The Nurse Workforce

3

Sean P. Clarke

Introduction

The term "nurse workforce" refers to the workers available at a local, regional, or even national level to deliver nursing care to a group of patients, clients, or citizens. The workforce has clear consequences for the quantity and nature of nursing services available and the conditions encountered by caregivers and patients in various settings. In workforce research and policy, many assumptions are made about the mix of nursing personnel who provide nursing services. The assumptions merit clarification. A set of supply and demand factors drive whether shortages, surpluses, or balances are observed in the nurse workforce at various healthcare system levels. These factors operate somewhat differently across countries, regions, organizations, and specialties. Local and higher level policy approaches address challenges in recruiting and retaining nurses, such as nurse workforce diversity, educational composition, and broad age differences. Policy regulating nurse staffing levels has potentially significant influences on the demand for nursing services. To date, experience with such policies, notably mandatory staffing ratios, has been limited. Moving forward, economic and technological changes will influence the nature of nursing services within care delivery systems and thus the demand for nurses. These changes may provide opportunities to preserve and even surpass the safety and quality outcomes that nurses and their interventions facilitate for the profession's clients but may require changes in the nurse workforce to drive a brighter future for the profession and its clients.

S. P. Clarke (✉)
Rory Meyers College of Nursing, New York University, New York, NY, USA
e-mail: sc7372@nyu.edu

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The Nurse Workforce: Context for the Quality Health Outcomes Model

The nurse workforce is an element of context (macro-level) influencing the interplay of constructs within the QHOM (Mitchell et al. 1998) (Fig. 3.1), notably by influencing the characteristics of nurses delivering various interventions and the environment in which these interventions are delivered. In the model, system elements (macro and meso) shape the characteristics of the individual workers (micro-level; nurses or nursing workers) providing interventions to specific clients and the conditions under which they deliver them to clients. In turn, clients then experience outcomes. The nurse workforce and its relationship to other contextual factors and QHOM constructs could easily be applied to health professionals and workers outside nursing whose services could be complementary (even essential) in providing care to a specific population.

Workforce issues play two critical roles in the quality of nursing care. First, the presence of enough providers of service who have appropriate preparation and adequate experience to carry out necessary work and function as part of smoothly functioning teams can be considered a precondition for providing safe care. Second, initiatives intended to shape either the workforce or the quality of care are closely related to each other and have reciprocal influences. For instance, policy initiatives to regulate staffing levels can influence the demand for nurses and nursing workers. Further, attention or inattention to quality of work-life and diversity issues in the workforce influences recruitment and retention, staffing levels, and ultimately the quality of care.

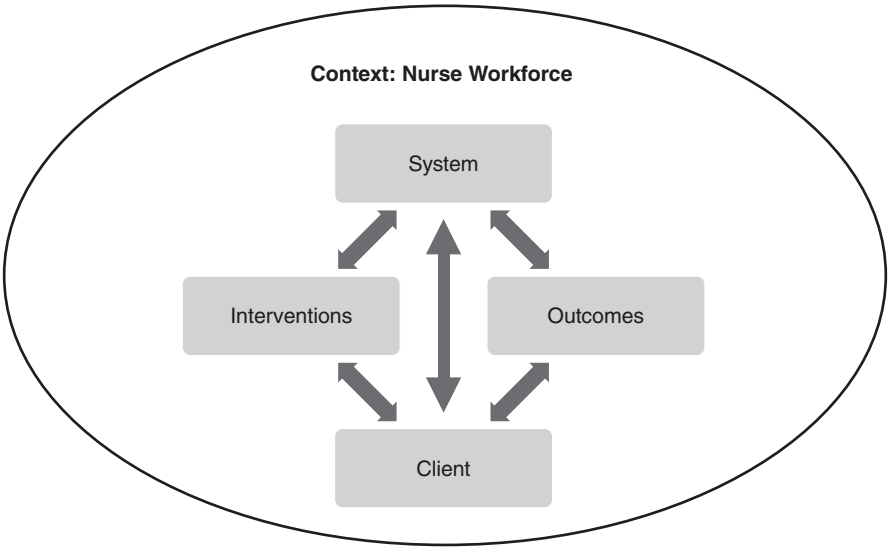

Fig. 3.1 Framework for the nurse workforce context

Arguably, a workforce composed of appropriately qualified nurses or nursing workers provides the foundation for delivering high-quality nursing care. Words such as "appropriately qualified" are used purposefully, as are broad terms like "high quality" and even "nursing care," but leave much room for interpretation. It is challenging, if not impossible, to find consensus on what constitutes enough personnel with the correct training (and further, a sufficiently stable and experienced workforce) in a specific healthcare setting. It is also challenging to establish, empirically, or by consensus, what the needs might be for nurses across a whole society or even the ideal prerequisite training for nursing work. Furthermore, "sufficiently large" and "appropriately qualified" are subjective terms that imply a common understanding of the work to be done and how it should be organized. There are many tacit assumptions about where and how care is to be delivered and the types and numbers of workers required to perform it.

The extensive practical concerns of deploying nurses and nursing personnel to deliver healthcare have generally relied on tradition, rather than a careful review or even empirical research findings, to drive most local and societal level decisions about the nurse workforce. Nonetheless, common sense would suggest that high-quality nursing care cannot easily be delivered with thin staff coverage or with coverage by staff with minimal preparation to deal with the more complex and rapidly changing patient needs in a specific setting.

Most discussion and research on workforce-related topics emphasize professional (registered) nurses (RNs). However, nursing care is provided by a mix of professional nurses, practical (or vocational) nurses, and unregulated workers. The nature of the nurse workforce varies across settings, regions, and countries. Many jurisdictions consider RNs, regardless of the type of education they have received, to be "professional" (as opposed to "practical") nurses. However, many have drawn a distinction between "technical" nurses (RNs holding associate degrees from junior/community colleges where the original intent of the type of education was an emphasis on technique and procedure) and "professional" nurses (those holding bachelor's degrees and having a broader education more thoroughly grounded in the liberal arts and sciences) (Montag 1963). Use of the term "technical" in contrast to "professional" and reference to the notion of different job descriptions and role expectations for RNs holding different levels of degrees or "differentiated practice" (Koerner 1992) have faded considerably in the past 20 years. However, for over a century, a vocal minority within the profession has pressed the case for the bachelor's degree as the entry point and has won it in some countries and jurisdictions. In places where the entry point issue has not been resolved, advocates have continued to argue for restricting RN licensure to those holding bachelor's and higher degrees (see the discussion of education and entry to practice towards the end of the chapter).

