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Investigating Factors of Female Genital Mutilation in Ethiopia

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Abstract

Over 125 million girls and women alive today have been cut in the 29 countries in Africa and the Middle East where FGM/C is concentrated and the prevalence of FGM was 80% in 2000 and only a 5% decrease had been observed in 2005 in Ethiopia. The objective of this study was to assess and identify the prevalence and factors associated with female genital mutilation in Ethiopia using 2016 EDHS. The dependent variable was female genital mutilation constructed from a number of variables on uptake of the various WHO recommended for women circumcision (coded as No= 0 and Yes=1). The study used Descriptive Statistics and Binary logistic regression model to identify the critical determinants of FGM. A Study was conducted on 7822 women age 15-49 of which 65.2% were circumcised. The significant factors of Female genital mutilation are region, religion, and education status, place of residence, wealth index, media exposure, parents' education level and ethnicity. In the study, wealth index, older age of women and being Muslim were factors significantly associated with increased circumcision risk in Ethiopia. Hence, government, health bureau, Health workers and others should increase the awareness of mothers with no education and need for integrated societal development interventions, such as involving religious leaders in women's mobilization and interventions, targeted at the high FGM clustered rural areas and regions.

Keywords: Genital Mutilation, Ethiopia, Female, Logistic Regression

Introduction

FGM/C could be a violation of girls' and women's human rights and is condemned by several international treaties and conventions, yet as by national legislation in several countries. Yet, wherever it's practiced FGM/C is performed in line with tradition and social norms to confirm that ladies are socially accepted and mature, and to uphold their standing and honor and that of the entire family. UNICEF works with government and civil society partners towards the elimination of FGM/C in countries where it is still practiced [1].

Female genital mutilation (FGM) is a collective term used for a range of practices involving the removal/ alteration of parts of healthy female genitalia for nontherapeutic reasons [2] whereas 'female genital mutilation', 'Female genital cutting', and 'female circumcision' could be used but the widely and alternatively used ones currently are Female Genital Mutilation and/or Cutting as used by the United Nations (UN) Agencies.

The procedures of FGM may have harmful physical, psychosocial and sexual consequences and can cause severe pain, shock caused by severe pain, severe bleeding, problems urinating and later on repeated urinary tract infections, menstrual problems, infertility as well as com-plications in childbirth [3]. Imaginable psychosocial and sexual long-term consequences include fear for sexuality, post-traumatic symptoms, anxiety and depression, painful sexual intercourse [4].

In Ethiopia, the age at which FGC is performed varies among the different ethnic groups [5]. In Ethiopia, 65% of women age 15-49 are circumcised: 3% of women had cutting with no flesh removed, 79% had cut with the flesh removed, and 7% had their genital area sewn closed after cutting in Ethiopia. FGM has been identified as a major social, health and rights violation problems for millions of girls, especially in Africa and also the Middle East. Female circumcision is most prevalent among the ethnic groups of Afar and Somali (98% and 99%, respectively), followed by Welaita and Hadiya women (92% for both). 54% of ur-ban women are circumcised, as compared with 68% of women in rural areas. FGC is less prevalent among women with higher education and those in the highest wealth quintile [5].

Despite some 25 years of efforts to ban FGM in many countries around the world, the prac-tice is still far from being eradicated [6,7] during these years, the occurrence in Ethiopia's Southern Nations, Nationalities and Peoples Region (SNNPR), of which the Hadiya Zone is a part, was 71% and 74.8%, respectively [8] and [9]. According to a follow-up survey in 2006, the rate of decrease among Hadiya was only 5.2%, and the prevalence was 70.9% [10], indicating the need for further studies and interventions to address the problem.

Therefore, this study was carried out using DHS 2016 data to assess and analyze contributing factors of female genital

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mutilation in Ethiopia. The findings of the study also help to design appropriate interventions to halt the practice in the study area.

Data and Methodology

Study Area and Data

Ethiopia is that the second most inhabited country in Sub-Saharan Africa. Administratively, Ethiopia is divided into nine geographical regions (Tigray, Afar, Amhara, Oromo, Soamli, Benshangul-Gumuz, SNNPR, Gambela and Harar) and two administrative cities (Addis Ababa and Dire-Dawa). The sampling frame used for the 2016 EDHS is that the African nation Population and Housing Census (PHC), which was conducted in 2007 by the Ethiopia Central Statistical Agency (CSA).

