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EVALUATION OF US AND TAIWAN HEALTH SYSTEM PERFORMANCE:A REVIEW OF THE LITERATURE

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Abstract: The delivery and coverage of healthcare varies drastically country to country. The United States (U.S.) and Taiwan present a case of contrasting healthcare systems from the roots up as one relies on a single-payer system and the other utilizes a multi-payer system. Along with other differences including health status, cost of care, and utilization of care, there are also notable similarities among the two systems. This paper will analyze the similarities and major differences between the two systems. A literature review was conducted to identify the major characteristics of the two systems and report health statuses for the two countries to compare the level of care provided under varying delivery models. Both qualitative and quantitative data was used to draw conclusions regarding the similarities and difference between the U.S.

multi-payer system and the Taiwan single payer national health insurance system. It was concluded that while there are few similarities, especially when comparing the U.S. Medicare and Medicaid programs to the Taiwan National Health Insurance system, there are mainly differences present between the two systems.

Keywords:

Introduction

Across the globe, there are numerous different ways healthcare is mandated and delivered. There has been much debate surrounding which system is the most efficient and effective at delivering high quality, low cost healthcare to the population it serves. Four main types of healthcare systems have emerged as the building blocks for which most developed countries' systems are built upon. These include the Beveridge model, the Bismark model, the National Health Insurance model, and the out-of-pocket model (Wallace 2013). Most countries rely heavily on one of the main four models; conversely, the United States (U.S.) relies on aspects of all four models. While this method has worked in some instances, it hasn't necessarily led to the most successful or innovative way to deliver care. In theory, the best healthcare model is believed to be the one that cares for patients from birth to death as this puts an emphasis on preventative care and, in turn, improves the health of the population while simultaneously reducing costs (Wallace 2013). Two healthcare systems that can provide vastly differing views of each other while still presenting with similar tendencies are the U.S. system and the Taiwan National Health Insurance system.

1. Research Methodology

A literature review was conducted on the various aspects of the U.S. healthcare system and the Taiwan healthcare system. Distinctive characteristics and major features of the two systems were recorded and then analyzed to determine the similarities and differences present between the two countries. Health data and statistics were also used to provide quantitative measures for comparison.

1.1. UNITED STATES HEALTHCARE SYSTEM

The U.S. is among the few advanced nations that does not provide universal health coverage. However, the lack of a single-payer plan allows patients to shop for plans that fit their needs. This has led to patient empowerment and increased awareness of healthcare costs. Conversely, some patients opt out of care they need due to sub-par coverage or inability to pay, negatively affecting patient health outcomes. It is estimated that more than 30.7 million people in the U.S. have no health insurance, further contributing to the poor health outcomes commonly reported (Cohen et al. 2020).

Out of the 37 Organization for Economic Co-operation and Development (OECD) countries, the U.S. stands at 28th position for life expectancy. The average life expectancy at birth of the U.S. population is 78.6 years, lesser than the average of 80.7 years of the OECD countries (America's Health Rankings Annual Report 2020). The 2019 infant mortality rate in the U.S. was 5.8 deaths per 1,000 live infant births ranking 33rd, which is higher than the OECD average rate of 3.8 deaths per 1,000 live births (America's Health Rankings Report 2020). For maternal mortality rate, the U.S. ranked 25th out of 26 OECD countries in 2018 (11 OECD countries did not report data for 2018 on maternal mortality), with an average of 17.4 deaths per 100,000 live births (OECD 2020a).

The U.S. has both public and private health insurance, with the private sector serving as the major source of coverage for the population. As of 2019, a total of 62.1% and 37.4% of the population were covered by private and public health insurance, respectively, and a significant part of population (9.5% which corresponds to 30.7 million people) lacked any type of health insurance (Cohen et al. 2020). Additionally, the per capita costs of healthcare spending has been very high in the U.S. According to the Centers for Medicare and Medicaid Services (CMS). In 2018, it increased by 4.6%, making total spending per capita equal to $3.6 trillion; in the same year, the health care spending was $11,172 per person (CMS 2020). Increase in health insurance costs due to the reinstatement of the health care tax was the primary reason for this rapid increase in the health care spending (CMS 2020).

