

# An assessment of cultural perceptions and recognition of Ebola virus disease, and its correlation with traditional burial practice in rural Guinea

Chulwoo Park<sup>1</sup>, Amira Roess<sup>1</sup>, Sally Lahm<sup>1</sup>, Mamadou Kally Bah<sup>2</sup>, Mohamed Campel Camara<sup>3</sup>, John Sandberg<sup>1</sup>

<sup>1</sup>Milken Institute School of Public Health, GWU, <sup>2</sup>Université Gamal Abdel Nasser, <sup>3</sup>Université General Lansana Conté

## BACKGROUND

West Africa faced the largest Ebola outbreak between during 2014-2016 with 11,310 lives, more than all other outbreaks combined.



<http://www.countryreports.org/country/Guinea.htm>

The humanitarian response to control the disease was hampered in part due to a limited understanding of local rituals including traditional medicine and West African funeral rituals.

Forceful removal of the sick or dead from the community was highlighted as one particularly problematic intervention.

Despite the perceived investment in Ebola social mobilization campaigns in West Africa during the outbreak, there remain gaps in the evaluation of these campaigns and whether knowledge about Ebola leads to any behavior change including traditional burial practices.

## OBJECTIVES

Our objective is to understand the extent of knowledge of Ebola 1 year into the outbreak and the association between that knowledge and traditional burial practices in rural Guinea.