Historically, nurses have undertaken extensive ranges of activities that encompass clients' psychological and physiological needs across the life span and across settings. An assumption is that nurses (particularly professional nurses) do the visible and invisible work that put their time and skills to best use. It is rare to consider whether some proportion of nurses' work may be dedicated to tasks and actions that have minimal impacts on patient well-being or do not require a nurse's (or an RN's,

or perhaps a bachelor's educated RN's) education. What complicates such discussions is that within the scope of nursing work, many functions that might require hands-on training but arguably little formal education, at least on the surface, would seem able to be assigned to workers other than RNs in at least some circumstances. At times, the scope of nursing practice has been a very emotional subject, loaded with overtones touching on both economics and professional identity. In different settings, and indeed in some jurisdictions and countries, practical nurses, unregulated personnel, and even family caregivers can and do take on some nursing "tasks." Yet, it has been argued that some nursing work (i.e., having high stakes in terms of safety or skill, or the expectation that work will be executed with judgment and ongoing assessment of the client's health status) constitutes the practice of registered nursing and requires the education and credentialing of an RN. To the extent that RNs are the predominant type of nursing staff in North American acute care hospitals, one could argue that this has been more or less settled in many regions and settings. However, the determination that an RN is always the "correct" type of worker to fill a given patient care role has been questioned, especially by some outside the profession.

Most nurse workforce discussions imply that there are firm boundaries around the activities that nurses can perform, should be involved in, and actually perform. The exact nature of nurses' work, and indeed all health professionals and professional and skilled workers in general, has been a topic of intense discussion and debate. In reality, of course, in some contexts, other types of professional and nonprofessional workers carry out work done by nurses, and nurses (often with additional training) either potentially could or do act as replacements for other types of healthcare workers. Economists refer to this as "substitution" and it has potentially important impacts on demand for nurses. As will be discussed at the end of the chapter, reconsidering these boundaries and opportunities for substitution may become more prominent, moving forward in a changing healthcare system. A full exploration of debates regarding nursing care's nature and scope is beyond this chapter's scope. From this point forward in the chapter, although many of the ideas have relevance for discussions about other types of nursing workers, the emphasis will be on RNs (rather than on practical nurses, unlicensed care providers/patient care technicians, or advanced practice nurses).

Interplay of Nursing Supply and Demand at Various Levels of the Healthcare System

Discussions and analyses of the nurse workforce typically begin with concepts from labor economics applied to one or more healthcare system levels or an organization delivering nursing services—the notions of supply and demand. In addition to considering whether the nursing supply is adequate to meet demand, another important distinction is the difference between reviewing the state of a nurse workforce in the present or at a point in the past and projecting what might happen in the future. Although estimating future supply and demand is of apparent interest to managers,

human resources specialists, government officials, and those considering careers in nursing and has been the focus of energy for researchers and leaders, it is a considerably challenging exercise. Currently, there are about four million RNs in the United States (AACN 2019), not necessarily all of whom are working in nursing jobs, over 400,000 licensed nurses in Canada (CIHI 2020), and almost 650,000 in the United Kingdom (RCN 2020). A recent World Health Organization report places the worldwide number of nurses at 28 million, 19 million of whom are "professional" nurses (WHO 2020). The scale of these workforces and the range of geographic regions within these countries and work settings where nurses work render estimates and projections of supply and demand all the more challenging.

Supply

The supply of workers is the number of people who are able and willing to be employed in a field at a point in time. Ultimately, the supply of nurses is influenced by a relatively small number of factors. One of the significant determinants is the output of educational programs preparing students for entry to the profession. At many points in the history of nursing, including the present time (November 2020), the supply of available nursing education slots has been smaller than the number of applicants (a result of either high demand with or without low numbers of educators, clinical placements, or space in colleges and universities). However, over some periods and in some regions, the number of qualified applicants has been less than the number of slots in nursing education programs and the demand for new graduates. The second major determinant of supply has been personal choices leading to exit from the profession or its specialties (or decisions not to enroll in nursing education). The third determinant has been migration in or out of a country or region.

Nursing Education Programs

Preparation for professional nursing in industrialized countries generally requires at least 2 years of higher education after secondary school graduation (12th grade in most societies). The baccalaureate degree typically represents a minimum of 4 academic years of schooling after secondary school graduation. Accelerated (shortened) nursing programs were developed for students with previous postsecondary education. In either a traditional or an accelerated path, students and their families and schools of nursing commit to multiple years of prelicensure education. In addition to qualified faculty in specific content areas and physical space in classrooms (or electronic infrastructure to substitute for physical space), the finite number of students an area's healthcare organizations or other settings can accommodate at any one time also places constraints on admissions to and graduations from nursing school. Further, retention is imperfect in nursing education; students may fail to complete prerequisites or basic courses in a program before beginning their clinical educations. Also, failures and student decisions not to continue in their programs occur routinely in nursing programs. A relatively small number of graduates do not pass the licensure examinations at the end of their programs.

It is notable that for more than a decade as of the time of this writing (November 2020), interest in education for registered nursing practice and numbers of graduations have been at their highest levels in the history of the profession in the United States. The COVID-19 pandemic has placed nurses and other frontline health workers and the importance of their work in the spotlight and has highlighted the demands and risks nurses face. Further, the long-term economic impact of the COVID-19 crisis on healthcare delivery and the job market for nurses is unclear. All of these factors could have a strong influence on nursing's desirability as a career over the coming years.

Personal Choices Influencing Entry and Exit from the Profession and Specialties

A host of personal and economic factors affect nurses' decisions to work in nursing and particular specialties in hospitals and healthcare at large. Put simply, even if they do not always express it in such terms, nurses, like all types of workers, will make choices about how they spend their time and will attempt to find the most rewarding use of their time. Choices include the most congenial or best remunerated work in nursing, another field, or not working at all.

Economic conditions in society at large can have a significant impact on nurses' willingness to work or to accept specific types of jobs. In leaner financial times, especially when families might need income, more nurses tend to be willing to work and to work longer hours. Some seek out the best paying work or consider less well-paying or less prestigious nursing work when no other positions are available. In contrast, in more prosperous economic times, considerations about the desirability of different workplaces and specialties or even the attractiveness of work and workplaces outside nursing can change, as can perceptions about whether it is necessary to work at all.

Increasing gender and age diversity have been characteristics of nursing for some years. However, in the past, the substantial number of women of childbearing age in the nurse workforce and the accompanying challenges in securing good childcare led to patterns of departures and trends towards part-time employment linked to maternity leaves and childrearing. With the aging population in the United States and other countries and accompanying aging of the nurse workforce, age-related decisions around retirement timing, sometimes connected with family caregiving responsibilities for spouses, partners, and older relatives, appear to more commonly influence decisions about when to stop work.

Gender balance in the field may serve as either an incentive or a disincentive for entering or staying in the field. Several wage-related structural inequalities may play a role for working women. Blau and Kahn (2017) offer a partial explanation that nurses' compensation has often been below that of people doing work of comparable complexity in fields where there is a more even gender balance. Wage compression in nursing is well documented (entry salaries may be attractive but increases throughout a career may tend to be small) (Greipp 2003), which might serve as a disincentive for entering or staying in nursing over the long run.

