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Breakfast consumption pattern among rural and urban children

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Abstract

Breakfast is described as the first meal which breaks the fast that had been for over twelve to fourteen hours (Wayon *et al.* 1997). A study was conducted to examine the breakfast consumption pattern among rural and urban children at University of Agricultural Science Dharwad**.** Study sample comprised of 60 children from rural and 60 children from urban in Dharwad district who attended higher primary school. Breakfast consumption was assessed by using self structured questionnaire. A result revealed that, in both rural and urban, majority of children were regular breakfast consumers. Majority of children were from vegetarian food habits. Rural consumed carbohydrate rich nutrient profile foods for their breakfast and urban children consumed protein rich nutrient profile foods for their breakfast. In rural and urban group majority did not consume any kind of special foods for their breakfast. Study results indicate the need for guidance/ counselling, orientation programme to child and their parents to encourage their regular breakfast and rich in nutrition like protein, vitamins food consumption.

Keywords: Breakfast consumption, rural children, urban children

Introduction

Breakfast is described as the first meal which breaks the fast that had been for over twelve to fourteen hours (Wayon *et al.* 1997) [10]. Breakfast should provide 25 per cent of the daily nutrient required to an individual (Gibson and Sullivan, 1997) [3]. Children and adolescents need to meet nutrient requirements to maintain an appropriate growth rate while avoiding nutrient deficiencies which can lead to poor health [Pollitt, 1995) [7]. Accordingly, breakfast skippers also had lower intakes of fat, carbohydrate, and protein [Pollitt *et al*, 1991] [8]. Breakfast is seen as an important first source of energy for the day, so that the brain can cope with the demands of the morning . While skipping breakfast induces short term metabolic changes, it may also affect overall nutritional status. The gradual decline of insulin and glucose level could determine a stress response, which interferes with different aspects of cognitive function, such as attention and working memory (Simeon, 1998) [9]. It is plausible that the decline in cerebral iron level likely to result from diet that is deficient in home intensifies the stress associated with overnight and morning fast. Children who skip breakfast but eat later on in the day may catch up their daily nutrient requirements but are unlikely to attend and concentrate on the teacher's lecture in the morning session because they are hungry. Laboratory study showed that missing breakfast detrimentally affects children's cognition and that undernourished children are more likely to be affected [Enery, 2005] [2]. Other studies have explored the relationship between nutritional, anthropometric indicators and school achievement indicators as grade level, age at enrollment, absenteeism, achievement test scores, IQ, and performance on selected cognitive tasks including concentration in the classroom (nicklas *et al*, 2000) [6].

When skipping of breakfast becomes frequent, there is a gradual decline in blood glucose and insulin concentrations. For the brain and not for other organs, glucose is pretty much source of energy. Without needed fuel, the brain cannot function at optimal performance, children become lethargic and apathetic. As a child continues to skip breakfast into adolescence, the developing brain is affected. Breakfast skipping run the risk of becoming malnourished which has been linked to delayed cognitive development (Bayerl and Stang, 2003) [1]. Breakfast is among the food which in early morning satisfies the nutritional needs and increases mental work load ability.

Materials and Methodology

This base line survey was carried to select school children of age between 10-13 years. Around 60 children were selected from four villages of Dharwad taluk as rural samples. Around 60 children were selected from four different locations of Dharwad city as urban samples and total sample comprised of 120 children. To select these children parent's prior permission was obtained. Home visits were made to collect child's general information, breakfast foods consumption pattern was assessed through structured schedule. Three day's, recall method was used to gather information related to food consumption by the children.

Tools used for assessment

Structured schedule for breakfast consumption

The schedule was used to assess the child's breakfast consumption pattern including breakfast consumption,

breakfast timing, reasons for eating and not eating breakfast, symptoms for not eating breakfast, fruits and beverage consumption, special food consumption, nutritional composition of food and morbidity pattern of children. The information on the child's previous 3 day's breakfast food intake was elicited by interviewing the mother

Breakfast consumption: Based on the number of days of breakfast consumption per week, children were categorised as regular and irregular breakfast consumers. Children who consumed breakfast for more than 5 days in a week they were considered as regular breakfast consumers, if less than 5 days, they were considered as irregular breakfast consumers (Hazzaa *et al.* (2019) [5]

Food habit of the family: According to the type and kind of foods consumed by the family members, families of children were classified as vegetarian and non vegetarian families.

