Effects of Food Prices on Dietary Intake of Pre-Primary Children in Low Income Peri-Urban Households in Uasin Gishu County, Kenya

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Abstract

Unpredictable fluctuations in food prices have direct impact on household's income, which negatively affect dietary intake while raising the risk of malnutrition. The objective of the study was to determine the food price effects on dietary intake of pre-primary children in low-income peri- urban households in Eldoret municipality. A descriptive survey was used with a sample size of 399 low-income households. A structured questionnaire was used to collect data from caregivers. Majority of the respondents, 282 (70.6%) were married. About 279(69.9%) had tertiary level education. Most (140(35.2%)) of the households had a monthly wage above Kenya Shillings (KShs) 21000, KShs 16000-20000 at 103(25.8%) with only 15(3.7%) having wage of KShs 1000 to 5000. Majority of households 257(64.6%) had more than 4 members. About 332(83.2%) of the households consumed 3 meals a day. Only 174 (43.6%) of the households consumed snacks during the day. Over half of the respondents, 334 (83.60%) had made major changes in their dietary intake over the past one year. Majority 375 (94.3%) significantly increased intake of staple foods while reducing the number of meals taken a day 280 (70.2%) as a result of increased food prices. Household head unemployment, increased household expenditure and decline in food supplies from friends and relatives all indicated a statistically significant association with the quality of dietary intake (p-value=0.00). Linear logistic regression analysis showed that change in the food price negatively affected the dietary intake at p=0.446. Furthermore, decrease in food supplies from friends and relatives led to decreased quality and adequacy of diet taken by the households and vice versa (p-value<0.05). From the findings, food prices affected the dietary intake of pre-primary children in low-income households. The study recommends that the government should cushion the populace against hunger by giving money monthly to low income and vulnerable household to enable them meet their dietary needs. It should also enforce existing policies that protect consumers against unpredictable food price spikes in the country.
Key Words: Food Price, dietary intake, pre-primary children, low income

Introduction

Food price volatility is the rapid, unpredictable changes in food prices that wreak havoc on market rather than long term structural trends in food prices that we can prepare for and adjust to, United Nation's Food and Agriculture (FAO, 2022). Food prices are a primary determinant of food consumption patterns and high food prices have a negative effect on the dietary intake, nutritional status and health especially the poor households. According to FAO (2022), monthly Food Price Index, the global food prices shot up nearly 33% in September

2021 compared with the same period the year before. It also found out that global prices had risen by more than 3% since July 2021.The high food prices, have a serious impact on the poorest populations in the world. Among these populations are people living in African continent (FAO, 2017). High costs of food also curtail household spending for other essential goods and services, such as health care (Huang & Huang, 2012). In Kenya, food availability is not satisfactory, about one-third of Kenyan population, have an average daily caloric intake

below the recommended level of 2,100 Kcal/person/day with 98% of the food consumed in Urban areas being purchased and only 2% from own production (Mohajan,2 013). This implies that majority of the urban population obtain food from market or shops. Food price changes have increased levels of food deprivation among urban population, while placing tremendous pressure on achieving agreed United Nations Sustainable Development Goals (SDGS) on Zero hunger by 2030. According to the Action against Hunger International Nutrition Security Policy, (2014), World prices of wheat, rice and all seed crops continued rising in early 2016. These increases in agricultural commodity prices have been a significant factor driving up the cost of food in local markets, leading to a fuller awareness and justification for heightened concern about food intake in the world, especially for developing countries. Moreover, after steadily declining for a decade, world hunger is on the rise affecting 9.9 per cent of the people globally.

Objective of the Study

The objective of the study was to determine the food price effects on dietary intake of pre-Primary children in low-income Peri-Urban Household in Uasin Gishu County, Kenya. This may inform interventions strategies to address and cushion Kenyans in urban areas from hunger and food insecurity to ensure adequate dietary intake.

