POLICY BRIEF

Improving Household Nutrition through Biofortified Foods: Gender-responsive Policy options

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Key Messages

- Promoting targeted nutrition education interventions targeting men could be crucial for boosting demand and consumption of biofortified foods and reducing the consumption of unhealthy food.
- Strengthen gender-responsive policies in food system policies and programs aimed at promoting more equitable access to nutritious foods.
- Enhance the economic access and the awareness and information about biofortified foods through income support
- Integrate men in the gender and nutrition intervention programme alongside their spouses.

Introduction

Biofortification has been shown to provide numerous health and nutrition benefits, including Vitamin A, iron, and zinc to women of childbearing age and children under 5, as well as improve food security and increase food accessibility (Foley et al., 2021; Ruel & Alderman, 2013). In Rwanda, biofortification is a central focus of the government's national agricultural policies and strategies with the aim of addressing micronutrient deficiencies prevalent among vulnerable groups like women and children, to combat malnutrition and improve public health outcomes. Despite the concerted efforts to increase the production and consumption of biofortified foods, the consumption of these products is still low, and household food and nutrition insecurity persist. It thus becomes imperative to ascertain how the interplay of factors at the household level can explain the willingness to purchase nutrition-enhanced food.

Interhousehold power dynamics is household members' ability to influence decisions and control resources within a household or family (Folbre, 1986). This power can come from income, education, employment, assets, etcetera. Gender dynamics capture the differences in roles, and other relations women and men at the household or family level.

The extant literature also shows that intrahousehold power dynamics can influence the willingness to purchase the biofortified food products (Shibata et al., 2020; Doss, 2013). For example, access to economic resources and household decision-making can affect bargaining power and willingness to pay for biofortified foods. In addition, other factors such as gender norms, nutrition information, physical attributes of the products, and education level can influence the decision to purchase the biofortified foods. In addition, entrenched gender barriers and masculinity can also affect the nutritional intake, disproportionately affecting women and children. Nevertheless, there is limited knowledge about intrahousehold power relations and gender barriers on willingness-to-pay (WTP) for the government-recommended fortified maize flour and biofortified beans. Therefore, this policy brief[1] provides insight into how intrahousehold gender and power dynamics affect spouses' willingness to allocate resources and purchase fortified maize flour and biofortified beans in informal settlements in Rwanda at the household level.

[1] This policy brief is an excerpt from the paper titled "Intrahousehold Power Dynamics, and Preference for Nutrient-Enhanced Foods: a Gendered Experimental Evidence from Rwanda [version 1] VeriXiv 2025, 2:111 https://doi.org/10.12688/verixiv.1053.1)

The analysis and findings were based on a sample of married men and women, including those who have children, living in informal settlements. Data collection took place in 2024 in all five administrative provinces in Rwanda, including Kigali, the capital of Rwanda, which has a high level of informal settlements. The data collection also spanned to other informal settlement areas in other provinces. The five administrative provinces are Amajyaruguru (Northern Province), Amajyepfo (Southern Province), Iburasirazuba (Eastern Province), Iburengerazuba (Western Province), and Umujyi wa Kigali (Kigali).

Key Findings

- In general, women demonstrate a higher willingness to pay for the fortified and biofortified food. They also show a higher willingness to pay when they have higher income power than their spouses and have one or more under-five-year-old children.

- Men are unwilling to pay for the nutritious food, even when they have higher income power than their spouses or have one or more children under five years.

- Gender norms, such as those that deem men as protectors and having higher physical strength, more deserving; cultural expectations that prioritise males' nutrition over females; norms that limit women's participation in household decisions, etc., that support unequal food consumption and distribution, can lead to inequality in food access and security. Our findings show that this unequal food consumption in the household reduces willingness to pay for the food, which can consequently undermine household welfare.

- In contrast to women, men’s involvement in food decision-making and financing leads to lower willingness to pay for fortified and biofortified food. This signifies the crucial role of women in controlling household resources and food-related decisions.

Figure 1 illustrates the complex relationship between intrahousehold power dynamics and willingness to pay, highlighting the significant role of gender and power relations in household consumption decisions related to nutrient-enhanced foods.

