STATEMENT

Examining Pharmacy Workforce Issues in the United States and the United Kingdom

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Objective. To examine available data and actions surrounding current pharmacy workforce issues in the United States and United Kingdom.

Methods. Published pharmacy workforce data from the United States and United Kingdom were gathered from various sources, including PUBMED, Internet search engines, and pharmacy organization websites. Data was collated from additional sources including scientific literature, internal documents, news releases, and policy positions.

Results. The number of colleges and schools of pharmacy has expanded by approximately 50% in both the United States and United Kingdom over the previous decade. In the United States, continued demand for the pharmacy workforce has been forecasted, but this need is based on outdated supply figures and assumptions for economic recovery. In the United Kingdom, workforce modeling has predicted a significant future oversupply of pharmacists, and action within the profession has attempted to address the situation through educational planning and regulation.

Conclusion. Workforce planning is an essential task for sustaining a healthy profession. Recent workforce planning mechanisms in the United Kingdom may provide guidance for renewed efforts within the profession in the United States.

Keywords: manpower, health workforce, internationality, health policy, pharmacy education

INTRODUCTION

Health care is an environment of constant evolution and growth. In the last several decades, the role of the pharmacist in the United States has shifted from being product-driven to a patient-focused, integrated member of the health care system. The profession has seen changes in training structures, increased uptake of postgraduate residency training, and growth in the need for services as a result of expansion of third-party coverage, community chain pharmacies, and ultimately, prescription volume. Today, pharmacists are confronted with a quickly aging patient population and health care reform that must be integrated into their practice. The past several years have also seen a rapidly expanding market of pharmacy schools and an increasing student enrollment. Concerns have emerged that this growth may be too expansive, possibly leading to

a detrimental effect upon the future workforce and its sustainability within the job market.

This issue is not unique to the United States as similar apprehensions are being voiced in other developed areas of the world, namely in the United Kingdom, which has seen similar evolution of the pharmacy profession and now faces the same concerns regarding the expansion of enrollment and workforce. However, as the United Kingdom operates within the realm of the National Health Service (NHS), a publicly-funded health care system, the scope of and approach to the issue is different than those in the United States and may provide a useful comparison for understanding the issue and the approaches to address it.

METHODS

Published data relating to the workforce, including supply and demand figures, planning assessments, and policy proposals and statements relevant to the pharmacy profession in the United States and United Kingdom were researched. Data were obtained from various sources, including PUBMED (for scientific literature),

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Internet search engines (for internal documents and news releases), and pharmacy organization websites (for policy and professional materials). Information was collated by country and supplemented with author analysis and assessment where appropriate.

RESULTS

United States

The number of pharmacy schools in the United States has seen significant expansion in recent years—currently at 130 (full or candidate) accredited institutions, up from approximately 80 in 2000^{1,2}—and this expansion is primed to provide an increasing number of professionals. The number of students in doctor of pharmacy (PharmD) programs has also increased dramatically, with growth in enrollment from 2.9% to 8.4% per year over the previous decade.² Several commentaries have been published in the *American Journal of Pharmaceutical Education* expressing concern over this increase and its downstream effects upon the pharmacy job market.³⁻⁵ The predominant question is whether this educational expansion will be matched with increased availability of jobs for pharmacists.

The most recent job outlook figures for pharmacists from the Bureau of Labor Statistics (BLS) at the US Department of Labor predict more than 41 000 new positions (a 14% increase) by 2022.⁶ Much of this growth depends on 2 factors: first, the Affordable Care Act (ACA) expanding health care to millions of currently uninsured Americans, and second, an increased need for services for an aging population with more complex medication needs.⁶ Additionally, the overall health care industry is expected to expand as the economy recovers. Pharmacists near retirement, who continued working through the recession, will exit the job market as the economy improves, specifically expanding the need for newer professionals. The BLS states that a robust recovery from the recent recession is necessary to see industry and job expansion. In 2013, the Federal Reserve indicated the US economy was still below full health,⁷ and, in a survey of 200 top employers, the Business Roundtable found less than one-third of respondents were expecting to increase employment and one-quarter were instead looking to lay off workers.⁸ Recent job gains in 2014 and 2015 have begun to give hint of stronger economic recovery and labor market forecasting,⁹ but the situation remains volatile.

