

Food product development as a tool for transformation of diets for improved nutrition:

A case of fish-enriched complementary foods in Malawi

Tinna A. Ng'ong'ola-Manani¹, Tijoy Lowole¹, Chisomo Dambula²

¹Department of Food Science & Technology, Lilongwe University of Agriculture & Natural Resources, Malawi

²Ministry of Natural Resources and Climate Change, Department of Fisheries, P.O Box 593, Lilongwe, Malawi

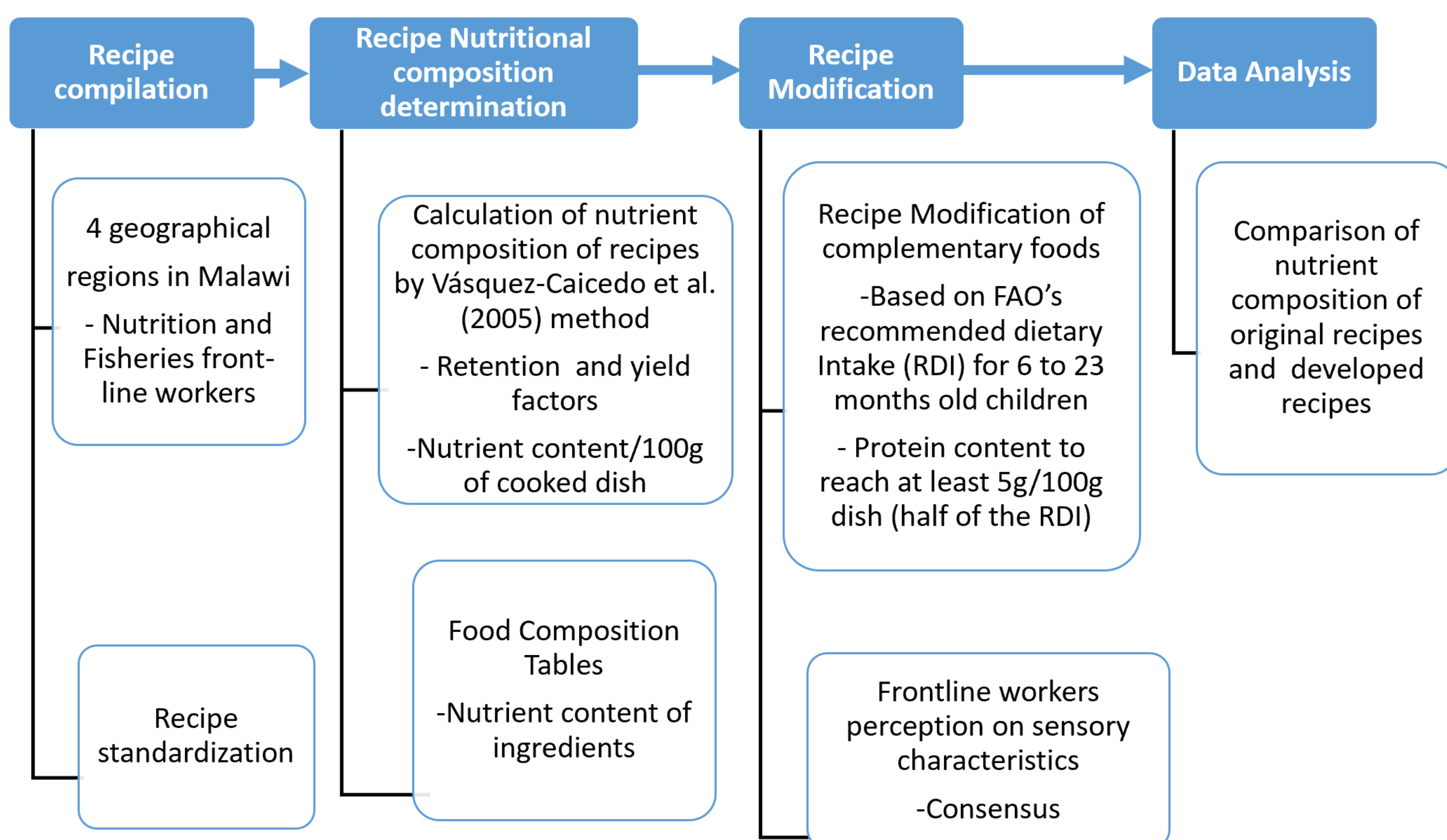
Introduction

- In Malawi, fish accounts for 33% of animal-source protein consumed by children 6–23 mo
- There are abundant small dried fish that present a hard-to-chew phenomenon; hence, children are fed watery fish broth.

Study Aim

To improve diet quality of children aged 6 – 23 months through integration of small fish into complementary foods.

Methods



Original porridge recipes

- 2.4–29.4 g of sun-dried *Engraulicrypris sardella* (usipa)
- 0.6 to 8.9% fish as a proportion of all ingredients

Modified porridge recipes

- 7–29.4g of parboiled usipa
- 1.1–7.0 % fish as a proportion of all ingredients

Fig 1: Stages in the development of fish-based dishes

Findings & Interpretation

Table 1: Comparison of nutrient composition of porridges against RDIs for children aged 6–23 months

Nutrient	Nutrient content per 100 g cooked porridge									
	Pro (g)	Energy (kcal)	Fat (g)	Carb (g)	Vit A (mcg)	Iron (mg)	Ca (mg)	Mg (mg)	Zinc (mg)	Vit C (mg)
Infants (6–12 mo)	11	600 – 900	30	95	500	11	260	75	2 to 3	50
Maize-soy porridge (Reference)	8.05	231.77	20.81	32.61	0.08	2.35	31.94	58.17	0.93	0
Fish-sorghum porridge	13.27	395.24	5.33	76.58	3.52	5.29	19.55	151.16	1.49	1.08
Fish-millet porridge	11.2	447.85	4.4	41	10.8	11.6	279.1	179.1	1.2	1.1
Fish-soy-maize porridge	11.92	296.36	31.25	45.46	0.86	3.47	34.84	92.25	1.07	0
OFSP-fish-porridge	14.35	256.51	8.58	28.11	788.89	2.3	74.88	80.21	0.72	20.44
Fish-maize-vegetable porridge	9.93	260.28	4.67	61	16.85	9.6	28.27	112.05	1.98	0.38
Fish-cassava porridge	11	139.84	4.67	50.04	5	3.53	113.42	99.6	0.55	2.09

Key Meets RDI with 2 feedings



Fig 2: Categories of recipes developed. Left to Right: Porridge, Sausage, Snacks

Conclusions

- Food product development combined with informed selection of ingredients is needed to improve nutrient intake.
- Fish-fortified sorghum or millet porridges can enhance nutritional quality of complementary foods.

References

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- MAFOODS. 2019. Malawian Food Composition Table. 1st Edition.
- Vásquez-Caicedo, et al., (2005). www.uerofir.net