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Healthcare Expenditure Vs Healthcare Outcomes: a Comparison of 25 World Health Organization Member Countries

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HEALTHCARE EXPENDITURE VS HEALTHCARE OUTCOMES:
A COMPARISON OF 25 WORLD HEALTH ORGANIZATION MEMBER COUNTRIES

by

Stevan Hidalgo, RHIA

A Master's Thesis Presented in Partial Fulfillment
Of the Requirements for the Degree
Master of Science, Health Service Administration

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I have **READ AND ACCEPTED**

the Master's Thesis by:

Stevan Hidalgo, RHIA

Healthcare Expenditure vs. Healthcare Outcomes:
A Comparison of 25 World Health Organization Member Countries

Submitted in partial fulfillment of
requirements for the
Master of Science in Health Services Administration
degree at
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Abstract

This study attempts to determine whether there is a correlation between a country's per capita expenditure on healthcare and its healthcare outcomes. Prior studies have been done to assess access experiences and variations by income in various countries, and to compare the US's multi-payer system to countries with universal or national health insurance. Researchers and authors agree that certain elements of a country's healthcare system are superior, while others are inferior, and that these elements combined would produce a healthcare system with first-rate outcomes, high patient satisfaction, and universal access to healthcare for all citizens. This study was carried out as a cross-national, bivariate, correlational research study. The 25 World Health Organization member countries with the highest per-capita gross national income per capita were selected for inclusion in this study. Of these countries, the United States spends more on healthcare per capita, yet ranks toward the bottom for adult mortality rate, life expectancy at birth, under-five mortality rate, and infant mortality rate. The most current available data for per-capita healthcare expenditure were from 2005, whereas the most current available data for the selected healthcare outcomes were from 2006. Spearman's rho, Z-scores, and ANOVA tests did not reveal any statistically significant correlation between a country's per-capita expenditure on healthcare and the selected outcomes of adult mortality rate, life expectancy at birth, under-five mortality rate, and infant mortality rate. This study failed to show that additional healthcare spending yielded improved outcomes on the selected indicators.

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Chapter 1: Introduction

For years we have heard the assertion that the United States has the best healthcare system in the world. Whether this statement is anecdotal or evidence based is uncertain. Data from the World Health Organization (WHO) indicate that the United States spends more on healthcare per capita than any of the 25 wealthiest WHO member nations (World Health organization, 2007). Even with this distinction, in 2005, an American's life expectancy at birth was 77.9 years, and infant mortality rate was 7 per 1000 live births, ranking 23rd on both outcomes among these 25 member nations (WHO, 2007). Additionally, the United States remains the only top-tiered WHO member nation that does not provide any form of universal access to healthcare (Gorin and Moniz, 2004, Institute of Medicine, 2004), yet only one Kuwait has a higher under-five mortality rate (11 deaths per 1000 live births) compared to the United States (8 deaths per 1000 live births), and only 14 developing nations have lower under-five mortality rates than the United States (Save the Children, 2007).

According to Organization for Economic Cooperation and Development (OECD) 2005 data, the United States spent \$6700 per capita on healthcare in 2005. This is more than double the OECD's average, and accounts for 16% of the United States' Gross Domestic Product (Borger, Smith, Truffer, Keehan, Sisko, Poisal, and Clemens, 2006). As of 2005, there were 47 million uninsured Americans (California Health Care Foundation, 2005); total national health costs increased from 2004 by 6.9%—two times the rate of inflation (Catlin, Cowan, Heffler, and Washington).

As the population of uninsured Americans increases, healthcare costs continue to rise, and the country's per capita expenditure on healthcare increases, it becomes

necessary to find supporting evidence to prove or disprove the veracity of the proclamation that the US has the best healthcare system in the world.

Research Question

This research study asks the question: Is there a correlation between a country's per capita expenditure on healthcare and its healthcare outcomes?

Null Hypothesis

As a country's per capita expenditure on healthcare increases, its population healthcare outcomes of adult mortality rate, infant mortality rate, life expectancy at birth, and under-5 mortality rate will not improve.

