

# CONSUMER AWARENESS OF FOOD FORTIFICATION IN KENYA: THE CASE OF VITAMIN-A-FORTIFIED SUGAR

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### Introduction

Food quality, safety, and availability are globally considered important aspects for human development. These entail access to nutritious and balanced diet that comprises carbohydrates, proteins, roughages, vitamins, and minerals. Good nutrition is a prerequisite for human health and labour productivity (Caballero, 2003). Food quality is often conceptualized in the context of food energy or calorie intake. However, it is increasingly recognized that a large segment of the world's population especially in developing countries, consume foods that are deficient in some micronutrients (WHO, 2007).

Among the nutritional deficiencies, lack of sufficient amount of vitamin A (VA) and iron has the greatest impact on public health (WHO, 2006). Vitamin A deficiency (VAD) is a major problem that is not necessarily limited to specific groups of people or isolated communities. An estimated 250,000 to 500,000 VA-deficient children go blind every year (West Jr. and Darnton-Hill, 2001). A part from acute eye symptoms, VAD also weakens the immune system, thus increasing the severity of infectious diseases and infant mortality rates. For adults, the severity of VAD is higher among pregnant and lactating women. For instance, it is estimated that about 600,000 women die from childbirth-related complications each year, many of which could be reduced through better provision of vitamin A (Sommer and West Jr., 1996).

VA is mainly obtained from animal sources in the form of retinol. VA from plant sources is less easily absorbed and utilized by the human body (less Bio-available) than the VA coming from animal products (Kimenju et al., 2005). Since VA from plant sources is usually found in large amounts in only a few fruits and vegetables, many of which are highly seasonal, low income populations may suffer from VAD unless VA is available in processed foods such as sugar, oils, and staples (Ruel, 2001). Several approaches have been developed to reduce VAD worldwide. In Kenya, supplements are provided to children through vitamin A capsules, typically every six months. An alternative to supplementation is dietary diversity, by creating awareness about the problem in affected communities and increasing use of foods that have relatively high levels of pro-vitamin A from home gardens and other sources. However, these strategies suffer low coverage due to logistic difficulties and complexities (KNFFA, 2011).

The third approach is to enrich processed foods with pro-vitamin A carotenoids through food fortification. This is the practice of increasing the content of an essential micronutrient, such as vitamins and minerals, in a food irrespective of whether the nutrients were originally in the food before processing or not (FAO, 2002). Success stories from Guatemala suggest fortification could prove to be an essential strategy for combating VAD in Kenya, which has high rates of micronutrient malnutrition.

Over 70% of children and 33% of women of childbirth age in Kenya, for example, suffer from the severity of infectious diseases and infant mortality rates while over 30% of children suffer from acute eye symptoms (KNFFA, 2011), which are the outcomes VAD. At the same time, as is the case in many developing countries, access to food supplements and animal food products-that supply vitamin A directly in form of retinol, is limited (Gonzalez et al., 2010).

### The research problem

Recent reports suggest that food fortification could be a cost-effective strategy to addressing micronutrient malnutrition in developing countries (van Stuijvenberg et al., 2001; IVACG, 2003). Further, among other advantages, food fortification doesn't require people to change their eating habits, thus the "target" population continues to eat the food chosen as a "vehicle" which, once fortified, becomes a good source of the micronutrient (Qaim et al., 2007). However, food fortification is just gaining momentum in Kenya, and thus relatively little empirical information is known about its actual implication to consumers.

The awareness levels of Kenyan sugar consumers regarding VA sugar fortification and its nutritional importance might pose a barrier to acceptance of fortified sugar. Consumers are the sole determinants of the success of industrial food fortification initiatives through their purchase decisions. The potential for sugar fortification programme therefore, relies solely on the level of consumers' awareness. However, there is a dearth of knowledge on consumer awareness and perceptions regarding sugar fortification and its usefulness. Therefore, this study examined the awareness levels of Kenyan consumers to VA sugar-fortification and assessed whether dwelling place (rural or urban) and food demand and consumption characteristics had any effect on the level of sugar fortification awareness observed.

The study specifically; i) explored awareness of sugar fortification and compared the levels of awareness between rural and urban sugar consumers; ii) assessed the socioeconomic and food demand characteristics that influences consumer awareness of fortified sugar. It was hypothesised that rural and urban sugar consumers have the same levels of awareness regarding fortified sugar.

