

SOCIOLOGY

Statistical analysis of the prevalence of Female Genital Mutilation and societal attitudes in Africa

Gergely Kovacs*

*Corresponding author. E-mail: gergely.kovacs21@gmail.com

Paper received 10.10.15; Revised 18.10.15; Accepted for publication 22.10.15.

Abstract. The study aims to examine the possible correlation between the prevalence of societal attitudes especially religiosity and FGM in African countries. The basis of the article is the UNICEF study on FGM published in 2013 [1]. The study also attempts to establish any correlation of FGM with other sociological and economic factors in the studied countries.

Keywords: female genital mutilation, African countries, religiosity

Foreword

This article covers a highly controversial topic. The author is a devoted supporter of freedom of speech, freedom of religion and equality. The objective of this article is to examine the possible effects of an ideology on a society. It was not the intention of the author to offend any religious beliefs. However Female Genital Mutilation (FGM) is a practice that effects the lives of 127 million women in the studied countries alone [1] (and another 120 million more worldwide [5]). It is the authors opinion, that we owe these women to examine, discuss and debate this issue openly, honestly and rationally.

Definitions

UNICEF defines FGM as follows: ‘Female genital mutilation, also known as ‘female genital cutting’ or ‘female circumcision’, refers to all procedures involving partial or total removal of the female external genitalia or other injury to the female genital organs for non-medical reasons. [1]

In reality, these are all blanket terms describing a broad range of practices performed on girls and women, mostly before the age of 15 and often in infancy or early childhood. More precise anatomical descriptions are provided by a typology developed by WHO in 1995 and updated in 2007 [2].

FGM is a tradition of many ethnicities in Africa. This practice is inherited from ancient times, survived the religious, social and political changes over the centuries, and

continues to be practiced in modern times. Despite this, many people associates it with a certain religion. Can this correlation be proven by statistical means?

FGM and Religiosity Correlation

The examination is done by correlating the prevalence of Islam (percentage of Muslims) in a country and the prevalence of FGM (percentage of women of the age of 15 to 49 years who have undergone FGM).

The data about the prevalence of FGM in the studied countries comes from the UNICEF study [1].

The data about the prevalence of Islam comes from several sources: [3], [4], [5].

To establish a possible correlation at first simple linear progression methods were used:

