

# COMMUNAL HANDWASHING WITHOUT SOAP OR CHANGING THE WATER AS A SOURCE OF CONTAMINATION IN HOUSEHOLDS: A RANDOMISED CONTROL TRIAL (RCT)

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## PROBLEM

- Leading cause of death in children (Diarrhoea and COVID) are preventable;
- Proper timely handwashing with soap --->↓the transmission of enteric pathogens and COVID;
- In Africa: communal handwashing practice persists (decades)
- Communal handwashing (C-HW)** : group handwashing practice [common bowl of water + without soap and + without changing the water between individuals]
- C-HW: A transmission route for pathogens** (before household mealtimes, in social events or in institutions)

## METHODS FOR OUR EVIDENCE FOR ACTION

RCT - Feasibility trial to test a simple intervention (The use of soap)

**Aim:** to alter the bacterial transmission from this practice

**Sample size:** 280 households

**NULL Hypothesis:** Washing hands of family members in the same bowl with soap does not reduce the risk of contamination of hands with faecal coliforms

**Study participants:** A semi-experimental C-HW situation with 5 members in each household. Hand swab was done on the last person who is usually a child due to order of handwashing from oldest to youngest. We asked participants at households to do the practice as they would usually except to ensure only 5 took part for consistency of result interpretation. (Former research found 5 was the average size of family groups washing)

**Intervention:** Ask family members in intervention households to use soap after the first bowl of water and rinse in a separate bowl of water.

**Sample/data collected:** water (before and after C-HW and in intervention group from rinsing bowl); Hand swab (before and after washing) – for Lab culture

Questionnaire was asked from the head of family and from the last person washing and being swabbed related to their hygiene behaviour prior to sampling.

### A. TYPICAL COMMUNAL BOWL



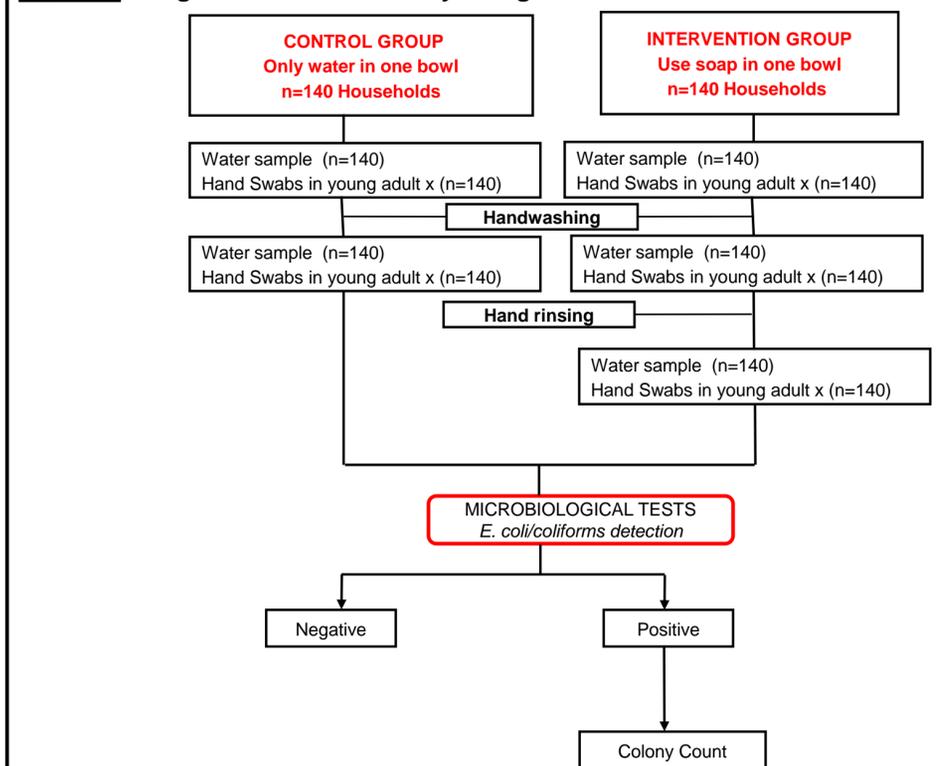
### B. ALTERNATIVE TO THE BOWL



B. Used as an alternative to the typical communal bowl by many household in urban area

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**Figure 1. Diagram of the RCT study design**