Justification for Study

Six times in the past century—during World War I, during the Depression, during the Truman and Johnson Administrations, in the Senate in the 1970s, and during the Clinton years—efforts have been made to introduce some kind of universal health insurance, and each time the efforts have been rejected (Gladwell, 2005). In the 2008 presidential election season, healthcare reform had a noteworthy role in both parties' platform. Even if they did not agree on what changes would be most effective, both 2008 presidential nominees—Senators John McCain and Barack Obama—argued that the country needed to get more value for its healthcare money. Each proposed a plan to reform healthcare and provide Americans with more value for its healthcare dollar.

This study will compare healthcare spending and selected healthcare outcomes in 25 World Health Organization member nations, and provide a conclusion whether

increased spending on healthcare results in better health outcomes for adult mortality rate, infant mortality rate, life expectancy at birth, and under-5 mortality rate.

Implications of the Research for Healthcare Administrators

In recent years, public backlash has caused third party payers to be more lenient in utilization review methods in an effort at reducing healthcare costs. Public focus has recently switched to healthcare costs and access to health insurance, especially for the uninsured (Harris, 2007). It is estimated that, nationally, in 2005 there were 47 million uninsured Americans, or 16 percent of the US population. In 2005, Colorado's uninsured rate was 17 percent, one percentage point higher than the national rate (Colorado Health Institute, 2006).

Nationally, five percent (nearly 2.1 million) of the 39.2 million community hospital discharges in 2005 were considered uninsured because the discharged patients were not covered by private or public insurance (Levit, Ryan, Elixhauser, Stranges, Kassed, Coffey, 2007). The percentage of working adults (aged 18 to 64) who had no health coverage climbed from 18.5 percent in 2004 to 20.5 percent in 2005. The percentage of people (workers and dependents) with employment-based health insurance dropped from 70 percent in 1987 to 59.5 percent in 2005, representing the lowest level of employment-based insurance coverage in more than a decade (NCHC, 2007). Rising health insurance premiums are the main reason cited by small employers for not offering health insurance coverage (NCHC, 2007).

Adoption of universal health insurance has implications for healthcare administrators in every aspect of the healthcare system, including treatment, quality of life, healthcare delivery, information management, health policy, healthcare financing

(Academy Health, 2004) and patient satisfaction. One of the more evident advantages of adoption of a universal health care system is the elimination of the “middle man” –the third-party payer—resulting in more efficient billing and claims processes. It is estimated that administrative costs consume 31.0 percent of US health spending, double the proportion of Canada (16.7 percent) (Woolhandler, Campbell, and Himmelstein, 2003). According to Woolhandler, et al., “administrative waste could be saved to provide comprehensive health insurance to all Americans.” Woolhandler, et al., also report that the average US hospital devoted 24.3 percent of its spending to administration, whereas the average Canadian hospital administration cost was 12.9 percent of hospital spending.

Healthcare administrators should also expect changes in the areas of financing, regulation, human resources, and research. It can be argued that universal health insurance will either increase or decrease regulation; a reduction in the current workload for providers could result in more time spent with the patient. Reduction in administrative waste will eliminate much of the administrative staff responsible for insurance verification and insurance authorization. Opponents of universal healthcare argue that the absence of market competition may slow innovation in treatment and research.

Healthcare providers face increasing financial risks as they provide discounted or free care to a growing number of uninsured patients (Colorado Health Institute, 2007). From a public health perspective, providing universal health insurance to the currently uninsured US population will facilitate early entry into the healthcare system, potentially avoid unnecessary morbidity and mortality (Guyatt, et al., 2007), and reduce most

disparities in access to care (Lasser, Himmelstein, Woolhandler, 2006). In addition, providing coverage to the uninsured population can potentially reduce the severity of epidemics by reducing the number of disease carriers.

In Lasser, Himmelstein, and Woolhandler (2006) the need for universal healthcare is well summarized: “Universal coverage attenuates inequities in health care, and should be implemented in the United States. However, adequate funding to avoid waits for care is essential; otherwise, satisfaction with care may diminish. Moreover, universal coverage is not sufficient to eliminate all health disparities. We must also address inferior systems of care in institutions serving the poor, and nonfinancial access barriers such as cultural and language barriers.”