Throughout its history, the U.S. has had problems with focusing on patient care and excessive spending (Kunnath 2012). While the U.S. has many of the world's best-equipped hospitals and highly specialized physicians, its health care system often falls short of providing the highest quality of care despite spending double the median of industrialized countries at 16 percent of gross domestic product (GDP) (Schoen et al. 2006).

The Patient Protection and Affordable Care Act (ACA)

It has been inferred by researchers in the past that improving the experience of care and the health of populations, as well as, reducing the per capita costs of healthcare are areas where the U.S. healthcare system needs to improve (Berwick et al 2008). Since the implementation of Medicare and Medicaid, improvements were developed to address these areas within the Patient Protection and Affordable Care Act (ACA). The ACA was intended to fundamentally change nearly every aspect of healthcare, and it represents the most significant transformation of the U.S. healthcare system to date (Manchikanti 2011). The ACA launched in 2010 expanding Medicaid to all individuals in families earning less than 133 percent of the federal poverty level (FPL) and provided subsidies to uninsured lower-income individuals (Hofer et al 2011). Before the expansion, only some low-income people met the eligibility criteria, such as children, pregnant women, people with disabilities, and individuals more than 65 years old. The provision of health insurance for everyone was a foundational issue within the ACA since coverage is a major determinant of access to healthcare expanded by the law, which has remarkably decreased the uninsured population of all races in the U.S. (see Figure 1).

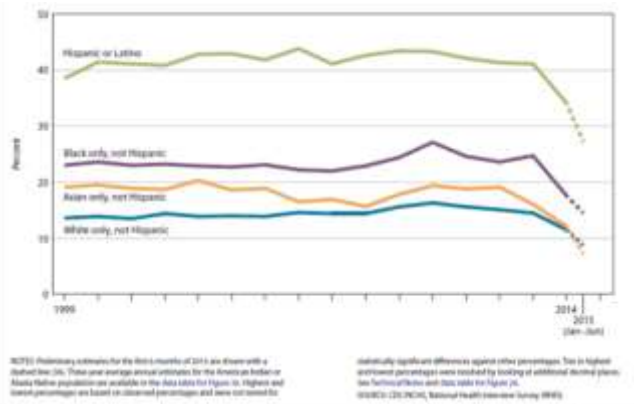

Figure 1. *No Health Insurance Coverage among Adults Aged 18-64, by Race and Hispanic Origin: United States, 1999-June 2015.* National Center for Health Statistics. "Health, United States, 2015: With Special Feature on Racial and Ethnic Health Disparities." 2016. https://www.cdc.gov/nchs/data/hus/hus15.pdf

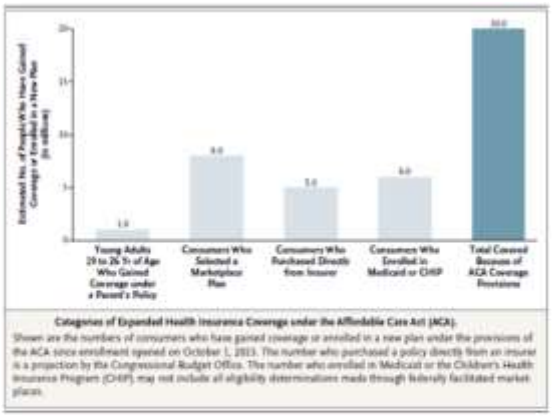

Figure 2. *Categories of Expanded Health Insurance Coverage under the Affordable Care Act (ACA).* Blumenthal, David, and Sara R. Collins. "Health Care Coverage under the Affordable Care Act — A Progress Report." *New England Journal of Medicine* 371, no. 3 (2014), 275–81. https://doi.org/10.1056/nejmhpr1405667.

It is estimated that 20 million Americans were covered as of May 1, 2014 under the ACA which is close to half of the Americans without coverage (44 million in 2013) prior to the enactment of the ACA (see Figure 2) (Garfield et al. 2019). By 2016, the U.S. had reached the

lowest number of uninsured Americans to date; however, the Congressional Budget Office (CBO) in 2017 projected an increase in the uninsured rate for the U.S. as the penalties for not having insurance were repealed. The CBO estimated that in 2018, the uninsured rate would be around 14 million, and, without changes to the current legislation, by 2026 nearly 56 million American's will be uninsured (CBO 2017).