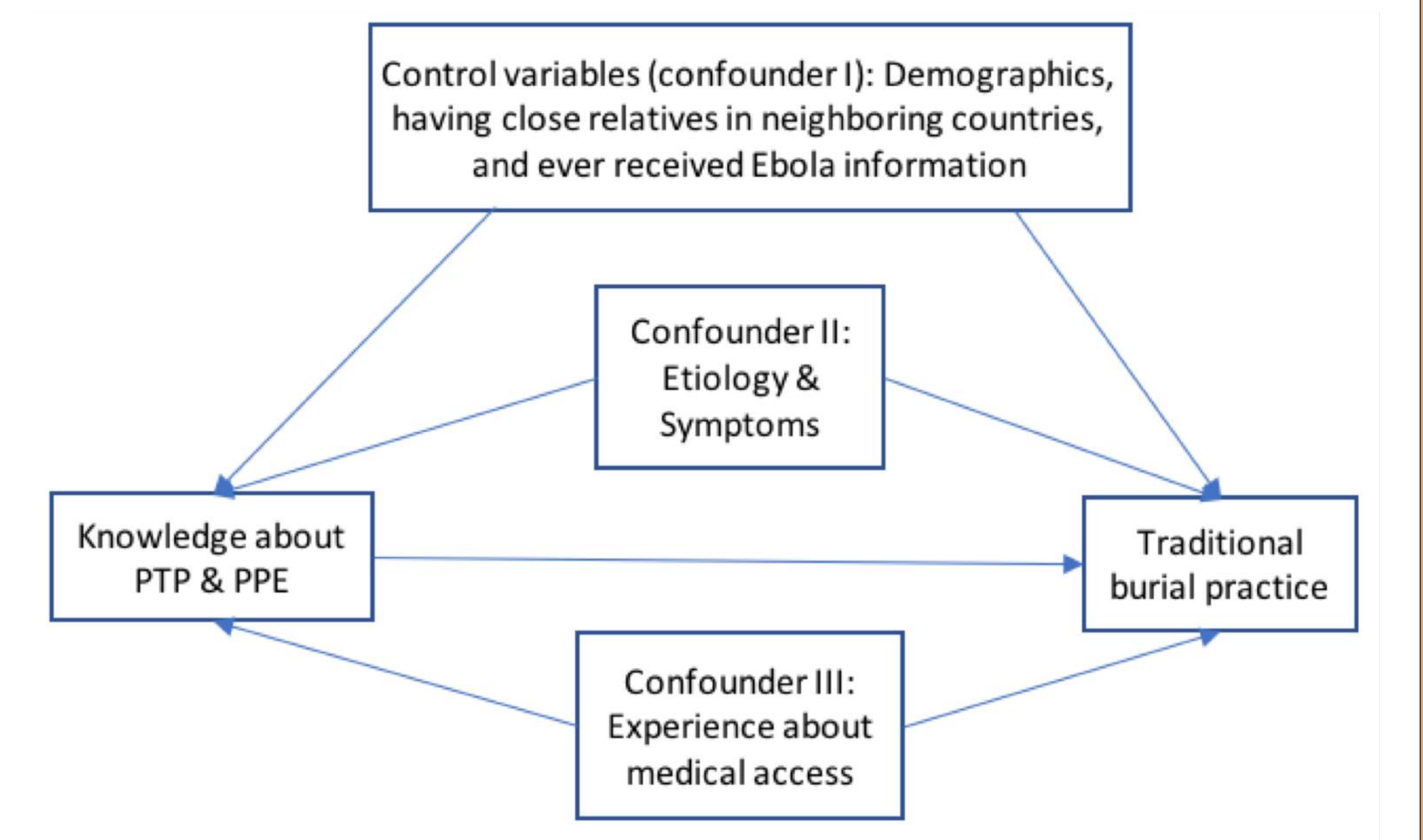


Figure 1. Direct Acyclic Graph of causal inference between knowledge about PTP & PPE and traditional burial practices. Multiple confounder factors are explained away by controlling for them.

## METHODS

Cross-sectional survey of 385 village residents throughout Guinea to measure knowledge and behaviors related to Ebola.



Figure 2. Two prefectures in each of Guinea's four Natural Regions

Discrete and marginal change in probability models examined transmission knowledge on the outcome.

Outcome: practice traditional burial rituals. Independent variables: knowledge about person-to-person (PTP) transmission and personal protective equipment (PPE).

This study controlled for three confounders:

1. demographics, having close relatives in neighboring countries, ever received Ebola information,
2. knowledge of Ebola etiology & symptoms,
3. medical access experience.

All analysis was done with STATA14/MP.

Table 1. Descriptive Statistics for demographics and other variables

Variable	Analytic Sample (n=322)		Full sample (n=385)		DHS 2012 (N=17,501)
	Mean or Proportion	Standard Deviation	Mean or Proportion	Standard Deviation	
<b>Dependent variable</b>					
Practicing traditional burial rituals	16.5%	0.371	17.1%	0.377	
<b>Main independent variables: PTP &amp; PPE</b>					
Incorrect knowledge about person-to-person infection	20.8%	0.407	21.2%	0.409	
Incorrect knowledge about body person-to-person infection	20.5%	0.404	22.5%	0.418	
Incorrect knowledge about personal protection equipment	13.4%	0.341	15.4%	0.362	
<b>Control variables: Demographics (Confounder I)</b>					
Age (range: 18-89 years old, ref: 0. 18-25 years)	45.7	17.046	46.1	17.141	40.5
1. 26-35 years	21.7%	0.413	21.7%	0.413	23.0%
2. 36-45 years	19.3%	0.395	19.6%	0.397	17.5%
3. 46-55 years	17.1%	0.377	15.9%	0.366	14.7%
4. 56-65 years	17.7%	0.382	18.8%	0.391	11.2%
5. 66+ years	11.2%	0.316	11.7%	0.322	9.4%
Sex (1. Female)	39.4%	0.489	38.6%	0.488	55.6%
Years lived in community	36.8	21.715	37.5	21.884	
Ethnicity (ref: 0. Soussou)					
1. Peulh	37.9%	0.486	37.6%	0.485	
2. Malinké	20.5%	0.404	21.7%	0.413	
3. Others	39.1%	0.489	38.4%	0.487	
Occupation (ref: manual labor & shopkeeper merchant)					
1. Skilled others	15.8%	0.366	16.2%	0.369	
2. Housewife	12.4%	0.330	11.0%	0.313	
3. Agriculture	43.8%	0.497	46.6%	0.499	
Years of schooling (ref: 0. No education)					
1. Primary	19.3%	0.395	18.4%	0.388	10.6%
2. Middle and higher	16.5%	0.371	17.3%	0.379	14.7%
Close relatives in neighboring countries (1. Yes)	50.0%	0.501	50.8%	0.501	
Ever received Ebola information (1. Yes)	97.5%	0.156	97.4%	0.160	
<b>Etiology &amp; Symptoms (Confounder II)</b>					
Incorrect knowledge about the cause of Ebola	63.4%	0.483	64.0%	0.481	
Incorrect knowledge about symptoms of Ebola	30.1%	0.460	31.4%	0.465	
Incorrect knowledge about spraying	15.5%	0.363	17.4%	0.380	
<b>Medical Access Experience (Confounder III)</b>					
Visited government health services doctor (1. Yes)	34.8%	0.477	33.8%	0.474	
Used medication in the last 1 month (1. Yes)	46.6%	0.500	46.6%	0.499	
Visited traditional medicine specialist (1. Yes)	23.9%	0.427	26.8%	0.443	
Used traditional medication in the last 1 month (1. Yes)	30.4%	0.461	33.9%	0.474	

