Design and test of an Intervention to change 5 food hygiene behaviours in Nepal

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1. Introduction

Food-borne diseases are a major cause of illness globally. Inadequate food hygiene probably causes a substantial proportion of gastro-enteric infections among infants and young children. One estimate has 70% of diarrhoea in developing countries caused by pathogens transmitted through food[1,2]. Contaminated weaning foods are potentially a major contributor to childhood diarrhoea and may contribute to undernutrition[3]. However, most of what is known about food-borne infections in low-income settings is based on expert opinion and biological plausibility only[4]. Food hygiene has been neglected both in research and in programming. Simple, easily replicable and feasible food hygiene interventions are needed that can be implemented within Water, Sanitation and Hygiene (WASH), health, and nutrition programmes.

2. Objectives

- Design and implement a proof-of-principle food hygiene intervention targeting mothers with a child aged 6-59 months.
- Measure the effect of the intervention on food hygiene behaviours (primary outcome).
- Measure the effect of the intervention on microbiological contamination and diarrhoeal disease (secondary outcomes).

(Note: this poster only highlights the primary outcome of the trial)

3. Methods

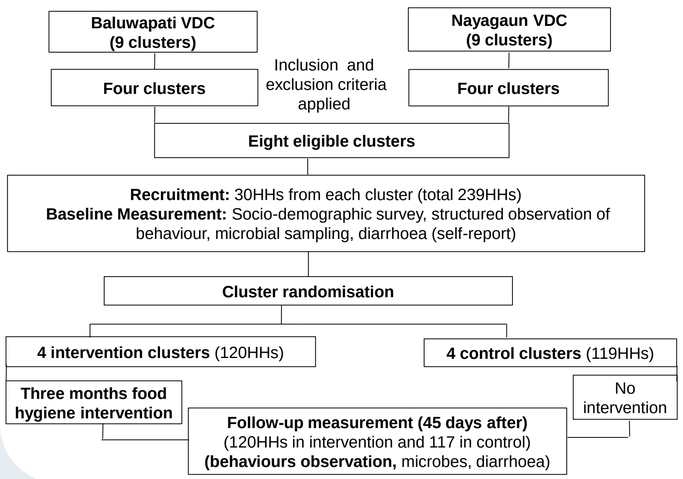
Study setting : Kavre: rural hill district, Nepal.

Study duration : October 2012 to December 2013
3 months intervention May – August 2013.

Study design: Cluster randomized, Before-After study with Control

Study population: Households with child aged 6-59 months

Figure 1: Flow diagram of the trial:



4. Intervention Design:

Package development: A simple and scalable food hygiene behaviour change package was designed using Evo-Eco theory of behaviour change[5] on the basis of detailed formative research and pretesting.

Positioning and branding: The intervention had a consistent brand, the **'Ideal Mother'** concept**,** with the strapline **'Safe Food, Healthy Child'**.

Figure 2: targeted five key food hygiene behaviours

Intervention delivery: 15 trained community health volunteers delivered six community/group events followed by six HH visits over three months.

Behaviour change principles: Each event was designed around a specific motivational themes such as 'Nurture', 'Disgust', 'Social Respect' and 'Affiliation'. The campaign also changed the physical, biological and social settings of the kitchen.

Pic 1: change in kitchen setting

Pic 2: bip as a reminder for HWWS

Ideal mother

Pic 3: nurture: child life game

Pic 4: disgust exercise using glo-germ

Sample size: Eight clusters with 30HHs per cluster using 95% confidence interval ($p<0.05$), 90% power, 5% loss to follow-up and design effect of 1.29 allow us to detect a difference of 20% in key behaviours between control and intervention arm.

Outcome assessment: The primary outcome measure was the proportion of mothers practicing all key food hygiene behaviours when observed. The observations took place from 1 to 5pm, when the behaviours of interest were likely to be seen. The primary and secondary outcome assessment were carried out 45 days before and 45 days after the intervention.

Ethics: Ethical approval for the study was granted by the ethics committees of the LSHTM and the Nepal Health Research Council, Nepal.

Acknowledgements: thanks to research advisory committee members, SHARE consortium, WaterAid, Ministry of Health and Population in Nepal, LSHTM, mothers Kavre Nepal, field staff, FHMs/FCHVs, observers and all collaborators.

