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WORKING PAPER

Key barriers and enablers of consumption of animal source foods by women in four districts of Southern Karamoja, Uganda

Gudrun Stallkamp[a], Rebecca Oketcho[b], Paul Troy[b]
[a] Welthungerhilfe
[b] Concern Worldwide
Presenter: Gudrun Stallkamp, email: gudrun.stallkamp@welthungerhilfe.de

Abstract

Aim: To investigate the key barriers and enablers of improving the consumption of animal source foods (ASF) by women in four districts in Karamoja. Dietary diversity, especially consumption of micronutrient-rich ASF, can contribute to addressing the high anemia burden in Karamoja.

Method: In October 2016, Concern Worldwide conducted a barrier analysis survey using the established 'Designing for behavior change' approach in four districts (two communities each) where the 'Resiliency through Wealth, Agriculture, and Nutrition' project operated. Data were collected of 48 'Doers' and 50 'Non-Doers': pregnant women or mothers with a child <5 years who did/ did not practice the desirable behavior. A $p<0.05$ of the odds ratio and/or absolute percentage point difference of ≥15% between doers and non-doers were used to identify key barriers/enablers.

Findings: Responses of Doers and Non-Doers differed in three of 12 determinants investigated: self-efficacy, social norms, access. Insufficient financial resources to buy ASF, not having or no access to animals were barriers to ASF consumption. Supportive social networks (project staff, neighbors/ friends, certain relatives) can boost ASF consumption whereas other relatives may be less supportive. Events (season, animal death, celebration) and 'having an appetite' make consumption easier.

Recommendations: Agriculture, livestock and livelihoods programs should improve income earning, promote subsequent spending on ASF for consumption and improve household level availability of (small) animals, also through preservation/storage, for regular consumption. Social and behavior change programs should also focus on communities overall (e.g., community drama) and husbands as an enabling environment to highlight the nutritional importance of ASF.

Introduction

The reduction of anemia among women of reproductive age is one of the global nutrition targets endorsed by the member states of the World Health Organisation to be achieved by 2025 (WHO 2014). In Uganda, the prevalence of anemia was 31.8% among women of reproductive age in the 2016 demographic and health survey (DHS) (UBOS & ICF 2017), while the food security and nutrition assessment (FSNA) of Karamoja in January 2018 estimated that 46% of women of reproductive age were anemic (UNICEF & WFP 2018). This was above the 40% threshold that indicates a situation of 'severe' public health significance (WHO 2011). It was an increase from the 32.0% observed for Karamoja by the 2016 DHS (UBOS & ICF 2017) yet suggests little long-term improvement when considering the data on anemia from various FSNA and DHS reports since 2011 (Stallkamp 2016). During the July 2018 FSNA, 77% of pregnant women reported taking at least 90 iron/ folic acid tablets during their last pregnancy (UNICEF & WFP 2018b).

Animal source foods (ASF), such as meat/ poultry/ fish, organ meat, eggs, dairy or insects, provide not only protein but also highly bio-available micronutrients, such as iron, vitamin B_{12}, calcium, vitamin A, and zinc. The consumption of ASF, also in the absence of supplementation and as part of food-based strategies in resource-poor settings, can contribute to fulfilling requirements of such micronutrients in vulnerable population groups, including pregnant and lactating women or women of reproductive age in general (Arimond *et al.* 2017). In children, consumption of ASF has been linked to improved child growth/ reduced stunting (Headey *et al.* 2018). The EAT-Lancet Commission on Food, Planet, Health recently proposed a planetary health diet that predominantly consists of plant-source foods and that contains moderate to no quantities of poultry, seafood, red or processed meat (EAT-Lancet Commission 2019). The Commission emphasizes explicitly that in Sub-Saharan Africa, where countries have a high prevalence of undernutrition, the consumption of ASF by children can benefit their nutrition status (growth, micronutrients), health and development.

The Resiliency through Wealth, Agriculture and Nutrition in Karamoja (RWANU) project was implemented by a consortium of ACDI/VOCA, Concern Worldwide and Welthungerhilfe in Amudat, Moroto, Nakapiripirit and Napak Districts of Karamoja from 2013 – 2017 with funding by the United States Agency for International Development. A social and behavior change component to improve health and nutrition practices at household level was implemented by Concern Worldwide. Among others, optimal maternal, infant and young child feeding behaviors were promoted through a cascading network of 345 mother care groups with 3,496 lead mothers and associated household caregiver groups, reaching 43,451 women or households across the four districts (Oketcho 2016). Welthungerhilfe implemented a goat component within the project to increase milk consumption among selected target households.