Other difficult-to-quantify forces influence nurses' personal choices about entry and exit from nursing. The nursing profession's public image as noble but selfless, unintellectual, "dirty work" may influence nurses' compensation and ultimately pose a challenge in recruiting and retaining nurses (Girvin et al. 2016). The physical and emotional demands of nurses' work and a perception that employers and the public expect nurses to overextend themselves may affect nurses' decisions to leave particular jobs or to abandon the profession altogether. Nursing work safety can play a role in individuals' decisions regarding continuing in the field or retiring. Examples of work safety issues include the stresses and risks highlighted by emerging infectious diseases such as COVID-19 or particularly difficult times in healthcare when there are cuts in positions.

Geographical Mobility Regionally, Nationally, Internationally

In general, except for those entering the profession with the specific intent of emigrating to other regions or countries, nurse labor markets tend to be local in the sense that prospective members of the profession are likely to attend nursing school in the same communities where they hope to live and work. Barring somewhat unusual circumstances, they tend not to leave. However, where salary differentials between urban and rural areas are large, nurses may choose to keep their homes in rural areas while commuting to work in regions where they can earn more (see, for instance, Skillman et al. 2006). Over the years, in the United States, nurses' movement to areas of opportunity and away from regions seen as having fewer or lower paying positions has been responsible for the workforce's shape and distribution. In the coming decades, population will shift away from current nurse-dense regions of the United States and towards areas where nursing education programs are less plentiful, and lower salaries (the Southeast and Southwest) are projected. These shifts could potentially lead to significant nurse shortages (Auerbach et al. 2017).

Nurse migration from lower to higher income countries has been a long-standing phenomenon that has played a significant role in smoothing out imperfect balances between local needs for nursing and domestic nursing education outputs in the United States. Impacts on migrating nurses' home countries and their healthcare systems are mixed. Concerns about "brain drain" from societies that invest heavily in nurses' education are offset somewhat by economic benefits to these nurses, their families, and their larger societies (Kingma 2006).

Demand

Demand for nurse labor has a technical sense and meaning quite different from generally understood or intuitive "need" for nursing services. In workforce analysis, demand is the number of work hours an employer is willing to hire based primarily on wage levels and the expected revenues the employer expects to generate; it is often thought of in terms of *unmet* demand rather than perceptions of the adequacy of the number of nurses in practice in the eyes of nurses, patients, other healthcare system stakeholders, or society at large (US DHHS 2017). Open positions are, of

course, very different from the level of confidence of clients and those working in healthcare organizations where a sufficient number of nurses are working, and from unaddressed needs for nursing services in the population (as defined by numbers of people experiencing specific health problems or needs for healthcare services). The size and qualifications of a workforce that would be in a position to deliver tested and validated nursing interventions to the public at levels and in a manner that would foster optimal patient outcomes have never been determined. Open unfilled positions for nurses in healthcare organizations are thus used as a proxy for societal needs.

The creation and maintenance of nursing positions result from management decisions that consider local and higher level health system forces. The population characteristics of a particular region in terms of age, gender, and similar factors influence health needs and the resources and insurance coverage of the population for paying for care. The proportion of patients in a region served by a particular healthcare organization (market share) and the models of care being used also drive decisions about the numbers and types of nurses or nursing workers to be hired. "Models of care" is a broad term that refers to the formal and informal principles regarding which types of nurses and related workers provide care and how they work together to provide services in particular settings (Dubois et al. 2013). For instance, some institutions and settings predominantly or exclusively employ RNs (and prefer bachelor's educated RNs). Additionally, regulatory forces (such as legislated mandatory minimum staffing ratios), agency and unit leaders' visions of care, historical patterns of staffing and models of care, and financial considerations (budget limits) will influence demand.

Supply, Demand, Shortage, and Surplus at Various Levels of the Healthcare System

In simplest terms, a labor shortage occurs when the supply of workers is insufficient to meet demand. A surplus (which translates to underemployment or unemployment of some proportion of a group of workers) is the reverse—it occurs when supply exceeds demand (Greenlaw and Shapiro 2018). Both supply and demand can vary enormously and show dramatic differences even across units or specialties in the same healthcare organization. One unit can experience a very different situation relative to a shortage or surplus than another unit. Pronouncements about supply and demand (shortages, surpluses, or balances of supply and demand) should be normally accompanied by careful qualifiers about where and in what specialties the statements are being made.

Workforce conditions in agencies and organizations tend to be heavily influenced by geographical location. Geography will influence whether multiple employers compete for nurses and new graduates and whether a concentration of multiple employers in a region serves as a draw to attract nurses to that area (Skillman et al. 2006). Where there are variations in compensation and other management practices, differences may be seen in nurse supply across agencies within

a single community. However, a limited supply of new nursing graduates coming into a local employment market in a region and the attractiveness of an area for nurses and their families can lead to community-wide shortages. The desirability of working in a particular specialty and the history and reputation of the particular unit or clinic within a facility can play important roles in whether there are an adequate number of qualified individuals available to fill open positions. States, provinces, and territories (and of course entire countries) are often affected by common economic conditions that can influence the supply of new nurse graduates and the ease of recruiting and retaining nurses. Compared to the local cost of living, nurse compensation can have important influences on nurses' recruitment and retention. Navigating immigration and employment arrangements as well as laws and regulations surrounding licensure, even though nurses can seek licensure in new jurisdictions when they migrate, can be complicated and time consuming (Shaffer et al. 2020). As for all professions, it is common to think of national and state/provincial/territory boundaries as imposing important constraints on nurse workforce supply.

Global or worldwide nurse shortages—defined as poor working conditions and the inability of nursing education programs in all countries to keep up with demand—lead to shortfalls of nurses in relation to population health needs (WHO 2020). However, because there are many differences across countries in the titling and preparation of nurses, how nurses are used in delivering services, and the multiple barriers to nurses' extensive international mobility, a truly international market for nurses and their labor does not exist. Instead, similarities in the general forces affecting nurse workforces across countries make sharing experiences across world regions informative and point to advocacy opportunities at a global level.

Supply, Demand, Shortage, and Surplus in Specific Settings

Acute Care Hospitals and Hospital Specialties

In inpatient acute care hospital settings, nursing care requires a large nurse workforce tailored to the delivery of intense and complex interventions and close monitoring for potentially life-threatening complications of illnesses and treatments. Nonetheless, only approximately 60% of American RNs are currently employed in hospitals (US DHHS 2019)—the downward trend in hospitals as an employment setting has been observed for several decades (US DHHS 2010, 2019). Hospitals and specific settings within them employ large numbers of nurses around the clock. The need for night shift and weekend coverage creates unique pressures on nurses and managers. It can drive nurses at specific points in their lives to consider settings or roles that do not require varying work hours and schedules or working at times that are at odds with their friends and family's off-hours. Hospital practice is characterized by bureaucratic control, including extensive procedures, systems, rules, and hierarchical relationships between nurses and nursing workers with other health disciplines and professions and across different patient care specialties. Concerns have been raised that hospitals may not be employers of choice relative to

nonhospital settings for better educated healthcare workers who value autonomy (AHA Strategic Planning Committee 2001).

