

Ultra-processed food consumption trends and its impact on nutritional status among school going adolescent girls from rural areas of Jorhat district of Assam

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Rationale/Objective

Adolescence period is a phase most vulnerable in terms of physiological, mental and nutritional demand, and the nutritional status of adolescent girls as the future mothers contributes significantly to the nutritional status of the community.

Ultra-processed food products are hyperpalatable with sophisticated and attractive packaging, and aggressive marketing.

Objectives

- Assessment of UPF consumption trends
- Study on impact of UPF consumption on nutritional status

Increased ultra-processed food (UPF) consumption



Malnutrition and nutrition transition

Unfavourable health outcomes



Threat to public health



Methodology

1. Selection of sample : school going adolescent girls (N=100) purposively selected for the study (age group 16-17 years)
2. Assessment of nutritional status by anthropometry (Height, weight and BMI)
3. Assessment of nutritional status by biochemical procedure (haemoglobin estimation)
4. Assessment of nutritional status by clinical signs and symptoms
5. Food frequency questionnaire (FFQ) method: Assessment of UPF consumption pattern based on modified NOVA classification was used

All data analyses were conducted in IBM **SPSS** version 16



Results

Table 1. Comparison of mean observed height and weight of adolescent girls (16-17 years) with 95th centile value of height and weight (ICMR standard 2010)

Anthropometric indices	Age (years)	No. of subjects (N=100)	Mean ±SD	95th centile value (ICMR standard)	Mean difference (absolute value)	% of 95th centile value of height and weight (ICMR)	% excess(+) or deficit (-)	p- value
Height (cm)	16	50	152.80±5.48	159.70	6.90	95.67	4.33(-)	0.00*
	17	50	152.70±4.79	160.20	7.50	95.31	4.69(-)	0.00*
Weight (kg)	16	50	42.98±6.56	51.30	8.32	83.78	16.22 (-)	0.00*
	17	50	45.09±7.82	52.80	7.71	85.39	14.61 (-)	0.00*

Table 2. Per cent distribution for nutritional status of adolescent girls (16-17years) according to WHO (2007) Z-scores of BMI-for-age

Age (years)	No. of subjects (N=100)	Severe thinness (%)	Moderate thinness(%)	Normal(%)	Overweight(%)	Obese (%)
16	50	-	12%	84%	4%	-
17	50	2%	12%	78%	8%	-

Normal : > -2SD to <+1SD
 Moderate thinness: <-2SD to >-3SD
 Severe thinness: <-3SD
 Overweight : >+1 SD to <+2SD
 Obesity : >+2 SD

Table3. Per cent distribution of adolescent girls (16-17 years) according to WHO (2007) prevalence of anaemia

Age (years)	No. of subjects (N=100)	Non- anaemia	Anaemia		
			Mild	Moderate	Severe
16	50	32%	-	66%	2%
17	50	34%	-	60%	6%

Non- anaemia (Hb g/dl) : <12
 Mild anaemia (Hb g/dl) : 11-11.9
 Moderate anaemia (Hb g/dl) : 8-10.9
 Severe anaemia (Hb g/dl): >8

Fig 1. Clinical signs and symptoms of adolescent girls (N=100)