Consumption of animal source foods by women is part of a women's dietary diversity score indicator, which was measured by the RWANU project at baseline and endline (population-based surveys) and during annual surveys (beneficiary-based sample). The consumption of a diverse diet by women was promoted during module 2 of the project's Mother Care Group curriculum during the second lesson called 'Dietary Diversity for Women Before, During and After Pregnancy'. The indicator was very low at baseline (2.6 out of 10 groups); it increased from 3.1 to 3.9 to 4.0 food groups during the beneficiary-based annual surveys in 2014, 2015 and 2016, respectively. The project target for the endline survey was set at 3.5 food groups while the international threshold is set at five (out of 10) food groups. A data check performed by the ACDI/VOCA monitoring & evaluation team ahead of the survey showed that 59.7% of women of reproductive age consumed any type of animal source foods (ASF) during the preceding 24 hours. Milk was consumed by nearly all women who consumed any ASF, while half of the women also consumed meat (29.4%). Less than 10% of women consumed eggs and a negligible proportion of women consumed any of the highly micronutrient-rich organ meat, such as liver, heart or kidney. ASF were more frequently consumed in Amudat District compared with the other three districts (ACDI/VOCA M&E team, personal communication).

The aim of this assessment was to investigate the key barriers and enablers of improving the consumption of ASF by women of reproductive age in four districts in Karamoja, and to use the findings to accelerate the promotion of ASF consumption among the RWANU project participants.

Research design and methods

In October 2016, Concern Worldwide Uganda conducted a barrier analysis (BA) survey in four districts (two communities each) where the RWANU project operated. The BA survey is an element of the Designing for Behavior Change (DBC) method (FSN Network and SBC-TF 2013), a formative research method that helps to identify the specific determinants that differ significantly between 'doers' and a 'non-doers' of a particular behavior and that may be useful to address during the subsequent implementation phase of a project.

As per the DBC/ Barrier Analysis survey guideline, the planned sample size was set to 45 Doers and 45 Non-Doers. The actual sample size was 48 Doers and 50 Non-Doers. Data were collected of pregnant women or mothers with a child below five years of age who did or did not practice the desirable behavior of consuming at least one food item from the animal source food groups every day. Initial screening questions established whether somebody is a Doer, a Non-Doer or should not be interviewed. Due to the expected low prevalence of women consuming ASF on the previous day, the project mobilized eligible women and asked them to come to a central point on the data collection day.

A standardized questionnaire template was used to formulate questions that assessed the doers' and non-doers' perceptions for 12 determinants (as per DBC method). The 12 determinants include perceived self-efficacy/ skills, perceived social norms, perceived positive consequences, perceived negative consequences, access, cues for actions/ reminders, perceived susceptibility/ risk, perceived severity, perceived action efficacy, perception of divine will, policy, and culture. The questionnaire was prepared in English and translated into Karamojong and Pokot ahead of the enumerator training. External enumerators were hired who had the required language skills and some of them had participated in an earlier BA survey. The project team conducted a one-day training, including interviewing techniques, in-depth guidance on the questionnaire and mock interviews, and the role of supervisors. Per district, three external enumerators collected data who were supervised by a RWANU Field Coordinator of Concern. Two of the four supervisors had participated in a BA survey before. Supervisors maintained a tally sheet of the number of doers/ non-doers interviewed in their area to ensure the recommended sample size was accomplished and they were responsible for the logistics within their area.

The enumerators initially applied only the screening questions until they achieved their district quota of doers and non-doers. The supervisors managed a tally sheet of how many doers and non-doers had been identified during the screening. Once the quota for one of these groups was fulfilled, the supervisors instructed the enumerators to only screen for eligible participants from the other group. Any remaining women were then informed that they could leave while the teams started with the interviews of those screened and included in the survey. A small paper slip system ensured the correct matching of the questionnaire from the screening exercise. During the actual interview, enumerators used a small pictorial poster to exemplify animal source foods. Selected study participants were interviewed using either the doer or the non-doer questions depending on their screening outcome. Enumerators were tasked to actively probe for 'anything else' when asking the open-ended questions and to record all responses.