A major source of workforce data within the profession is the Pharmacy Manpower Project (PMP; now known as the Pharmacy Workforce Center) initially performed in 2001.¹⁰ The expert panel was convened to determine the profession's workforce needs through the year 2020. Employing data such as population demographics, technology, drug use trends, and expansion of the profession into

the overall health care paradigm, the panel concluded there would exist a shortfall of 157 000 pharmacists by 2020. The increased need for pharmacists would emanate from the expected increase in prescriptions for a growing population over the age of 65 and from the pharmacist's role expanding into a number of areas, such as drug use safety and policy, geriatrics, and long-term care facilities. The panel assumed a growth rate in pharmacy education of 3 new schools every 10 years.¹⁰ Instead, the number of schools increased by over 50% in just over one decade, and 31 schools of pharmacy have expanded their class size by more than 50%.⁴

In 2000, the Department of Health and Human Services (DHHS) produced a report assessing the supply/demand balance within the pharmacy profession and found that a shortage was indeed occurring, primarily from increasing demand for pharmaceutical care services and constrained growth in the number of new graduates.¹¹ At the time of the report, there were 81 operating schools of pharmacy and the number of applicants had dropped off considerably, below levels seen in the early 1990s.¹¹ An updated workforce study was issued by the DHHS in 2008 and predicted continued future need for pharmacists with a shortfall of nearly 38 000 by 2030, despite the supply of pharmacists having grown faster than previously projected.¹² However, their updated conclusions were based on an expected growth in schools that would lead to 12 000 graduates in 2030—a number that has been surpassed nearly 20 years too early. The analysis evaluated several supply-based and demand-based scenarios, and the most aggressive supply scenario estimated 20% more graduates than baseline assumptions; this aggressive scenario has essentially been realized in 2015. When coupled with the most anticipated demand scenario (moderate growth in prescriptions per capita), there would be a resulting oversupply of approximately 7500 pharmacists by 2030. However, based on this increased supply, the range of all demand scenarios varies considerably from an oversupply of 88 900 pharmacists to a shortage of 97 800 pharmacists.¹² Lastly, the DHHS released an updated fact sheet regarding workforce projections for pharmacists for 2012 through 2025; their simulation modeling (incorporating implementation of the ACA for the first time) predicts a pharmacist supply increase of 35% during this time period, compared to a demand increase of 16%, noting that “the US will have adequate numbers of pharmacists to meet future demand.”¹³ The definition of “adequacy” in this projection translates numerically to an oversupply of nearly 50 000 pharmacists in 10 years' time. However, a broad description of the methodology and model structure from this report limits discussion.

The Aggregate Demand Index (ADI, supported by the Pharmacy Workforce Center) is a data source that provides an up-to-date survey on pharmacist staffing levels that contribute to these models.¹⁴ The most recent ADI indicates that 35 states have a balanced workforce. A moderate demand exists in 13 states (down from above 40 just a few years ago) and 3 states already acknowledge a surplus of pharmacists; no state has a high demand. The national ADI has decreased by approximately 25% from 4.31 in August 2006 to 3.27 in March 2014, demonstrating a decreasing demand for pharmacists over time.¹⁴ Unfortunately, no forward projections are available; time series data from ADI can build a descriptive model of the pharmacy workforce, but the ability of the model to forecast is limited.¹⁵ The American Society for Health-System Pharmacists (ASHP) also conducts an annual survey of staffing levels, albeit limited to those in hospitals and health systems.¹⁶ Their 2013 survey reported a vacancy rate of 2.1% for pharmacists, which represents an 11-year low from 7.2% in 2002; this was coupled with the lowest turnover rate (5.6%) and lowest mean time to fill vacancies (3.2 months) during the same time frame. Entry-level frontline pharmacists were perceived to be in excess among 48.1% of pharmacy directors.¹⁶

