Yenidoğan Ölümleri ve Sağlık Harcamaları İlişkisinde AB ve Afrika Ülkeleri Arasındaki Farkın Bölgesel Etkisi

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Öz

Amaç: Bu gözlemsel boylamsal çalışmada, AB ve Afrika üzerinden bölgesel farklılıkların sağlık harcamaları ve yenidoğan ölümleri arasındaki ilişkiye etkisinin incelenmesi amaçlandı.

Yöntemler: AB için ölüm oranı, yenidoğan (1.000 canlı doğumda), Kişi başına düşen cari sağlık harcaması (cari ABD Doları) ve Cari sağlık harcaması (% GSYH) parametreleri, Orta Afrika Cumhuriyeti, Orta Doğu ve Kuzey Afrika; Araştırma veri seti olarak Güney Afrika ve Sahra Altı Afrika kullanıldı. Veriler 2000-2018 yılları arasındaki Dünya Bankası Ülke Raporlarından toplanmıştır. Çok değişkenli analiz için Genelleştirilmiş Doğrusal Model (GLM) analizi kullanıldı.

Bulgular: AB'de 1.000 canlı doğum başına neonatal ölüm oranı anlamlı derecede yüksekti. HEPC_USD ve HEPC_GDP ortalamaları Afrika ülkelerinde en yüksekti ($p<0,05$). Post Hoc test sonuçları Afrika ülkeleri arasındaki farkların da anlamlı olduğunu gösterdi ($p<0,05$). Korelasyon analizi sonuçları yenidoğan ölüm hızının HEPC_USD, HEPC_GDP, Ülke, Yıl ve AB/Afrika parametreleriyle anlamlı düzeyde ilişkili olduğunu gösterdi ($p<0,05$). Yenidoğan ölüm analizi sonuçları için Genelleştirilmiş Doğrusal Model (GLM), yalnızca HEPC_GDP'nin 1.000 canlı doğum başına yenidoğan ölümü üzerinde anlamlı etkiye sahip olduğunu gösterdi ($p<0.05$). AB'ye veya Afrika bölgesine üye olmanın veya yıl parametrelerinin 1.000 canlı doğum başına neonatal mortalite üzerinde anlamlı bir etkisi bulunmadı ($p>0.05$).

Sonuç: Afrika ile AB arasındaki bölgesel farklılıklar yenidoğan ölümlerini açıklamada yeterli değildir. Bu nedenle yenidoğan ölümlerinin azaltılmasında sağlık hizmetlerinin sunumundan ziyade sağlık harcamalarının değerine ve adil dağılımına odaklanmak gerekmektedir.

Anahtar kelimeler: Yenidoğan ölümü, sağlık harcamaları, Avrupa, Afrika

The Regional Effect of The Difference Between Eu and African Countries in The Relationship Between Neonatal Deaths and Health Expenditures

Abstract

Objective: In this observational longitudinal study, it was aimed to examine the effect of regional differences on the relationship between health expenditures and neonatal mortality through the EU and Africa.

Methods: Mortality rate, neonatal (per 1,000 live births), Current health expenditure per capita (current US$) and Current health expenditure (% of GDP) parameters for EU, Central African Republic, Middle East & North Africa; South Africa and Sub-Sahran Africa were used for research data set. Data were gathered from World Bank Country Reports for 2000 to 2018. Generalized Linear Model (GLM) analysis was used for multivariate analysis.

Results: Neonatal mortality per 1.000 live births was significantly higher in the EU. HEPC_USD and HEPC_GDP means were the highest in African countries ($p<0.05$). Post Hoc test results showed that differences between African countries were also significant ($p<0.05$). Correlation analysis results showed that neonatal mortality rate was significantly correlated with HEPC_USD, HEPC_GDP, Country, Year and EU/African parameters ($p<0.05$). Generalized Linear Model (GLM) for neonatal mortality analysis results showed that only HEPC_GDP had significant effect on neonatal mortality per 1,000 live births ($p<0.05$). Being a member of EU or African region or year parameters did not have a significant effect on neonatal mortality per 1,000 live birth ($p>0.05$).