The general principle of local conditions being fundamental in nurse workforce analyses holds true even within a single type of hospital (for instance, pediatric hospitals generally have much less difficulty recruiting and retaining staff than general hospitals). There can be significant variations in supply and demand factors across specialties and units, even within the same institution. Certain specialties may be particularly attractive by virtue of pride in serving a specific population (for instance, children, newborn babies, patients undergoing cardiac surgery, or veterans). Many specialties come to feel like "tribes" of like-minded or similarly motivated nurses and other healthcare workers. However, it can be difficult to separate "personalities" and rhythms of work in different specialties from the benefits of working under strong and supportive managers and feeling colleagueship with a team of nurses and other workers and professionals. Even though nurses working in a new setting (even in the same specialty) generally require onboarding training and orientation, nurses often change specialties over their professional lives without further formal education, which is not common in the other health professions and occupations. This phenomenon might be a cause for optimism as needs for hospital care and demands for nursing services within hospitals shift in the coming years.

Considerable speculation, assumptions, and debate surround particular nursing specialties' desirability from a recruiting and retention perspective. Intuitively, in critical care units and emergency departments, where nurse-to-patient ratios are low to permit close monitoring and rapid response to patients at the highest risk of death, the work is most likely to exhaust and overwhelm nurses physically and emotionally of any of the hospital specialties. However, empirical research suggests that critical care units and emergency departments are not necessarily high-stress, high-turnover settings for nurses to the extent that might be assumed (Hooper et al. 2010; Mallidou et al. 2011). The most stressed, burned-out, and dissatisfied hospital nurses tend to be those working in less technologically intensive areas and are seen as less prestigious or desirable, such as gerontology or general medical and surgical units. Patient volumes on these units may be quite high, and the workload involved in caring for each patient may be quite heavy as well. These units sometimes serve as the usual first entry point of nurses (particularly new graduates) into a particular hospital workforce. Furthermore, nurses on medical-surgical or general units may work with many different medical trainees and physicians and surgeons creating stressors, instead of a small and stable team of physicians who form high-quality working relationships with the nursing staff. Various initiatives over the years, for instance the Robert Wood Johnson Foundation's Transforming Care at the Bedside (TCAB) project, recognized the specific challenges of these nurses and specifically targeted work conditions for nurses on medical-surgical units (Needleman et al. 2016).

Hospital nurse workforces, especially in major metropolitan areas, are characterized by a sizable segment of workers interested in career mobility. The goal of these nurses is often to work for a specific amount of time on a particular type of unit on a path towards more advanced training or other specialties (or work roles other than frontline hospital staff), or to experience city life or work in a large hospital

immediately after graduation. There is a tradition of this career path in American nursing and other English-speaking or European countries. For instance, several years of critical care experience are typically required for admission to nurse anesthesia graduate programs, leading to work in American nurses' best paid specialty. Therefore, a certain degree of turnover appears to be built into positions in particular specialties, which has various implications in terms of supply, demand, and composition of the nurse workforce in these areas. Like the United States, a certain level of turnover related to career mobility influences workforce supply and demand in other countries.

Subacute and Rehabilitation Settings

Care in subacute and rehabilitation settings is characterized by decreased patient intensity and risk of deterioration relative to hospitals. However, there is a need for nurse-delivered treatments and nursing services that are too risky or burdensome for patients to receive in their own homes. Patient needs can be extremely variable in these settings and include the need for specialized physical and psychological healthcare needs (for instance, rehabilitation following spinal cord or brain injuries). There is also the possibility of rapid intervention in the event of life-threatening complications (Dombrowski et al. 2012; Neatherlin and Prater 2003). Generally, these settings are characterized by heavier RN patient loads than acute care hospitals and greater involvement of nursing personnel other than RNs in care delivery. The increased regionalization of the highest intensity acute care settings and financial considerations have led to expansion of rehabilitation and subacute facilities and nurses' roles within them.

Long-Term Care

A majority of individuals (elderly or not) living with serious chronic physical and mental health conditions reside in their own homes and receive services in institutions and clinics or less commonly receive home visits from providers. However, a certain proportion is admitted to residential settings. The broad term for such facilities is "long-term care," including many subtypes of institutions within this category of agencies. Certain features are common to these facilities: they are staffed predominantly by unlicensed/unregulated workers, with licensed practical and registered nurses overseeing the care provided by unlicensed workers or aides (Reinhard and Young 2009). The licensed nurses also deliver treatments unlicensed workers are not permitted to perform. Financial pressures on these facilities are often high, and salaries tend to be lower than in acute care and other settings. Baccalaureate-educated RNs tend to be less common in long-term care (US DHHS 2010; Jones et al. 2019). The technological intensity of care can vary widely, as can the patient populations' age ranges and the types of underlying health conditions that have led to their admission. Stressors for the nurses and nursing workers in these settings include heavy demands in physical care giving. Many residents have limited mobility and a limited likelihood of regaining independence (and in fact high likelihood of deterioration). Stressors in practice include low satisfaction of residents and their families with residents' conditions and/or the care being received.

Community-Based Care

Many healthcare services are provided on an episodic rather than a continuous basis to individuals who live in their own homes (or otherwise phrased, who are "community dwelling"). Depending on definitions and classifications being used, outpatient clinics where nurses may or may not work in cooperation with other types of health professions (and that may or may not physically or organizationally be part of a hospital) may be considered as community settings along with settings such as home health and public health services. Community settings are often characterized by independence—in many cases, nurses have minimal contact with other nurses as peers or managers, and nurses see patients alone for the most part. There can also be high demands for productivity and sometimes less favorable pay and quite variable working conditions and safety risks (De Groot et al. 2018; Friedberg et al. 2017; Markkanen et al. 2017).

In anticipation of some of the shifts in the US healthcare system described in the last sections of this chapter, experts have advocated for many years that students should spend more clinical education time in community environments (Wojnar and Whelan 2017). To this end, the Health Resources and Services Administration has funded demonstration projects to universities for developing educational models that provide baccalaureate students with more clinical experience in community settings (Vanhook et al. 2018). With these evolving community roles, it is hoped that better population health outcomes and more meaningful and satisfying work for nurses will emerge.

Other Settings

For many generations, nurses have practiced outside settings that are traditionally thought of as healthcare settings. These include clinical research, various roles in health insurance, sales and marketing of healthcare-related products, and community settings that do not operate specifically or primarily as healthcare delivery sites. In the past, all of these settings have been seen as competitors for hospitals in recruiting nurses. As the healthcare system continues to evolve, the nontraditional settings may increasingly become more common employers of nurses. Further, in the future, some of these practice areas may become venues for delivering patient interventions.