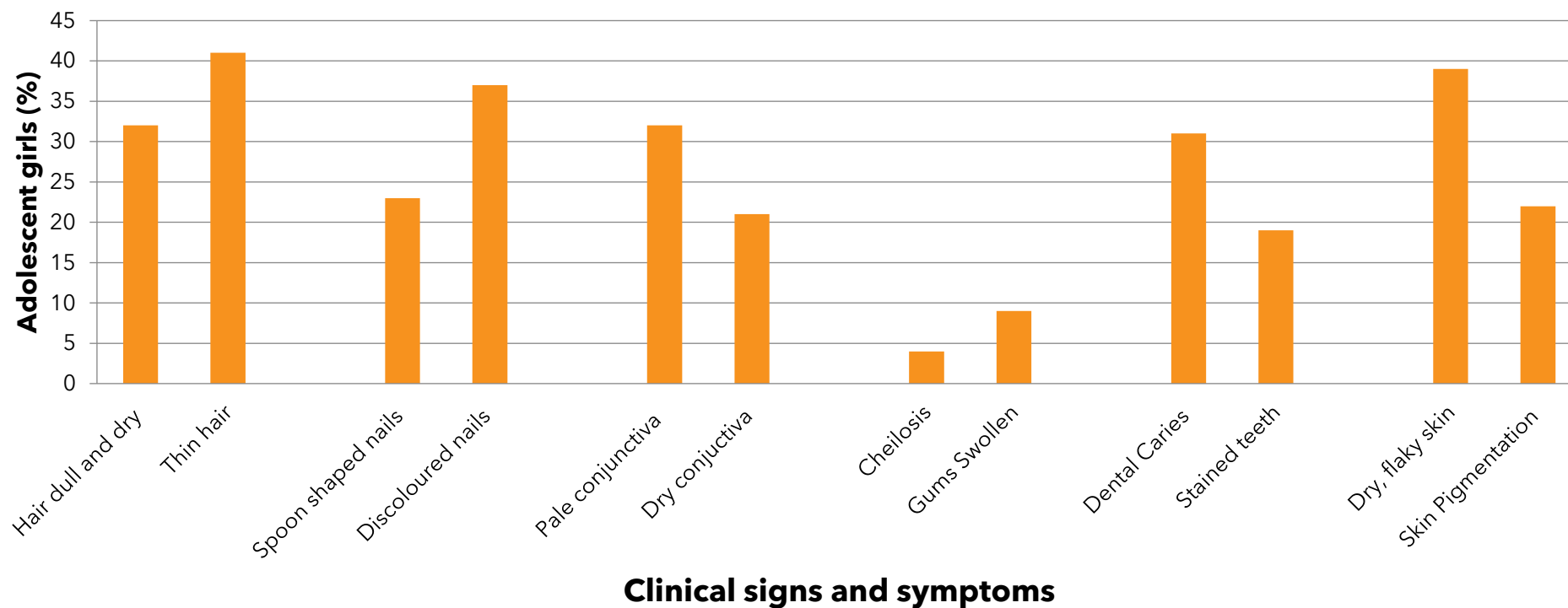


Table 4. Consumption of UPF products based on FFQ

Ultra Processed Foods	Daily (%)	Weekly (%)	Never (%)	Occasionally (%)
Aerated/cold/soft drinks and other similar drinks	3	67	0	30
Energy drinks and other similar drinks	0	0	96	4
Packaged and branded, bottled or tetra packs fruit/vegetable-based juices, concentrates, powdered and other similar items	0	51	0	49
Packaged and branded milk or flavoured milk, malt based health drinks, protein powder, yogurt/curd-based drinks, milk substitutes, Ready-to-drink tea/coffee mixes, Dairy whiteners and other similar items	44	50	4	2
Packaged and branded bread and other similar items	4	73	0	23
Packaged and branded biscuits, cream biscuits, cookies, cream puffs/rolls and other similar items	86	14	0	0
Packaged and branded Indian namkeens and other similar items	34	57	0	9
Packaged and branded chips, nachos, puffs and other similar items	66	23	0	11
Pizza, burgers, french fries, wraps from fast-food chains and other similar items	3	23	0	74
Packaged and branded extruded coated breakfast cereals and other similar items	0	66	25	9
Packaged and branded desserts and Indian sweets and other similar items	0	45	10	45
Packaged, branded and flavoured yogurt, fruit yogurt, kheer/payasam and other similar items	0	0	0	0
Packaged and branded ice creams, flavoured ice bars, kulfi and other similar items	3	60	0	37
Packaged and branded fruit-based preserves (like jams, marmalades, jellies) and other similar items	5	12	2	81
Chocolates; Toffees; Lollipops; Chewing gums; Fruit candies; Aam papad/ Fruit leathers/ bars; Flavoured mouth fresheners and other similar items	26	51	0	23
Packaged and branded ketchup, chutneys/instant chutney powders/tastemakers, Packaged and branded pickles, sauce, instant gravies/curries and other similar items	27	35	0	44
Packaged and branded milk-based spreads, mayonnaise, dips, cheese products, salad dressings and other similar items	0	8	0	92
Margarine; Packaged and branded flavoured butter (like garlic butter), coconut cream/milk and other similar items	0	0	100	0
Packaged and branded instant soups, instant noodles/ pasta and other similar items	0	4	31	65
Packaged and branded instant dishes/snacks and ready to cook powdered mixes and other similar items	0	0	93	7
Packaged, branded and frozen ready- to-cook vegetarian snacks and other similar items	0	0	100	0
Packaged, branded and frozen ready- to-cook non-vegetarian snacks and other similar items	0	0	100	0
Packaged and branded ready-to-cook meals in cups and other similar items	0	0	78	22
Packaged and branded bread and dessert mixes and other similar items	0	8	0	92