It was enforced by the Central applied mathematics Agency (CSA) at the request of the Ministry of Health (MoH). Data assortment happened from Gregorian calendar month eighteen, 2016, to June 27, 2016.

The EDHS sample was stratified and selected in two stages. Each region was stratified into urban and rural areas, yielding sampling strata. Samples of EAs were selected independently in each stratum in two stages. Implicit stratification and proportional allocation were achieved at each of the lower administrative levels by sorting the sampling frame within each sampling stratum before sample selection, according to administrative

units in several levels, and by using a probability proportional to size selection at the first stage of sampling.

In the first stage, a total of EAs (EAs in urban areas and EAs in rural areas) were selected with probability proportional to the EA size (based on the PHC) and with freelance choice in every sampling stratum. A household listing operation was carried out in all the selected EAs from September to December. The resulting lists of households served as a sampling frame for the selection of households in the second stage. Some of the selected EAs were large, with more than households. To minimize the task of household listing, each large EA selected for the EDHS was segmented. Only one section was designated for the survey, with chance proportional to the section size. Household listing was conducted only in the selected segment, that is, a EDHS cluster is either an EA or a segment of an EA.

In the second stage of selection, a fixed number of households per cluster were selected with an equal probability systematic selection from the newly created household listing. All women age - and all men age - , who were either permanent residents of the selected households or visitors who stayed in the household the night before the survey, were eligible to be interviewed.

For this study, a total of 7,822 women who aged 15-49 were included in the study. The dependent variable for this study is female circumcision; if the female experienced Circumcision of Genital Mutilation Yes (1) otherwise No (0). The predictor (independent) variables of the study are classified as: demographic and socioeconomic variables which are expected to have an impact on Female Genital Mutilation.

The predictor variables included in the study were: Maternal Education, wealth Index, region, religion, marital status, age of mother, occupation, place of residence, parents' education level, media exposure, ethnicity, and household head sex. For this study, the binary logistic regression model will be used to investigate effects of predictors on the probability of the response variables (genital mutilation) (Y_i) in Ethiopia which is defined as follows. Yi takes a value 1 if the female experience genital mutilation and 0 otherwise. Where: - i = 1,2,...,n; where:- n is the number of sampled females. Let us denote the proportion of success (experience genital mutilation).

$$p(Y_{ij} = 1) = 1 - \pi_j \quad (1)$$

And $Y_i \sim$ Bernoulli (π_i)

The logistic regression model is defined as follows. Let $\mathbf{X}_{nx(k+1)}$ denote the single level binary logistic regression data matrix of k predictor variables of the genital mutilation and $\boldsymbol{\beta}_{(k+1)x1}$ be a vector of coefficients and given as

$$X = \begin{bmatrix} 1 & x_1 & x_2 & \dots & x_{1k} \\ 1 & x_1 & x_2 & \dots & X_{2k} \\ \vdots & \dots & \dots & \dots & \vdots \\ 1 & x_{n1} & x_{n2} & \dots & x_k \end{bmatrix} \quad \beta = \begin{bmatrix} \beta_o \\ \beta_1 \\ \vdots \\ \beta_k \end{bmatrix}$$

X -is the design matrix

β- is the vector of unknown coefficients of the covariates and intercept Then, the logistic regression function is given as:

$$\pi_i = \frac{\exp(\beta_o + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_k X_k)}{1 + \exp(\beta_o + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_k X_k)} = \frac{\exp(X_i'\beta)}{1 + \exp(X_i'\beta)} \quad (2)$$

$$\log\left(\frac{P(y = 1/X)}{1 - p(y = 1/X)}\right) = \log\left(\frac{\pi_i}{1 - \pi_i}\right) = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k = X_i'\beta$$

Where: - i= 1, 2,…, k

The coefficient is interpreted as the change in the log-odds of experiencing female genital mutilation per unit change of the corresponding continuous covariate. In case of categorical predictor variable, it is interpreted as the log-odds of experiencing genital mutilation given a category compared to the reference category [11].