1.2 TAIWAN HEALTHCARE SYSTEM

In 1995, Taiwan implemented the National Health Insurance Act, which created the National Health Insurance (NHI) system. Prior to implementing the NHI system, Taiwan health insurance consisted of separate plans and coverage systems providing insurance for roughly 57% of the population (Wu et al. 2010). During this time, out-of-pocket payments were high. In order to form the NHI system, four previous group insurance programs - the labor insurance, government employee insurance, farmers' health insurance, and fisherman's health insurance - were combined into one comprehensive plan with coverage for all (Wu et al. 2010).

The National Health Insurance Act was implemented with three main objectives: financial sustainability, equity, and efficiency. The implementation of the Act allowed for a public single-payer system, a national global budget, easier accessibility, and comprehensive coverage for its population at lower costs with a higher rate of coverage. The higher rate of coverage is due to the mandatory requirement that all Taiwanese citizens must join their NHI system; foreign guests visiting Taiwan for more than six months are also eligible for coverage (Wu et al. 2010). Additionally, a nationwide research data bank has allowed for planning, monitoring, and evaluation of services provided.

Taiwanese Healthcare Characteristics

Taiwan has distinctive aspects of its health care system, which may not be seen elsewhere. After the implementation of the National Health Insurance Act in 1995, their health system remarkably improved, affecting both rural and urban areas. Out of the three main objectives of the National Health Insurance Act, emerge important characteristics that make Taiwan's health care system unique such as, universal and comprehensive coverage, a public single-payer system, national global budget, and patient satisfaction, which is the one of important quality indicators used for health system performance (Aydin 2018). Additionally, Taiwan has achieved a level of interoperability within its NHI system. By using a patient's NHI integrated circuit (IC) card, or

smart card, healthcare organizations are able to access every aspect of the patient's medical record immediately. The NHI IC card is also the source of billing and payment information for the patient, making all of their medically necessary information available in one place.

Through the NHI system, Taiwan has been able to significantly improve upon the average ratings for life expectancy, infant mortality rate, birth rate, and the percentage of health expenditure on the GDP (Wu et al 2010). As of 2018, the infant mortality rate in Taiwan was 4.2 deaths per 1,000 births, the maternal mortality rate was 12.2 deaths per 1,000 births, and average life expectancy was 80.19 years (Thomala 2019; Textor 2019). While Taiwan is not an OECD country, they would have ranked 29th out of 37 for infant mortality, 30th out of 34 for maternal mortality, and 27th out of 37 for life expectancy in 2018.

The public single-payer system has played a key role in controlling total cost as well as quality. The system's administration decides the fee for drugs, hospitalization, and patient care as a single purchaser playing a role in the market, by which total health expenditure can be standardized and controlled. Likewise, Taiwan has a national global budget method for resource allocation which prevents exceeding budget allocations (Cheng 2003; Lu & Hsiao 2003). This type of budget method helps to control resources, motivate workers to strive to achieve budget goals, and allows for the assignment of accountability (Wolfe & Moran1993). Taiwan has been reporting consistently low costs and spending for care as a result the NHI system and budgeting process they adopted. In 2018, Taiwan spent 40 billion New Taiwan dollars (equivalent to $1,360,706,200 U.S. dollars) on healthcare (Textor 2020). Additionally, Taiwan only spends 6.1% of its GDP on health expenditures, while the U.S. spent nearly 17.5% of its GDP and the average for OECD