Conclusion: Regional differences between Africa and the EU are not sufficient to explain neonatal deaths. Therefore, it is necessary to focus on the value and fair distribution of health expenditures rather than the delivery of health services in reducing neonatal deaths.

Keywords: Neonatal death, health expenditure, Europe, Africa.

Introduction

Neonatal deaths have been an important indicator for public health from past to present. Neonatal mortality rates do not only show the level of development of a country's or region's health system. At the same time, neonatal mortality rates are seen as an indicator of the ability of citizens in that region or country to access the health system (1-4).

Health is not only a fundamental right of individuals, but also an important issue in the field of finance. Especially health expenditures show the importance that countries give to health. On the other hand, studies from past to present have shown that health expenditures and the sharing of these expenditures among individuals are not only related to income but also to other variables. Especially the developments after the new public administration approach and the transparency and accountability principles that emerged in the administration allow health expenditures to be planned more effectively. Controlling health expenditures and sharing them regularly with the public allows these expenditures to be made more effectively and for the public interest to come to the fore (5-8).

Many studies have been conducted on neonatal death, which is one of the indicators of health services. Again, health expenditures have been the subject of many studies both in the field of public administration and in the field of health management. However, there are not enough studies examining the relationship between health expenditures and neonatal deaths over EU and African regional differences (9-14). Therefore, in this study, it was aimed to examine the effect of regional differences on the relationship between health expenditures and neonatal mortality through the EU and Africa.

Material and Methods

Mortality rate, neonatal (per 1,000 live births), Current health expenditure per capita (current US$) and Current health expenditure (% of GDP) parameters for EU, Central African Republic, Middle East & North Africa; South Africa and Sub-Sahran Africa were used for research data set. Data were gathered from World Bank Country Reports for 2000 to 2018 (Table 1).

Table 1. Research parameters and the World Bank Codes

Parameter	The World Bank Code
Mortality rate, neonatal (per 1,000 live births)	SH.DYN.NMRT
Current health expenditure per capita (current US$)	SH.XPD.CHEX.PC.CD
Current health expenditure (% of GDP)	SH.XPD.CHEX.GD.ZS

Being EU of African member was used as a dummy variable, and year was used as a controlling variable in correlation and regression analysis.

Mortality rates, health expenditures in USD and % of GDP were described with means and standard deviations. Kolmogorov Smirnov Test was used for normality of research parameters. Since distributions were non-normal, nonparametric tests were used. Kruskal Wallis test was used for differences between countries, and Mann Whitney U test was used for Post Hoc comparisons. Generalized Linear Model (GLM) was used for multivariate analysis of parameters. All analysis were performed at SPSS 17.0 for windows at 95% Confidence Interval.

Results

Mean neonatal mortality rates per 1.000 live births was higher in the CAR, followed by SSA, MENA and SA. Range for neonatal mortality was also higher in African countries (Figure 1).

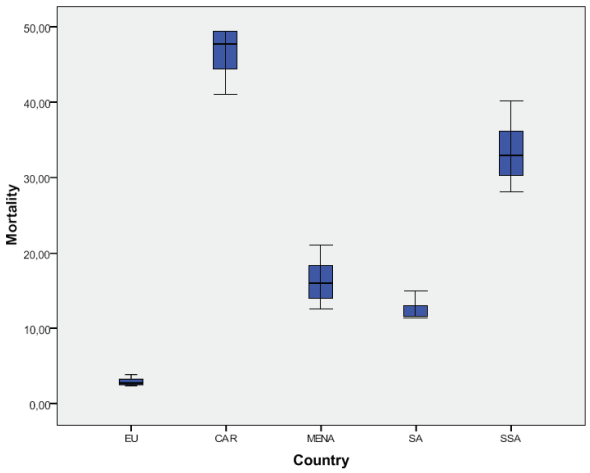

Figure 1. Mean neonatal mortality rates per 1.000 live births and differences between African countries and EU for 2000 to 2018

HEPC_GDP was the highest in the EU, followed by SA, SSA, MENA and CAR. Ranges for HEPC_GDP was also higher in the EU, CAR, MENA, and SA (Figure 2).