Chapter 2: Literature Review

Healthcare reform continues to be a divisive topic in the United States. Because of the similarities in population demographics, the Canadian healthcare system is often used as a comparative model when discussing options to reform the multi-payer healthcare system of the United States. Alternatively, Canadians sometimes look to the United States for ways to improve their own healthcare system (Madore, 1992). Nonetheless, disparate opinions exist when debating the merits and deficiencies of both Canada's single-payer healthcare system and the United States' multipayer healthcare system. Blomqvist (2002) argues, however, that too much focus is paid to the Canada-versus-US comparison. He states, "Because the US system has features that most Canadians find completely unacceptable, the conclusion drawn from these comparisons often is simply that, because our system is better, we have little to learn from south of the border" (Blomqvist, 2002).

In a study of 1650 US doctors, approximately 49 percent supported governmental legislation to establish national health insurance; 40 percent opposed any such legislation (Ackerman & Carroll, 2003). Between 1978 and 2007, public support for some form of national health insurance has waned, although the majority of those polled still support one of various versions of a national health insurance program. In 1978, 76 percent of participants in a national Gallup poll felt there was a need for some form of national health insurance (Goodman & Steiber, 1981). In a May 2007 CNN/Opinion Research Corporation Poll, 1028 adults nationwide were asked, "Do you think the government should provide a national health insurance program for all Americans, even

if this would require higher taxes?" Sixty-four percent of those questioned responded *yes*, whereas 35 percent responded *no* (PollingReport, 2007).

Citing 1999 OECD data, Hussey and Anderson (2004), dispute the often-heard declaration that America has the best healthcare in the world, stating there is no empirical evidence to justify the claim. Hussey and Anderson indicate that evidence does show that the United States ranks in the bottom quartile for life expectancy and infant mortality (Hussey and Anderson, 2004). Additionally, World Health Organization data from 2005 show that life expectancy at birth in the US is 82 years for women and 77 years for men, with a combined (male and female) life expectancy of 77.9 years, and infant mortality rate in the US being 7 deaths per 1000 live births. When compared to the top-tiered WHO member nations, the US ranks 23rd for both life expectancy at birth and infant mortality rate. Additionally, the United States' rate for maternal mortality is 1 in 2,500, with 28 WHO member countries, performing better on this indicator (Save the Children, 2007).

O'Neil and O'Neil (2007), however, claim that infant mortality and life expectancy are poor measures of the efficacy of a healthcare system because they are influenced by factors unrelated to the quality and accessibility of medical care, i.e. obesity, improved medical treatment, education level, etc. One undisputed fact is that the United States spends approximately 16% of its gross domestic product (GDP) on healthcare, more than any developed country (Guyatt, et al., 2007; Lasser, et al., 2006; Save the Children, 2007), mainly because of higher labor, administrative and malpractice insurance costs (OECD, 2005). In 2003, administrative costs accounted for seven

percent of the total healthcare spending in the United States (California Healthcare Foundation, 2005).

In their study, “Access to Care, Health Status, and Health Disparities in the United States and Canada: Results of a Cross-National Population-Based Survey,” Lasser, et al (2006) compared health status, access to care, and utilization of medical services in the United States and Canada, and compared disparities according to race, income, and immigration status. They concluded that “United States residents are less able to access care than are Canadians,” and that “universal coverage appears to reduce most disparities in access to care” (p 1, 2006). The study utilized data from the publication “Joint Canada/US Survey of Health” (JCUSH) to compare healthcare utilization, access to healthcare, and health status in Canada and the United States, and investigated the possibility that universal health insurance mitigated any disparities in health based on race, immigration status, and income level. The original study was conducted on 3505 Canadian and 5183 US adults, and assessed health status, disease prevalence, behavioral risk factors, health care utilization, and access to care in the two countries. Analysis of JCUSH data revealed that, with the exception of having a lower rate of cigarette smoking, US respondents were less healthy than Canadians, with higher rates of obesity, physical inactivity, diabetes, hypertension, arthritis, and chronic obstructive pulmonary disease. US residents were also more likely to have unmet healthcare needs and to forego necessary medication. The study revealed that, although death rates from cervical cancer are lower in Canada, as many as 21% of Canadian women do not receive routine cervical cancer screening. Barriers to care varied between the two countries: Cost in the United States, and long waiting times in

Canada. Lasser, et al, conclude that universal healthcare mitigates inequities in health care.