While there is reasonable expectation that demand within pharmacy may increase, quantifying this effect requires consideration of the overall health of the economy, growth in prescription rates affected by the aging population, and health care reform.^{17,18} An emerging issue that may also become pertinent is the cost of a pharmacy education, which increased by 54% on average in the last 8 years, resulting in an estimated average debt among pharmacy students of \$114 422.¹⁹ Although the average pharmacist salary and number of total pharmacist jobs in the United States have steadily increased, from 2008 to 2012 the rate of increase of average debt greatly outpaced the rate of salary increase (23% vs 6.6%), decreasing effective salary.¹⁹ Increasing debt could also potentially affect the supply structure for a new generation of pharmacists. No available projection models comprehensively incorporate all of these factors (with up-to-date supply data) to estimate the level of workforce balance.

Although workforce data is available from multiple sources, the United States has no coordinated and comprehensive effort regarding pharmacy workforce planning. While a formal assessment was performed by the DHHS in 2008 and provided useful information, its projections are likely outdated. Updated modeling in 2012 appeared to indicate a different situation for the workforce with a predicted oversupply. In 2010, the American Pharmacists Association and ASHP released a joint discussion paper examining the expansion of pharmacy

education.²⁰ Among the paper's key recommendations was the need for a stakeholders' conference on workforce planning and the establishment of an ongoing assessment of workforce needs and response to these needs. However, follow up to this recommendation remains to be seen. The de facto approach by the profession thus far has been a reliance on the free market to determine pharmacist supply and demand.

United Kingdom

The number of master of pharmacy (MPharm) programs in the United Kingdom also increased in recent years. At the time of writing, there were 26 universities fully accredited by the General Pharmaceutical Council (GPhC) and 3 universities with provisional accreditation—this is in contrast to the 16 accredited programs that were operating in 2003.²¹ Despite a national increase of 15% in first-year university students in all degree programs from 2004 to 2008, the number of students in pharmacy programs increased by 40% during the same time frame.²² This increase has led to similar concerns regarding the future balance of the pharmacy workforce.

After completion of the 4-year MPharm, graduates apply for preregistration, a 1-year training period under the supervision of a registered pharmacist at an accredited site, similar to the advanced pharmacy practice experience (APPE) in the US pharmacy education model. Successful completion of these components and subsequent passing of a registration examination enables the graduate to apply to the GPhC for registration (ie, licensing) as a pharmacist. However, unlike APPEs, preregistration training is a separate experience from the university curriculum and the responsibility of the student to secure. Increased student enrollment puts significant pressure on the number of placements in preregistration system, not unlike the competitive nature of the ASHP Matching Program, where 35.7% of applicants did not match with a residency in 2014.²³ However, while residency is an optional experience, poor matching between pharmacy student numbers and preregistration placements in the United Kingdom would potentially allow students to graduate from a pharmacy program yet be unable to become registered and practice as a pharmacist.

From 2002 to 2010, the number of pharmacists on the GPhC register increased by 11.9%.²⁴ Registrants became younger, with growth in under-30-year-olds outpacing all other age bands—a likely result of increases in pharmacy student numbers.²⁴ The national pharmacy staffing survey (which surveys NHS-employed pharmacy staff primarily in the hospital sector) indicated an overall net shortage of pharmacists in Great Britain, however vacancy rates dropped between 2010-2012

from 11.9% to 7.5% in England, and from 7.1% to 3.1% in Wales.²⁵ Vacancy rates remain higher in lower-band (ie, entry-level) employment (at 12.2% in England), but these have also decreased in recent years.²⁵ Data on community pharmacists is less readily available but recent policy changes are likely to change that landscape as well. In order to open a new community pharmacy and apply for an NHS contract, applicants are required to satisfy a statutory market-entry test, which is designed to prevent new pharmacies from opening in areas where there is no perceived need for additional services. In 2005, applications in England for pharmacies that would be open at least 100 hours per week were granted an exemption from this rule in an effort to improve public access to pharmacy services. Accordingly, the number of community pharmacies in England (which had remained relatively stable at 9765 in 2000-2001 and 9736 in 2005-2006) increased by 15.4% by 2011-2012.²⁶⁻²⁷ The growth in the number of pharmacies, particularly those with prolonged operating hours, increased demand for pharmacists and supported the expansion from pharmacy schools and student numbers over the last 10 years. However, this exemption was fully repealed in 2012, and the downstream effect this change on growth and job availability for community pharmacists is unknown.