Methodology

Study Area

The study was conducted in Eldoret municipality, Uasin Gishu County in Kenya. Eldoret was selected by purposive sampling because it is surrounded by prime agricultural land. Eldoret is a cosmopolitan town. Communities settled in Eldoret include Kalenjin, Luhya, Kikuyu, Luo, Kamba, Kisii among others and refugees of Sudanese origin. It has an estimated population of 475,716 as per 2019 Kenya National Bureau of Statistics. Eldoret is surrounded by prime agricultural land. As a trading centre for Uasin Gishu County, Eldoret economy is largely driven by large scale grain, dairy and horticultural farming and sport tourism especially athletics.

Eldoret municipality comprises of 19 estates namely Racecource, Langas, Yamumbi, Kipkaren, WestIndies, Kipkenyo, Kapyemit, King'ong'o, Kamukunji,

Kimumu, Munyaka, ElgonView, Kapsoya, Pioneer, Mwanzo, Shauri, Bacon, Huruma among others. These residential estates are low, middle or high income.

Target Population

The target population for this study was drawn from all the low-income peri-urban households with pre-primary children in the low-income estates within Eldoret town, Uasin Gishu County. According to the Kenya National Bureau of Statistics (2019), Eldoret town has an estimated population of 475,716 people.

Study Design

A descriptive survey research design was adopted. A structured questionnaire was used to collect information from respondents on their dietary intake, food consumption patterns, their coping strategies and how they are affected by food prices.

Sample Size and Sampling Procedures

A sample size of 399 households was determined using the Taro Yamane formula of 1973 ($n = N/(1 + N(e)^2)$) from an estimated target population of 475,716 in Eldoret municipality (KNBS, 2019).

A multi-stage sampling technique was used. Eldoret town municipality, Uasin Gishu County was purposively selected. Estates were put into clusters through simple random sampling. Six low-income estates in peri-urban were purposively selected. Proportionate sampling procedure was used to sample out the households with pre-primary children and their heads from the study area.

The 6 estates sampled were low-income category (Munyaka, Langas, Shauri, Huruma, Kipkaren and Bacon). Majority of residents in these estates are poor and could be affected by fluctuating food prices. According to the Kenya National Bureau of Statistics (2019), the population given is up to the sub location level; therefore, the population of these estates was obtained from the area chiefs. This was from the Kenya National Bureau of Statistics (2019) household clusters.
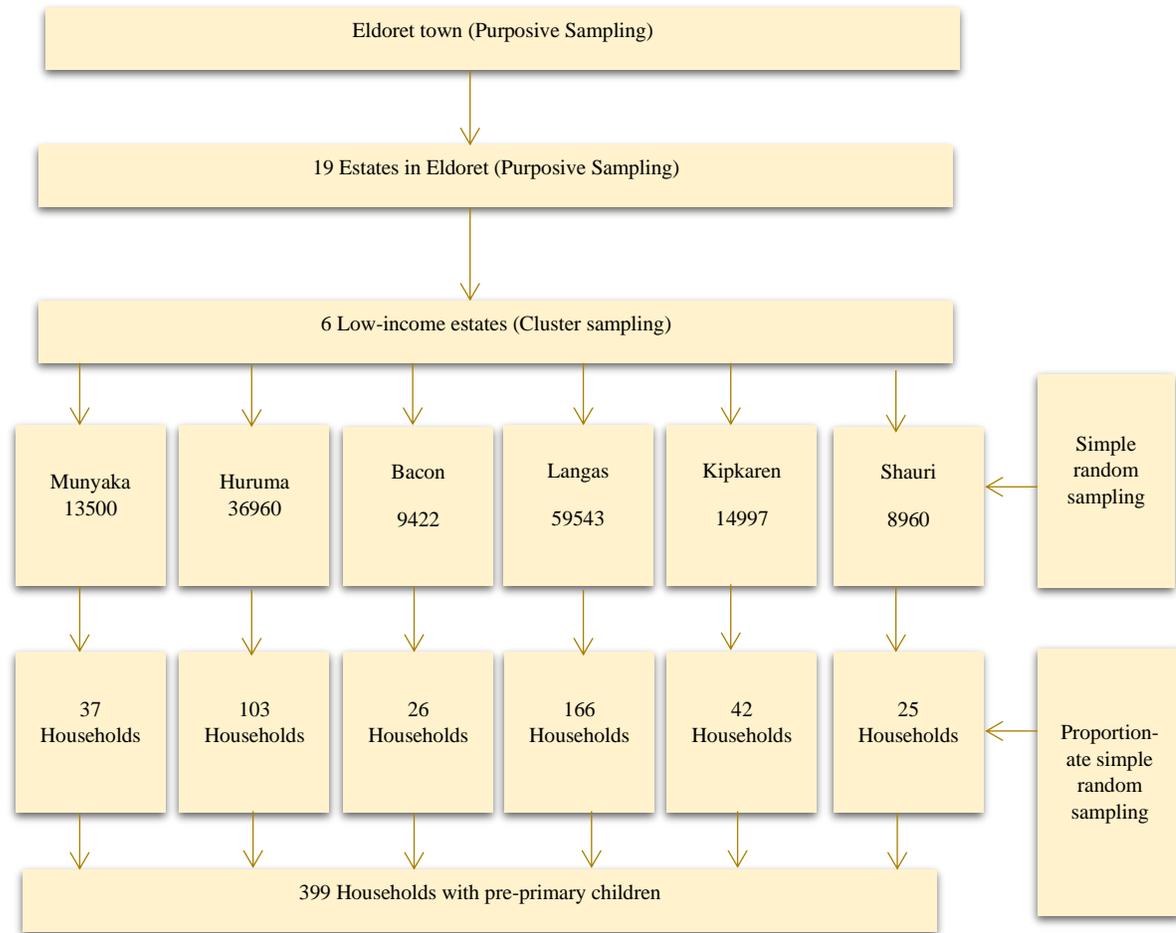
Figure 1: *Flow Chart of Sampling Procedure for the 6 Peri-urban*