Results and Discussions

Results

The study was conducted on a secondary data; EDHS 2016. Results of the descriptive part depicted a total number of 7,822 all women age 15-49 were included in this study. Among these, 5,101 Females included in the study (65.2%) were circumcised while 2721 (34.8%) women were not circumcised in Ethiopia.

From the total interviewed women, 65.2% had experienced FGM and 52.93% of their daughters not undergone the procedure, 25.37% circumcised a daughter, 12.85% circumcised two and 12% circumcised more than three daughters in the country.

The study explored percentages of 15-49 women selected for the study and accordingly 15.8% of them live in urban area of the country while the remaining 84.2% life was based in rural areas of Ethiopia.

Table 1 shows the proportion of FGM by General Characteristics in Ethiopia. Religion is another important characteristic of the population under study and the descriptive result depicts that about 68.4% of the study populations were Christians, 30.2% were Islam and the remaining 1.4 % was into another religion.

The educational status was considered as an important factor in the investigation of female circumcision in Ethiopia. Accordingly, from the total number of the population studied, 40.01% were without education, 18.72% had primary education while the remaining 40.5% had secondary and higher education. The proportion of women aged 15-49 in Ethiopia is different from urban to rural. The study explored percentages of 15-49 women selected for the study and accordingly 15.8% of them live in urban area of the country while the remaining 84.2% life was based in rural areas of the country.

Table 1: Proportion of FGM by General Characteristics in Ethiopia

Variables	Categories	Frequency	Percent (%)
Religion	Christian	5352	68.4%
	Muslim	2362	30.2%
	Others	108	1.4%
Educational level	No education	3130	40.01%
	Primary	1464	18.72%
	Secondary	2083	27.0%
	Technical/ vocational	733	9.5%
	Higher	312	4.0%
Age in 5-year groups	15-19	1913	24.5%
	20-24	1380	17.6%
	25-29	1319	16.9%
	30-34	982	12.6%
	35-39	890	11.4%
	40-44	702	9.0%
	45-49	636	8.1%
Place of residence	Urban	1236	15.8%
	Rural	6586	84.2%
Marital status	Never in union	2656	34.0%
	Married	2872	36.7%
	Living with partner	225	2.9%
	Widowed	704	9.0%
	Divorced	1060	13.6%
	No longer living together/ separated	305	3.9%
wealth index	Poor	2677	34.2%
	Middle	1531	19.6%
	Rich	3614	46.2%
Occupation	Not working	3518	45.0%
	Professional/technical/ managerial	343	4.4%
	Clerical	171	2.2%
	Sales	1567	20.0%
	Agricultural - employee	1016	13.0%
	Services	378	4.8%
	Skilled manual	397	5.1%
	Unskilled manual	170	2.2%
	Others	262	3.3%
Media exposure	No	4796	61.3%
	Yes	3026	38.7%
Husband's education level	No education	2254	28.8%
	Primary	3206	41.0%
	Secondary	1195	15.3%
	Higher	1167	14.9%

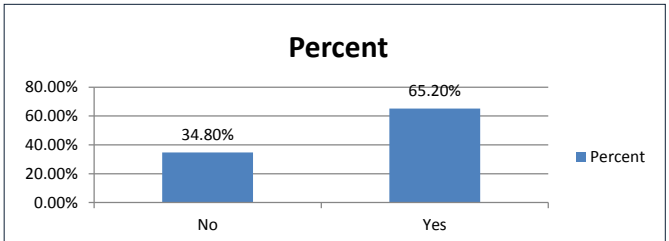

Figure 1: Proportion of FGM by general characteristics in Ethiopia

Most of the women under study were currently married (36.7%), while the remaining 34% were never in the union and 2.9%, 9%, 13.4%, 3.9% were living with a partner, widowed, divorced and separated respectively. The analysis of the wealth category of those women indicates that 34.2%, 19.6% and 46.2% of them were poor, at the middle class and rich, respectively. The Occupation 15-49 women selected for the study is regarded as an important factor to assess female genital mutilation and the surveyed women were categorized into different occupation categories. The result confirmed that 45%% of them were not working, 20% sales, 13% were agriculture employee and the rest about 22% were belong to occupation categories such as, professionals, clericals, services, skilled manual, unskilled manual and others Media exposure and partner's education level were also other important variables used to characterize the surveyed population of the study. The Parents' education status was considered as an important factor in the investigation of the prevalence and determinants of female circumcision in Ethiopia. (Table 1)