Using data from the Commonwealth Fund International Working Group on Quality Indicators, Hussey, et al., compared indicators that reflect medical care in Australia, Canada, New Zealand, England, and the United States. The quality indicators included five-year cancer relative survival rates, thirty-day case-fatality rates after acute myocardial infarction and stroke, breast cancer screening rates, and asthma mortality rates. Analysis of these data showed that “each country has at least one area of care where it could learn from international experiences and one area where its experiences could teach others” (Hussey, et al., 2004). In this comparison, the United States had the highest breast cancer survival rates, but only the third-highest rate of breast cancer screening rates among these five countries. Cervical cancer screening rates were considerably higher in the United States than in the other countries, yet survival rates were comparable when compared to two other countries. The US ranked last for kidney transplant survival rates and fourth for liver transplant survival rates. (No data for liver transplant survival rates were available for New Zealand.) Hussey, et al., argued that, although the United States performed relatively well for certain quality indicators, the increased dollar spent on medical care in the United States did not yield proportionate outcomes. A limitation of this comparative study was that the quality indicators were opportunistic rather than comprehensive and were not representative of health conditions that accounted for a large share of the burden on the healthcare system in these countries. The quality indicators selected were those that could be easily

compared with the available data. To include other indicators, i.e. diabetes, would have required review of the medical record, the cost of which would have been prohibitive.

In a systematic review of 38 studies comparing health outcomes in the United States and Canada among patients treated for similar underlying medical conditions, Guyatt, et al., (2007) classified 11 of the studies as high quality, and 28 of the studies as low quality. The criteria used for high/low quality classification were: (1) Did the investigators adequately adjust for prognostic differences? Adjustment was considered inadequate if either disease severity or comorbidity were not considered in the analysis. (2) Did the investigators enroll a sufficiently diverse and representative population that it is plausible that the outcomes in patients studied are representative of the outcomes in the country at large? Only studies that enrolled patients from a number of regions, or from a very large population within a region, met this criterion (Guyatt et al., 2007). Of the high-quality studies two (5.2%) reported superior outcomes in the United States, while 5 (13.2%) studies favored Canada. Three (7.9%) of the low-quality studies reported superior outcomes in the United States, whereas 9 (23.7%) studies favored Canada. Nineteen (50%) of the studies—both high- and low-quality--yielded mixed or unequivocal results. The study results indicated that although Canadian outcomes were more often superior to US outcomes, neither country can claim superior quality of medical care or better health outcomes. The acknowledged limitations of the study are in the uneven quality of the original studies, and the threats to validity found even in the high-quality studies. In spite of these limitations, Guyatt, et al., indicated that the results did not support the claim that that American patients received consistently better care

than Canadians, therefore Americans are not getting better value for their healthcare dollar.

In *Health Status, Health Care and Inequality: Canada vs. the US*, O'Neill and O'Neill used JCUSH data in addition to data from other Canadian and US surveys, and other national and international sources. The effect of income on health status in the two countries was also compared. Their conclusions were similar to those of Lasser, et al., and include: No significant differences are evident in the four health status indicators available in the JCUSH data; there is a somewhat greater incidence of chronic health conditions in the US combined with evidence of greater access to health treatments in the US; there is greater access in the US to specialty health care and no evidence that the income/health gradient is any different between the US and Canada. On the questions about satisfaction with health services and the ranking of the quality of services recently received, more US residents than Canadians answered fully satisfied and excellent. Even incorporating other surveys, i.e. The National Health Interview Survey (NHIS), the US Medical Expenditures Panel Survey (MEPS) for the US, and the Canadian Community Health Survey (CCHS) for Canada, which are based on much larger samples than the JCUSH data, results were similar and showed no significant difference in the quality of healthcare in Canada and the United States, but did reflect a difference in health status between Canadians and Americans. They claim, however, that these results "are obviously not hard evidence that the quality of health care is the same in both countries" (p 7, 2007) and recommended that more objective measures of health status be sought.