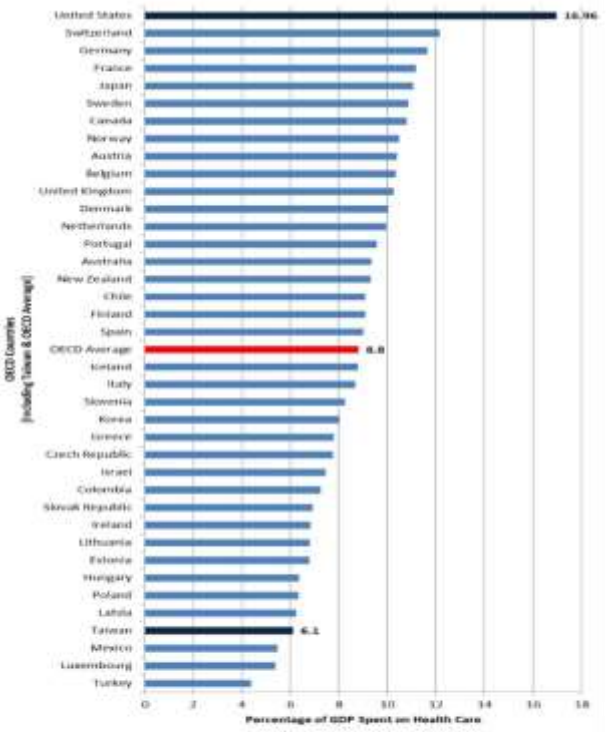

Figure 3. *Percentage of GDP per Country Spent on Health Care in 2018.* OECD. "Health Expenditure." 2019. https://www.oecd.org/els/health-systems/health-expenditure.htm#:~:text=Health%20spending%20as%20a%20share,stayed%20at%208.8%25%20in%202018.

countries was around 8.8% in 2017 (see figure 3) (Cheng 2019; OECD 2019).

The public single payer system and the national global budget methodology in Taiwan have had a remarkable impact on patient satisfaction, which is the one of most important quality indicators used for health system performance. Taiwan's patient satisfaction rate of the national health insurance is more than 80 percent, and there is no evidence to support that patients in the Taiwan NHI system are disappointed or upset about not having a choice regarding insurers (Cheng 2019). However, while the satisfaction rate is generally high in Taiwan, the quality of care, especially for outpatient visits can be lacking at times. This is partially reflective of the culture in Taiwan to take medicine and seek healthcare frequently, which is supported by the NHI system (Wu et al. 2010). The frequency of seeking healthcare has led to a higher than average rate for the average amount of times a patient sees a provider per year. In 2016, Taiwan patients average 12.2 visits per year compared to the OECD average of 6.3 and the U.S. average of 4.0 visits per year (Cheng 2019). The heightened amount of visits subsequently puts a strain on the healthcare system to provide the care demanded. For a provider in Taiwan, it is not unusual for them to see over 50 patients in one morning alone making it increasingly difficult to provide high quality care to every patient (Wu et al. 2010).

2. Analysis

Similarities

While the U.S. and Taiwan health systems primarily represent a comparison of differences, there are some similarities present between the two countries. Even though Taiwan, statistically,

has better health measures for life expectancy, maternal mortality and infant mortality, when ranked with the other OECD countries, they ranked comparable to the U.S. (see Figure 4). Additionally, Taiwan and the U.S. both struggle with disparities and barriers to care in rural areas. This has led to physician shortages in both countries, with more physicians present in the heavily populated areas instead of the rural or remote towns. Comparatively, the ratio of physicians per 1,000 people in 2015 was 2.6 for the U.S. and 1.7 for Taiwan; the OECD average was 3.3 physicians per 1,000 people (Cheng 2015; The World Bank 2018).

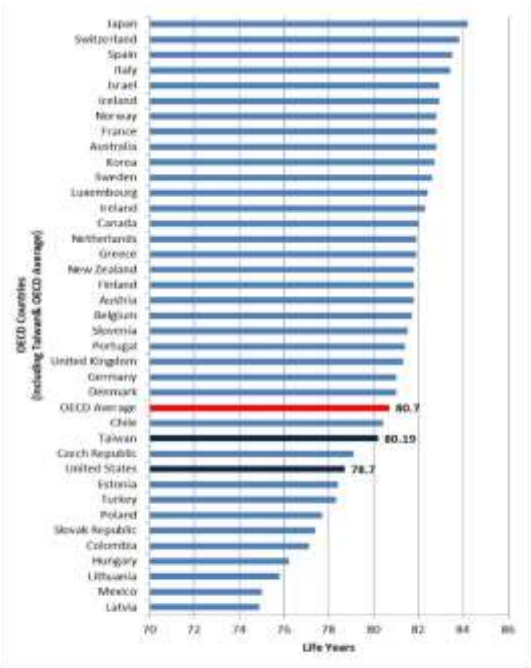

Figure 4. *Average Life Expectancy per Country in 2018.* OECD. Life expectancy at birth (indicator). 2020. DOI: 10.1787/27e0fc9d-en (Accessed on 25 July 2020)