Table 2 shows the Cross tabulation of region versus female genital mutilation in Ethiopia. Female circumcision is most prevalent among the ethnic groups of Afar and Somali (98

Table 2: Cross tabulation of region versus female genital mutilation in Ethiopia

Regions	Respondent circumcised			
	Yes		No	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Tigray	320	59.3%	220	40.7%
Afar	61	91.0%	6	9.0%
Amhara	1269	69.5%	557	30.5%
Oromiya	2076	72.1%	804	27.9%
Somali	226	98.7%	3	1.3%
Benishangul gumuz	65	86.7%	10	13.3%
SNNPR	1070	64.3%	594	35.7%
Gambela	16	59.3%	11	40.7%
Harari	16	80.0%	4	20.0%
Addis Adaba	245	54.9%	201	45.1%
Dire Dawa	35	74.5%	12	25.5%

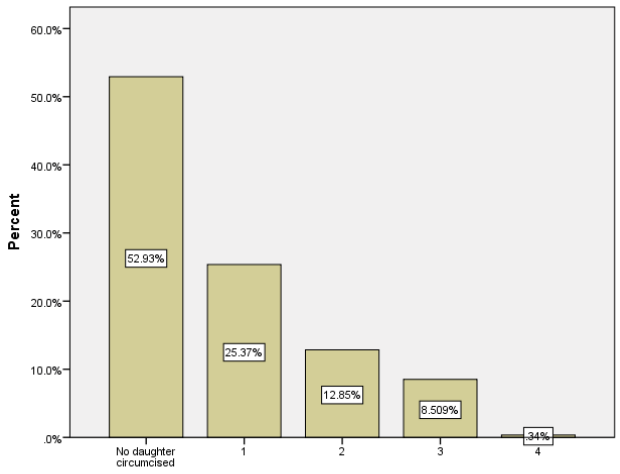

Figure 2: Proportion of FGM by number of daughters circumcised in Ethiopia

percent and 99 percent, respectively), followed by Welaita and Hadiya women (92 percent for both) (not available here due to several categories). The prevalence of circumcision in Ethiopia is different from region to region in the country. The study explored percentages of female circumcision across regions of Ethiopia and accordingly, the female genital mutilation proportion is highest in Somali region(98.7%) and followed by Afar region (91%) whereas those from Addis Ababa city administration shares smallest proportion (54.9%). The results of the study further confirm that the status on female circumcision in Ethiopia is 65.2% prior to the survey year (Table 2).

Determinants of Female genital mutilation in Ethiopia

Table 3 shows the Logistic regression result of determinant of Female Circumcision in Ethiopia The results from Binary logistic regression analysis in table 3 revealed that region, religion, education level, place of residence, wealth status, place of delivery, media exposure, parents' education level and ethnicity were significant predictors of female circumcision at level of significance.

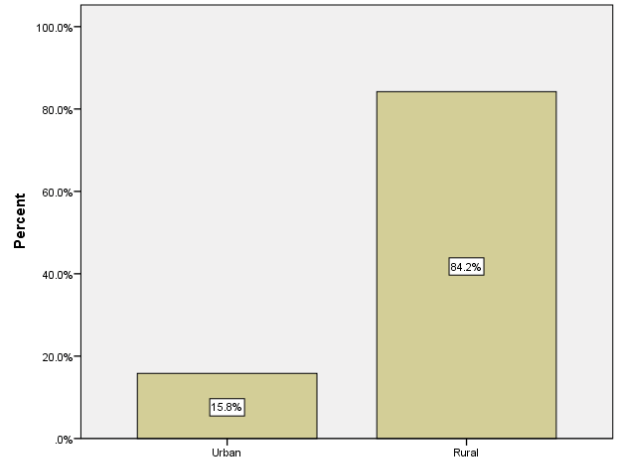

Figure 3: Proportion of FGM by place of residence in Ethiopia

The binary logistic model was employed to explore determinants of female circumcision in Ethiopia. This model uses maximum likelihood technique which is an iterative procedure for estimation of parameters. The Wald statistic as indicated was statistically significant P- value (P<0.000) and the