*Total population (KNBS, 2019)

Data Collection Process

A structured questionnaire was used to collect information on demographic information of the respondents like gender, age, education, monthly income, occupation marital status, household size and household head as checklist questions, dietary intake, dietary diversity and coping strategies. The study recruited and trained four (4) research assistants on the data collection process and precautionary measures related to the prevention of COVID-19 were undertaken during data collection. The data collection enumerators, which included the researcher and research assistants, explained the consent document to the respondents, those who agreed to participate signed the consent document. The questionnaire was administered to the respondents to fill; the enumerators asked the respondents questions whenever they deemed right to do so.

Data Analysis and Presentation

Descriptive statistics was done using percentages and frequencies. Chi Square analysis was used to show association between variables. Further, linear logistic regression was used to show the strength of association between socio economic characteristics, price of food and dietary intake Data was presented in tables and graphs.

Ethical and Logistical Consideration

The University of Eldoret, postgraduate school cleared the study, and a permit to conduct research was obtained from The National Commission for Science, Technology, and Innovation (NACOSTI). All ethical concerns were addressed relating to voluntarism, confidentiality, privacy, and autonomy.

Findings

Demographic Characteristics of Households with Pre-primary Children

The study looked into demographic characteristics of the households with pre-primary children in terms of gender, marital status of caregivers, household size, and household members 4 to 5 years. Majority of the respondents were female 276(69.2%) while male was 123(30.8%) among them, 282 (70.6%) were married with 81(20.2) being single and only 24(6%) and 12(2.9%) having separated and divorced respectively. The researcher also determined household size and household members within the 4 to 5 years age bracket. The findings showed that, most households had 4 members and above in the household 257(64.6%) with 142(35.4%) having 2-3 members in the household, however majority of the households 317(70.6%) had one child aged 4 to 5 years and 82(20.6) had two as documented in Table 1.

