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Achieving healthier diets requires a thorough understanding of the diversity and drivers of food choice. The International Rice Research Institute developed a 'Food Choice Application' featuring 162 unique Bengali dishes and captured the weekly meal plans of 177 low to middle income households in West Bengal. Food choices varied by gender and between urban and rural communities affected primarily by budget constraints and to a lesser extent by behavioural change communication towards healthier diets.

By **Matty Demont, Marie Claire Custodio, Jhoanne Ynion, Arindam Samaddar, Rochie Cuevas, Anindita Ray (Chakravarti) & Suva Kanta Mohanty**

WHAT AFFECTS HOUSEHOLDS' FOOD CHOICE IN WEST BENGAL?

The Food Choice Application maps the weekly food portfolio of a household by featuring dish options during five eating occasions over the week.



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The EAT-Lancet Commission recently urged the world that we need to achieve ‘planetary health diets’ that prioritise human health at minimal environmental footprint for the nearly 10 billion people likely to inhabit earth by 2050 (Willett et al. 2019). However, to render diets healthier, policy makers first need to understand the diversity of food choice and the drivers that affect it. To capture this, the International Rice Research Institute (IRRI) collaborated with Maharani Kasiswari College, Kolkata and KIIT University, Bhubaneswar (DFC 2019). Aimed at understanding the behavioural drivers of food choice in West Bengal, the project involved a target population of urban and rural households in low and middle income groups.

Food Choice Application (FCA)

One of the primary deliverables of the project was an interactive application that was used to capture the diversity of food choices in West Bengal. After inventorying, preparing, standardising, analysing and photographing dishes in Maharani Kasiswari College food lab, the team identified 162 unique Bengali dishes. These dishes were then worked into an application—the Food Choice Application (FCA) and allocated to five eating occasions breakfast, morning snack, lunch, afternoon snack and dinner (Fig. 1).

The FCA maps the weekly food portfolio of a household by featuring all dish options that can be consumed during five eating occasions over seven days of the week. Respondents can specify the number of servings of the dish their household is planning to consume, where each serving represents the quantity for one adult. As

the servings increase, a budget bar indicates the available per cent budget left for the household’s use. The FCA was pretested for refining the functionality of the application and was made available in both English and Bengali.

The FCA treats weekly food choice of a household as an investment decision under a budget cap. Next, it treats the dish as the unit in the investment decision-making. The FCA allows households to invest in a combination of dishes for their weekly food consumption for all relevant occasions until their budget is exhausted. A fixed budget allocated to a household is imputed in the application and is adjusted in real time. Households may invest until their budget is exhausted or they can keep savings for other purposes.

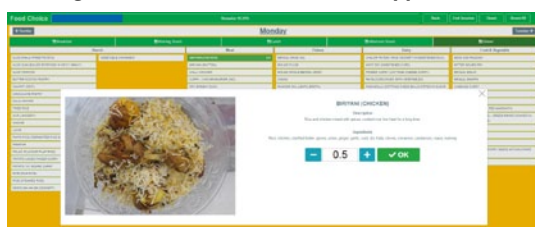
Behavioural experiments

The FCA was subsequently used in behavioural experiments with a random sample of urban and rural households in low and middle income classes in West Bengal (IRRI 2018). A total of 14 experimental sessions were jointly implemented by IRRI and Aeon Market Research Private Limited from 28 November to 3 December 2018 in Kolkata, then from 3–4 December 2018 in Siliguri. Out of the 14 sessions, 11 were held in Kolkata and three were conducted in Siliguri.

In each session, 12 to 15 households were invited and each household comprised both husband and wife. A total of 192 households participated in the experiment. The sessions were randomly assigned to a treatment and control group. During the ‘treatment sessions’, households were exposed to a behavioural change communication (BCC) broadcast featuring nutritionist Anindita Ray Chakravarti from Maharani Kasiswari College, Kolkata. The BCC provided insights into how households in West Bengal can improve their diets and dietary patterns to improve their health status. After the broadcast, an IRRI animator explained how a participant may navigate the app (Fig. 1).

Each household received a food budget which was randomly drawn from a list of weekly food expenditures of similar households surveyed previously in the same area. This means that some households received a lower budget and others a higher budget than what they would normally have at their disposal to purchase food. The random treatment enabled an understanding of

Fig. 1: A view of the Food Choice Application



The application assists households in planning their optimal weekly meal portfolio under a given budget constraint

how budget affects choice of food. Both the head of the household and their spouse were given the opportunity to plan their household meals using the app, first individually and then jointly as a couple (Fig. 2). This process enabled researchers to capture the diversity of food choices and preferences through a gender perspective and capture intra household decision making.