### **Methods**

The target population included households residing in the County of Nairobi (which hosts the capital city) and Kakamega (which is rural and lies to the western region of Kenya). The survey was conducted between March and April 2013 through personal interviews. This method of data collection was preferred because; the respondents' concerns and questions could be addressed at hand by the interviewers, guaranteed higher response rate and made the use of visual aids possible. This method was also instrumental in ensuring that only members of the household who are primary food shoppers answered the questionnaire. Descriptive statistics was performed using STATA 10, while binomial regression model was specified to analyze the factors postulated to affect levels of consumer' awareness, using NLOGIT 4 econometric software.

### **Results**

More female respondents (55%) answered than males (45%) because individuals in the study areas were selected based on availability and responsibility for food purchase in the household. The implication is that female members' shoulders heavy responsibility in terms of household food purchase decisions and therefore, should be targeted for nutrition information programmes. Respondents' average age is 35 years (varying from 18 to 85 years); persons younger than 18 years were not selected for the interviews as it was assumed that the younger sugar consumers had less experience in shopping and would give biased responses (De Groote et al., 2010). Group statistics shows that 46% of the rural consumers and 63% of the urban consumers are aware of VA fortified sugar. The independent sample test for the means of awareness levels for urban and rural consumers' (t-test for equality of means) allows rejection of the null hypothesis that the mean awareness estimates for urban and rural consumers are equal, at 5% significance level.

To determine the factors that are perceived to be most important in influencing purchase decisions, consumers were asked to rate five product characteristics – price, taste/flavor/colour, nutritional information, brand name and additional health ingredients' information, for example, fortification label, on their purchase decision– according to their level of importance prior to purchasing sugar, using a Likert scale ranging from not at all important (1) to very important (5). Following Gonzalez et al. (2010), the definition of the “most important factor” was based on the number of consumers responding to the top (4–5) scale levels, that is, fairly important and very important. On average, taste/flavor/colour (91%), price (88%), and nutrition (65%) are the most important consumption factors, brand name ranked fourth at (65%) while an additional health ingredient was ranked last at (45%).

This suggests that price and sensory characteristics (measured as taste/flavor/colour) are ranked higher than nutrition, by the majority of sugar consumers' in Kenya. These results compares to those reported by (Harris, 1997), and indicate that some consumers may not accept nutritious (fortified) foods if changes occurs to the sensory characteristics regardless of their awareness levels. Among the regressors, age of consumers, purchasing from supermarket, reading newspaper, living in urban area as well as having a child below the age of five years, are the significant factors that influence consumers' awareness of sugar fortification, while marital status and years of formal education had insignificant effect.

### **Conclusions**

This study found that consumers' awareness of sugar fortification in the study areas was higher for urban consumers. The study also established the fact that purchasing sugar from supermarket, age

of the consumer, reading newspaper, location in urban area and household having infant member(s) significantly influences consumer's awareness of sugar fortification. In addition, marital status and the years of formal education of the consumers' had insignificant influence on the level of consumer awareness, contrasting the prior expectation of the study. Consumers still value/perceive price and changes in sensory attributes highly compared to nutritional attribute when faced with a choice between fortified and conventional sugar. Care must therefore, be taken to ensure that fortificants that maintains the sensory characteristics of food are used in the fortification process. This would enhance wider acceptability among consumers. Public nutrition education programmes which are designed to create and maintain awareness need to be developed to target a specific region. The finding that females are less likely to be aware compared to males, particularly in rural areas, imply that these nutritional programmes should also be packaged with programmes that promote gender roles. In this regard, little may be achieved through blanket usage of media in nutritional education, given that the study revealed exclusive control of media and other information resources by the males. Therefore, use of groups in the society such as women groups, churches and other non-profit organizations are encouraged to supplement media sources. A number of studies have revealed that access and use of mobile phones in Kenya is high (see for example, Okello et al., 2009). Dissemination of nutritional information through mobile phones (short messages) should be considered. Finally, younger generation (whose access to media and phones is low), can also be targeted for nutritional information in schools. The study suggests introduction of Nutrition education as well as formation of nutrition/dietary clubs in both primary and secondary schools.

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