Managing Supply and Demand of the Nurse Workforce

Recruitment Efforts

Bringing nurses into jobs in a region or a specific setting generally involves offering sufficiently attractive working conditions and compensation (salary and benefits packages) to qualified applicants. Considerable debate regarding nurses' motivations has surrounded the importance of salaries over a positive work

environment. Historically, nursing has followed a pattern where there are times of supply-demand equilibrium with relatively flat or stable salaries. These stable periods are followed by periods of shortage where salaries increase sharply to expand supply by bringing people into the field or encouraging them to come back to work. Various agencies' compensation strategies to recruit new staff have to be balanced against potential impacts on the morale of experienced staff who may watch newcomers earn comparable or even higher salaries on hire despite being recent arrivals to the field or an organization. Non-salary-related factors may also play a role in recruiting. For example, when advertising positions or speaking to prospects it is prudent to call attention to specific potentially desirable aspects of a particular city or community or offer benefits that compensate for less desirable aspects of a setting or position (e.g., housing subsidies for expensive real estate markets or salary differentials for offshifts). Among the non-salary benefits that may be attractive to recruits are subsidies for pursuing educational opportunities in line with their career ambitions (Gooch 2016; Marshall et al. 2017). Nurse residency programs to facilitate the education-to-work transition for new graduates can be a draw, and advancement pathways or career tracks ("career ladders") can be appealing to both new graduate nurses and experienced ones.

Retention Efforts

When nurses stay in place, it is generally assumed that various conditions in their current positions make departure less attractive than staying. A collective bargaining agreement or human resources policies, salary advantages, job security, and preferential scheduling may be associated with longevity in a particular institution, especially for longer term employees. Furthermore, "social capital" that nurses accrue over time—familiarity and friendship with fellow staff members, as well as fluency with policies, procedures, and routines—can encourage nurses to remain in their positions. Compensation on a par with that offered by other institutions within comparable commuting distance for nurses may also play a role in retention. Opportunities to transfer to other roles or work in other practice areas within a larger organization can also influence willingness to stay. A large body of literature and commonly held wisdom speak to the impact of organizational unit-level working conditions on retention (Lake et al. 2019; Petit Dit Dariel and Regnaux 2015; Wei et al. 2018), especially factors linked to manager competence and relationships with staff. Examples include manager provision of meaningful feedback, fairness, and equity in the treatment of staff, presence and attention to working conditions and interpersonal relations among staff, as well as a sense that the manager seeks to bring out the best in their setting's staff (Roche et al. 2015). Some go so far as to speak of nurse managers as the "chief retention officers" in their facilities (Anthony et al. 2005). Chapters 4 and 13 provide a more in-depth discussion of unit and organizational level working conditions.

Diversity Considerations

Addressing diversity challenges in the workforce involves seeking out and hiring workers who represent the communities that a healthcare organization serves (inclusion) and setting up environments where people of various backgrounds feel a sense of belonging to the healthcare organization's community. Although chapter space limitations preclude a full discussion of diversity considerations, many resources are available, including works specific to healthcare (Dreachslin et al. 2013). Several points bear mention here. In nursing, there is an underrepresentation of men and racial and ethnic minority groups. Relatively small but striking increases in male nurses and nurses from nonwhite and Hispanic backgrounds have been documented in recent decades by several researchers and organizations (US DHHS 2019; Zangaro et al. 2018). Similar trends have been seen in many but not necessarily in all countries. However, beyond gender, race, and ethnicity, efforts to recruit and retain staff showing a diversity of gender identity, sexual orientation, religious and spiritual beliefs, disability and ability, socioeconomic status, and national and regional origin have received attention recently.

After promoting entry to nursing education programs across individuals with varying backgrounds, enhancing the experience of members of underrepresented groups in training, and when entering the practice field after graduation, as well as offering high-quality, welcoming onboarding to nursing positions and ensuring positive ongoing experiences within positions are all considered critical. Strategies can include efforts to make sure about the opportunities to discuss both positive and negative experiences with peers of similar backgrounds and engaging individuals from underrepresented groups in planning outreach, recruitment, and retention efforts.

Arguments for efforts to increase diversity in the nurse workforce generally relate to the importance of having the workforce reflect the populations served by nursing, in a manner that spans specialties and roles (and including education, management, and staff development). Above and beyond wanting to spread opportunities for stable and well-paying nursing work across various groups, patients, families, and trainees need to see themselves and the groups they identify with represented among those providing care to have confidence that they will be treated with fairness and respect. Furthermore, workforce diversity enhances the likelihood that the full range of points of view, needs, and experiences of various groups are incorporated into care decisions regarding specific patients and families, as well as policies at institutional and higher levels in the healthcare system.

Inevitably, nurses will routinely work with individuals, families, and communities with different characteristics and experiences from their own, even if efforts to recruit and retain nursing staff from a diversity of backgrounds are successful. In addition to the inclusion of relevant prelicensure and specialty education programs, continuing professional development can also address cultural awareness and humility (Foronda et al. 2016). Sometimes, contrasted with "cultural competence," avoiding stereotypes and having awareness and humility are often understood as sensitivity to issues that might arise for people of different backgrounds within the

healthcare system. Realizing that missteps are an important part of working with differences and can be handled respectfully and non-defensively is essential. Language training adapted to local needs and formal and informal methods for building cultural fluency or familiarity with customs and realities in groups that nurses come into frequent contact with can also be helpful. Building self-awareness of the influence of a nurses' background and history with encountering differences and offering communication strategies for building trust and helping relationships with people from different backgrounds are also crucial. Together, efforts to address diversity issues will likely prove increasingly important with increasing awareness of historical and current injustices and demographic trends worldwide.

Age and Generational Differences

Age or generation is not always included in diversity factors in discussions of the nurse workforce. However, currently, in many countries, the nurse workforce spans a wide range of ages (from early 20s to 70s or older). It includes at least four different generations (i.e. distinct groups of individuals who were born within similar timeframes and who therefore experienced major life milestones alongside a common set of historical events) (Christensen et al. 2018). The experiences of passing from kindergarten through high school and higher education and nursing education have been quite different across generations, as well as many aspects of personal, family, and work-life. Conflicts can and do arise in the workplace as members of these generations interact, especially when experiences with coworkers contrast with expectations. The technology used in practice settings has increased markedly. Nursing work's relationship to health information technology, including medical devices with digital interfaces, has created challenges for nurses from older generations (see Chap. 6). Younger nurses enter healthcare with different socialization and much different preparation for their work and expectations of the workplace than their older colleagues. They may find formality and deference in interactions that peers, superiors, and patients from older age groups are accustomed to clashes with their habits and inclinations. Attention to possible struggles and challenges nurses of different age groups can encounter, the potential for conflict in work relationships, and the need for continued professional development will continue to be essential elements for ensuring that nurses can meet the clients' needs and adapt to accelerating changes ahead (Wolff et al. 2010).