Breakfast timing: It is the time at which the child consumes breakfast and is categorized as below.

Breakfast timing	Type
8:00- 9:00 AM	Right time consumption
9:00-10:00 AM	Late consumption

Reasons for breakfast consumption: List of reasons (gives me energy, helps me to pay attention, helps me to be healthy, helps me its try new foods, helps me its physically fit, helps me to get good grades in school, helps me to be a better mood and others) for consuming breakfast as gives for children were asked to mention these reasons with preference of order of ranking 1 to 8.

Reasons for not consuming breakfast: List of reasons (do not have a time, do not hungry, trying to maintain my weight, do not like breakfast foods, my family does not eat breakfast, in home do not prepared breakfast and others) for not consuming breakfast as gives for children were asked to mention these reasons with preference of order of ranking 1 to 7.

Symptoms of not consuming breakfast: List of reasons (feel hungry, get headache, get stomach ache, feel tired, does not have energy, feel grumpy, trouble in paying attention in class and others) for symptoms of not consuming breakfast as gives for children were asked to mention these reasons with preference of order of ranking 1 to 8.

Fruits consumption: If the children consume fruits for more than thrice a week, they were considered as regular fruits consumers and otherwise were categorized under non regular fruits consumers (Banana, Apple, orange, guava, soppota and pine apple).

Beverage consumption: If the children consume beverages more than 5 days in week they were considered as regular beverage consumers, if less than 5 days they were considered as non regular beverage consumers (Milk, tea and coffee).

Special food consumption: Kind of special foods consumed by the child in a week, ie, foods like dry fruits, sprouted grains, vegetable salads, mix cereals laddu and others.

Nutrient profiles: List of breakfast foods consumed in last 3 days was collected from children. Nutritional value of these food items was calculated by using nutritive value book by Gopolan *et al.* (2020) [4]. Consumed breakfast foods were classified as protein rich, carbohydrate rich and fat rich foods.

Morbidity pattern of child: Information on child suffering with different health problems like fever, cold, cough, vomiting, constipation, diarrhea, stomach ache, headache and others for last one month was noted.

Table 1: Distribution of rural and urban children by type of food consumed for breakfast N=120

Foods *	Rural		Urban	
	N	%	N	%
Dosa	34	56.66	17	28.33
Pulav	12	20.00	15	25.00
Idli	29	48.33	19	31.66
Avalaki	31	51.66	23	38.33
Upama	35	58.33	21	35.00
Vada	11	18.33	5	8.33
Puliyogare	8	13.33	16	26.66
Kesari bat	12	20.00	6	10.00
Chitranna	9	15.00	15	25.00
Chapatti	21	35.00	23	38.33
Rice	5	8.33	6	10.00
Roti	19	31.66	6	10.00
Curd rice	12	20.00	6	10.00
Wangi bath	12	20.00	10	16.66
Puri	20	33.33	8	13.33
Talipatu	13	21.66	7	11.66
Chicken	18	30.00	10	16.66
Egg	12	20.00	18	30.00
Padu	14	23.33	10	16.66

*Values are multiple options of children

Distribution of rural and urban children by type of food consumed for breakfast

Table 1. indicates breakfast items consumed by children for their breakfast, in rural areas upma were consumed by higher per cent (58.33%) followed by dosa (56.56%), avalaki (51.66%). Among urban areas, equal per cent of them (38.33%) consumed avalaki and chapatti followed by upma (35.00%), idli (31.66%), egg items.

Distribution of rural and urban children by food consumption pattern

An examination of the table 2. Shows, among rural children, around 68.30 per cent of them were having breakfast regularly and remaining 31.70 per cent were irregular consuming the breakfast. In case of urban children, 66.70 per cent of children were having breakfast regularly and about 33.30 per cent were irregular in breakfast consumption. Studies on this revealed similar results as outlined by Pereiraa *et al*. (2017) who found that 81 per cent of children were regular breakfast consumers and 12 per cent of them skipped breakfast. Priya *et al*. (2010) reported that, majority of children were regular breakfast eaters.

Distribution of food habits of the family among rural children shows that, around 58.30 per cent of them belonged to families having vegetarian food habits and about 41.70 per cent were belonging to families of non vegetarian food habits. In case of urban children, around 63.30 per cent belonged to families having vegetarian food habits and about 36.70 per cent of families belonged to family with non vegetarian food habits. Reason might be, in rural areas, early in the morning mothers were involved in agriculture, household and other related works. As they attend house hold taskes and they used to prepare breakfast late.