After the data collection, the qualitative answers were jointly coded into agreed categories and the frequencies of each generated category were counted. For all pre-coded answers, simple frequencies were recorded. As per the DBC method, the coding and counting was conducted together with the enumerators and supervisors. Frequencies were recorded on flip chart paper initially and later entered by the study lead into the existing MS Excel tabulation template developed for BA data analysis. Due to limited time during the coding day, the study lead counted and recorded the frequencies of the responses to the last eight pre-coded questions without the group's involvement.

The data were analyzed in two ways using a) the recommended crude '≥15 percentage point difference' rule between doer and non-doer percentages, and b) a pre-designed MS Excel template to calculate a *p* value of the odds ratio. The ≥15% rule was applied to indicate whether a response/ response category yielded a significantly different response by doers vs non-doers. All data were then entered in the Excel spreadsheet to calculate the odds ratio and a *p* value for the odds ratio. A $p<0.05$ of the odds ratio and/or absolute percentage point difference of ≥15% between doers and non-doers were used to identify key barriers/ enablers. A response/ determinant was considered significant if at least one of the two methods indicated a significant difference.

Results

Responses of doers and non-doers differed in three of the 12 determinants investigated: self-efficacy, social norms, and access (Table 1). In total, 10 responses were identified as significantly different. Of them, seven were identified as significant by both methods described in the methods section above; three responses were identified as significantly different by one method only. Table 2 provides an overview and broad interpretation of the significant determinants.

Related to *perceived self-efficacy*, nearly all non-doers (90%) and more than doers (71%) mentioned that it would make it easier to practice the behavior when they had money to buy the necessary ASF. Several ways of making money were mentioned: casual labor, business, vegetable garden, selling agricultural produce and selling firewood. More doers (83%) than non-doers (54%) mentioned that it is easier to practice if there is access to animals, for example when it is the right season, animals are available, when an animal died but was still okay to consume or somebody's animal died and then the owner offers credit, when a family was able to hunt animals, or when there was a festival. More doers than non-doers mentioned it is easier to practice the behavior 'when you have an appetite' for an ASF item (13 vs 2%). Asked for what makes it more difficult, more doers than non-doers (33 vs 16%) responded that sickness of the animals or veterinary advice not to consume the animals or an imposed quarantine made it more difficult.

In relation to *perceived social norms*, more doers than non-doers mentioned that certain people were supportive of and approved their practicing of the behavior: Concern or RWANU staff (such as the Health Promoter) (44% doers vs 26% non-doers) and neighbors & friends (21% doers vs 6% non-doers). More non-doers than doers (34 vs 15%) mentioned that certain relatives would be supportive if they consumed ASF, i.e., mother, father, sister, brother, grandparents, son, and some unspecified in-laws. On the other side, more doers than non-doers (13 vs 2%) mentioned that several other relatives, i.e., a co-wife, the father in-law or their own parents, disagreed with their ASF consumption.

Access to the food items necessary was perceived as difficult in general, but more so by non-doers. More non-doers than doers perceived it as 'very difficult' (40 vs 9%), while more doers mentioned it was 'somewhat difficult' (72% doers vs 52% non-doers). This also confirms the findings related to self-efficacy with the questions on 'what makes it easier/ more difficult'.

[Table 1]
[Table 2]

Discussion and conclusions

At the time of the assessment, conclusions were drawn and recommendations were developed that were relevant and feasible to implement within the RWANU project at that (late implementation) stage. They were updated for this paper to suit a more general context.

Within the current context, the consumption of ASF is an important strategy to increase intake of key nutrients, especially protein and micronutrients, to achieve diverse diets with foods from various food groups and thus contribute to nutritional and health well-being. Regular consumption of ASF requires sufficient and year-round household level access to and availability of ASF. This may be achieved by using income to purchase ASF, by producing them at household level and by preserving and storing

the produce safely for later consumption. The consumption of ASF in general but also those that are perishable and difficult to trade, such as milk and eggs, may be boosted through increased income by households and conscious decisions for regularly purchasing these ASF at the markets or from others in the community. It also may be increased by supporting households to raise, for example, goats or cows for milk and chicken or other poultry for eggs. Agro-pastoral and livelihoods programs should improve income earning or village level saving opportunities for households, also and especially of those with household members who are at risk of nutrition deficiencies. Interventions should include activities that increase access to (small) animals for own production and regular availability of milk and eggs and occasional consumption of meat. Post-production management activities should promote preservation and safe storage so that the produce can be consumed safely at a later stage.