\* PTP: Person-To-Person, PPE: Personal Protection Equipment

## RESULTS

Most respondents had correct knowledge about PTP (79.2%), transmission from a corpse (79.5%), and PPE (86.6%) but low knowledge about the cause of Ebola (36.6%). Respondents were more likely to visit government health care providers (34.8%) and use medication in the last 1 month (46.6%), compared to visiting traditional medicine specialists (23.9%) and using traditional medication in the last 1 month (30.4%). (Table 1)

After controlling for the three confounders (demographics, knowledge of Ebola etiology & symptoms, and access to medical care), there was no significant association between traditional burial practices and knowledge about PTP (PTP infection: 12.2 percentage points,  $P < 0.1$  by one-tailed test; body PTP infection: -1.5 percentage points,  $P > 0.1$ ) & PPE (5.8 percentage points,  $P > 0.1$ ). (Table 2)

Table 2. Discrete and marginal change in probabilities model 0-5 for traditional burial practice and PTP & PPE knowledge, controlling for demographic, etiology & symptoms, and medical access experience: (n=322)

Variable	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Demographics</b>						
Age	0.001	0.002	0.001	0.001	0.001	0.001
Sex (female)	0.235***	0.190***	0.208***	0.202***	0.247***	0.249***
Years lived in community	0	0	0.001	0.001	0.001	0.001
Ethnicity (ref: Soussou)						
1. Peulh	0.014	-0.155	-0.138	-0.093	-0.08	-0.022
2. Malinké	0.117	-0.072	-0.13	-0.094	-0.077	-0.036
3. Others	0.026	-0.128	-0.103	-0.052	-0.062	0.001
Occupation (ref: manual labor & merchant)						
1. Skilled others	0.048	0.104†	0.081	0.07	0.099†	0.091†
2. Housewife	0.436***	0.258**	0.196*	0.156*	0.193*	0.148*
3. Agriculture	0.032	0.031	-0.001	0.008	-0.004	0.003
Education (categorical, ref: no education)						
1. Primary	-0.069	-0.05	-0.047	-0.05	-0.061†	-0.061†
2. Middle and higher	-0.123**	-0.098*	-0.078†	-0.056	-0.078†	-0.049
Close relatives in neighboring countries (yes)	0.019	0.045	0.015	0.005	-0.002	-0.013
Ever received Ebola information (yes)	-0.472**	-0.033	0.024	0.031	0.032	0.032
<b>Incorrect knowledge about PTP &amp; PPE</b>						
Person-to-person infection	0.209***		0.130†	0.108†	0.142†	0.122†
Body person-to-person infection	0.201***		0.052	0.005	0.029	-0.015
Personal protection equipment	0.177***		0.092†	0.038	0.087	0.058
<b>Incorrect knowledge about Etiology &amp; Symptoms</b>						
Cause of Ebola	0.062			-0.025		-0.031
Symptoms of Ebola	0.245***			0.194***		0.211***
Spraying to prevent Ebola	0.188***			0.034		0.017
<b>Medical Access Experience (yes)</b>						
Visited government health services doctor	0.06				0.031	0.033
Used medication in the last 1 month	0.029				0.052	0.071†
Visited traditional medicine specialist	0.006				0.05	0.016
Used traditional medication in the last 1 month	-0.032				-0.002	0.02
Constant		0.054*	0.024*	0.009*	0.007**	0.002**
LL		-114.46	-103.43	-93.27	-100.65	-89
AIC		256.93	240.85	226.54	243.31	226.01
BIC		309.77	305.02	302.03	322.58	316.59

†  $P < 0.1$  (one-tailed test), \*  $P < 0.05$ , \*\*  $P < 0.01$ , \*\*\*  $P < 0.001$ , final analytic sample size: 322, restricted the prediction to the estimation subsample.  
\*: the marginal effect is significant at  $\alpha = 0.05$  level by one-tailed test with the expected direction.

## CONCLUSIONS

In West Africa, many believe that funerary and burial practices are a crucial step in transitioning from the living world to the spiritual one. Traditional burial practices were important in the emergence and transmission of Ebola. Our results imply that knowledge about PTP & PPE does not translate to respondents stopping unsafe burial practices. However, knowledge about Ebola symptoms is associated with respondents having safer burial practice behavior.

Social mobilization campaigns were propagated but little rigorous evaluation has been done to understand how knowledge about disease influences risky behaviors. To prevent another Ebola outbreak, culturally-appropriate interventions that address traditional burial practices are critical.

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## CONTACT INFORMATION

Amira Roess [aroess@gwu.edu](mailto:aroess@gwu.edu)  
Chulwoo Park [cwpark@gwu.edu](mailto:cwpark@gwu.edu)

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