Additional similarities can be found in the structure and formation of healthcare in Taiwan and the U.S. Almost all privately owned hospitals in Taiwan are not-for-profit, as is the most common in the U.S. Patients in both countries are subject to paying copayments and any out-of-pocket expenses for services that are not covered under their insurance. Additionally, there is a degree of freedom in selecting providers to receive care. In the U.S., patients are able to choose any provider, but they may not be in their network resulting in higher costs or no coverage; in Taiwan, patients are free to select any provider without incurring out-of-network expenses. Both countries have also made strides in improving the quality of care delivered to patients, placing an emphasis on quality over quantity through different reimbursement programs. The U.S. utilizes the pay-for-performance system while Taiwan has the fee-for-outcomes approach.

Differences

Among the similarities that can be found between the U.S. and Taiwan healthcare systems, there are also significant differences including delivery model, costs, and health ratings and utilization. Aside from the major difference of insurance models, spending for healthcare is another area of significant difference between the two countries, mainly driven by the high administrative and sunk costs associated with the U.S. healthcare system. Taiwan spent 11.1% less of its GDP on

healthcare costs in 2017 (Cheng 2019). With the single-payer system in Taiwan, all healthcare costs are set by the government. This eliminates competition and price gouging that is common practice in the U.S., especially in pharmaceuticals, in order for different insurers and providers to make a profit. Additionally, the single-payer system creates a unified and simplified process for delivering care thus reducing administrative complexity and associated costs.

Accessibility is one of the key features of a health care system and represents another area of difference between the U.S. and Taiwan. It influences the physical and social wellbeing, along with the mental health status and overall quality of life. People throughout the U.S. do not experience equal access to healthcare. There is a wide range of disparity depending upon the geographic area, race, ethnicity socio-economic condition, and other factors such as age, sex, and disability status.

Insurance coverage, which is another important component in determining the access to health care system, is also less in the U.S. as compared to Taiwan. One of the main characteristics of the Taiwan health care system is good accessibility and comprehensive insurance coverage (Wu et al. 2010). With universal coverage except for the prisoners and the people who have moved out of the country, the entire population of Taiwan has health insurance coverage. Conversely, the much fragmented multi payer system in the U.S. leaves behind a large portion of the population (30.7 million) without any type of coverage for their health care needs (Cohen et al. 2020).

Utilization of healthcare services is drastically higher in Taiwan compared to most developed countries, which can be attributed to the increased accessibility and coverage within their health system; this can be both a positive and negative measure. Positively, Taiwan citizens are able to access the care they need when they need it, resulting in a healthier population. It is reported that even with the high utilization rate present in Taiwan, patients experience shorter wait for most major healthcare procedures (Cheng 2019). Negatively, there is evidence of overuse in the system as Taiwan recorded nearly double the OECD average amount of provider visits per year, which can lead to lower quality care provided. The U.S. was two visits lower than the average OECD provider visits per year rate, but this could be attributed to the lack of insurance coverage and/or high costs for care associated with provider visits.

3. Conclusion

Through a comparison analysis of the U.S. and Taiwan healthcare systems there are evident differences, paired with few similarities, between the two systems. The Taiwan NHI system offers

comprehensive and low cost health insurance to the citizens of Taiwan. Since the enactment of the NHI Act in 1995, the country has experienced consistently lower healthcare spending and increased health outcomes as a result. This has also allowed for the technological advancement of interoperability across the country. Patients are able to go to any healthcare organization with their NHI IC card and have their medical records immediately; thus enhancing patient satisfaction and reducing the potential for medical errors.

The U.S. healthcare system is unlike any other. It comprises elements of multiple healthcare insurance models and relies on both public and private insurance to cover healthcare services. The ACA, enacted in 2010, was the first step towards government-run healthcare similar to Taiwan. This act resulted in the U.S. achieving its lowest number of uninsured Americans in 2016. However, moving forward it will be important for the U.S. healthcare system to make fundamental changes to its healthcare insurance model as costs and the uninsured rate continues to rise. Following the process of systems like the Taiwan NHI system could be beneficial in implementing these changes.

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