Nurse Education and the Entry to Practice Debate

Nursing history in the United States is marked by (a) shifts in the institutions where education to enter practice occurred (away from hospital diploma schools to junior colleges and more recently from junior colleges to institutions offering 4-year and higher degrees) and (b) progressive expansion of career opportunities for nurses that require baccalaureate or higher degrees. It is beyond this chapter's scope to explain

the forces, the debates, and the implications of these movements in detail. However, the continued move towards 4-year (baccalaureate) education as the preferred credential for entry to practice and considerable pressure on nurses educated at other levels to earn a bachelor's degree in nursing after initial licensure have been driven by the quest to increase the nursing's social standing and position in the healthcare system (Goode et al. 2001; IOM 2011; Zittel et al. 2016). In the United States this move has taken the form of changing licensure requirements through state-level legislation, for instance, in New York (Menzik 2017). More commonly, formal or informal policies for preferentially hiring RNs with bachelor's degrees at particular institutions have been seen for quite some time. In other countries, moves to reform preparation for nursing have addressed educational programs themselves (Clarke and Patrician 2001). Whether the elevation of educational credentials required for entry to nursing practice has been a positive force in promoting equality of opportunity and achieving a diverse workforce is a complicated question. The geographical distribution of bricks-and-mortar bachelor's and higher level nursing education is not uniform across the United States. Thus, inequities in higher education opportunities can influence the shape of the nurse workforce, even in an increasingly digital era of program delivery. Financial, physical, and digital access remain of concern. Also, questions remain regarding elevating education requirements for generalist and advanced nursing practice. Will higher requirements meet the public's needs in a new era of healthcare? Or is the move towards higher degree preparation a form of credential inflation that primarily benefits higher education institutions rather than students and their families or society (Clarke 2016)? Suppose the practice field underuses the knowledge and skills of nurses educated at the bachelor's degree or higher levels. What implications does this underutilization have for future jobs (numbers and position types) and management strategies in the practice setting? The questions merit consideration in designing educational programs moving forward.

Dealing with Impacts of Workforce-Related Regulatory Efforts Such as Minimum Staffing Ratios

At a time of widespread nurse shortages, health system turbulence, and a refocusing of attention on patient safety, policy advocacy in California led to the passage of minimum staffing ratio legislation (AB 394) in 1999 that took effect in 2004 (Health Facilities 1999). This legislation mandated the development of a set of staffing guidelines for various hospital specialties through a negotiation process between labor and management representatives, and ultimately led to implementing minimum nurse-to-patient ratios in hospitals to be maintained at all times (Chapman et al. 2009). There are two fundamental stances on staffing ratios. One stance is that government regulation is essential to prevent managers and executives in hospitals and other healthcare institutions from putting dangerously low staffing levels in place that jeopardize patient and nurse safety. This argument draws on the mostly correlational and cross-sectional research literature linking nurse staffing with patient outcomes (Griffiths et al. 2016). The opposing stance is that staffing ratios

are a blunt tool that constrains managers, executives, and staff unnecessarily while creating needless expense. Staffing ratios can create unintended consequences like the closure of units and even entire institutions and worsen working conditions for nurses (Buerhaus 2010). The anti-ratio stance commonly references the subtleties of the operations of different hospitals and units. There is no direct evidence of the effectiveness of minimum ratios on patient safety in jurisdictions that have implemented them (Serratt 2013).

In terms of the impact on the workforce, a few general statements can be made about staffing regulations. The drafters of such regulations assume that a sufficient number of nurses are available and willing to work for the wages on offer and that healthcare organizations can afford these wages but need some inducement to do so through the imposition of mandatory ratios (Gordon et al. 2008). Depending on the gap between staffing levels in place and the levels required to meet ratios or conditions, there is certainly the possibility that ratio legislation or requirements can increase demand for nursing staff in a particular institution, region, or country (and thus create shortages) (Buerhaus 2009; Douglas 2010). Also, adopting and enforcing minimum staffing ratios might render specific regions more attractive and help address recruitment and retention problems. If this turned out to be accurate, arguably, ratio legislation could worsen shortages in non-ratio-regulated regions. It is important to note that staffing ratios represent an understanding of healthcare facilities' operation, including models of care, at a particular point in time by those drafting them. Ratios may force nurses and managers to adhere to staffing patterns that are not practical or relevant for patient care in alternative settings or when technology is used to guide or enhance the provision of services.

The Future of the Nurse Workforce

Despite many nursing practice traditions that have endured across time and countries, enormous and seemingly ever more rapid social, economic, and technological changes continue to shape how nurses deliver interventions to patients. With these changes have come shifts in both the nature of nursing work and the demand for nurses as employees of healthcare organizations that are expected to continue into the next years.

The various stakeholders in healthcare systems are faced with a nearly constant set of dilemmas involving balancing costs against care quality and access to services. Meeting public expectations regarding the availability of high-quality and affordable services has been a growing challenge. Organizing healthcare workers and resources in ways that address the complex nature of health is another challenge. For 50 years, there have been repeated calls for an increased emphasis on enhancing health enhancement and disease prevention, as opposed to curative treatments for preventable illnesses and long-term support for chronic diseases. There have also been calls for a return to community-based (over institution-based) delivery of services. Indeed, over recent decades greater numbers of nurses have come to work outside hospitals and inpatient institutions in special roles. In industrialized

countries, many of these nurses also have graduate training (such as nurse practitioners). They have taken on the provision of more and more services to promote wellness, prevent disease, and manage chronic illness complications.

Moving forward, as care affordability continues to be of great concern, governments and insurance carriers will look to care providers to take a more purposeful and focused role in reducing illness burden and improving the efficiency of resource use. Therefore, they will likely either expect or insist on greater use of technology and changes in delivery methods. Nurses and the interventions they provide may well have an expanded role in the healthcare system. The numbers of nursing positions may either grow or diminish, but the roles they perform will undoubtedly change. Perhaps nurses will increasingly collaborate with lesser trained workers and technicians (often in an arrangement involving delegation of responsibility for tasks to non-nurses), as well as rely more heavily on technology and devote more time to activities that require the full breadth and depth of their training. Collaboration between professionals and nonprofessionals, at one time discussed chiefly in connection with expanding access to care in emerging economies, may become increasingly common across health professions and result in further task shifting of work from other health professions to nursing and shifting work from nursing to technicians and unlicensed workers of various types (WHO 2007; WHPA 2008).

Technology has already played an unquestionable part in the evolution of nursing roles over time. For instance, at one time, blood pressure measurement using a cuff and stethoscope was restricted to physicians (Sandelowski 2000). Likewise, the drawing of blood and insertion of IV catheters were off-limits to nurses—it is now a standard part of US hospital nursing practice (although not necessarily internationally). In general, as new technologies emerge, professions tend to loosen their hold on some older ones. Various types of point-of-care technologies have increasingly made a wide array of assessments and therapeutic interventions possible and affordable on a large scale and with great consistency (see Chap. 6 for an example of intravenous pump integration into the electronic health record to improve care and decrease errors). In recent years nurses have also been playing prominent roles in helping individuals and families incorporate technologies in their daily lives as they manage their health at home.

Over the years, various commentators have mused that nursing and other health professions were likely immune from significant changes in demand related to technology or automation because of the need for direct observation, judgment, or face-to-face human contact. Of course, robotic technology to assist with repetitive tasks and improve precise manipulations in surgical settings has broken down some of these assumptions. While not widespread in healthcare yet, the use of robots or avatars to provide companionship or emotional support is no longer alien—it has been operationalized in limited contexts (for example, see Chi et al. 2017). For decades experts discussed the promise of information technology to improve the quality and consistency of expert judgments; now, artificial intelligence (AI) approaches are increasingly automating what had previously been seen as work reserved for live humans acting in real time. Technology is changing the nature of work performed by live humans across many fields, including healthcare (Jesuthasan

and Boudreau 2018; Susskind and Susskind 2015). Reconsideration of the work of nurses in light of these developments has only just begun.

