



THE RELATIONSHIP BETWEEN HEALTH EXPENDITURE AND SOCIOECONOMIC/DEMOGRAPHIC INDICATORS: AN INTERNATIONAL COMPARISON

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Abstract

Health is a matter of human rights. Factors affecting health includes health expenditures. All health expenditures are regarded as investments in human beings and is necessary for the development of society. It is known that the health status of countries which allocate more resources in health is higher. The current research was performed to analyse the relationship between countries' health expenditures and socioeconomic /demographic factors.

In the study, five health expenditure variables and eight socioeconomic /demographic factors were examined. A total of 180 countries with available data were included in the study sample. Data was obtained from World Health Statistics (2014), "data.worldbank.org" and the Human Development Report (2014). Descriptive statistics were calculated and correlational analyses were performed. Data was analyzed using the SPSS 19.0 software.

It was found that there are significant differences in health expenditures across countries. Regarding total health

expenditures, there was a 10-fold difference between the highest and lowest values. Countries with high income allocated more resources in health and significant relationships between health expenditure variables and socioeconomic /demographic factors were found. It is concluded that the general economic and health status of undeveloped/developing countries can be improved by developing appropriate economic policies.

Introduction

Health is a matter of human rights. The concept of health evolves its extent and content through social, political, and cultural experience and international laws; which constitute the historical heritage of humanity (Ateş, 2013). Blum, who brought an environmental approach to health, indicated that health status is comprised of four basic factors and their sub-factors: environment, behaviour, genetics, and health services. However, Blum ignored social factors (Schulze et al., 2003). The social context is an important cornerstone of health and is classified under the separate title of “social determinants of health” in the literature. The elements associated with health such as social, cultural and economic factors are generally defined as social determinants of health (Lloyd et al., 2004). People’s life styles and work conditions have a major impact on their health and lifespan (Wilkinson et al., 2003) Link et al. (1995) emphasized that the fundamental reason of illness is social conditions. Social indicators of health include the health system, environments people are born into, and environments where people grow up, live, work, and grow older (World Health Organization, 2013). Improvement of health status is strongly related to the improvement in such social factors. In the past, efforts to promote health focused on preventing and curing diseases, however, these efforts failed to improve health conditions at a desired level. Today, health in its social context is considered as a tool to improve economy. According to this view, sparing increased funds from national and international resources and investing them in health and its social indicators will result in economic growth (Çelik, 2011).

In order to constitute a healthy population, it is essential to have a strong economy, to provide sustainable growth of economy and to support health care by meeting the needs of the population. All expenditures spent in health care constitute health expenditures. Expenses to regain health as well as expenses on prevention and improvement efforts such as vaccination, STD (sexually transmitted diseases) prevention, and nutrition are considered as health expenditures (Akin, 2007). It is important to know the amount spared for health expenditures in order to manage resources of a country and to make

international and intersectoral comparisons. The outcome of health expenditures, which is defined as health status, is considered as a measurement of a country’s level of development (Mutlu et al., 2002).

All health systems in the world fundamentally target building a society of healthy individuals. Healthy individuals and societies compose the core of security, power, stability, wealth and happiness (Ersöz, 2008). Nowadays, governments place more importance on health expenditures. Health expenditures play a key role in economic growth and differ from one country to another depending on the level of development. Specifically, health expenditures are relatively larger in developed countries compared to developing countries (Akar, 2014). In countries with a certain level of economic development, the spared budget for health expenditures increase, and in turn, individuals’ awareness of health improves. Therefore, the improvement of health status would accelerate economic growth (World Bank, 2014).

The present study was conducted in order to show the differences in health expenditures on an international level and to determine the relationship between health expenditures and socioeconomic/demographic factors.