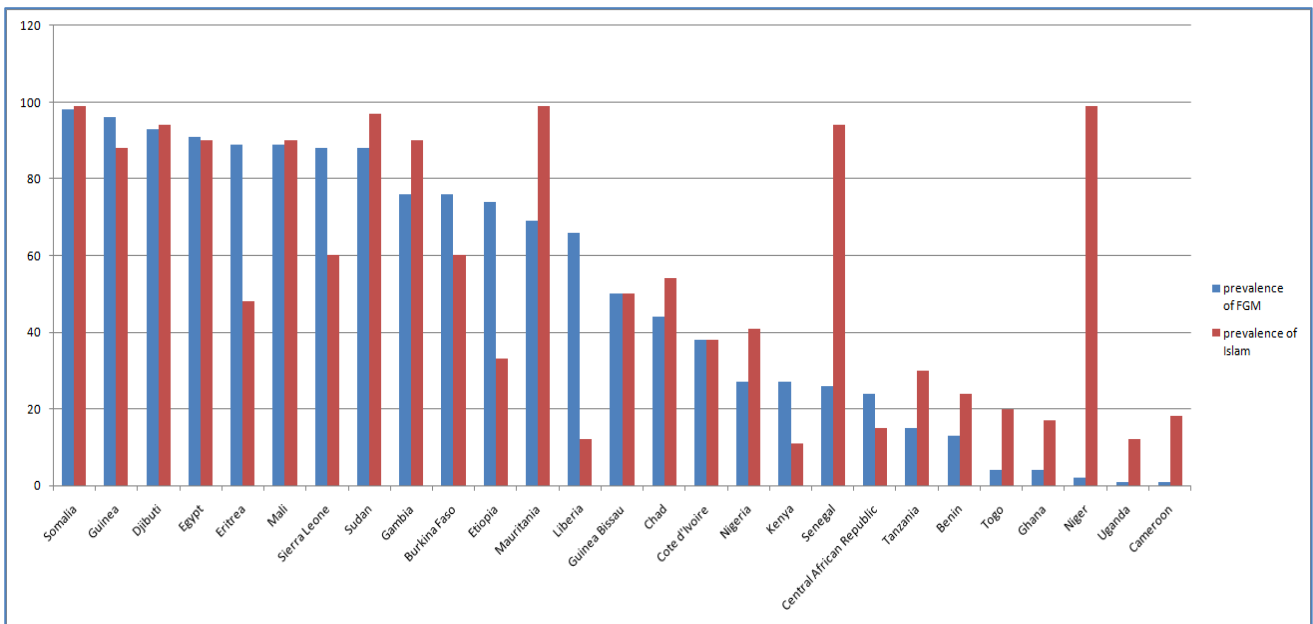


Figure 1: Correlation of prevalence of FGM and Islam (x: countries, y: prevalence %)

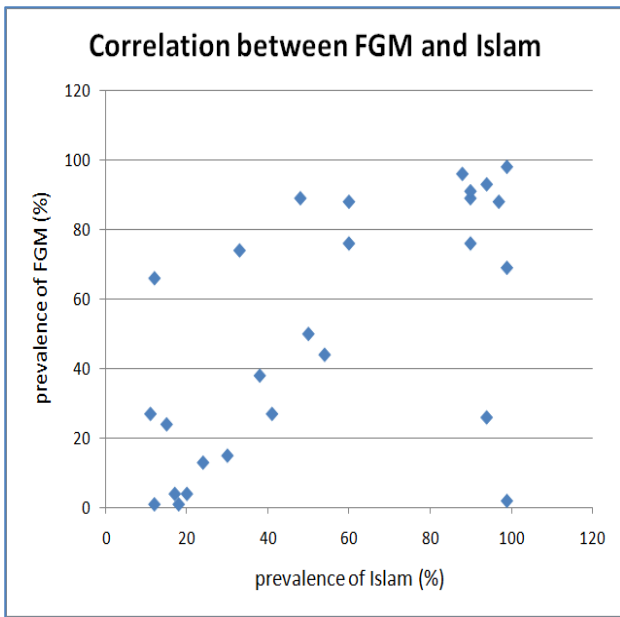


Figure 2: Correlation of prevalence of FGM and Islam

Both diagrams indicate a correlation between the prevalence of FGM and Islam. To determine the strength of the correlation, the Spearman's rank correlation coefficient was used (ρ_s). The Spearman rank correlation is a non-parametric measure of statistical dependence between two variables.

The value of the Spearman correlation coefficient can be between -1 and 1.

A value of -1 indicates a perfect reverse relation.

A value of 0 indicates, that there is no correlation between the two variables.

A value of 1 indicates a perfect correlation between the two variables.

The hypothesis is, that there is a correlation between the prevalence of Islam and FGM, meaning: $0 < \rho_s < 1$

The result is $\rho_s = 0,5775$. This is a moderate strength correlation.

The result is consistent with the result of Curry [6] ($\rho_s = 0,54$) on the older WHO-Pew dataset[2].

To determine the significance of the result, the standard Spearman significance table was used:

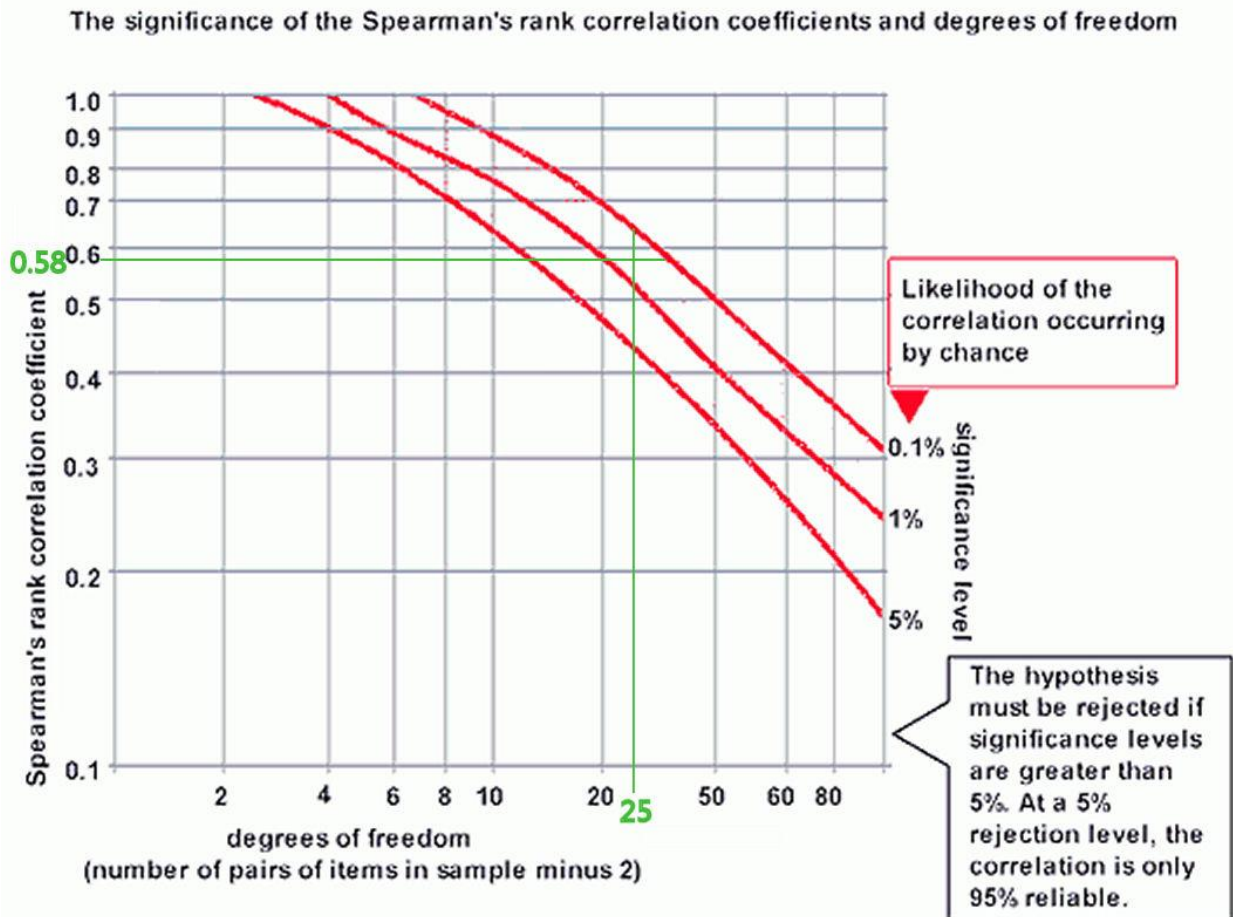


Figure 3: Significance of correlation between Islam and FGM prevalence

So the likelihood of the correlation to be purely a coincidence is between 0,1% and 1%.

Conclusion: there is a very reliable, moderate strength correlation between the prevalence of Islam and FGM in the studied countries. However, data for Eritrea, Ethiopia, Sierra Leone, Liberia, Kenya, where prevalence FGM

significantly higher than the prevalence of Islam, are contradictory to these statistics. Also data for Mauritania, Senegal, and Niger, where prevalence FGM is smaller or even negligible compared to the prevalence Islam. The exceptional nature of these countries merit further investigation.

Anti-FGM sentiment and Islam relation

The UNICEF study on FGM [1] also asked women, if they think the practice of FGM should end.