Table 1
Demographic Characteristics of Households with Pre-primary Children

Item	Response	n	(%)
Gender of child	Male	123	30.8
	Female	276	69.2
Marital status of caregivers	Single	81	20.2
	Married	282	70.6
	Separated	24	6
	Divorced	12	2.9
House Hold size	2-3 members	142	35.6
	4 & above	257	64.4
Household members 4 to 5 years old	One member	317	79.4
	Two members	82	20.0
	Three members	0	0.0
	Four Members	0	0.0

According to table 2, the current study revealed that majority of the pre-primary children's caregivers had attained tertiary level education with 122(30.5%) having diploma, 100(25%) certificate and 57(14.4%) having a degree. Around 80 (20.1%) had secondary education with 40(10.1%) reporting to have primary education only. Of the 399 respondents, a great proportion of the caregivers had formal employment 206 (51.6%) with 69(17.2%) being in informal employment, 105(26.2%) in business and only 19(5%) unemployed. In terms of income, most households had a monthly wage above KShs 21000 representing 140(35.2%), followed by wage

between KShs 16000-20000 at 103(25.8%) with the least being wage of between KShs 1000 to 5000 at 15(3.7%). The study reported fathers to be the majority when it comes to bread winners 238(59.6%), mothers152 (38.0%) and others (Sister, brother and uncle) at 9(2.3%).

Table 2

Socio-economic Characteristics of Households with Pre-primary Children

Item	Responses	n	%
Education level	Primary level	40	10.1
	Secondary	80	20.1
	Certificate	100	25.0
	Diploma	122	30.5
	Degree	57	14.4
Occupation of respondent	Formal employment	206	51.6
	Informal employment	69	17.2
	Business	105	26.2
	Unemployed	19	5.0
Monthly wage	1000-5000	15	3.7
	6000-10000	61	15.3
	11000-15000	80	20.1
	16000-20000	103	25.8
	Above 21000	140	35.2
Family bread winner	Father	238	59.6
	Mother	152	38.0
	Sister/brother/uncle	9	2.3

Effects of Food Price on Dietary Intake of Pre-primary Children in Low income peri-urban in Eldoret town, Kenya

In trying to understand the actual impact of rising food prices in the dietary intake and quality, it is essential to comprehend the perception of individuals (Da Costa & Alves, 2015). From Table 3, Out of the 399 respondents, 87.10% indicated to have been buying their food from the market, 10.2% from farming and 2.7% from donations and friends'. According to table 1, the number of meals consumed by the households in a day was estimated. Majority (83.2%) of the households took three (3) meals a day with 16% taking two (2) meals a day and 0.8% having one (1) meal a day. Consistent with the results, Matz Kalkuhl & Abegaz, (2015) concluded that the rising food prices had a negative aggregate effect on the urban households despite the fact that households were still able to sustain their basic food consumption with majority taking at least three (3) meals a day. Alem & Soderbom (2012) concluded that changes in food prices affected households with low-income levels. More than half, 225(56.4%) of the respondents reported to not taking snacks, with only 174(43.6%) having snacks during the day. This scenario could be associated with unemployment of the household heads. The most commonly consumed snacks were Mandazi and Bread at 218(54.7%) and 122(30.7%) respectively. The pre-primary children had inadequate intake, which concurs with Mitchell (2008), rising food prices has been considered to have adverse effects on

food consumption such as increased distress, increased starvation, lower purchasing ability and perennial poverty.

Table 3
Number of Meals and Snacks Intake

Item	Response	n	%
Number of meals/day	One	3	0.8
	Two	64	16
	Three	332	83.2
Snacks intake	Yes	174	43.6
	No	225	56.4
Kind of snacks taken	Bread	122	30.7
	Mandazi	218	54.7
	Sweet-potatoes/arrow roots	44	11
	Boiled maize	14	3.6
N=399			

Chi-square results indicated a significant association between dietary intake and unemployment status of household head, increase of household expenditure and decline in food supplies from friends and relatives (p-value = 0.00). On the contrary, lack or inadequate funds in the household and food prices did not show statistically significant association with dietary intake of the household with p value = 0.81 and 0.56 respectively. Further analysis reveal that change in the price of food by one-unit changes negatively the dietary intake by 0.20 units. This implied that when the price of food increase the type of diet consumed is of low quality and vice versa. However, the results were statistically insignificant with P = 0.446.