Table 2: Cross tabulation of region versus female genital mutilation in Ethiopia

	β	Sig.	Odds ratio
Region (Tigray: reference category)		0.000	
Afar	1.104	0.004	3.016
Amhara	-1.206	0.009	0.299
Oromiya	-0.681	0.072	0.506
Somali	1.044	0.006	2.841
Benishangul gumuz	-0.083	0.841	0.920
SNNPR	0.247	0.629	1.280
Gambela	-0.931	0.014	0.394
Harari	0.999	0.073	2.772
Addis Adaba	-0.031	0.964	0.970
Dire Dawa	-0.476	0.227	0.621
Religion(Christian: reference category)		0.009	
Muslim	0.216	0.298	1.241
Others	0.056	0.789	1.058
Education level (no education)		0.000	
Primary	-1.341	0.000	.262
Secondary	-0.327	0.014	0.721
Technical/ vocational	-0.285	0.037	0.752
Higher	-0.220	0.147	0.802
Age (15-19: reference category)		0.831	
20-24	0.099	0.382	1.104
25-29	0.071	0.523	1.074
30-34	0.051	0.640	1.053
35-39	0.113	0.322	1.119
40-44	0.151	0.185	1.163
45-49	0.020	0.869	1.020
Residence (urban: reference category)	0.200	0.005	1.222
Marital status(single: reference category)		0.868	
Married	-0.083	0.555	0.921
Living with partner	-0.049	0.716	0.952
Widowed	-0.089	0.645	0.915
Divorced	-0.086	0.574	0.917
No longer live together/separated	0.021	0.882	1.022
Wealth index(lowest: reference category)		0.000	
Middle	0.204	0.001	1.226
Rich	0.847	0.000	2.333
Occupation(chief excutives, senior officials)		0.387	
Not working	0.136	0.325	1.145
Professional/technical/managerial	0.205	0.250	1.228
Clerical	0.100	0.639	1.105
Sales	0.137	0.338	1.147
Agricultural – employee	-0.019	0.899	0.981
Services	0.263	0.133	1.301
Skilled manual	0.196	0.259	1.216
Unskilled manual	-0.036	0.863	0.964
Media exposure(Yes: reference category)	0.111	0.029	1.117
Parent education level (no education)		0.013	
Primary	0.101	0.339	1.106
Secondary	-0.093	0.342	0.911
Technical/ vocational	-0.153	0.163	0.858
Higher	-0.117	0.286	0.889
Ethnicity (several categories)		0.001	

model has strong explanatory power to predict the probability of female circumcision in Ethiopia. The coefficients and odds ratio of the logistic model are given in Table 3 and discussion and interpretations of these variables are as follows.

Region is one of the significant variables influenced female circumcision in Ethiopia. The result of odd ratio confirmed that the female in Afar region are 3.016 times more likely to be circumcised compared to the women living in Tigray region whereas the women living in Amhara region were 0.299 times less likely to circumcised compared to those living in Tigray region. In addition to this the women living in Oromia region were 0.505 times less likely to circumcised compared to the women living in Tigray region whereas the women living in somali region were 2.841 times more likely to be circumcised compared to the women living in Tigray region. The study result further depicted that the women living in Gambella region were 0.394 times less likely to be circumcised than the children living in Tigray region and the women living in Dire Dawa city administration were 0.621 times less likely to be circumcised than the children living in Tigray region.

Similarly, religion is another significant determinant of female circumcision. The result of this study demonstrated that women whose religion was Islam and others traditional religion were 11, 1.241 and 1.058 times more likely circumcised than that of those following Christian in the respectively in the country.

Education status is another significant determinant of female circumcision in Ethiopia. Women with primary education were 0.262 times less likely circumcised compared to those without formal education. Women with secondary education were 0.721 times less likely to experience circumcision compared to those without formal education. Women with technical/vocation al and higher education were 0.752 and 0.802 times less likely circumcised compared to those without formal education in Ethiopia. Place of residence is also among the important variables significantly influenced women circumcision and accordingly women who live in rural area were 1.222 times more likely to be circumcised than women who live in urban area of Ethiopia.