An example of emerging technology, telehealth, was once assumed to be a fallback strategy for situations where limited numbers of trained professionals or unworkable distances for face-to-face contacts rendered it impossible to provide services any other way. Many assumptions about the safety or privacy of interactions occurring at a distance have either been addressed or have faded. Telehealth was already growing in 2018 (US DHHS 2019) before the COVID-19 crisis, with one in three nurses indicating that telehealth technologies were in use in their workplaces. Telehealth has advanced rapidly as a healthcare delivery strategy in the current COVID-19 pandemic (as of the writing of this chapter in 2020) (Brody 2020), with cost considerations and patient preferences as well as practical constraints driving its adoption.

In the next years, nurses may increasingly serve as initiators of service, troubleshooters of problems, and even designers of systems in which patients receive most care in their own homes. The majority of services may be primarily delivered with technology assistance or by nonprofessionals and technicians. Given that nursing education emphasizes the delivery of direct care in institutional settings, rather than the management and coordination of care in community settings, without significant changes in nursing education and a willingness of clinicians and managers to engage with the evolution of services and changing patient and health system expectations, the deployment of individual nurses or nurses as a collective could decrease significantly in the next years without action. Perhaps the most significant losses patients and families would feel with a decreased presence of nurses in the healthcare system would be reduced expertise in and sensitivity to patients' and families' experience that nursing as a profession has historically brought to the delivery of health services. A preferred future would see an evolution of nurses' roles in line with the patient and health system outcomes. The involvement of nurses in care aims to foster healthcare system changes in the coming years to improve access, affordability, and quality of care. Policy decisions at multiple levels regarding the nurse workforce supported by data indicating which types of nursing involvement are essential to patients will be necessary to ensure enough nurses with the proper preparation to carry out their roles in a renewed system.

References

American Association of Colleges of Nursing (2019) Nursing fact sheet. https://www.aacnnursing.org/news-Information/fact-sheets/nursing-fact-sheet

American Hospital Association (AHA) Strategic Policy Planning Committee (2001) Workforce supply for hospitals and health systems. Trustee 54(6):suppl 4 p. following 6

Anthony MK, Standing TS, Glick J, Duffy M, Paschall F, Sauer MR, Kosty Sweeney D, Modic MB, Dumpe ML (2005) Leadership and nurse retention: the pivotal role of nurse managers. J Nurs Adm 35(3):146–155

Auerbach DI, Buerhaus PI, Staiger DO (2017) How fast will the registered nurse workforce grow through 2030? Projections in nine regions of the country. Nurs Outlook 65(1):116–122

Blau FD, Kahn LM (2017) The gender wage gap: extent, trends, and explanations. J Econ Lit 55(3):789–865
Brody J (2020) A pandemic benefit: the expansion of telemedicine. The New York Times. https://www.nytimes.com/2020/05/11/well/live/coronavirus-telemedicine-telehealth.html
Buerhaus PI (2009) Avoiding mandatory hospital nurse staffing ratios: an economic commentary. Nurs Outlook 57(2):107–112
Buerhaus PI (2010) It's time to stop the regulation of hospital nurse staffing dead in its tracks. Nurs Econ 28(2):110
Canadian Institute for Health Information (CIHI) (2020) Nursing in Canada, 2019: a lens on supply and workforce. CIHI, Ottawa. https://www.cihi.ca/sites/default/files/document/nursing-report-2019-en-web.pdf
Chapman SA, Spetz J, Seago JA, Kaiser J, Dower C, Herrera C (2009) How have mandated nurse staffing ratios affected hospitals? Perspectives from California hospital leaders. J Healthc Manag 54(5):321–335
Chi NC, Sparks O, Lin SY, Lazar A, Thompson HJ, Demiris G (2017) Pilot testing a digital pet avatar for older adults. Geriatr Nurs 38(6):542–547
Christensen SS, Wilson BL, Edelman LS (2018) Can I relate? A review and guide for nurse managers in leading generations. J Nurs Manag 26(6):689–695
Clarke SP (2016) The BSN entry to practice debate. **Nurs Manag** 47(11):17–19
Clarke S, Patrician P (2001) Entry to practice in Ontario. Am J Nurs 101(2):73–75
De Groot K, Maurits EEM, Francke AL (2018) Attractiveness of working in home care: an online focus group study among nurses. Health Soc Care Commun 26(1):e94–e101
Dombrowski W, Yoos JL, Neufeld R, Tarshish CY (2012) Factors predicting rehospitalization of elderly patients in a postacute skilled nursing facility rehabilitation program. Arch Phys Med Rehabil 93(10):1808–1813
Douglas K (2010) Ratios—if it were only that easy. Nurs Econ 28(2):119–125
Dreachslin JL, Gilbert MJ, Malone B (2013) Diversity and cultural competence in health care: a systems approach. Jossey-Bass, San Francisco
Dubois CA, D'Amour D, Tchouaket E, Clarke S, Rivard M, Blais R (2013) Associations of patient safety outcomes with models of nursing care organization at unit level in hospitals. Int J Qual Health Care 25(2):110–117
Foronda C, Baptiste DL, Reinholdt MM, Ousman K (2016) Cultural humility: a concept analysis. J Transcult Nurs 27(3):210–217
Friedberg MW, Reid RO, Timbie JW, Setodji C, Kofner A, Weidmer B, Kahn K (2017) Federally qualified health center clinicians and staff increasingly dissatisfied with workplace conditions. Health Aff 36(8):1469–1475
Girvin J, Jackson D, Hutchinson M (2016) Contemporary public perceptions of nursing: a systematic review and narrative synthesis of the international research evidence. J Nurs Manag 24(8):994–1006
Gooch K (2016) How 5 health systems are recruiting, retaining nurses during an RN shortage. https://www.beckershospitalreview.com/hr/how-5-health-systems-are-recruiting-retaining-nurses-during-an-rn-shortage.html
Goode CJ, Pinkerton S, McCausland MP, Southard P, Graham R, Krsek C (2001) Documenting chief nursing officers' preference for BSN-prepared nurses. J Nurs Adm 31(2):55–59
Gordon S, Buchanan J, Bretherton T (2008) Safety in numbers: nurse-to-patient ratios and the future of health care. Cornell University Press, Ithaca, NY
Greenlaw SA, Shapiro D (2018) Demand and supply at work in labor markets. In: Principles of microeconomics, 2nd edn. OpenStax, Houston, pp 84–92. https://openstax.org/details/books/principles-microeconomics-2e
Greipp ME (2003) Salary compression: its effect on nurse recruitment and retention. J Nurs Adm 33(6):321–323
Griffiths P, Ball J, Drennan J, Dall'Ora C, Jones J, Maruotti A, Pope C, Recio Saucedo A, Simon M (2016) Nurse staffing and patient outcomes: strengths and limitations of the evidence to inform policy and practice. Int J Nurs Stud 63:213–225

