

Analysis and Forecast of Nursing Care Costs

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Received date: April 20, 2020; Accepted date: May 5, 2020; Published date: May 11, 2020

Citation: Pettingill BF, Tewes FT (2020) Analysis and Forecast of Nursing Care Costs. Trauma Acute Care Vol.5 No.1:78. DOI: 10.36648/2476-2105.5.1.78

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Study Analysis

Since 1970, health spending growth has outpaced the growth of the United States economy as measured by the Consumer Price Index (CPI). In 1970, total national health expenditures as a percent of Gross Domestic Product (GDP) was 6.9%; total national health expenditure in 2018 represented 17.7% of GDP. The recently released National Health Expenditure (NHE) data from the Centers for Medicare and Medicaid Services, after being updated and organized by the Peterson-Kaiser Family Foundation Health System Tracker confirm these figures [1]. Four decades have passed between 1970 to 2020, and the long-term effects of medical inflation versus national inflation can only be compared in constant dollars. In short, the Health System Tracker values use constant 2018 dollars to compare 1970 figures (\$385 Billion) against the present value of 2018 figures (\$3,649 Billion). This means the total national health expenditure in 2018 is 947% larger than it was in 1970.

According to this study, "On a per capita basis, health spending has increased 31-fold in the last four decades, from \$355 per person in 1970 to \$11,172 in 2018. Inconstant 2018 dollars, the increase was 6-fold, from \$1,832 in 1970 to \$11,172 in 2018" [2]. The total health expenditures represent the amount spent on healthcare and health-related activities, including expenditures from both public and private funds.

The Bureau of Labor Statistics (BLS) and the Occupational Employment Statistics (OES) track employment figures and annual wages for the largest group of people employed in the health sector, namely registered nurses (RN) and licensed practical nurses (LPN). The differences in responsibilities are as follows:

According to a 2017 report by the National Center for Health Workforce Analysis, demand for the number of registered nurses (RN) in the United States by 2030 is projected to skyrocket to 3.6 million. In 2017, this same number was approximately 2.8 million. Furthermore, these projections were developed using the Health Resources and Services Administration's (HRSA) Health Workforce Simulation Model (HWSM).

According to their 2017 report, "the HWSM is an integrated microsimulation model that estimates current and future supply

and demand for health workers in multiple professions and care settings. While the nuances of modeling supply and demand differ for individual health professions, the basic framework remains the same. The HWSM assumes that demand equals supply in the base year.

For supply modeling, the major components (beyond common labor-market factors like unemployment) include characteristics of the existing workforce in a given occupation; new entrants to the workforce (e.g., newly trained workers); and workforce participation decisions (e.g., retirement and hours worked patterns). For demand modeling, the major components include population demographics; health care use patterns (including the influence of increased insurance coverage); and demand for health care services (translated into requirements for full-time equivalents (FTEs)) [4].

RegisteredNursing.org educates nurses about current and future trends in their profession. On January 22, 2020 RegisteredNursing.org projected shortages of registered nurses nationwide. In summary, the article states that the Top 5 states with the greatest 2030 shortage of registered nurses will be California, Texas, New Jersey, South Carolina, and Alaska [5].

The BLS lists trauma nursing as a subsection of registered nurses. Trauma nurses have a job outlook of 19% growth rate by the year 2022, or nearly triple the exponential growth identified for RNs by 2030 [6]. On February 27, 2020 RegisteredNursing.org addressed the responsibilities of trauma nurses, i.e. those who receive additional certifications beyond RNs to take care of patients who suffer from acute injury or illness, whether accidental or intentional. Trauma nurses may be involved in care resulting from automobile accidents, assault, gunshot wounds, stab wounds, head injuries, physical or emotional abuse, penetrating injuries, and any kind of environmental injury. RNs need additional certification to work as Trauma Nurses because trauma patients often arrive from an accident scene without any easily identifiable diagnoses and critically unstable; creating a high-stress and chaotic environment in which the trauma nurse needs to act as quickly as possible [7].

To become a trauma nurse, the following forms of education must be completed. First, Bachelor of Science in Nursing (BSN) four-year degree plus an additional two-years of training in a specialized area of trauma or emergency care before an RN can

work as a trauma nurse. Additional certification of the NCLEX-RN licensure is mandatory. A Master of Science in Nursing (MSN) namely, a two to three year program which can be completed online or in-class learning covering a multitude of subjects, including trauma nursing. Finally, a Doctorate of Nursing Practice (DNP) is attained by the top 1% of nurses in this country. For this 1% figure to increase in the future, at least 10% of all BSN graduates have to commit to studying towards an MSN or preferably a DNP within five years of their initial graduation [8].

Depending on the place of employment, RNs can attain career advancement through certifications and credentials.

- Trauma nurses must be certified in Basic Life Support (BLS) and advanced cardiac life support (ACLS) as well. These are courses available through the American Heart Association, but most workplaces also provide these courses.
- The Trauma Nursing Core Course (TNCC) is a two-day certification course that prepares nurses for care of trauma patients. The certification is valid for four years and is offered through hands-on classroom learning and online learning.
- Emergency Nursing Pediatric Course (ENPC) may be required depending on the workplace. Certification they must validate for four years. Students acquire the basic skills for executing medical and pharmacological interventions and be able to recognize medical emergencies in children.
- The Certified Flight Registered Nurse (CFRN) credential for nursing is mandatory for responding to medical emergencies from the air and participating in evacuation and disaster relief. Applicants must possess an active, unrestricted RN license and recommended two years of experience as a flight nurse.
- From all of these credentials, the first nationally recognized certification available for trauma nurses is the Trauma Certified Registered Nurse (TCRN). Testing requirements include possessing an active, unrestricted

RN license; two-year or 1,000 practice hours in trauma nursing (direct or indirect patient care); and 20-30 hours of trauma-specific coursework across the trauma continuum. The TCRN certification is valid for four years.