## RESULTS FOR OUR EVIDENCE FOR ACTION

**Table 1. descriptive characteristics of study participants**

VARIABLE	Control n/mean (% / SD)	Intervention n/mean (% / SD)	Total N(% / SD)
<b>A. Household head</b>			
Age (mean [SD])	52.045 [14.615]	50.462 [14.796]	51.265 [14.698]
Gender,male (n(%))	142 (94.7%)	133 (93.7%)	275 (94.2%)
Education level (n(%))			
1. Not attending school	92 (61.3%)	80 (56.3%)	172 (58.9%)
2. Elementary school to College	53 (35.3%)	55 (38.7%)	108 (37.0%)
3. Have finished university	5 (3.3%)	7 (4.9%)	12 (4.1%)
<b>B. Last member's characteristics</b>			
Age (mean [SD])	11.887 [2.218]	12.225 [2.602]	12.051 [2.414]
Gender,male (n(%))	61 (0.407)	57 (0.401)	118 (0.404)
Education level (n(%))			
1. Not attending school	37 (24.7%)	42 (29.6%)	79 (27.1%)
2. Elementary school to College	113 (75.3%)	100 (70.4%)	213 (73.0%)
The container is visibly clean (n(%))	88 (59%)	84 (59%)	172 (59%)
Hand washing time (in seconds)	15.447 [6.936]	18.944 [6.921]	17.147 [7.135]
Washed hands before communal handwashing for other reasons (n(%))	27 (18%)	18 (13%)	45 (15%)

In some households, the C-HW container was not visibly clean

**Table 2. Fequency of the use of soap and reasons for continuing C-HW practice**

VARIABLE	Rural n (%)	Urban n (%)	Total N (%)
<b>Frequency of using SOAP during communal handwashing</b>			
1. Daily during each meal	36 (15.5%)	14 (23.7%)	50 (17.1%)
2. Daily BUT not during each meal	16 (6.9%)	5 (8.5%)	21 (7.2%)
3. Less than one use per day	23 (9.9%)	2 (3.4%)	25 (8.6%)
4. Between 1-2 uses per week	13 (5.6%)	5 (8.5%)	18 (6.2%)
5. Only on special occasions	38 (16.3%)	10 (16.9%)	48 (16.4%)
<b>Reason for washing hand with communal handwashing method</b>			
1. Important for family solidarity	120 (51.5%)	32 (54.2%)	152 (52.1%)
3. To maintain the tradition	78 (33.5%)	12 (20.3%)	90 (30.8%)
2. *	0 (0.0%)	0 (0.0%)	0 (0.0%)
4. Other reason	101 (43.3%)	17 (28.8%)	118 (40.4%)

\* We want to save water this way; Cannot buy hand washing tool; Too much effort to use this device

While majority of the households visited were using soap on special occasions, only 17% were using soap daily during each meal. And the main reasons for maintaining the C-HW practice were "it's importance for family solidarity" and "traditional reasons".

**Table 3. Positivity rate of handswabs before and after communal handwashing**

Microorganisms growth	Control Group (N=142)		Intervention (Use of soap) Group (N=150)	
	Before C-HW	After C-HW	Before C-HW	After Rinsing
<b>Hand Swab</b>				
1. Positive to <i>E. coli</i>	22 (14.7%)	30 (20.0%)	22 (15.5%)	22 (15.8%)
2. Positive to Coliforms	80 (53.3%)	98 (65.3%)	83 (58.5%)	76 (54.7%)
<b>Water samples</b>				
1. Positive to <i>E. coli</i>	11 (7.3%)	21 (14.0%)	6 (4.2%)	12 (8.6%)
2. Positive to Coliforms	101 (67.3%)	136 (90.7%)	87 (61.3%)	102 (73.4%)

The microbiology analyses confirmed a higher risk of contamination for the last person in the C-HW process. The use of soap slightly decreased the positivity rate for the handswab

## CONCLUSION:

- The water and hand swabs of individuals have more growth of microorganisms of all categories after C-HW than after use of soap
- It was not enough for the last person/child to rinse the hands in another common bowl to eliminate E Coli from hands
- The reasons for C-HW seems to be very important to Mali families and therefore advising to eliminate the practice altogether is likely to face resistance and therefore a combined solution such as our intervention may be a good interim measure to reduce hand contamination even if it cannot be eliminated. Another solution could be a community level intervention such as the MaaChampion study where other reasons such as health of the child promote behavioural change.

## SOLUTION

In 2014-2018, we tested a community empowerment and culturally engendered method of food-hygiene behaviour change in families through targeting mothers of young children (a 30 cluster RCT in the Gambia, The MaaChampion Study). Although mothers and food preparation practices were the main target and C-HW was not explicitly discouraged, qualitative data from grandmothers found that some stopped C-HW before meals. The MaaChampion intervention involved traditional songs, dances, drama, storytelling and empowered mothers while involving the whole communities. We plan to build on our Gambia experience and Mali data from above to develop a community-level motivational behaviour change intervention.