The results also revealed that change in household income and change in funds allocation of household income has direct impact on dietary intake. Results show that change in the funds allocated to purchase food by one unit, changes positively the dietary intake by 0.18 units. This implied that when the amount of funds allocated to purchase food increase, the type of diet consumed is of high quality and vice versa. However, the association was not statistically significant with p - value = 0.30.

Finally, the results highlighted that change in unemployment status of household members by one unit, changes negatively the dietary intake by 0.55 units. This implies that when the unemployment level of household members increase, the type of diet consumed is of low quality and vice versa.

Effects of Food Price on Dietary Diversity of Low-Income Peri-urban in Eldoret Town, Uasin Gishu County, Kenya

According to Figure 2, the low-income households with pre-primary children generally consumed foods from all the food groups frequently within the past week preceding the study. Cereals were the most consumed food group (99%, n=398) followed by oils and fats (99%, n=396) and vegetables (97%, n=389) in a week. The least consumed food groups in terms of frequency of consumption in a week were meats (47%, n=192) and roots and tubers (48%, n=191). The findings agree with, Darmon and Drewnowski (2015) found that most households consumed food

from all food groups frequently with cereals being the highest consumed food group. The least consumed foods in a week prior to the study were meat group.

The mean number of times of oils and fats consumption was 6.24 times in a week. Cereals consumption was 6.41 times in a week and vegetables 5.05 times in a week. Milk and milk products were at 4.24 times in a week, fruits 3.75 times in a week, legumes, nuts and seeds 3.23 times in a week, eggs 2.07 times in a week, fish 1.98 times in a week, meats 1.61 times in a week and roots and tubers were consumed 1.54 times in a week
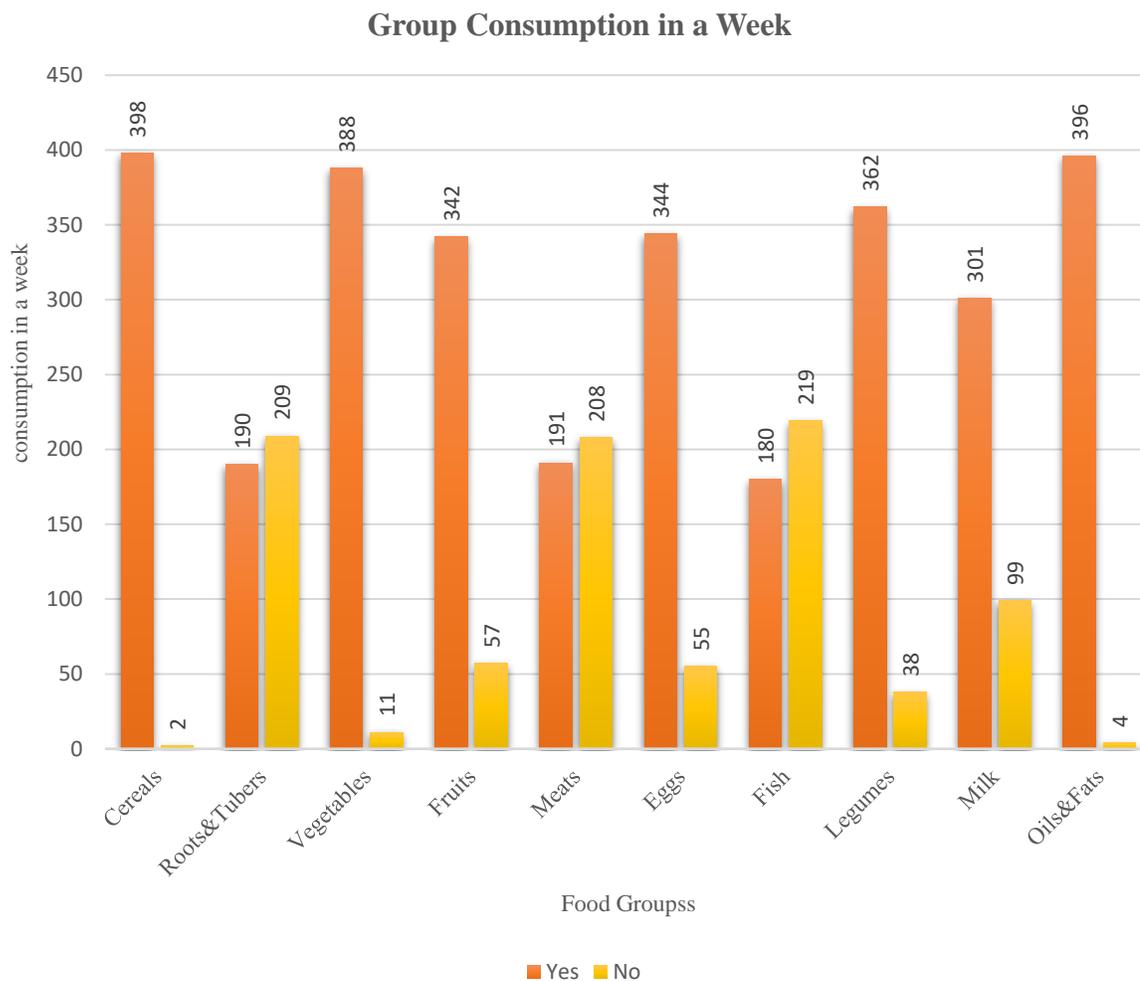
Group Consumption in a Week