Using data from the 2001 Commonwealth Fund International Health Policy Survey, which assessed access experiences and variations by income in Australia, Canada, New Zealand, United Kingdom, and United States, Schoen and Doty (2003) examined inequities in access to healthcare associated with income while controlling for the effects of health insurance, health status, education, race/ethnicity, immigration status, and residential location. The Commonwealth Fund Survey was a five-nation survey consisting of interviews with a random sample of approximately 1400 adults age 18 and older in each of the five countries. The five measures related to access related to seeing a specialist, getting care in the evenings or weekends, getting care where the individual lived, and two items related to waiting times: how long it took to get care when sick, and waiting times for elective surgery among respondents with surgery in the past two years. In Canada, having private supplemental health insurance contributed greatly to access to care and satisfaction with the care received, whereas being uninsured in the United States had significant negative consequences for access, including two to five times more likely than those with private insurance to have difficulties seeing a specialist, getting care on weekends or evenings, and experiencing all cost-related access problems. The authors concluded that “with respect to providing equity in access to care and health care experiences across income classes UK emerges as the most equitable and US as the least equitable” (p 320, 2004), with Canada being in the middle of these two extremes.

In their article, *Fragmentation of Care for Frail Older People—an International Problem. Experience from Three Countries: Israel, Canada, and the United States*, Clarfield, et al. (2001), conclude that “The main value of comparative studies is to show

what could be done in effective patient care and efficient institutional operation, while pointing out the mistakes of others. An underlying theme in such studies is that there must be an ideal, or at least a better way to run a health service” (p 1720).

While comparing the healthcare systems of the United States and Canada, Blomqvist (2002) opines: “Faced with an all-or-nothing choice, I would choose the Canadian system over the US one hands down. I would much rather live with what we now have in Canada, with all its faults, rather than accept the fundamental shortcomings of the US-style alternative. But I also think that the Canadian health care system is under more pressure today than it has been for a long time, and that it can be improved in ways that may make it more like the US system in some respects” (p. 12).

Summary

Researchers and authors agree that certain elements of a country’s healthcare system are superior, while others are inferior, and that these elements combined would produce a healthcare system with first-rate outcomes, high patient satisfaction, and universal access to healthcare for all citizens. At best, the aforementioned studies compared outcomes in five countries. A more realistic conclusion may be drawn if more countries are used for comparison purposes.

A common theme in these studies is that Americans are not receiving proportionate value of healthcare services for the amount of money spent, and that other countries may receive better value but have to contend with inconveniences, i.e. longer wait times for certain healthcare services in Canada.

Chapter 3: Research Method

The purpose of this study was to determine whether there is a correlation between a country's per capita expenditure on healthcare and outcomes of selected health indicators.

Methodology

This study was carried out as a cross-national, bivariate, correlational research study. Cross-national comparisons also allow countries to learn from each other and to assess their performance and population health status. Correlational designs attempt to explore the relationships between at least two variables within a given environment (Brewerton and Millward, 2001).

The 193 member countries in the World Health Organization (WHO) were ranked in order of per-capita gross national income per capita. The 25 countries with the highest per-capita gross national income per capita were selected for inclusion in this study. In this ranking, the United States ranked third, behind Luxembourg and Norway.

Data Collection

Data from the World Health Organization were used for this analysis. The original published statistics were collated from publications and databases produced by WHO's technical programs and regional offices. The WHO publication, World Health Statistics 2007, presents data on the distribution of health outcomes, disaggregated by gender, age, urban versus rural setting, wealth, and educational level. These statistics were primarily derived from analyses of household surveys and were available only for a limited number of countries (WHO, 2007), including the countries studied in this project.