With respect to breakfast timing among rural children, majority (81.70%) of them were having breakfast between 9:30-10:30 AM and about 18.30 per cent of them had timing between 8:30-9:30 AM. In case of urban children, majority (71.70%) of them were having breakfast between 9:30-10:30 AM and about 28.30 per cent of children were having breakfast between 8:30-9:30 AM.

With respect to fruits (weekly) consumption among rural children, around 28.30 per cent of children consumed banana and around 16.70 per cent of children consumed apple. In case of urban children, about 21.70 per cent of them had an apple, around 20.00 per cent of the children consumed others fruits (like soppota, guava and pin apple).

With respect to beverage consumption among rural children, most (53.30%) of them consumed milk followed by 45.00 per cent had consumed tea. In case of urban children, around 45.00 per cent of them consumed tea after their breakfast where as, 38.30 per cent of children had milk.

With regard to nutrient profile among rural children, nearly 36.60 per cent of children consumed the foods which are rich in carbohydrate followed by 33.40 per cent had consumed food items rich in fat. In case of urban children, around 36.80 per cent of them consumed the foods rich in protein followed by 31.60 per cent of them consumed the foods rich in carbohydrate.

With respect to consumption of special foods, among rural children, about 18.3 per cent of them had dry fruits followed by 10.00 per cent had other foods such as, vegetable salads, mix cereals laddu. While about 63.30 per cent of children had not consumed any kind of special foods with breakfast or before breakfast. Among urban children, about 23.30 per cent of them consumed sprouted grains followed by 18.30 per cent of children had dry fruits. About 55.00 per cent of children were not consumed any kind of special foods with breakfast or before breakfast.

Distribution of rural and urban school children by reasons for consuming and not consuming breakfast

The evidence of table 3 pointed out, the reasons for consuming breakfast, among rural children. Equal percentage (21.70%) of them felt that 'its gives me energy as well as help to pay attention' followed by 16.60 per cent reported that it 'helps me to be healthy'. Among urban children, majority (73.30%) of them reported that 'its gives me energy' as the major reason followed by 16.70% per cent said 'its helps me to pay attention'.

With respect to reason for not consuming breakfast, majority of (36.80%) children from rural areas reported that they 'do not feel hungry' followed by 26.30 per cent of them felt that they 'do not have time'. Among urban children, the major (40.00%) reason was that they 'do not have a time' followed by 35.00 per cent of them reported as 'do not feel hungry'. Abmani *et al*. (2012) found that, 80 per cent of children skipped daily breakfast, the most common reasons for skipping breakfast at home included were "not feeling hungry" and "waking up late for school". Uttar *et al.* (2010) study results also indicated that, reasons for skipping breakfast may be "lack of time", "not being hungry in the morning" and "feeing unwell" at the time of having breakfast.

Distribution of rural and urban school children by symptoms of not consuming breakfast

Figure 4. shows that, with regard to symptoms of not consuming breakfast, in rural children 28.30 per cent of them reported the major symptoms as 'feels hungry' followed by 21.70 per cent felt 'get headache' and gets stomach ache (13.30%). While in case of urban children, 68.30 per cent of them expressed the major symptoms as the 'feels hungry' followed by 21.70 per cent of them reported 'get headache'.

Distribution of rural and urban school children by morbidity pattern of the child (last one month)

Results of table 5 pointed out, among rural children, around 23.30 per cent of children were suffered with cough followed by 21.70 per cent of them suffered with cold as well as fever. Where as, among 6.70 per cent of children no morbidity during last one month was observed. Among urban children, nearly 15.00 per cent of children were suffered with fever followed by 13.30 per cent of them had suffered with cold. While 35.00 per cent of children had no morbidity since last one month.