In response to these data as well as increasing concern within the profession, the Department of Health (the ministerial branch of government supporting health care in England) commissioned a third-party comprehensive assessment of supply and demand in the pharmacy workforce, performed by the Centre for Workforce Intelligence (CfWI). The assessment used a robust approach with a horizon scanning workshop among stakeholders to identify impacting forces within the profession, followed by scenario generation of possible influences, and finally, modeling of supply/demand structure for pharmacists.²⁸ Factors considered included the demographic structure of the workforce, training schemes and enrollment figures, reform proposals, technological advancements in the profession, and changes in pharmacist roles.²⁸ The models were accompanied by sensitivity analyses and formal assessment of data quality for input variables. The results were published in 2013, and among 4 main models considered, all resulted in a predicted oversupply by 2040 ranging from 11 000 to 19 000 pharmacists (compared to the approximately 50 000 pharmacists currently registered in Great Britain). The consensus determined that the absence of an active intervention for the increasing number of students, "would almost certainly lead to unemployment. . . in the short-to-medium term."²⁸

Prior to the release of the workforce assessment, it was recommended by government ministers that a cap be

placed on the number of students studying pharmacy at universities in England.²⁹ University placements for medicine and dentistry have been subject to such regulation for several years as part of a formal and ongoing assessment of future workforce requirements.³⁰ This type of intervention appears to have good professional support. A recent risk analysis from the Royal Pharmaceutical Society (RPS, the professional leadership body for pharmacists in Great Britain) identified capped university admissions as the most likely means of controlling entry to the pharmacy profession, while minimizing consequences for both patients and the profession.³¹ Integral to this option was the need to plan and match student numbers to market demand and the mandate that all pharmacy school graduates would be guaranteed a preregistration placement.³¹

In formal response the CfWI report, 2 government-related organizations, Higher Education Funding Council for England (HEFCE) and Health Education England (HEE), released a consultation in September 2013 seeking advice on how to manage the projected oversupply of pharmacists.³² Three potential options were presented for discussion: (1) continuing to let the free market determine student enrollment, (2) employing a control on student numbers, or (3) altering the MPharm program structure to allow for 2 educational paths, one leading to a general science (nonprofessional) qualification, and one leading to preregistration.³² A variety of stakeholders published their responses in favor of option 2, including the RPS,³³ British Pharmaceutical Students' Association (the official student organization of the RPS),³⁴ the Pharmacy Schools Council (a nonregulatory body representing schools of pharmacy in the United Kingdom),³⁵ and the Pharmaceutical Services Negotiating Committee (which promotes and supports interests of all NHS community pharmacies in England).³⁶ An analysis of responses was published in October 2014, which indicated that most opinions supported the introduction of some form of student intake control.³⁷ However, the Minister for Universities, Science, and Cities indicated at this time that despite the consultation results, specific number control would not be advised in wider governmental educational policy and that pharmacy applicants should instead be told that preregistration placements were not guaranteed.³⁸ Hence, action regarding the consultation ceased.

DISCUSSION

Available data suggests that the supply of pharmacists is rapidly increasing in both the United States and the United Kingdom as a function of educational expansion. Data from the United Kingdom suggest a future job market will likely be unable to accommodate this growth, and

policy was initiated within the profession (but terminated by the government) to address the problem. Available projections from the United States have been scattered and subject to outdated data in some instances; moreover, the approach to workforce planning has largely lacked a coordinated effort and tangible response for action.

The availability of a stable and competent workforce is central to a functional and advancing health care system. A shift in focus toward enhanced patient care and interdisciplinary collaboration increased the number of professional opportunities for pharmacists in recent years. However, the needs of health care are dynamic, and a recent International Pharmaceutical Federation (FIP) report recommends that countries proactively model their future workforce needs and develop planning strategies to secure the future provision of services and education within the profession.³⁹ The FIP report notes that national health care systems are diverse with varying needs, and therefore a “one size fits all” approach may not be fully optimal for workforce planning. This is certainly the case with the United States and the United Kingdom and their potential approaches to the situation.