Material and Methods

This study employed a descriptive and retrospective design. The universe of the study was planned to comprise of 194 countries which are members of the World Health Organization (WHO). As a result of difficulties faced in accessing accurate and up-to-date information, 180 countries were included in the sample. Based on the available information pertaining to countries and the relevant literature, 5 dependent and 8 independent variables were defined. The dependent variables were health expenditure per capita, total health expenditure, public health expenditure, private sector health expenditure and out of pocket (OOP) health expenditure. The independent variables were life expectancy at birth, maternal mortality, infant mortality, annual population growth rate, total fertility rate, gross national income per capita, the mean years of education, and the expected years of education.

Data was collected from the WHO Statistics-2014, Human Development Report-2014 and the World Bank’s official website. Data was analysed using the SPSS 19.0. Descriptive statistical methods, frequency analysis and correlational analyses were used.

Results

Table 1
SOCIOECONOMIC/DEMOGRAPHIC VARIABLE'S MINIMUM, MEDIAN AND MAXIMUM VALUES

	Min.	Medyan	Max.
Life Expectancy at birth (years)	45,6 (Sierra Leone)	73	83,6 (Japan)
Maternal mortality ratio (per 100 000 live births)	1 (Belarus)	60	1100 (Sierra Leone)
Infant mortality rate (probability of dying by age 1 per 1000 live births)	2 (Norway, Finland, Japan)	16	117 (Sierra Leone)
Annual population growth rate (%)	-0,8 (Bulgaria, Moldova)	1,3	7,9 (Oman)
Total fertility rate (per woman)	1,3 (Bosnia Herzegovina, Singapore, Portugal)	2,3	7,6 (Niger)
Gross national income per capita (PPP int. \$)	104 (Egypt)	8.883,5	119.029 (Qatar)
Expected years of schooling (of children) (years)	1,3 (Burkin Faso)	8,35	12,9 (USA)
Mean years of schooling (of adults) (years)	4,1 (Eritrea)	12,8	19,9 (Australia)

Table 1 shows the minimum, median and maximum values of socioeconomic/demographic variables. As shown in Table 1, the lowest life expectancy was in Sierra Leone (45.6 years) and the highest life expectancy was in Japan (83.6 years). Maternal mortality rate was 1/100.000 in Belarus and 1100/100.000 in Sierra Leone. Infant mortality rates in Norway, Finland and Japan were 2 in 1000, while it was 117/1000 in Sierra Leone. Bulgaria and Moldova

had an annual population growth rate of -0.8 % and Oman had a rate of 7.9 %. Fertility rates per woman in Bosnia Herzegovina, Singapore and Portugal were 1.3; while Niger had a rate of 7.6. Per capita income was the lowest in Egypt (\$104), while Qatar had the highest income (\$119,029). Mean years of education was 1.3 in Burkina Faso and 12.9 in the United States of America. Expected years of education was 4.1 in Eritrea and 19.9 in Australia.

Table 2
FREQUENCY ANALYSIS ON HEALTH EXPENDITURE

	Min.	Medyan	Max.
Expenditure on health, total (% of GDP)	1,80 (Myanmar)	6,40	17,90 (USA)
Health expenditure per capita (current US\$)	15 (Dem. Republic of Congo)	335	9276 (Switzerland)
Health expenditure, public (% of GDP)	0,40 (Myanmar)	3,5	11,50 (Mikronesia)
Health expenditure, private (% of GDP)	0,20 (Brunei)	2,5	12,60 (Sierra Leone)
Out-of-pocket health expenditure (% of total expenditure on health)	0,10 (Kiribati)	31,40	76,20 (Sierra Leone)

Table 2 describes the information of minimum and maximum health expense variables. According to Table 2, the largest budget spared from GDP to health expenditure was in USA by 17,9 %, and the smallest was shown as 1,8 % in Myanmar. The health expenditure per capita was 15 dollars in Democratic Republic of Congo and 9276 dollars in Switzerland.

Public health expenditure in Myanmar was 0,4 % of their GDP and it was 11,5 % in Micronesia. Brunei Darussalam showed the lowest private health sector expenditure (0,2 %) and this rate was 12,6 % in Sierra Leone. In inspection of OOP health expenditure, 0,1 % of total health expenditure of Kiribati was OOP and 76,2 % of Sierra Leone's as the highest.

