in a timely manner.

3.2.4. Minimizing Adverse Drug Events

Integrating pharmacists in public health to monitor the health status of patients will facilitate the reduction of adverse drug events. An adverse drug event is defined as harm which arises from use of medications at a normal dosage and with normal use [26]. Pharmacists are able to assist patients by improving their medication use through individualized therapeutic regimens to ensure patient safety and reduce adverse drug events. Studies have proven that the monitoring of adverse effects have helped reduce adverse events. In a randomized experimental design, implementing a system for pharmacists to monitor adverse effects in cancer drugs proved to be useful. Pharmacists noted that incorporating the system in their practice took little effort, time, and expense since patients documented symptoms and adverse effects on their own and the data was used to modify medication regimen to improve the patients' clinical status.

Results showed that 68.4% of patients in the intervention group noticed a pattern in their adverse effects. Subjects found that the monitoring tool was useful and would also recommend it to others while about 50% were "very" or "extremely" likely to use it again to minimize the effects of adverse reactions [27].

Pharmacists can play a crucial role through regular MTM services by asking patients about the signs and symptoms which may lead to a possible adverse drug event. By collaborating the information with the patient's prescriber to further investigate and establish a differential diagnosis, this service would help prevent adverse drug events [28]. A randomized controlled trial was also performed on outpatients with cardiovascular disease and results showed that the risk of events were 34% lower in the intervention group. The results of the study showed that intervention by pharmacists to improve medication use decreased risks of adverse drug events and medication errors [29].

It is evident that the role pharmacists play in public health can improve patient outcomes by reducing adverse drug events in the community and hospital setting. Patients generally discontinue care after multiple medication regimen changes.

3.3. Education

3.3.1. Public Health Education of Pharmacists

The pharmacist's role has expanded above and beyond dispensing medications. Pharmacists today also apply their knowledge to actively teach pharmacy students, public health nurses, nurse practitioners, dentists, physician assistants, physicians and other healthcare professionals about drug therapy. A broad degree of understanding related to the drug use process is essential for many healthcare professions, and pharmacists are the medication experts. Education in prescription and nonprescription drugs is conducted in a variety of settings, such as seminars, newsletters, on-the-job training, and courses in professional pharmacy schools. The Accreditation Council for Pharmacy Education sets guidelines which include performance competencies that incorporate public health into pharmacy education by promoting the importance of health, wellness, disease prevention and management to patients. In the public health arena, these goals of pharmacy practice benefit society by creating desirable patient outcomes, minimizing overuse, underuse and misuse of medications, and achieving medication related public health goals [30].

In 2004, the American Association of Colleges of Pharmacy (AACCP) included a population-based care approach in its Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes. According to the newest version of CAPE 2013 Outcomes, pharmacists are expected to "function collaboratively as members of an interprofessional team, advocating for patients and demonstrating leadership, providing care for diverse patient populations, contributing to the health and wellness of individuals and communities, educating a broad range of

constituents, and effectively managing a highly technical workplace” [31]. The report emphasizes the essential role of pharmacists in advancing public health policy and improving quality of care.

Currently, several colleges of pharmacy offer the dual degree of Doctor of Pharmacy and Master of Public Health (PharmD/MPH). Graduates with this dual degree program would be more competitive for positions in many official government agencies such as the Centers for Disease Control and Prevention (CDC) and Food and Drug Administration (FDA), managed care organizations, private sector companies, or nonprofit organizations. Additional reports reveal that the number of related educational opportunities among colleges of pharmacy and public health is positively correlated with the number of job opportunities for those interested.

3.3.2. Pharmacists as Healthcare Providers

Despite many services that pharmacists offer, they are rarely referred to as healthcare providers under the Social Security Act or by the Centers for Medicare & Medicaid Services (CMS) [32]. Although nurse practitioners, physician assistants, and pharmacists share similar roles as primary care providers by promoting public health, preventing and treating diseases, and counseling and educating patients, only nurse practitioners and physician assistants are listed by the American Academy of Family Physicians (AAFP) as Non-Physician Primary Care Providers or Non-Physician Practitioners (NPPs) [33]. Pharmacists are often underutilized and not fully compensated by Medicare and Medicaid for the much needed MTM services they provide to patients.

It is essential to acknowledge and compensate pharmacists to improve patient and health system outcomes of the nation. There have been several reports highlighting the importance of appreciating pharmacists as healthcare providers because of their capabilities in providing value-added services. Current pharmacy practice models of collaboration in pharmacy and public health have shown an improvement in overall healthcare delivery and cost-effectiveness. A 2011 physician survey conducted by the Indian Health Service (IHS) National Clinical Pharmacy Specialist (NCPS) Program showed that many physicians agreed that pharmacists helped to deliver primary care services and should receive more formal recognition such as “billable non-physician practitioners” [32]. Furthermore, the American Pharmacists Association emphasized that value recognition of pharmacists to cover a wide range of services is one of “the top strategic priorities” for 2013 [34]. Appreciation may be provided in the form of established policy by administration, statutes through legislation, or compensation mechanisms [16].

It is imperative to honor and reward pharmacists for the expanded services they provide to the public. These value-added services may include offering immunizations, HIV testing, screening for blood pressure, diabetes, cholesterol and health education consultations. Many pharmacists are hopeful that as they continue to advance

their roles in public health coupled with engagement in medical communities, they will receive healthcare provider designation in the near future.

4. Discussion

More recently, the public’s perception of the pharmacist’s role continues to expand due to increased public health awareness in the pharmacy curriculum as well as increased involvement in the community through patient interactions. Furthermore, healthcare professionals should work together to focus on the concerns of society to improve the effectiveness of healthcare and public health. As a result, healthcare professionals will be able to prevent disease, focus on the individual, develop prevention strategies and improve health outcomes through increased access to healthcare and minimization of adverse drug events. By expanding the role of pharmacists in public health, concerns of the public can be better addressed as pharmacists serve as their advocate.

In the future, many changes are expected to occur and job responsibilities will continue to increase in order to control costs and improve the quality of care. Pharmacists are capable of promoting optimal health outcomes and assessing the patient’s therapeutic needs to prevent adverse drug events. Additionally, increasing the public’s knowledge about value added services pharmacists can provide may help reduce the barriers patients face concerning their health and contribute to the overall wellness of the community and the nation.

5. Conclusion

Today, public health services are in demand. An opportunity exists for the integration of pharmacy and public health shifting the pharmacy profession toward a promising future. Evidence suggests that utilizing pharmacists in public health settings helps to improve health outcomes, decrease costs, prevent diseases, minimize adverse drug events and maintain good patient health. This creates more opportunities for pharmacists to work in public health and since pharmacists are easily accessed by members of the healthcare team and patients, they are able to play a larger role as the patient’s advocate or during times of need. Through collaboration with other healthcare providers and an increase in pharmacists assuming provider roles, pharmacists can continue the evolution of pharmacy and working towards public health goals. Additionally, efforts should be expanded to increase coverage of public health topics within pharmacy curriculum and vice versa. Public health mainly focuses on preventative care and the population’s perspective. However, personal responsibility is emphasized to contribute in shaping the health of the whole society. The integration of the two disciplines will help to keep a balanced focus and advance the health of the nation.

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