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**Correlations between the proportion of type III female genital mutilations in the series and adverse obstetric outcomes: a short meta-analysis.**

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Abstract.

Background. Authors have reported that evidence on health harms of female genital mutilation is poor. Aim. Meta-analyzing prospective studies on adverse obstetric outcomes according to the severity of female genital mutilation. Method. Prospective studies were already acknowledged in previous meta-analyses and used for calculations. The proportions of type III female genital mutilation were extracted by full-texts, along with the proportions of adverse obstetric outcomes. Assuming random models, the proportions were encoded for meta-analysis and weighted for the inverse of the variance. Non-parametric correlations among weighted proportions of type III female genital mutilation and weighted proportions of obstetric outcomes were built. Analyzable obstetric outcome were: Cesarean section, instrumental delivery, episiotomy, post-partum hemorrhage, low Apgar' score – need of resuscitation. Results. Meta-analyzable series are few and heterogeneous. There is a trend of direct correlation among the proportion of type III female genital mutilations in the series and the proportion of Cesarean section, instrumental deliveries, post-partum hemorrhage and low Apgar' scores at birth or need of neonatal resuscitation. The significance was reached for the post-partum hemorrhage and for the fetal adverse outcome. Conclusion. It should be retained that type III female genital mutilation is likely to be a serious concern for birth.

## Introduction.

Authors have questioned that current evidence on health harms of female genital mutilations (FGMs) have been extracted from poor quality studies by western countries people, following own cultural believing. Such cultural believing works against the cultural rules in which FGM take their roots [1-4]. From a medical point of view, it's hard to conceive that FGMs have no consequences on the female health, but we acknowledge that evidence is still poor. The lack of evidence is linked with poorly reporting of outcome and of type of mutilation [5,6]. Concerning the obstetric outcomes, the evidence seems play against the FGMs, although results of meta-analyses are heterogeneous and came from low quality studies [7,8]. Results of the 2006 WHO study on adverse obstetric outcome in mutilated women best suggests that the more severe the FGMs are, the higher risk of adverse obstetric outcome is [9].

The aim of this short meta-analysis is to test the hypothesis that some obstetric outcomes correlate with the rates of type III female genital mutilation reported in prospective studies.

## Methods.

Meta-analyzable studies were previously acknowledged by Berg, Odgaard-Jensen et al [7] in their meta-analysis. Among these, the 2006 WHO study [9], the Berardi et al study [10], the Chibber et al study [11], the De Silva et al study [12], the Jones et al study [13], the Millogo-Traore et al study [14] and the Wuest et al study [15] are prospective studies. We re-screened the above mentioned prospective studies in order to correlate adverse obstetric outcomes to the rate of type III female genital mutilation.

The Chibber et al study [11] does not report rate of type III FGMs. The corresponding Author of that study was contacted by e-mail but she did not answered. The study [11] was excluded from analyses. When the reported event was 0, it was estimated the rate of rare event according to Quigley et al [16]. The reported proportion of obstetric outcomes and type III FGMs were encoded according to Lipsey & Wilson [17]. Random effect models were assumed when correcting the effect sizes for the inverse of the variances. The proportions weighed for the inverse of the variances for obstetric outcomes and for type III FGMs were correlated by using the non-parametric correlation. A significance was expected with a p value of less than 0.05. Calculations were done by using OpenOffice.org Calc, version 3. Correlations were performed by using KyPlot 2.0.

## Results.

Table 1 reports descriptive statistics,  $I^2$  values and results of Spearman' and of Kendall' correlations. There is a trend of direct correlation among the proportion of type III FGMs in the series and the proportion of Cesarean section, instrumental deliveries, post-

partum hemorrhage and low Apgar' scores at birth or need of neonatal resuscitation. The significance was reached for the post-partum hemorrhage and for the fetal adverse outcome. It should be underlined that meta-analyzable prospective series are few, often heterogeneous (high  $I^2$  index) and of low quality, in agreement with what reported by Berg et al [7,18].

#### Discussion.

Heterogeneity and low quality studies are the main concern in assessing FGMs and women health, even if prospective studies were chosen for meta-analyzing data. Therefore, it should be cautious in interpreting the results. However, it should be retained that the type III FGMs are more likely a serious concern for birth, according to what has been suggested by the 2006 WHO study [9]. This finding should strength the idea that FGMs are a serious concern for the women health, in especially in relationship with the outcome of birth. Even if the cultural roots must be respected, it should not be advisable to concede the traditional genital cut for respecting the other cultures. In conclusion, there is an urgent need to well collected data on FGMs and female health outcomes. In Europe, it can be suggested to institute national registries on FGMs for assessing rate and complications of each type of FGMs, in order to best manage the female health of many women currently coming from Middle East and Africa to Europe.

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Table 1.

	Quality *	Type III FGM proportion	Cesarean section proportion	Instrumental delivery proportion	Episiotomy proportion	Post-partum hemorrhage proportion	Low-Apgar score – need of resuscitation proportion
WHO 2006 [9]	High	31.1%	5.9%	/	/	7.3%	8.5%
Berardi, 1985 [10]	Low	0.6%	12.7%	5.6%	22.5%	7%	2.8%
De Silva, 1989 [12]	Low	42.5%	4.2%	7.2%	55.1%	5.4%	5.4%
Jones, 1999 [13] -Burkina Faso -Mali	Low Moderate	5% 5%	1% 3%	/	/	/	/
Millogo-Traore, 2007 [14]	Low	2.6%	/	1.8%	71.8%	7.1%	4.4%
Wuest, 2009 [15]	Low	47.5%	22.1%	10.7%	19.8%	6.6%	6.6%
I <sup>2</sup>		100%	89.8%	35.6%	85.0%	86.0%	0%
Spearman' coefficient of correlation p			0.771 p=0.085	0.800 p=0.166	0.200 p=0.729	0.829 p=0.064	1.000 p=0.046
Kendall' coefficient of correlation p			0.600 p=0.091	0.667 p=0.174	0 p=1	0.733 p=0.039	1.000 p=0.014
The quality was attributed by Berg et al [18].							

Descriptive statistic and correlation between proportion of Type III FGMs and obstetric outcomes.