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**TITLE: INVESTIGATING EFFECTIVENESS OF BEHAVIOURAL CHANGE INTERVENTION IN IMPROVING MOTHERS WEANING FOOD HANDLING PRACTICES: DESIGN OF A CLUSTER RANDOMIZED CONTROLLED TRIAL IN RURAL GAMBIA.**

**Abstract**

**Objectives:**Weaning food is a source of infection for the young child leading to high rates of morbidity and mortality. We aimed to evaluate the effectiveness of a theory based and culturally adapted community level behaviour change intervention to improve weaning food preparation and handling in rural Gambia.

**Methods:**This PhD had 4 stages: (1) a systematic review of the literatures on weaning food hygiene intervention to identify existing evidence, tools available and lessons learnt, and (2) a mixed method formative research to identify critical control points (CCP), motivational factors for mothers' behaviour in weaning food preparation and handling practices in rural Gambia, and data for sample size calculation; (3) These findings were applied to formulate a community level intervention program for weaning food hygiene in the Gambia. (4) The last stage was implementation of the intervention and its evaluation in a cluster randomized controlled trial (RCT). We randomised by strata on village size and location, 30 villages, and in each evaluated 20 mothers with children 6-24 months at the time of intervention. The intervention involved dramatic arts, village wide meetings focussing on all mothers with children <5 years of age, and community mobilisation and competitions during 4 intensive days' visit to each village. It was implemented by a research team of two public health officers, two traditional communicators in 15 intervention villages and a driver. The 15 control villages received a day's unrelated activities by one Public Health Officer. The intervention was evaluated six months after the first 4 intensive visits, investigating mothers'

behaviour change as the primary outcome measure, and a number of other laboratory and morbidity secondary outcomes. The 21 independent female fieldworker assessors and mothers of the households were blinded to the purpose of the evaluation.

**Results:**In the systematic review, there were only 4 RCTs on weaning food hygiene interventions. These studies involved several intensive follow-ups which made them expensive for low and middle income countries (LMIC) to replicate. In the formative research, we prioritized 5 from 10 CCPs with 6 corrective messages and nurture, affiliation, purity, status or attraction motivational factors from the formative research used to formulate the 4 intensive village campaign day-visits and one reminder, for the intervention package. In the cRCT, all outcome measures were significantly improved except the washing of pots/utensils and placing on a clean surface. The composite behaviour score (primary outcome of all 5 behaviours (not boiling water) performed as a proportion of all opportunities that the behaviours could have been done during 6-3pm observation) was 72% vs. 19%,  $p < 0.001$  for intervention against the control arm. The 6 key behaviours were each significantly improved except washing of pots dried on clean surface, hand washing with soap before food preparation  $OR = 11.39$  (95% CI 6.81, 19.04),  $p < 0.001$  and reheated stored weaning food before second feeding of child  $OR = 76.32$  (95% CI 30.28, 192.34),  $p < 0.001$ . There was a reduction of contamination of weaning food immediately after cooking, before second feeding, and water just before drink with a mean difference of  $OR = -2.59$  log<sub>10</sub>cfu/gm (95% CI -4.82, -0.35),  $p = 0.023$ ,  $OR = -2.87$  log<sub>10</sub>cfu/gm (95% CI -5.27, -0.48),  $p = 0.019$ , and  $OR = -1.12$  log<sub>10</sub>cfu/gm (95% CI -1.86, -0.39),  $p = 0.003$ , respectively. Diarrhoea and respiratory symptoms reported for the past 7 days were also reduced, as was hospital admission for diarrhoea  $OR = 0.4$  (95% CI 0.3, 0.5),  $p < 0.001$ ,  $OR = 0.7$  (95% CI 0.5, 0.8),  $p < 0.001$ ,  $OR = 0.4$  (95% CI 0.2, 0.8),  $p = 0.018$  respectively).

**Conclusion:**Our public health, community level intervention for mother's hygienic preparation and handling of weaning food was effective in rural Gambia. This increased mothers' compliance to the practice of 6 key messages with a remarkable reduction of contamination of weaning food and drinking water. We suspect that the involvement of regular public health officers and structures of health system in the Gambia, cultural relevance, the simplicity and low cost of this intervention will make it feasible to replicate and scale-up.