Wealth index is among the important variables significantly influenced female circumcision and accordingly women with middle wealth index were 1.226 times more likely circumcised than poor, women of rich wealth were 2.333 times more likely circumcised than poor in Ethiopia.

Parents' Education status is another significant determinant of female circumcision in Ethiopia. Women has parents' with primary education were 1.106 times more likely circumcised compared to those without formal education. Women with secondary education were 0.911 times less likely to experience circumcision compared to those without formal education. Women with technical/vocational and higher education were 0.858 and 0.889 times less likely circumcised compared to those without formal education in Ethiopia. Place of residence is also among the important variables significantly influenced women circumcision and accordingly women who live in rural area were 1.222 times more likely to be circumcised than women who live in urban area of Ethiopia.

Similarly, the model result highly confirmed that women who have not all day's media exposure were 1.117 times more likely circumcised in Ethiopia than those who have all days media exposure. Once again, Ethnicity is also among the important variables significantly influenced female circumcision in Ethiopia (Table 3)

Discussion

This study is an attempt to identify some socio-economic and demographic determinants of female genital mutilation in Ethiopia based on survey EDHS 2016 data. Accordingly descriptive method and logistic regression analyses were used for analysis. The analysis generalized that the status on female circumcision in Ethiopia is 65.2% prior to the survey year compared to previous survey by UNICEF classification, with a moderately high FGM prevalence classifying Ethiopia as Group 2 countries which have a prevalence of between 51% and 80% [12].

The study result showed that region, religion, education status, place of residence, wealth index, media exposure, parents' education level and ethnicity significantly associated with female genital mutilation in Ethiopia.

The study result showed that religion was significantly associated with female genital mutilation in Ethiopia, which is in line with study findings from [13]. Our results show that variables such as women's education and place of residence were significantly associated with female genital mutilation in Ethiopia. Women who have at least secondary level of education were less to circumcise than those with no formal education which is consistent with study result obtained by [14]. Moreover, the study findings also revealed a number of factors associated with FGM practices, including parent education level, residence, mothers' education which is in line with the study result by [15].

In the study, higher order wealth index, older ages of women were factors significantly associated with increased circumcision risk in Ethiopia. Other studies in Ethiopia have indicated similar factors associated with the FGM practice [16]. Studies conducted in Kenya [17] have identified that religion, wealth status and perceived benefits of FGM were independent predictors of FGM practice. Moreover, the majority of women in high FGM prevalence clusters are rural residents, less educated and illiterate [9], [18, 19]. They are more likely to conform to traditional practices, including FGM.

Similarly, media exposure and socioeconomic status were associated with decreased odds of women's support of FGM continuation. This might be due to the overall community driven change associated with media exposure [20]. Wider community mobilization and education are associated with the overall empowerment of women and their capacity to fight against harmful traditional practices such as FGM. Therefore, women's education is a development priority in order to foster fast and long-standing behavioral change to eradicate FGM.

Conclusion and Recommendations

The result of this study has clearly indicated that the status of female circumcision in Ethiopia is 65.2% prior to the survey year. This study also concluded that FGM is associated with socio-economic factors (i.e. wealth status and education), demographics and religious practices. The challenges however, are that most women without education, women with poor wealth category and who had no media exposure still seem to be affected by female genital mutilation in Ethiopia. Our study adds to the existing body of literature regarding the factors that influence female genital mutilation in low and middle income countries. In addition, Religion, education status, place of residence, wealth index and media exposure provide a good opportunity to enhance the awareness of women about risks of female circumcision and other females health services. Based on the result of the study, the following recommendations are dispatched. Firstly, government, health bureau, Health workers and others should increase the awareness of mothers with no education, living in rural areas, mothers from high rate regions such as Somali and Afar and poor wealth category about the risk of female circumcision by providing equal accessibility of health facilities. This suggests the need for integrated societal development interventions, such as involving religious leaders in women's empowerment and community mobilization interventions, targeted at the high FGM clustered rural areas and regions. Secondly, Special attention should be given by the Health workers and government for the women in the country.

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