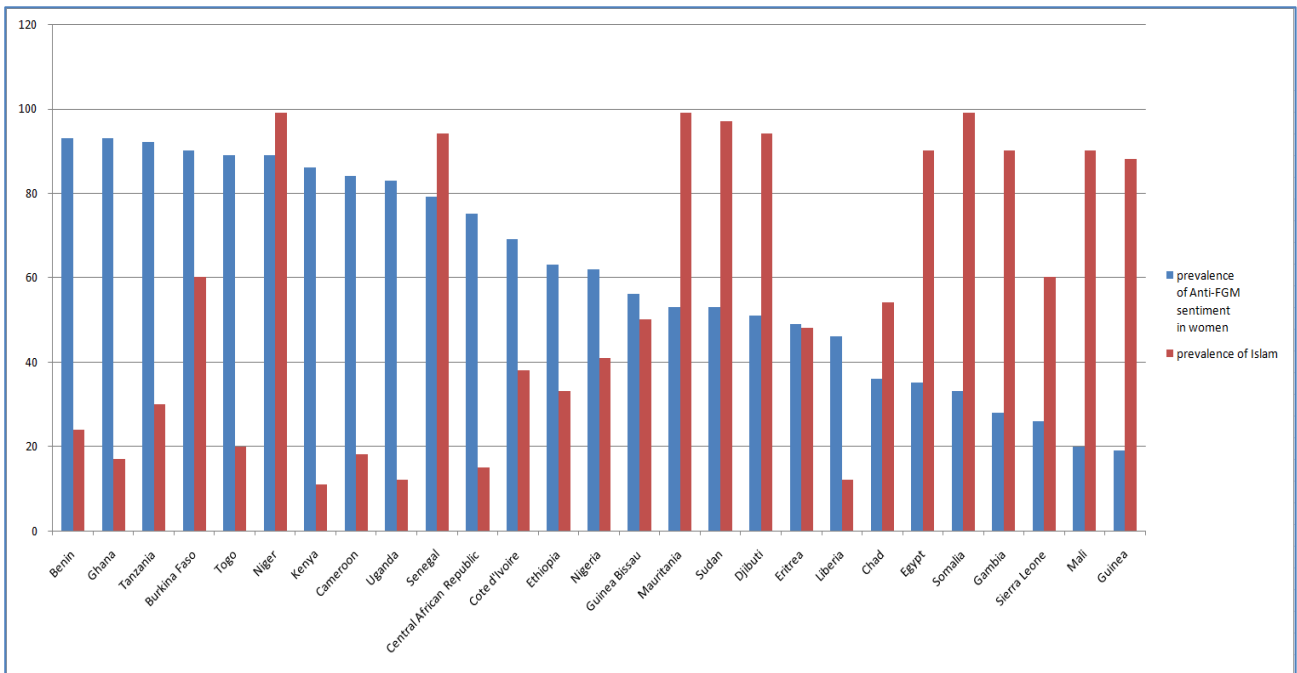


Figure 4: Correlation of prevalence of anti-FGM sentiment and Islam (x: countries, y: prevalence %)