Table 2: Distribution of rural and urban children by food consumption pattern N=120

Food consumption pattern	Category	Rural (n=60)		Urban (n=60)	
		N	(%)	N	(%)
Consumption of breakfast	Regular	41	68.30	40	66.70
	Irregular	19	31.70	20	33.30
	Total	60	100.00	60	100.00
Food habits of family	Vegetarian	38	63.30	35	58.30
	Non vegetarian	22	36.70	25	41.70
	Total	60	100.00	60	100.00
Breakfast timing	8:30-9:30 AM	11	18.30	17	28.30
	9:30-10:30 AM	49	81.70	43	71.70
	Total	60	100.00	60	100.00
Consumption of fruits (more than twice in a week)	Banana	17	28.30	9	15.00
	Apple	10	16.70	13	21.70
	Orange	5	8.30	9	15.00
	Others (soppota, guava, pinapple)	6	10.00	12	20.00
	Not taken	22	36.70	17	28.30
	Total	60	100.00	60	100.00
Consumption of beverages (weekly)	Milk	32	53.30	23	38.30
	Tea	27	45.00	27	45.00
	Not taken	1	1.70	10	16.70
	Total	60	100.00	60	100.00
Nutrient profile of food consumed	Protein rich	18	30.00	22	36.80
	Carbohydrate rich	22	36.60	19	31.60
	Fat rich	21	33.40	19	31.60
	Total	60	100.00	60.	100.00
Consumption of special foods	Dry fruits	11	18.30	11	18.30
	Sprouted grains	5	8.30	14	23.30
	Others (vegetable salads, mix cereals laddu)	6	10.00	2	3.30
	No special food	38	63.30	33	55.00
	Total	60	100.00	60	100.00

Table 3: Distribution of rural and urban school children by reasons for consuming and not consuming breakfast N=120

Groups	Reasons	Rural (n=60)		Urban (n=60)	
		N	%	N	%
Reasons for consuming breakfast	Gives me energy	13	21.70	44	73.30
	Helps me to pay attention	13	21.70	10	16.70
	Helps me to be healthy	10	16.60	4	6.70
	Helps me its try new foods	6	10.00	2	3.30
	Helps me its be physically fit	6	10.00		
	Helps me to get good grade in school	6	10.00	-	-
	Helps me to be in a better mood	6	10.00	-	-
	Total	60	100.00	60	100.00
Reasons for not consuming breakfast	Do not have a time	5	26.30	8	40.00
	Do not feels hungry	7	36.80	7	35.00
	Trying to maintain weight	3	15.80	1	5.00
	Do not likes breakfast food	3	15.80	2	10.00
	My family does not eat breakfast	1	5.30	-	-
	In home do not prepare breakfast	-	-	2	10.00
	Total	19	100.00	20.00	100.00

Table 4: Distribution of rural and urban school children by symptoms of not consuming breakfast N=120

Group	Symptoms	Rural		Urban	
		N	%	N	%
Symptoms of not consuming breakfast	Feels hungry	17	28.30	41	68.30
	Gets headache	13	21.70	13	21.70
	Gets stomach ache	8	13.30	3	5.00
	Feels tired	6	10.00	3	5.00
	Does not have energy	5	8.30	-	-
	Feels grumpy	5	8.30	-	-
	Trouble in paying attention in class	9	15.00	-	-
	Total	60	100.00	60	100.00

Table 5: Distribution of rural and urban school children by morbidity pattern of the child (last one month) N=120

Morbidity	Rural (n=60)		Urban (n=60)	
	N	%	N	%
Fever	13	21.70	9	15.00
Cold	13	21.70	8	13.30
Cough	14	23.30	7	11.70
Vomiting	5	8.30	7	11.70
Constipation	4	6.70	3	5.00
Diarrhoea	2	3.30	-	-
Stomach ache	4	6.70	1	1.70
Head ache	1	1.70	4	6.70
No health issues	4	6.70	21	35.00
Total	60	100.00	60	100.00

Conclusion

The findings focused that, in both rural and urban, majority of children were regular breakfast consumers. Majority of children were from vegetarian food habits. Rural consumed carbohydrate rich nutrient profile foods for their breakfast and urban children consumed protein rich nutrient profile foods for their breakfast. In rural and urban group majority did not consume any kind of special foods for their breakfast. Breakfast eating pattern is important factors for optimal cognitive development thus more attention should be given to the regular consumption of breakfast, through implementing school breakfast program, providing nutritional education and other health promotion activities. Nutrition education should attempt to educate adolescents, parents, teachers and school community about the importance of regular habits of eating breakfast because majority of children spend their time in the school. Further studies recommended looking into both long-term and short-term effects of skipping breakfast on cognitive performance and the relationship between breakfast eating patterns (including quality and quantity of food) and cognitive function in Ethiopian children.

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