The app yielded interesting outcomes. As there was a budget constraint posed at the outset, households sometimes traded off taste for nutritional and health attributes, in particular after exposure to the BCC on healthier diets. Figure 3 in fact shows how much the low to middle income households spent on feeding their household for the week and how they allocated their food budgets among several food groups—starch, vegetables, non-vegetable dishes (meat, fish), fruit, pulses and dairy. The food portfolios by gender, urbanity, level of exposure to the BCC and budget constraints were compared. It is observed that men tend to spend a higher portion of their given budget on food as their amount unspent was smaller than their women counterparts' savings. Women, on the other hand were found to invest more in non-vegetable dishes, while men invested slightly more in starchy dishes and pulses. Large differences were found when comparing urban and rural West Bengal. Rural households tended to spend more on starchy dishes, vegetables and pulses, while urban households invested more in non-vegetable dishes and dairy at the expense of vegetables and pulses.

When looking at the average food portfolios in Figure 3, we do not observe a strong overall effect of exposure to the BCC, although information on healthy diets seems to boost overall spending on food somewhat and particularly on non-vegetable dishes. Food choice seems to be largely determined by budget availability.

Way Forward

The interactive application is a useful tool that can help households plan their household meals. They can also be used in behavioural experiments to study diversity and drivers of food choice among the masses and to educate people about healthy food choices. The FCA is flexible and can be easily adapted to:

- other socio-economic target populations (e.g., low, middle or high income classes, populations suffering from malnutrition, indigenous

According to the Food Choice Application women invest more in non-vegetable dishes while men invest slightly more in starchy dishes and pulses.

Fig. 2: Laboratory set-up of the behavioural experiments conducted in Kolkata and Siliguri, where households are given the opportunity to plan their weekly meals first individually (top and middle) and then jointly (bottom).

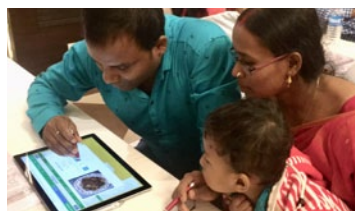
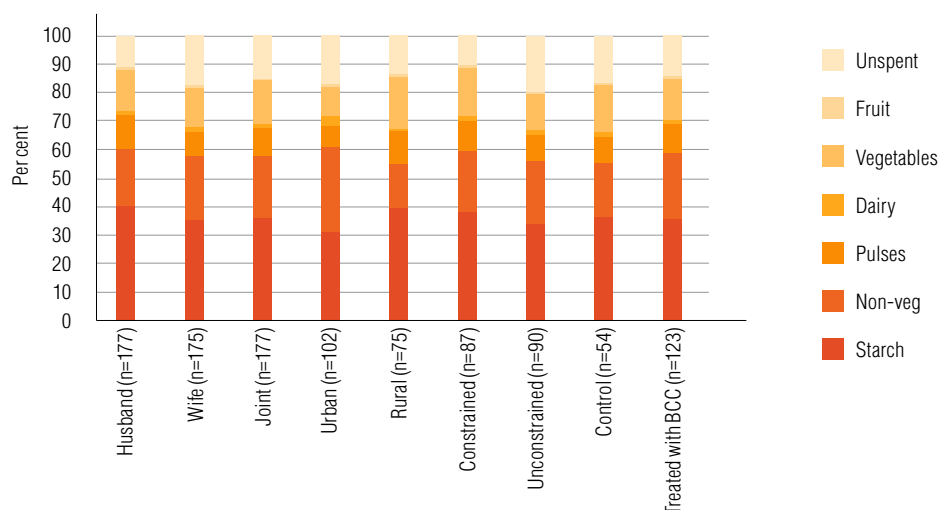


Fig. 3: Food choice of low to middle income households in West Bengal by gender, urbanity, budget constraints and level of exposure to behavioural change communication (BCC) on healthier diets.




populations; migrant populations; pregnant women; school children; millennials etc.)

- other geographical and cultural contexts (other states in India or other countries in the world), and
- other nutrition-sensitive interventions (agricultural diversification, schooling, women's empowerment, health and family planning services, etc.).

The example of West Bengal suggests that food choice varies by gender and between urban and rural areas and is affected by budget constraints, and hence, income. We do not find strong evidence that West Bengal households from low to middle income classes can be nudged towards healthier food choices through exposure to BCC interventions alone. However, the results need to be analysed per household segment to assess which household types are more resistant to change and under what conditions some households are willing to adopt healthier diets. We do find some evidence though that achieving healthier diets—as advocated by the EAT-Lancet Commission—may be more expensive, while food choice is strongly determined by budget constraints in low to middle income households.

In a follow-up research, the food portfolios need to be converted to nutritional outcome information for different household segments. This will generate a wealth of information that will reveal consumption habits of urban and

rural households under different income and information levels. The data set will enable us to better understand the drivers of food choice and in particular the roles of income and information on Bengali diets. 

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