The values report in the publication are said to be estimates using data from publicly accessible databases, peer-reviewed methods of estimation, and consultation with experts around the world. WHO considers the published data to be best estimates rather than the official view of WHO Member States (WHO, 2007).

The most current available data for per-capita healthcare expenditure were from 2005, whereas the most current available data for the selected healthcare outcomes were from 2006. Because effects of expenditures are not readily apparent until the following year, this researcher felt that comparing expenditure from one year to the following year's outcomes was acceptable methodology and did not pose a threat to internal validity.

Table 1

<i>Independent and Dependent Variables</i>	
<i>Independent variable (2005)</i>	<i>Dependent variables (2006)</i>
Per-capita healthcare expenditure per 100,000 population	Adult mortality rate per 1000 population
	Infant mortality rate per 1000 live births
	Life expectancy at birth (years)
	Under-5 mortality rate per 1000 live births

Definitions

Variables. The independent variable for this study is per-capita healthcare expenditure. The dependent variables are adult mortality rate, infant mortality rate, life expectancy at birth, and under-five mortality rate.

Measurements. 'Gross national income per capita' and 'per capita total expenditure on health' were measured in international dollars. International dollar rates were used to standardize monetary value among the countries, and to account for the purchasing power of different national currencies (WHO, 2007). Healthcare outcomes were measured by: (1) adult mortality rate per 1000 population, (2) infant mortality rate

per 1000 live births, (3) life expectancy at birth, and (4) under-5 mortality rate per 1000 population.

Chapter 4: Results

There are 193 member countries in the World Health Organization (WHO). Of the 25 member countries with the highest per capita total expenditure on health, the United States ranks first, spending \$6347 per capita (WHO, 2007). In 2005, healthcare spending in the United States accounted for 16 percent of the country's GDP. In spite of this spending, the United States ranked 25th, 23rd, 23rd (tie), and 23rd, for Adult Mortality Rate, Infant Mortality Rate, Life Expectancy at Birth, and Under-5 Mortality Rate, respectively (WHO, 2007). Additionally, there remain approximately 47 million uninsured Americans, approximately 16 percent of the population (California Health Care Foundation, 2005). However, before any meaningful conclusions can be drawn from these results, it is important to statistically compare healthcare expenditure versus healthcare outcomes among the top-tiered 25 WHO member countries, and determine whether increased expenditure on healthcare correlates with improved health outcomes of selected indicators. Outcome indicators for the 25 WHO member states used in this study are summarized in Table 1.

Using SPSS, Version 5.0, data were analyzed using Spearman's rho, which shows the magnitude and direction of the association between two variables that are on an interval or ratio scale (Archambault , 2000). The strongest correlations found with Spearman rho were the expected correlation between life expectancy and adult mortality rate ($\rho = .542$) and between under-five mortality rate and infant mortality rate ($\rho = .895$).

To account for differences in population size, Z-scores were calculated to standardize data and negate the effect of scales. Z-score results revealed no statistically significant associations.

Additionally, the countries were divided into quartiles based on per-capita spending. High-spending countries were compared to low-spending countries and used as factor levels in ANOVA. This, revealed no statistical difference between the first and fourth quartiles.