In the United Kingdom, the publicly funded structure of education and health care enables governmental intervention on a high level. However, administrative powers are “devolved,” meaning they are handled separately by constituent areas of England, Wales, Scotland, and Northern Ireland, and there is no single central body with coordinated powers in education or health care in the United Kingdom. As students can obtain their degree in one part of the country and do preregistration training or obtain employment in another part, there is potential for issues to arise from fragmented workforce planning. In addition, the HEFCE/HEE consultation resides solely within England; how it would fall into place within the rest of the United Kingdom is unknown. In the United States, the privatized nature of health care and the administrative structure of professional education mean that caps on enrollment are practically impossible (and arguably, illegal) to impose. However, the United States has similar issues with devolution in that administrative oversight of pharmacy and education are delegated to individual states with little federal control that could reconcile varying interpretations and degrees of professional supervision. Although the United Kingdom has nationalized health care, regulation in the pharmacy profession is similar to the United States. The United Kingdom’s GPhC and the United States’ Accreditation Council for Pharmacy Education operate in similar fashion, serving as assessors of quality control in the development of standards for pharmacy education and not as educational regulators for supply/demand in the profession. Community pharmacists, who constitute the large majority of the profession in

the United Kingdom, are not NHS employees, but are privately employed by third-party companies that contract pharmacy services with the NHS. These companies operate in a business market with similar regard to profit as the privatized profession in the United States. Therefore, an oversupply within the profession is likely to result in similar effects of the job market in either country.

Recent actions in the United Kingdom may not be directly applicable to the United States; however, much can be learned from the comparison. The United Kingdom provides an admirable example of professional grassroots action, which has stimulated formal and comprehensive workforce assessment and involves input from a variety of pharmacy stakeholders and external experts in workforce planning and consultation to the public and profession regarding possible solutions. In the United States, in order to provide the number of necessary pharmacists while maintaining the highest professional standards in education and the workforce, an unprecedented collaboration among the profession, industry, government, and education needs to be formed with these goals as their primary, if not sole, achievement. Implementing solutions in the United States would depend on specific issues identified through such a process, but the following items would need to be considered: (1) investigating, learning from, and coordinating approaches used by other professions, such as medicine and dentistry;⁴⁰⁻⁴¹ (2) implementing scenario-based assessments in workforce planning to accommodate for a volatile health care environment;⁴¹ (3) actively discouraging academic expansion that does not fill a preidentified need (eg, geographic or underserved areas) as a matter of professional responsibility rather than regulation;⁴ (4) advocating for establishment of new pharmacist roles to meet already increasing professional supply;⁴ (5) continuing focus on sustaining quality in pharmacy education within the rapidly expanding market of pharmacy schools.⁴²

CONCLUSION

Knapp and Schomer previously stated in the *Journal*, “Making projections and monitoring data trends are necessary but not sufficient. . . [we] need to use the projections and data trends as tools to identify and embrace those actions that will lead the profession forward in uncertain times.”⁴³ Worldwide, prudent workforce planning is needed within the profession to ensure a secure future workforce, which is trained and able to meet the demand of the dynamic health care environment. Instrumental to this planning is a better strategic alignment of individual governmental health care policy to the pharmacy profession.⁴⁴

Despite different health care delivery models, pharmacists in the United States and United Kingdom are facing similar rapid expansions within the profession. In

the United States, the number of new schools and expanded class sizes has extended beyond the scope of previous estimates. The pharmacist shortage may potentially be ending, yet no major coordinated response strategies are on the horizon. In the United Kingdom, the reality of a future oversupply of pharmacists has been identified and accepted by the profession and the government. Policy efforts are being focused on how to best address the situation, which will undoubtedly require a large scale coordinated effort to keep the profession in balance. The approach in the United Kingdom can serve as an example prompting the need for formal workforce assessment and the planning in the United States.

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