5. Results

Control and intervention clusters and households had similar social demographic characteristics

Figure 3: Proportion of mothers sustaining all key food hygiene behaviours by study arm (before-after)

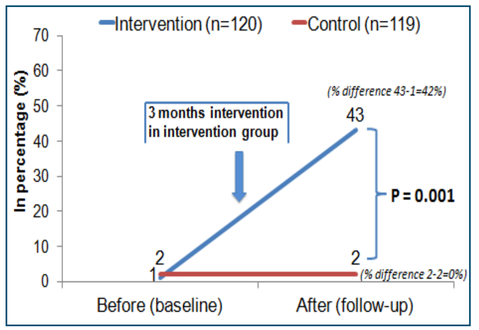


Table-1: Socio-demographic characteristics of the study population at baseline:

Variable	Control (n=119HHs)	Intervention (n=120 HHs)
Ward/cluster size (mean, range)	95 (83-112)	99 (75-141)
Family size (mean, SD)	5.8 (2.3)	5.9 (2.1)
Mothers' age (mean, range)	27 (18-50)	27 (19-43)
Toilet / latrine at households (%)	54	50
Soap observed (%)	84	80
Refrigerator at households (%)	1	1
Main source of cooking fuel (%)		
Firewood	93	87
Water source (%)		
Piped water to tap in yard, plot	48	52
Surface Water	52	48
Religion (%):		
Hinduism	40	49
Buddhism	60	49
Education level of mothers (%)		
None or informal	52	49
Caste/ethnicity of mothers (%)		
Brahmin/Chhetri/Thakuri	28	38
Hill Aadiwaasi / Janajaati (Taman	64	54
Hill dalit	8	8
Monthly HHs income (mean, range) £	66 (9-375)	68 (6-250)

Figure 4: Prevalence of key food hygiene behaviours in intervention arm (before-after)

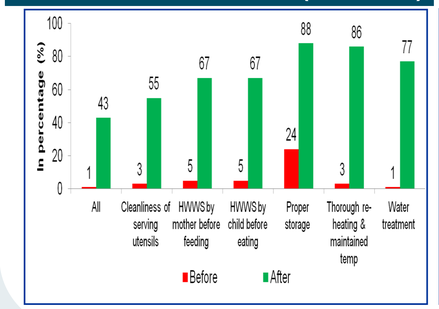
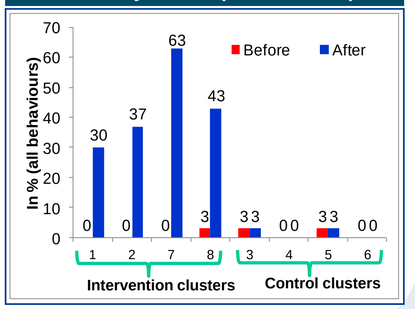


Figure 5: Prevalence of all food hygiene behaviours by cluster (before – after)



6. Discussion and Conclusions

The results show that the intervention was effective in achieving an increased prevalence of food hygiene behaviours in the intervention arm (43% vs. 1%). Key behaviours were more common in intervention than in the control arm (43% vs. 2%, p=0.001). The intervention appeared to be equally effective in improving all five behaviours and in all clusters with few variations. The campaign utilized modern behaviour change science moving away from standard educational approaches. Campaign activities such as changing kitchen settings, use of emotional drivers, eye danglers, and engaging events such as games, competitions (i.e. 'clean kitchen', 'ideal mother', 'safe food hygiene zone'), encouraged mothers to adopt and practice five key food hygiene behaviours.

Significant improvements in targeted behaviours indicate that, it is possible to change multiple food hygiene behaviours employing emotional motivators. Our next step is to refine the package and test whether it can be as successful at large scale.

References:

1. WHO. Basic Principles for the preparation of safe food for infants and young children Geneva. 1996.
2. Esrey SA. Food contamination and diarrhoea. WHO. January-February 1990:19-20.
3. Motarjemi Y KF, Moy G, Quevedo F. Contaminated weaning food: a major risk factor for diarrhoea and associated malnutrition. Bulletin of the World Health Organization 1993; **71**: 79–92.
4. Curtis V, Schmidt., Luby S., Florez R., Toure O., Biran A. Hygiene: new hopes and new horizons. Lancet Infect Dis. 2011: 11(4):312-21.
5. Aunger, R. and V. Curtis (2013). The Evo-Eco approach to behaviour change. Applied Evolutionary Anthropology. D. Lawson and M. Gibson. Berlin Springer.