Table 2

Outcome Ranking by WHO Member Country

Country	Adult mortality rate/1000 ^a		Infant mortality rate/1000 ^b		Life expectancy at birth/1000 ^c		Under-5 mortality rate/1000 ^d	
	Rate	Rank	Rate	Rank	Age	Rank	Rate	Rank
Australia	65	6	5	20	82	2	6	20
Austria	79	17	4	10	80	11	4	4
Belgium	86	21	4	10	79	19	5	14
Canada	72	13	5	20	81	4	6	20
Denmark	88	22	3	2	79	19	4	4
Finland	96	24	3	2	79	19	3	1
France	91	23	4	10	81	4	5	14
Germany	81	19	4	10	80	11	5	14
Greece	76	15	4	10	80	11	4	4
Iceland	59	1	2	1	81	4	3	1
Ireland	72	12	4	10	80	11	4	4
Israel	68	9	4	10	81	4	5	14
Italy	64	4	3	2	81	4	4	4
Japan	67	8	3	2	83	1	4	4
Kuwait	62	2	9	25	78	23	11	25
Luxembourg	83	20	3	2	80	11	4	4
Netherlands	70	10	4	10	80	11	5	14
Norway	70	11	3	2	80	11	4	4
Singapore	67	7	3	2	80	11	3	1
Spain	75	14	4	10	81	4	4	4
Sweden	64	5	3	2	81	4	4	4
Switzerland	63	3	4	10	82	2	5	14
United Arab Emirates	78	16	8	24	78	23	8	23
United Kingdom	80	18	5	20	79	19	6	20
United States	109	25	7	23	78	23	8	23

- Adult mortality rate (probability of dying between 15 to 60 years per 1000 population) both sexes
- Infant mortality rate (per 1 000 live births) both sexes
- Life expectancy at birth (years) both sexes
- Under-5 mortality rate (probability of dying by age 5 per 1000 live births) both sexes

Chapter 5: Discussion

This comparative study shows that a correlation does not exist between a country's per capita expenditure on healthcare and its outcomes of adult mortality rate, infant mortality rate, life expectancy at birth, and under-five mortality rate. Basch (1990) asserts that "The main value of comparative studies is to show what could be done in effective patient care and efficient institutional operation, while pointing out the mistakes of others. An underlying theme in such studies is that there must be an ideal, or at least a better way to run a health service."

Comparing selected healthcare indicators for the 25 wealthiest World Health Organization member states, each country performs well in some areas while performing poorly in others. The United States ranked first in per-capita healthcare expenditure (\$6347), yet ranked 25th in adult mortality rate (109 per 1000 population), and 23rd in infant mortality rate (7 per 1000 population), life expectancy at birth (78 years), and under-five mortality rate (8 per 1000 population). In comparison, Kuwait ranked last in per-capita healthcare expenditure (\$490), second in adult mortality rate (62 per 1000 population), 25th in infant mortality rate (9 per 1000 population), tied with the United States at 23rd in life expectancy at birth (78 years), and 25th in under-five mortality rate (11 per 1000 population). In Canada, to whom the United States is often compared, per-capita healthcare expenditure was \$3452 (rank = 6th), adult mortality rate was 13 per 1000 population (rank = 13th), infant mortality rate was 20 per 1000 population (rank = 20th), life expectancy at birth was 81 years (rank = 4th), and under-five mortality rate was 6 per 1000 population (rank = 20th, tie with Australia and United Kingdom).

This study was limited to the data available in the World Health Organization Statistical Information System (WHOSIS). Accessibility to healthcare and the effects of environmental and socioeconomic factors were not assessed. Future studies may add to the current literature by using healthcare outcomes such as five-year survival rates for cancers or for cardiovascular diseases.

The lack of correlation found between a country's healthcare expenditure and selected outcomes is consistent with the existing body of literature which states that Americans do not receive proportionate value for their healthcare dollars (Hussey, Anderson, et al., 2004). However, general conclusions about the United States' healthcare delivery system should not be drawn from this study, which include administrative costs—estimated at 31 percent of the United States' expenditure on healthcare. More conclusive research that specifically addresses direct healthcare costs (exclusive of labor, administrative costs, malpractice insurance costs, and research and development costs), and comparisons of these relationships and outcomes between countries is recommended.

The results of this study may strengthen the cause for either proponents of universal healthcare who argue that elimination of the third-party payer will result in more efficient billing and claims processes (Woolhandler, Campbell, and Himmelstein, 2003) and elimination or reduction in disparities in access to healthcare (Lasser, Himmelstein, Woolhandler, 2006), or for opponents, who argue that universal healthcare will create another level of governmental bureaucracy, and is simply another form of welfare (Chua, 2006). This study failed to show that additional healthcare spending yielded improved outcomes on the selected indicators

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