Figure 2: Frequency of Food Group Consumption in a Week

Dietary diversity score was classified as low dietary diversity score (1-4 food groups), medium dietary diversity score (5-7 food groups) and eight (8) and above food groups for a high dietary diversity score. According to figure 3, majority of the households had a medium dietary diversity score with 183(45.90%), while 89(22.30%) had a low dietary diversity score and 127(31.9%) had a high diversity score respectively. Most households with pre-primary children admitted to have made changes in their dietary intake in the past one year whereby they significantly increased the intake of staple foods and reduced the number of meals taken in a day. This further agrees with Kearney, 2010 and Maharan et al (2019) who discovered that 58% of the participants in their study had altered their eating habits because of rising cost of food.
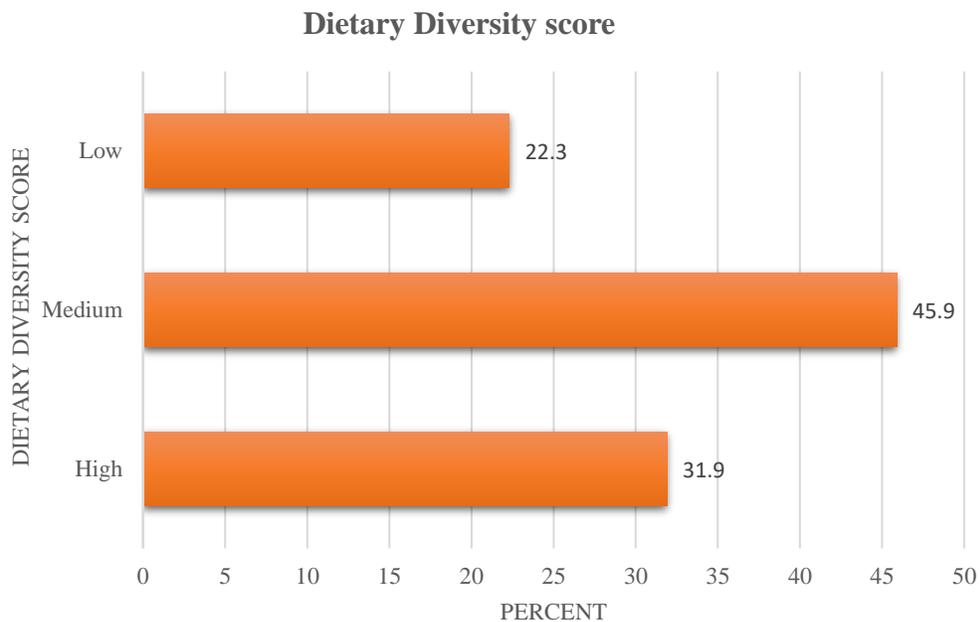
Dietary Diversity score