Health Facilities: Nurse staffing. California AB-394 (1999). http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=199920000AB394
Hooper C, Craig J, Janvrin DR, Wetsel MA, Reimels E (2010) Compassion satisfaction, burnout, and compassion fatigue among emergency nurses compared with nurses in other selected inpatient specialties. J Emerg Nurs 36(5):420–427
Institute of Medicine (2011) The future of nursing: leading change, advancing health. National Academies Press, Washington, DC. https://www.nap.edu/catalog/12956/the-future-of-nursing-leading-change-advancing-health
Jesuthasan R, Boudreau JW (2018) Reinventing jobs. Harvard Business School Press, Boston
Jones TL, Yoder LH, Baernholdt M (2019) Variation in academic preparation and progression of nurses across the continuum of care. Nurs Outlook 67:381–392
Kingma M (2006) Nurses on the move: migration and the global health care economy. Cornell University Press, Ithaca, NY
Koerner J (1992) Differentiated practice: the evolution of professional nursing. J Prof Nurs 8:335–341
Lake ET, Sanders J, Duan R, Riman KA, Schoenauer KM, Chen Y (2019) A meta-analysis of the associations between the nurse work environment in hospitals and 4 sets of outcomes. Med Care 57:353–361
Mallidou AA, Cummings GG, Estabrooks CA, Giovannetti PB (2011) Nurse specialty subcultures and patient outcomes in acute care hospitals: a multiple-group structural equation modeling. Int J Nurs Stud 48(1):81–93
Markkanen P, Galligan C, Quinn M (2017) Safety risks among home infusion nurses and other home health care providers. J Infus Nurs 40(4):215–223
Marshall J, Edmonson C, England V (2017) Nurse manager's guide to recruitment and retention. HCPro, Middleton, MA
Menzik J (2017) New York governor signs BSN in 10 into law for nurses. https://www.nurse.com/blog/2017/12/20/new-york-governor-signs-bsn-in-10-into-law-for-nurses/
Mitchell PH, Ferketich S, Jennings BM (1998) Quality health outcomes model. Image J Nurs Sch 30(1):43–46
Montag ML (1963) Technical education in nursing? Am J Nurs 63(5):100–103
Neatherlin JS, Prater L (2003) Nursing time and work in an acute rehabilitation setting. Rehabilit Nurs 28:186–190
Needleman J, Pearson ML, Upenieks VV, Yee T, Wolstein J, Parkerton M (2016) Engaging frontline staff in performance improvement: the American Organization of Nurse Executives implementation of Transforming Care at the Bedside Collaborative. Jt Comm J Qual Patient Saf 42(2):61–69
Petit Dit Dariel O, Regnaux JP (2015) Do Magnet®-accredited hospitals show improvements in nurse and patient outcomes compared to non-Magnet hospitals: a systematic review. JBI Database System Rev Implement Rep 13(6):168–219
Reinhard SC, Young HM (2009) The nursing workforce in long-term care. Nurs Clin N Am 44(2):161–168
Roche M, Duffield C, Dimitrelis S, Frew B (2015) Leadership skills for nursing unit managers to decrease intention to leave. Nurs Res Rev 5:57–64
Royal College of Nursing (RCN) (2020) The UK nursing labour market review 2019. Author, London. https://www.rcn.org.uk/-/media/royal-college-of-nursing/documents/publications/2020/april/009-135.pdf?la=en
Sandelowski M (2000) Devices and desires: gender, technology, and American nursing. University of North Carolina Press, Chapel Hill, NC
Serratt T (2013) California's nurse-to-patient ratios, part 3: eight years later, what do we know about patient level outcomes? J Nurs Adm 43(11):581–585
Shaffer FA, Bakhshi MA, Farrell N, Álvarez TD (2020) Original research: the recruitment experience of foreign-educated health professionals to the United States. Am J Nurs 120(1):28–38
Skillman SM, Palazzo L, Keepnews D, Hart LG (2006) Characteristics of registered nurses in rural versus urban areas: implications for strategies to alleviate nursing shortages in the United States. J Rural Health 22:151–157

Susskind R, Susskind D (2015) The future of the professions. Oxford University Press, New York

U.S. Department of Health and Human Services, Health Resources and Services Administration (2010) The registered nurse population: findings from the 2008 National Sample Survey of Registered Nurses. U.S. Department of Health and Human Services, Health Resources and Services Administration, Rockville, MD. https://data.hrsa.gov/DataDownload/NSSRN/GeneralPUF08/rnsurveyfinal.pdf

U.S. Department of Health and Human Services, Health Resources and Services Administration (2017) National and regional supply and demand projections of the nursing workforce: 2014–2030. U.S. Department of Health and Human Services, Health Resources and Services Administration, Rockville, MD. https://bhw.hrsa.gov/sites/default/files/bhw/nchwa/projections/NCHWA_HRSA_Nursing_Report.pdf

U.S. Department of Health and Human Services, Health Resources and Services Administration (2019) Brief summary results from the 2018 national sample survey of registered nurses. U.S. Department of Health and Human Services, Health Resources and Services Administration, Rockville, MD. https://bhw.hrsa.gov/sites/default/files/bhw/health-workforce-analysis/nssrn-summary-report.pdf

Vanhook P, Bosse J, Flinter M, Poghosyan L, Dunphy L, Barksdale D (2018) The American Academy of Nursing on policy: emerging role of baccalaureate registered nurses in primary care (August 20, 2018). Nurs Outlook 66(5):512–517

Wei H, Sewell KA, Woody G, Rose MA (2018) The state of the science of nurse work environments in the United States: a systematic review. Int J Nurs Sci 5:287–300

Wojnar DM, Whelan EM (2017) Preparing nursing students for enhanced roles in primary care: the current state of prelicensure and RN-to-BSN education. Nurs Outlook 65(2):222–232

Wolff AC, Ratner PA, Robinson SL, Oliffe JL, McGillis-Hall L (2010) Beyond generational differences: a literature review of the impact of relational diversity on nurses' attitudes and work. J Nurs Manag 18(8):948–969

World Health Organization (WHO) (2007) Task shifting to tackle health worker shortages. https://www.who.int/healthsystems/task_shifting_booklet.pdf

World Health Organization (WHO) (2020) State of the world's nursing 2020: investing in education, jobs and leadership. https://www.who.int/publications/i/item/9789240003279

World Health Professions Alliance (2008) Joint health professions statement on task shifting. https://www.whpa.org/news-resources/statements/joint-health-professions-statement-task-shifting

Zangaro GA, Streeter R, Li T (2018) Trends in racial and ethnic demographics of the nursing workforce: 2000 to 2015. Nurs Outlook 66(4):365–371

Zittel B, Moss E, O'Sullivan A, Siek T (2016) Registered Nurses as professionals: accountability for education and practice. Online J Issues Nurs 21(3). http://ojin.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Vol-21-2016/No3-Sept-2016/Registered-Nurses-as-Professionals.html