Table 3
HEALTH EXPENDITURE AVERAGE AND STANDART DEVIATION (FOR INCOME GROUPS)

Expenditure on health, total		Health expenditure per capita		Health expenditure, public		Health expenditure, private		Out-of-pocket health expenditure	
Avg.	Sd	Avg.	Sd	Avg.	Sd	Avg.	Sd	Avg.	Sd

High	7,86	3,03	2996,15	2351	5,53	2,33	2,32	1,42	21,48	11,35
Upper-Middle	6,31	1,98	466,04	211,95	3,83	1,54	2,49	1,16	31,28	15,27
Lower-Middle	6,37	2,47	149,89	89,12	3,56	2,26	2,81	1,66	38,24	20,41
Low	6,21	3,14	38,40	19,5	2,62	1,48	3,79	2,48	43,33	19,63
OECD	9,30	2,30	3839,50	2493,64	6,70	1,75	2,59	1,46	18,98	8,61
Global	6,76	2,73	1040,14	1782,18	4,04	2,22	2,75	1,72	32,37	18,36

The World Bank classifies countries based on their economic extent in four groups; low, lower-middle, upper-middle and high (World Bank, 2014). The countries' health expenditures were shown in Table 3 according to OECD and this classification. In Table 3, total health expenditure of high income level countries was 7,86 % and 6,21 % in low income level countries. OECD countries' average rate was 9,3 %. Per person health expenditure was \$2996,15 in high level

countries and \$38,40 in low level countries. Public health expenditures had a rate of 5,53 % in high income countries and 2,62 % in low income countries. The private sector health expenditure in high income countries was 2,32 and 3,79 in low income countries. OOP health expenditure in high income countries was 21,48 and 43,33 % in low income countries. In OECD countries 18,98 % of total health expenditure was spent OOP.

Table 4
HEALTH EXPENDITURE AVERAGE AND STANDART DEVIATION (FOR WHO REGIONS)

	Expenditure on health, total		Health expenditure per capita		Health expenditure, public		Health expenditure, private		Out-of-pocket health expenditure	
	Avg	Sd	Avg	Sd	Avg	Sd	Avg	Sd	Avg	Sd
Africa	6,46	2,83	138,09	211,34	3,14	1,65	3,26	2,27	36,14	18,6
Americas	7,37	2,46	966,91	1697,88	4,29	1,68	3,10	1,65	30,55	14,92
Europe	8,03	2,24	2244,92	2396,22	5,40	2,18	2,61	1,26	28,30	15,30
Western Pacific	6,45	2,81	1040,23	1659,30	4,56	2,92	1,89	1,13	24,81	19,29
Eastern Mediterranean	5,19	2,35	534,30	542,32	2,53	1,30	2,67	1,86	40,81	21,93
South-East Asia	4,15	1,80	125,30	162,22	2,09	1,16	2,07	1,22	41,72	22,89
Global	6,76	2,73	1040,14	1782,18	4,04	2,22	2,75	1,72	32,37	18,36

In Table 4, regional health expenditures according to WHO's classification was shown (World Health Organization, 2014). In terms of total health expenditures, the lowest rate belonged to South East Asia (4,15%) and the highest rate was in Europe (8,3%). Per person health expenditure was 125,30 \$ in South East Asia and 2244,92 \$ in Europe. Public health

expenditure rates were 2,09 % in South East Asia and 5,4 % in Europe. The lowest private health expenditure rate was in Africa (3,26 %). Comparison of OOP health expenditures showed that South East Asian countries had the highest rates (41,72%) and West Pacific countries had the lowest rates (24,81%).