Figure 3: Dietary Diversity score

There was a significant relationship between increased food prices and dietary diversity score of households with pre-primary children (p-value=0.002). A spearman's correlation analysis for strength of association further showed a negative significant but weak link between increased food prices and dietary diversity (r(397)=-.050, p-value=0.039).This implies that an increase in food prices leads to a 0.050 unit decrease in dietary diversity.

Cost of Food and Coping Strategies of Households with Pre-primary Children

An investigation on the cost of food revealed that, majority of the households allocated more than KShs 4000 for food monthly, 30.6% allocated 3000- 4000 KShs with the least allocating 1000- 2000 KShs (10%). The increased food prices affected household food purchasing power negatively with majority with 276(69.8%) reporting to have increased their food budget with 81(20.2%) opting for cheaper foods.

According to table 4, the households adopted various coping strategies to increased food prices. Majority of the households resorted to eating less preferred food,329(82.4%), Decreasing food variety at 316(79.1%), consuming processed foods 303(76%), skipping meals, 279(70%) and reducing portions of food, 248(62.1%) were the most used strategies to cope with the ever-increasing costs of foods. This is consistent with Maharan et al (2019) who discovered that 57% of the participants in the study shifted to purchasing cheaper brands available in the market as opposed to the high dietary quality. Similar findings by Matz (Kalkuhl & Abegaz, 2015) that most households affected with rising food prices preferred cheaper foods for survival.

Table 4
Coping Strategies to Increasing Prices of Food

Coping strategies	YES (%)	NO (%)
Consuming processed foods	79.1	20.9
Consuming street foods	5	95
Eating outside home	0.7	99.3
Skipping meals	70	30
Reducing meal portion	62.1	37.9
Pulling children out of school	0.0	100
Eating less preferred meals	82.4	17.6
Decreasing food variety	76	24
Women forgoing meals so that children and husband can eat	0.8	99.2
Begging for food	0.4	99.6
Selling assets	1.1	98.9

Conclusion

It can be concluded that food prices affect the dietary intake of pre-primary children in low - income households in peri-urban areas of Eldoret, Uasin Gishu, Kenya. When the prices of food increased, it reduced the purchasing power of the household and the quality and quantity of food purchased is compromised. In this case, the household opted for cheaper varieties of food items, which may be of less nutritive value. Pre-primary children in these households had their dietary intake affected by skipping of meals, reducing the portion sizes and lack of snacks as part of their meals.

The effects on dietary intake directly affected dietary diversity of pre-primary children in low-income households in peri urban areas of Eldoret town, Uasin Gishu, Kenya. Some of the food groups were not frequently included in the household diet especially the meat group. As indicated earlier, most of the low-income households in urban areas purchased their food from the market. Majority of them had constant income such that their income did not increase with increase in food prices. In this regard, their food budget remained the same therefore, their dietary intake and diversity was affected negatively.

To address the above scenario, most low-income households with pre-primary children adopted a number of coping strategies. The most used strategy was eating less preferred foods while the least was begging for food. This affected negatively on dietary intake and diversity that is why most of pre-primary children did not meet the recommended dietary intake of 1610 kcal/day.

Recommendations

The current study would recommend the government to give food subsidies to low-income urban households as a short-term response to food price spikes. The County government Ministry of Agriculture and health Stakeholders need to come up with multiple ways to improve food security and boost dietary intake of low-income urban households including kitchen gardening and rearing of chicken to supplement what they buy from the market. This will enhance dietary intake and diversity. The Low-income households should also adopt positive coping strategies to mitigate the food price effects on dietary intake of pre-primary households.

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