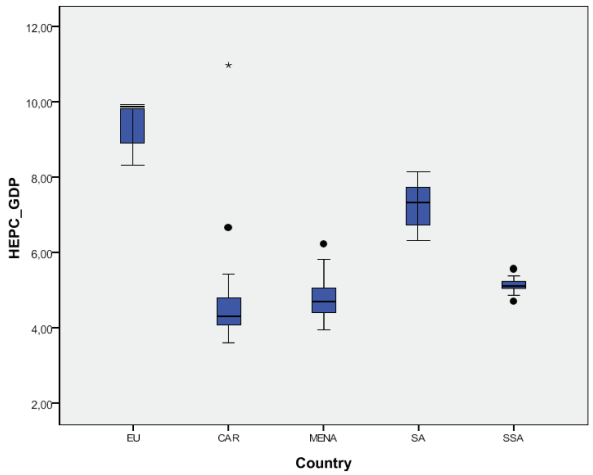

Figure 2. Mean health expenditure per capita (% of GDP) and differences between African countries and EU for 2000 to 2018

Neonatal mortality per 1.000 live births was significantly higher in the EU. HEPC_USD and HEPC_GDP means were the highest in African countries ($p<0.05$). Post Hoc test results showed that differences between African countries were also significant ($p<0.05$) (Table 2).

Table 2. Mean values of mortality, HEPC USD and HEPC GDP levels and differences

Country	Mortality	HEPC_USD	HEPC_GDP
EU	2.88±0.49	2837.14±720.39	9.43±0.55
CAR	46.31±2.93	19.53±9.62	4.82±1.66
MENA	16.21±2.73	313.21±133.66	4.82±0.65
SA	12.09±1.30	409.66±129.54	7.36±0.61
SSA	33.32±3.76	68.70±22.50	5.14±0.22
p value[a]	0.000	0.000	0.000
Post Hoc[b]	CAR, MENA, SA, SSA>EU CAR>MENA, SA, SSA SSA>MENA>SA	CAR, MENA, SA, SSA<EU CAR<MENA, SA, SSA SSA<MENA<SA	CAR, MENA, SA, SSA<EU CAR<SA, SSA SSA<MENA<SA

a. Kruskal Wallis Test, b. Mann Whitney U Test, HEPC_USD: Health Expenditure Per Capita (USD), HEPC_GDP: Health Expenditure Per Capita (% of GDP),EU: European Union, CAR: Central African Republic, MENA: Middle East & North Africa; SA: South Africa; SSA: Sub- Sahran Africa.

Correlation analysis results showed that neonatal mortality rate was significantly correlated with HEPC_USD, HEPC_GDP, Country, Year and EU/African parameters ($p<0.05$) (Table 3).

Table 3. Spearman's rho correlation analysis for mortality and research parameters

Mortality	r	p
HEPC_USD	-0.987**	0.000
HEPC_GDP	-0.806**	0.000
Country	0.301**	0.003
Year	-0.219*	0.033
EU/African	-0.693**	0.000

*p<0.05 **p<0.01 r: Correlation coefficient, HEPC_USD: Health Expenditure Per Capita (USD), HEPC_GDP: Health Expenditure Per Capita (% of GDP)

Generalized Linear Model (GLM) for neonatal mortality analysis results showed that only HEPC_GDP had significant effect on neonatal mortality per 1.000 live births ($p<0.05$). Being a member of EU or African region or year parameters did not have significant effect on neonatal mortality per 1.000 live birth ($p>0.05$) (Table 4).