Table 5
CORRELATIONS BETWEEN HEALTH EXPENDITURE AND SOCIOECONOMIC/DEMOGRAPHIC VARIABLE

	Life Expectancy	Maternal Mortality Ratio	Infant Mortality Rate	Annual population growth rate	Total fertility rate	Gross national income per capita	Expected years of schooling	Mean years of schooling
Expenditure on health, total	0,210**	-0,078	-0,190*	-0,320**	-0,194**	0,117	0,297**	0,310**
Health expenditure per capita	0,546**	-0,364**	-0,456**	-0,249**	-0,396**	0,664**	0,579**	0,568**
Health expenditure, public	0,414**	-0,332**	-0,409**	-0,409**	-0,343**	0,284**	0,515**	0,481**
Health expenditure, private	-0,224**	-0,328**	0,266**	0,042	0,167*	-0,200**	-0,225**	-0,166*
Out-of-pocket health expenditure	-0,307**	-0,320**	0,365**	0,152*	0,239**	-0,366**	-0,441**	-0,372**

Table 5 showed the relationships between health expenditure and socioeconomic/demographic variables. Correlation coefficients were defined as; 0 to (-) 0,30 low, (-) 0,30 to (-) 0,70 medium and (-) 0,70 to (-) 1 high (Saruhan et al., 2013). According to these results, the strongest relationships involved the annual growth rate of a population. There was a negative correlation between total health expenditure and growth rate of population (r: -0,32). The relationship between health expenditure per person and national income per person was found to be positive and at a medium level (r: 0,664); public health expenditure and expected years of education were positively related at a medium level (r: 0,515); private sector and maternal mortality rate were negatively related at a medium level (r:-0,328) and OOP health expenditure and expected years of education were negatively related at a medium level (r: - 0, 441).

Discussion and Conclusion

The main objective of the current study was to examine countries' health expenditure distribution by income groups and regions and to determine the relationship between health expenditure measures according to target socioeconomic/demographic variables. Data pertaining to 13 variables was collected for 180 countries from the 2014 World Health Statistics Report, the 2014 Human Development Report and the World Bank's official website.

As shown in Table 1, there were significant differences between countries' socioeconomic/demographic indicators. In terms of the most important indicator of health status in a country; life expectancy was found to be 45.6 years in Sierra Leone and 83,6 years in Japan. Consideration the world median value of 73 years, this difference seems to be significant. In Table 2, statistics of health expenditure was shown. Similar to socioeconomic/demographic differences, health expenditures showed major differences. The Democratic Republic of Congo had \$15 of health expenditure per person, while Switzerland had \$9276.

Examination of countries based on income groups (Table 3) showed that all health expenditure types were positive correlated with countries' income levels. Higher income group countries showed higher public and per person health expenditure rates. On the other hand, lower income group countries showed lower health expenditure, higher OOP, and private sector health expenditure rates.

Table 4 presented average health expenditure by regions and there were no significant differences across countries. This finding can be explained by the fact that countries were not homogeneously distributed by region. South East Asia included a total of 10 countries, while Europe included 51. However, South East Asia showed lower average health expenditure rates, while European countries had higher rates.

The majority of health expenditure and socioeconomic/demographic variables were associated at a statistically significant level. Although correlation

coefficients were relatively low, they were statistically meaningful nonetheless. Inclusion of most countries and avoiding sample choosing seemed to increase the reliability of the analysis conducted in the current study.

In conclusion, there were major discrepancies between countries' health expenditure rates. These differences were due to the socioeconomic and demographic features of the countries as well as their health policies. As previously mentioned, health expenditure variables and other factors were associated. As health expenditure per person increased, life expectancy also increased. In addition, as health expenditures increased, national income per person also increased. In this context, it is recommended that instead of attempting to

explain health expenditures with one or a small number of variables, it seems more appropriate to evaluate social indicators of health from a wider perspective. Nevertheless, previous research showed that a country's income level has a very strong relationship with health expenditure rates, while keeping other variables stable. In other words, as a country's economy grows, health becomes more important and larger funds are spared for it. Therefore, to avoid discrepancies between countries' health expenditures, first, a country's economy needs to be strengthened. It is suggested that countries reconsider their health policies in order to increase welfare of their populations. In case of insufficient national resources, support should be accepted from international organizations and developed countries.

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