Poor outcomes are very frequent with trauma patients, and trauma nurses need to handle the emotional strain caused by these poor outcomes. Additionally, the BLS reported in 2015 that 27% of fatalities in healthcare and social service settings occurring in 2013 were due to assaults and violent acts [9].

- care for ill, injured, or convalescing patients or persons with disabilities in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. They may work under the supervision of a registered nurse. Licensing is also required [10]. The majority of immigrant nurses fall in this category because of the lower educational requirements versus the educational requirements of registered nurses.

Key findings of the 2017 report by the National Center for Health Workforce Analysis states: "Thirty-three states are projected to experience a shortage of LPNs by 2030. States projected to experience the largest shortfalls of LPNs by 2030 include Texas, with a largest projected deficit of 33,500 FTEs, and Pennsylvania with a shortage of 18,700 FTEs. In seventeen states where projected LPN supply exceeds projected demand in

2030, Ohio exhibits the greatest excess supply of 4,100 FTEs, followed by California with 3,600 excess FTEs" [11]. But these numbers indicate many states will continue to experience a shortage, not as large however as for RN's (Table 1).

Table 1: Average Salary Increase 2010 – 2030.

Registered Nurse (RN)	Mean Annual Wage	Avg Rate of Change %
2010	\$44,410	
2020	\$77,460	6.37%
2030	\$143,636 (Forecast)	
Lic Practical Nurse (LPN)	Mean Annual Wage	Aveg Rate of Change %
2010	\$41,310	
2020	\$48,501	1.27%
2030	\$55,025 (Forecast)	

Despite the above salary forecasts for 2030, the Centers for Medicare and Medicaid Services forecast that as Baby Boomers age, Medicare enrollment is projected to grow to over 80 million people. Of these aging Baby Boomers, 40% are expected to have diabetes, 43% are expected to have heart disease, and 25% are expected to have some type of cancer. Additionally, the percentage of Medicare beneficiaries with three or more chronic conditions is projected to increase from 26% in 2010 to 40% in 2030. These forecasting figures do not include degenerative and debilitating diseases like Alzheimer's, which accounted for 32% of people over 85 years of age in 2016 [12]. Facing these challenging predictions of 80 million Medicare enrollees by 2030, it is clear that the 3.6 million projected demand for RNs in 2030 will translate into a tragically abysmal ratio of 22 patients for every RN employed [13].

The article concludes by stating: "The retirement of one million RNs between now and 2030 means the years of nursing experience and knowledge accumulated will be lost to the nursing workforce as these RNs exit the workforce" [14]. This is a very important loss because experienced RNs are more likely to be more adept at identifying complications and unexpected changes in patient conditions sooner than younger RNs. Also, experienced RNs can quickly respond to the appropriate treatment interventions.

To make matters more dire by 2030, the American Association of Medical Colleges estimates a physician shortage of between 40,800 and 104,900 because of decreasing working hours, retirement and increasing demand from 80 million Medicare enrollees by 2030. Although the health care reform under the ACA had the main goal of improving the efficiency of the health care delivery system, even aiming to increase the number of certain health care professionals, it is impossible to satisfy the health care demands of 80 million Medicare enrollees by 2030. Private industry hospital workers routinely face hazards related to lifting, moving, or otherwise physically interacting with patients. According to a 2015 study on occupational injuries by the BLS, there are 6.0 cases of occupational injuries per 100 full-

time healthcare workers and this statistic was significantly higher than other industries with physically taxing jobs, such as manufacturing and construction.

In 2014, the average loss per claim settled for hospital workers' injuries was \$15,860 (2011 dollars) [15]. According to BLS, hospital workers suffered 294,000 nonfatal workplace injuries and illnesses in 2014 [16] for which the information was available. Adjusting the average loss per claim settled for hospital workers' injuries from 2011 dollars to 2014 dollars results in a figure of \$16,692.00; thus 294,000 nonfatal workplace injuries would have cost the hospital industry \$4.9 Billion annually (if those cases resulted in settled claims). Furthermore, the buying power of \$15,860 in 2011 is predicted to be equivalent to \$24,458 by 2030. Assuming that the same 'flat' 294,000 nonfatal workplace injuries had occurred, it would cost the hospital industry \$7.2 Billion annually by 2030. This is an unthinkable drain on the health care system.

Additional factors causing challenges for the future nursing workforce by 2030:

- Decreased levels of physical activity, with an increased level of overweight individuals and an alarming rate of obesity. As elderly obesity increases, it is understandable that the projected 2030 figures will be much worse than the current level of 6.0 cases of occupational injuries per 100 full-time healthcare workers.
- Increasing necessity to retain experienced RNs beyond current projected retirement ages. The limited number of Ph.D. educated nurses and a shortage of nursing clinical internships to educate future nurses also restricts supply.
- According to the Health System Tracker, a 21.5 percent cumulative growth per Medicare enrollee spending has been determined in 2018. For Medicaid, a 12.5 percent cumulative growth in enrollee spending in 2018 was measured. Ten years earlier, in 2008, the cumulative growth per Medicare and Medicaid enrollee spending was zero percent [17,18].
- Elderly over 65 average \$11,316 (2016 dollars) in health spending, which represents 36 percent of the share of total spending on health care. Forecasting this figure forward on a straight line trajectory means that the 80 million Medicare enrollees by 2030, this "Elderly over 65" category will incur health spending per capita of \$19,360 (2030 dollars, using only a 4.75% future medical inflation rate annually). By 2030, Medicare will need more than \$1.548 Trillion to service these 80 million enrollees.18 Indeed the future is bleak vis-a-vis RN's, LPN's, MD's, and costs.

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