Intervention/ Policy Implications



1. Nutrition education on UPF and its impact on health



2. Implementation of nutrition garden at schools and households level

Table 5. Assessment of UPF products consumption pattern by FFQ of the selected school going adolescent girls

Ultra Processed Foods	Daily (%)	Weekly (%)	Never (%)	Occasionally (%)
Aerated/cold/soft drinks and other similar drinks	3	67	0	30
Energy drinks and other similar drinks	0	0	96	4
Packaged and branded, bottled or tetra packs fruit/vegetable-based juices, concentrates, powdered and other similar items	0	51	0	49
Packaged and branded milk or flavoured milk, malt based health drinks, protein powder, yogurt/curd-based drinks, milk substitutes, Ready-to-drink tea/coffee mixes, Dairy whiteners and other similar items	44	50	4	2
Packaged and branded bread and other similar items	4	60	0	36
Packaged and branded biscuits, cream biscuits, cookies, cream puffs/rolls and other similar items	78	14	0	8
Packaged and branded Indian namkeens and other similar items	34	57	0	9
Packaged and branded chips, nachos, puffs and other similar items	54	20	0	26
Pizza, burgers, french fries, wraps from fast-food chains and other similar items	3	17	0	80
Packaged and branded extruded coated breakfast cereals and other similar items	0	66	25	9
Packaged and branded desserts and Indian sweets and other similar items	0	45	10	45
Packaged, branded and flavoured yogurt, fruit yogurt, kheer/payasam and other similar items	0	0	0	0
Packaged and branded ice creams, flavoured ice bars, kulfi and other similar items	3	60	0	37
Packaged and branded fruit-based preserves (like jams, marmalades, jellies) and other similar items	5	12	2	81
Chocolates; Toffees; Lollipops; Chewing gums; Fruit candies; Aam papad/ Fruit leathers/ bars; Flavoured mouth fresheners and other similar items	26	51	0	23
Packaged and branded ketchup, chutneys/instant chutney powders/tastemakers, Packaged and branded pickles, sauce, instant gravies/curries and other similar items	18	29	0	53
Packaged and branded milk-based spreads, mayonnaise, dips, cheese products, salad dressings and other similar items	0	8	0	92
Margarine; Packaged and branded flavoured butter (like garlic butter), coconut cream/milk and other similar items	0	0	100	0
Packaged and branded instant soups, instant noodles/ pasta and other similar items	0	4	31	65
Packaged and branded instant dishes/snacks and ready to cook powdered mixes and other similar items	0	0	93	7
Packaged, branded and frozen ready- to-cook vegetarian snacks and other similar items	0	0	100	0
Packaged, branded and frozen ready- to-cook non-vegetarian snacks and other similar items	0	0	100	0
Packaged and branded ready-to-cook meals in cups and other similar items	0	0	78	22
Packaged and branded bread and dessert mixes and other similar items	0	8	0	92

Table 6. Comparison of UPF consumption of adolescent girls before and after intervention

	Daily (%)	Weekly (%)	Never (%)	Occasionally (%)
Ultra- processed food products				
Packaged and branded bread and other similar items	4	73	0	23
Packaged and branded biscuits, cream biscuits, cookies, cream puffs/rolls and other similar items	86	14	0	0
Packaged and branded chips, nachos, puffs and other similar items	66	23	0	11
Pizza, burgers, french fries, wraps from fast-food chains and other similar items	3	23	0	74
Packaged and branded ketchup, chutneys/instant chutney powders/tastemakers, Packaged and branded pickles, sauce, instant gravies/curries and other similar items	27	35	0	44

	Intervention			
	Daily (%)	Weekly (%)	Never (%)	Occasionally (%)
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Packaged and branded chips, nachos, puffs and other similar items	54	20	0	26
Pizza, burgers, french fries, wraps from fast-food chains and other similar items	3	17	0	80
Packaged and branded ketchup, chutneys/instant chutney powders/tastemakers, Packaged and branded pickles, sauce, instant gravies/curries and other similar items	18	29	0	53

Thank You