Interventions to increase household level access to and availability of ASF should be complemented by activities that effectively promote their consumption by household members including women of reproductive age, young children and adolescents. Such promotional activities should embed the 'message' about consumption of ASF as part of promoting dietary diversity in general. Social and behavior change programs should also work with communities overall (e.g., community drama) and husbands to highlight the nutritional importance of consuming ASF. Community members should be encouraged to support and be supportive of each other, especially of those who are consuming fewer ASF.

The above income generation, production, post-production activities should prioritize sustainable practices that will place least strains on the environment. Program developers and practitioners, policy makers, stakeholders at strategy level and donor agencies are playing critical roles in creating a sustainable and supportive environment that prioritizes the production and consumption of nutrient-rich foods while ensuring environmental sustainability.

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Table 1. Determinants that were significantly different between doers and non-doers, based on the ≥15% difference rule, the *p* value of the odds ratio, or both.

Determinant	**Doers % (frequency)**	**Non-Doers % (frequency)**	**Percentage point difference**	**Odds Ratio (95% C.I.)**	***p* value**
Sample size (*n)*					
for: self-efficacy/ social norms	48	50			
for: access	47	50			
Perceived self-efficacy					
Easier when money to buy ASF from: casual labor, business, vegetable garden, selling agricultural produce, selling firewood	70.8 (34)	90.0 (45)	19.2	0.27 (0.09-0.82)	0.016
Easier when…: there is easy access, season, animals are available, animal died, somebody's animal died and then owner offers credit, hunting animals, festivals	83.3 (40)	54.0 (27)	-29.3	4.26 (1.66-10.91)	0.002
Easier when you have appetite*	12.5 (6)	2.0 (1)	-10.5*	7 (0.81-60.50)	0.044
More difficult when animals are sick, veterinarian prohibits consumption/ quarantines animals	33.3 (16)	16.0 (8)	-17.3	2.63 (1.00-6.89)	0.046
Perceived social norms					
Concern/ RWANU staff, Health Promoter approve[+]	43.8 (21)	26.0 (13)	-17.8	2.21 (0.95-5.19)[+]	0.065
Other relatives (mother, father, sister, brother, grandparents, son, unspecified in-laws) approve	14.6 (7)	34.0 (17)	19.4	0.33 (0.12-0.89)	0.025
Neighbors, friends approve	20.8 (10)	6.0 (3)	-14.8	4.12 (1.06-16.05)	0.030
Other relatives (co-wife, father-in-law, own parents) disapprove*	12.5 (6)	2.0 (1)	-10.5*	7 (0.81-60.50)	0.044
Access					
Very difficult to get the food items needed	8.5 (4)	40.0 (20)	31.5	0.14 (0.04-0.45)	0.000
Somewhat difficult to get the food items needed	72.3 (34)	52.0 (26)	-20.3	2.41 (1.04-5.63)	0.039

[+] The *p* value for the odds ratio is not significant but there is a ≥15% point difference.

* The difference is less than 15 percentage points but the *p* value of the odds ratio is significant.

Table 2. Determinants interpretation table for determinants identified as significant (applying both the ≥15% difference rule, the *p* value of the odds ratio, or both).

Significant determinants	**Interpretation**
Self-efficacy (What makes it easier to practice the behavior?)	Doers find it easier to consume ASF regularly when it is the right season for plenty of animals around or when animals are available for consumption due to a certain event or special occasion. Doers find it easier to consume ASF regularly when they have appetite for these foods. Non-doers feel that having money (from various income earning sources) would make it easier to consume ASF regularly.
Self-efficacy (What makes it difficult to practice the behavior?)	More Doers than Non-doers find it difficult to practice the behavior when animals are sick or a veterinarian prohibits consumption/ places animals under quarantine.
Social Norms (Who approves of respondent practicing the behavior?)	More Non-doers than Doers mention that Concern/ RWANU staff or Health Promoters as well as neighbors and friends approve. More non-doers than doers perceive some 'other relatives' as approving (mother, father, sister, brother, grandparents, son, unspecified in-laws)
Social Norms (Who disapproves of respondent practicing the behavior?)	More non-doers than doers perceive some 'other relatives' as disapproving (co-wife, father-in-law, own parents)
Access (How difficult is it to get the food items/ materials needed to practice the behavior?)	Many more Non-doers than Doers find it very difficult to obtain the food items needed. More Doers than Non-doers find it only 'somewhat difficult' to find the food items needed.