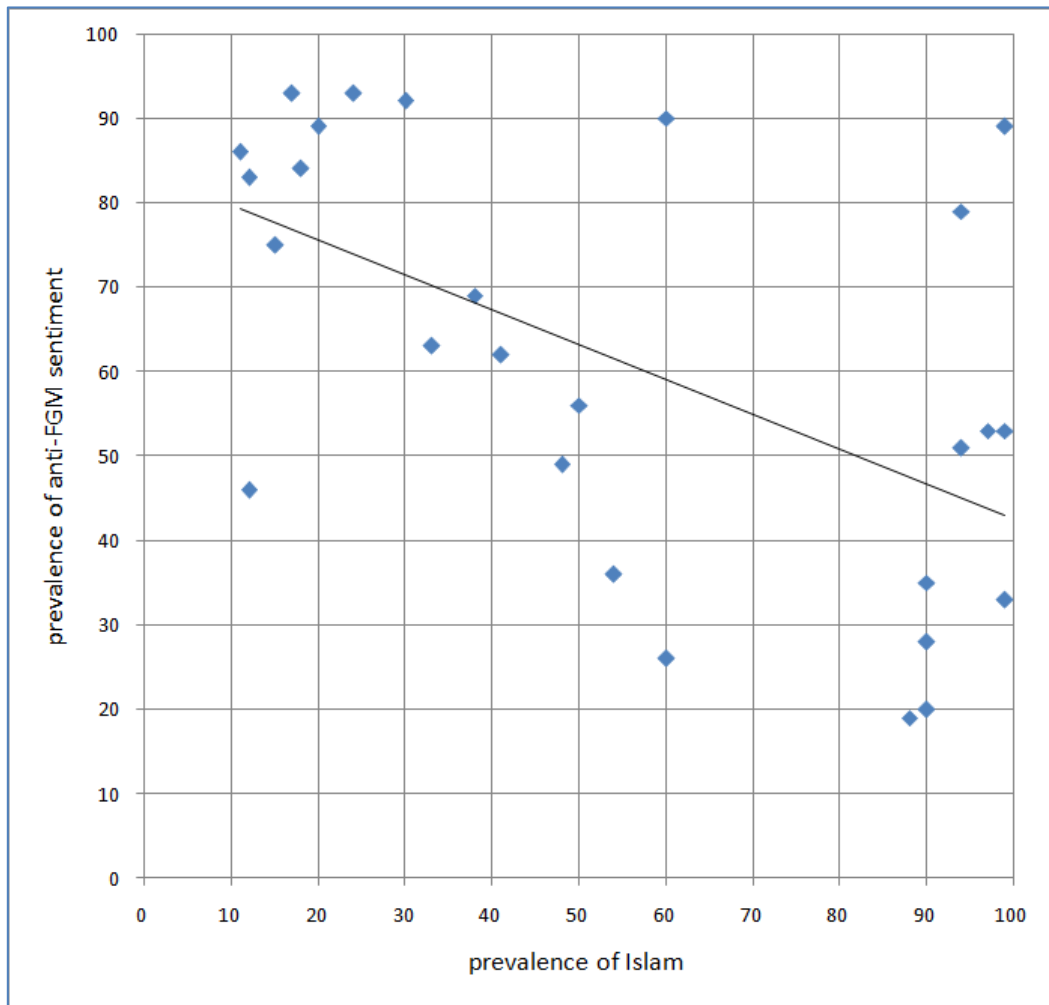


Figure 5: Correlation of prevalence of anti-FGM sentiment and Islam

Both diagrams indicate a reverse relation between the prevalence of Islam and anti-FGM sentiment. The same type of Spearman correlation coefficient is used to determine the strength of correlation.

The **hypothesis** is, that there is a reverse relation between the prevalence of Islam and anti-FGM sentiment among women, meaning: $-1 < \rho_s < 0$

The result is $\rho_s = -0,4661$. This is a moderate strength reverse relation.

Determining the significance of the result with the same table:

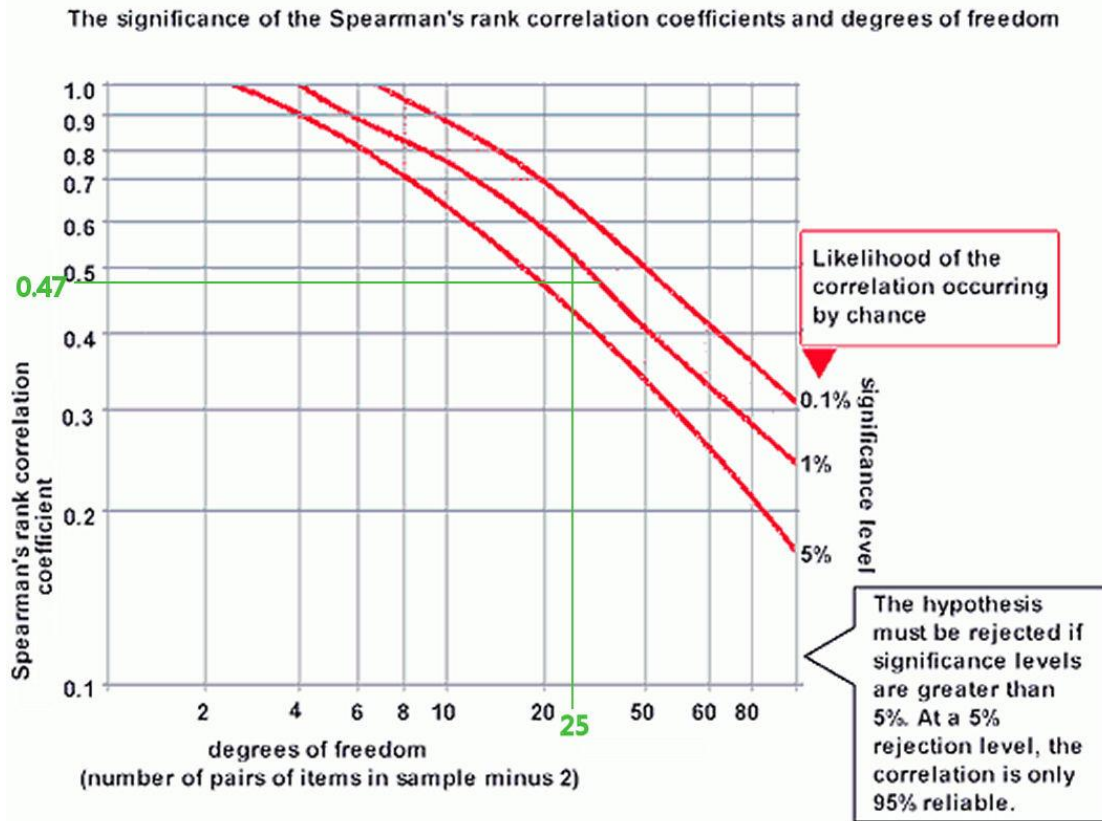


Figure 6: Significance of reverse relation between prevalence of Islam and anti-FGM sentiment

So the likelihood of the correlation to be purely a coincidence is between 1% and 5%, still within the limits allowing the acceptance of the hypothesis.

Conclusion: there is a reliable, moderate strength reverse relation between the prevalence of Islam and anti-

FGM sentiment in women in the studied countries. However, statistics of dominantly Islamic countries such as Niger and Senegal show that Muslim women disapprovingly relate to FGM. These anomalies also merit further research.

Exceptional Countries

Liberia, Senegal and Niger appear to be anomalies in both charts. It would merit further investigation what other social factors cause their special status.

Other possible factors

The same type of statistical analysis was conducted to find other social or economical factors, that could offer a better correlation with the prevalence of FGM in the studied countries.

The data came from the Human Development Report [7] published in 2014 by the United Nations.

Poverty (GDP per capita) correlation with FGM: $\rho_s = -0,061$

This value is very close to 0, and indicates, that there is no measurable correlation between poverty and prevalence of FGM.

Human Development Index(HDI) correlation with FGM: $\rho_s = -0,351$

This value represents a weak reverse relation. However the significance of the result is outside of the acceptable boundaries, as it is seen in the following table:

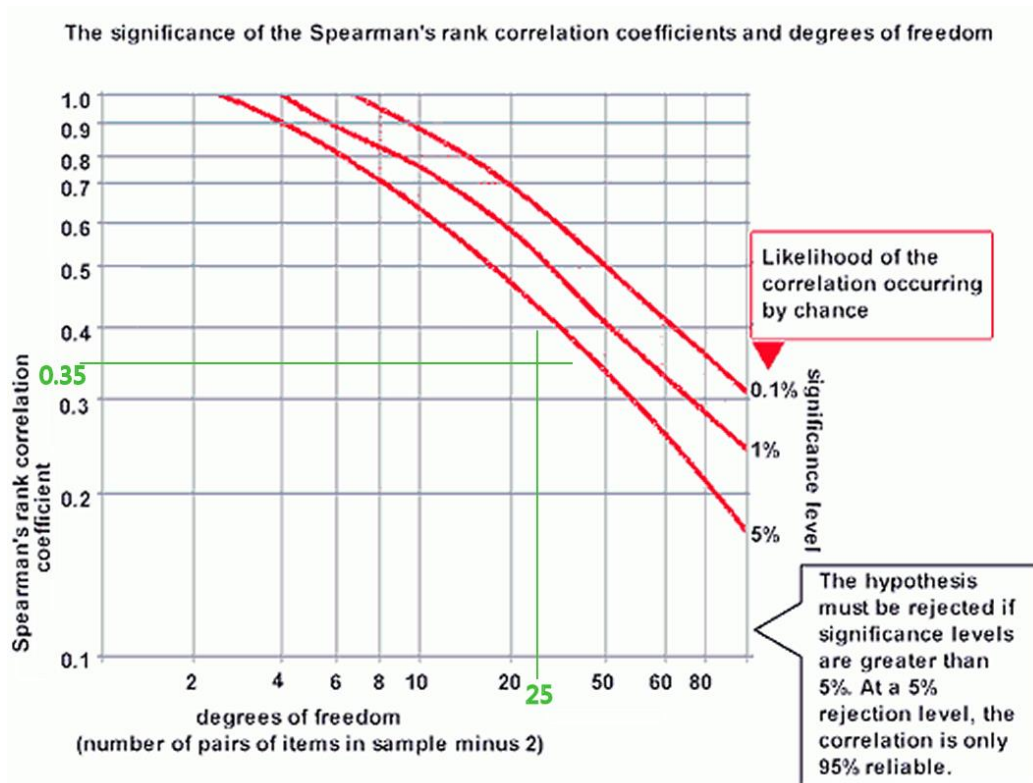


Figure 7: Significance of correlation between HDI and FGM, hypothesis needs to be rejected

Urban/rural population(%) correlation with FGM:
 $\rho_s=0,017$

This value is very close to 0, and indicates, that there is no measurable correlation between urban/rural population and prevalence of FGM.

Life expectancy (at birth) correlation with FGM:
 $\rho_s=0,117$

This value indicates that the correlation between life expectancy and prevalence of FGM is very weak.

Literacy(%) correlation with FGM: $\rho_s=-0,192$

This value indicates that the correlation between literacy and FGM is very weak.

Education Index(EI) correlation with FGM: $\rho_s=-0,49$

This value indicates a moderate strength reverse relation between Education Index and prevalence of FGM. The table puts the significance of the correlation between 1% and 5%.

This correlation however is weaker and less reliable than the correlation with prevalence of Islam.

Conclusions

The analysis of UNICEF data found that in the studied African countries a reliable correlation exists between the prevalence of Islam and practice of Female Genital Mutilation. A similar correlation exists between the prevalence of Islam and women's tolerance to FGM.

However correlation in itself does not mean causation. Just because two variables correlate, it does not prove, that one is causing the other. It can be argued, that the similar levels of Islam and Female Genital Mutilation are both caused by an unknown third variable, but this study could not find such possible alternative factor. It did, however, eliminate poverty, life expectancy, absence of urbanization and absence of basic education as possible explanations.

REFERENCES

- [1] UNICEF – Female Genital Mutilation/Cutting: A statistical overview and exploration of the dynamics of change (July 2013)
- [2] World Health Organization, Department of Reproductive Health and Research
 Eliminating female genital mutilation – An interagency statement
 ISBN: 978 92 4 159644 2
- [3] Pew Research Center
 Mapping The Global Muslim Population (October 2009)
- [4] United States, State Department
 (<http://www.state.gov>)
- [5] en.wikipedia.org
- [6] Oliver Scott Curry – The relationship between Islam and female genital mutilation (October 2014)
- [7] United Nations - Human Development Report 2014
<http://hdr.undp.org/en/data>