Table 4. Generalized Linear Model (GLM) for neonatal mortality

Parameter	B	Std. Error	95% Wald Confidence Interval	Hypothesis Test
			Lower	Upper
(Intercept)	18.511	431.5846	-827.380	864.401
Year	.018	.2157	-.405	.441
HEPC_GDP	-4.958	.9225	-6.766	-3.150
EU/African	-4.793	4.5347	-13.681	4.095
(Scale)	116.484[a]	16.9013	87.652	154.800

Discussion

In this study, the effect of regional differences on the relationship between neonatal mortality rates and health expenditures in African and EU countries was examined. In this context, both the differences between African countries and the EU and the differences within African countries were revealed.

In addition to being one of the most fundamental rights of individuals, health services are a concept that concerns the entire public and is related to public resources in terms of financing. For this reason, the public interest should be at the highest level in the production and delivery of health services. There have been significant developments in the production and delivery of health services, especially since the definition of health as a "global public good" and its handling within the framework of the new public administration approach. While the private sector and public cooperation and new public management approaches began to take place in the field during the delivery of health services, important developments were experienced in the field of health, and a global struggle against many diseases and epidemics began (15-18).

Despite all these processes, neonatal mortality rates are still one of the most important health indicators today. Neonatal deaths are an indicator and subject of both individuals' opportunities to receive health care services and individuals' right to life. Therefore, neonatal deaths also indicate the access of individuals to health services and income distribution justice in a country. In this respect, it is important to reveal its relationship with health expenditures.

In the literature, health expenditures are an important factor affecting neonatal deaths. However, many factors such as access to health services, income distribution differences, quality and technology levels of health services, follow-up of diseases and developments in treatment opportunities are effective factors in neonatal death (19-25). According to the results we obtained in our study, we found that in the univariate analysis, country, region and health expenditures were effective on neonatal deaths and had reducing effects. Again, according to our findings, not only the regional differences between the EU and Africa, but also the differences between countries within Africa were effective on neonatal deaths. The general result was that neonatal deaths increased as development and income level decreased.

On the other hand, the results of the multivariate GLM analysis showed that when all variables were taken together, only the share of health expenditures in GDP was effective on neonatal deaths, when all variables were taken together. In other words; the effects of regional differences and time on neonatal mortality were not statistically significant.

This result highlights two important arguments. First, it is possible to state that the impact of regional or national differences on health services is gradually decreasing and that health services provide access to almost every region. Today, there is a serious difference between the poorest people in the countries with the most advanced medical and health facilities and the health services of the richest people in the poorest countries. With the increase in the concept of health tourism and its applications in the field, health services take place in a more global market and the business side comes to the fore more than public benefit.

Secondly, when health expenditures are distributed effectively and efficiently, it is a much more effective tool in preventing neonatal deaths than technology or information in health care. From this point of view, it is possible to state that the economy is the number one culprit in neonatal deaths, rather than medical or medical reasons. In this respect, it can be said that the share of health expenditures in GDP is the most important factor.

One of the most important limitations of this study is while taking into account health expenditures and regional differences, not considering macroeconomic indicators that may affect these variables. However, macroeconomic indicators show significant differences between EU and African countries, and there is not enough data set to use the deflator effect in African countries. Today, data that should can be sufficient for further analysis is still being collected and shared. Another limitation of the study is that advanced time series analysis could not be performed because the data set did not fit the normal distribution. Again, this situation is not related to this research, and is an external limitation. In further studies, when more data is shared, the results can be compared by repeating the research.

Conclusion

The results obtained in the research clearly show that neonatal deaths can be reduced by increasing the share of health expenditures in GDP. Again, according to the results, regional differences between Africa and the EU are not sufficient to explain neonatal deaths.

Therefore, it is necessary to focus on the value and fair distribution of health expenditures rather than the delivery of health services in reducing neonatal deaths.

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