Figure1: Drivers, Barriers, and Effects of WTP for biofortified Products

Drivers of Willingness-to-Pay (WTP)	Barriers and Negative Impacts on WTP	Muted or Insignificant Effects	Effects on WTP for Children Under-Five
Being female: Increases WTP by 143 RWF. **Product appearance/packaging:** Positively impacts WTP. **Knowledge and awareness:** Increases WTP. **Wife financing food expenses:** Increases WTP by 356 RWF relative to the husband financing. **Higher income for women:** Women's WTP increases by 159 RWF when their income is higher than their spouse's. Wife as sole or joint decision-maker: Women's WTP increases by 452 RWF (sole) and 559 RWF (joint) respectively.	**Presence of under-five children:** On average, reduces WTP for the biofortified products. **Men's higher income:** Men's WTP decreases (insignificant) as their income increases relative to their spouse's. **Men financing food expenses:** Men's WTP decreases. **Men as sole or joint decision-maker:** Men's WTP decreases by 224 RWF (sole) and 212 RWF (joint). **Unequal food consumption:** deter both females and males WTP, as it is seen as a cultural norm.	**Product availability in general markets:** Increases WTP, but not significantly. **Psychological factors:** Mixed results; dwelling on nutrition information leads to a lower WTP. **Higher education levels than spouse:** Muted effect on WTP for both genders. **Unemployment of spouse:** When a woman's spouse is unemployed, her WTP is lower by 415 RWF. This effect is not seen in men.	**Women with higher income:** A rise in a woman's intrahousehold income increases her WTP for biofortified food for her children by an average of 157 RWF. **Men with higher income:** No significant effect. **Overall:** For households with under-five children, a rise in intrahousehold income increases WTP by 130 RWF.

Policy Recommendations

- **Promote inclusive nutrition education targeting men:** to ensure gender equality and inclusion, nutrition programmes targeting men should be encouraged. Due to the perception that women are in charge of food preparation, many nutritional interventions target women and children's welfare and nutritional education, with men left behind, making them continue spearheading and making uninformed household nutrition decisions and outcomes without nutritional knowledge. The

Ministry of Gender and Family Promotion as well as the Ministry of Health, are already implementing the National Family and Nutrition Policy and could take key coordinating roles in this regard.

- **Strenghten gender responsive actions and programmes** should be intensified and extended within the food system to ensure improved nutrition outcomes at the household and community levels.

- **Enhance economic access and the promotion and information of biofortified foods through income support** to ensure that the majority of vulnerable households can access nutrient-sensitive foods at all times. The Ministry of Local Government (MINALOC) has a key role to play in this regard as it has been providing support to the vulnerable, particularly to pregnant women and infants at risk, to improve their health and economic outcomes through programs like the Vision 2020 Umurenge Programme (VUP). Support could also be extended to other vulnerable groups to enhance nutrition security through biofortification.

  Besides, the ministries of the Ministry of Agriculture and Animal Resources (MINAGRI) have been at the forefront of supporting biofortified crops in Rwanda have been working with other MDAs such as the Rwanda Agriculture and Animal Resources Development Board (RAB) to promote the production, market linkages of biofortified crops. Intensified income support to farmers would also lead to increased production and lower prices, thereby promoting the affordability of the biofortified foods.

- **Integrate men as active partners in gender and nutrition intervention programmes** by actively involving them in such interventions to help in reshaping patriarchal and discriminatory gender norms while allowing the evolution of better societal norms that can better promote household nutrition security and health outcomes. This will ensure social justice and allow for the evolution of better societal norms.

Conclusion

This policy note explores the factors that affect the WTP for the government-recommended biofortified foods at the household level, with particular attention to intrahousehold power relations and gender dynamics. The findings indicate that intrahousehold power dynamics exert influence, but not always on the WTP for the biofortified food products. Women with unemployed spouses have reduced willingness to purchase the biofortified food products. However, those with higher economic resources and food purchase decision makers in their households exert more bargaining power and influence over decisions and WTP for the biofortified food.

The results also reveal that men usually reveal a disconnection between nutrition and masculinity as they are unwilling to pay for the biofortified products, even when they have higher economic resources than their spouses, or when they are the sole food purchase decision makers. Nonetheless, they exert more WTP when they have knowledge or awareness about biofortified food products. Also, we find evidence that a rise in women's intrahousehold income-related bargaining power relative to their spouse increases their WTP for the nutritious biofortified food. In contrast, men tend not to allocate monetary resources to their under-five-aged children irrespective of their possession of higher intrahousehold bargaining income power.

These results contribute to the broader literature on intrahousehold power dynamics and decision-making by offering insights into the gender dynamics of a nutrition-sensitive intervention that can reduce maternal and child malnutrition in a low-income country context such as Rwanda, where there is limited empirical evidence. Overall, the results suggest that policymakers should identify strategies for greater economic access and acceptability of biofortified foods, particularly among vulnerable groups like women and children.

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