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Dietary aspects of pregnant women in rural areas of Northern India

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Abstract

The aim of this article is to document the current dietary profile of pregnant women in rural areas of Delhi. In order to explore the diet the combination of quantitative (24-h recall method) and qualitative methods (food frequency method) were used. The mean intake of macronutrients and micronutrients, namely, iron, folic acid and Vitamin C which play an important role in the pathophysiology of nutritional anaemia during pregnancy was calculated from the food-stuffs, using *Nutritive Value of Indian Foods*. The preferences and avoidance of various foods by the pregnant women were also elicited. The data were analysed using Epi Info 3.4. The intake of calories, protein, iron, folic acid and Vitamin C was found to be less than the recommended dietary allowance in 100%, 91.2%, 98.2%, 99.1% and 65.8% of pregnant women respectively. Folic acid intakes were significantly lower in younger, primiparous and poorly educated women from low-income families. Vitamin C intake was lower among non-Hindus only. The overall data suggested the presence of food gap rather than isolated deficiency of any particular nutrient.

Keywords: dietary survey, pregnant women, rural, micronutrients, macronutrients, India.

Introduction

Nutrition in pregnancy demands extra attention because of the growing fetus, which places a high demand on mothers' stores of energy, protein and micronutrients such as iron, folic acid and Vitamin C that play an important role in the pathophysiology of

nutritional anaemia during pregnancy (Gopalan *et al.* 2002; Butte & King 2005). According to Stephenson *et al.* (2000) and Steketee *et al.* (2001), the nutritional status of the women is further aggravated by repeated pregnancies at short birth intervals, hookworm infestations and malaria in developing countries. Maternal deficiencies of energy and these micronutrients are associated with intrauterine-growth retardation, low birthweight, fetal and newborn death, birth defects and decreased physical and mental potential of the child and preterm deliveries, in addition to the maternal

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complications and death (WHO Collaborative Study 1995; Kelly *et al.* 1996; Peterson *et al.* 2000; Rao *et al.* 2001; Siega-Riz *et al.* 2001; Vause *et al.* 2006). Thus, the abovementioned nutrients affect health of both the mother and the baby. Assuming that adequate nutrition is available, these deficiencies can be avoided by improving mothers' diet before, during and between cycles of pregnancy.

The study on dietary intake of pregnant women has never been reported from rural areas of Delhi and only once in past 10 years from northern India (Panwar & Punia 1998). In view of these facts, it becomes imperative to report the current dietary profile of the pregnant women in rural areas of Delhi.

Materials and methods

The present study was carried out in two rural villages located approximately 25 and 35 km north of New Delhi, on the outskirts of Delhi. All pregnant women (116) with gestation period ranging from 12th weeks to 20th weeks from these two villages had agreed to participate in the study and the informed consent was obtained from them. The complete dietary information could not be collected from two women. The records of all women were maintained by the health-care workers posted at health centres in the study villages. Ethical clearance was obtained from the ethical committee of the Maulana Azad Medical College.

The dietary assessment was made by the first author who was trained for a period of 1 week in Department of Nutrition at Lady Irwin College, which is situated at a distance of 2 km from Maulana Azad Medical College. A combination of quantitative and qualitative methods was used to assess the diet of pregnant women. The schedule to obtain the socio-demographic and qualitative information on diet (Food Frequency Questionnaire) was prepared after collecting the information about the most commonly foodstuffs consumed in the community. This was administered to 12 pregnant women with gestation period between 12th weeks and 20th weeks residing in area other than study areas. The essential corrections were made in the questionnaire to on the basis of responses. The socio-demographic data and qualitative information on diet

such as history of consumption and frequency of various foodstuffs during past 1 week (Appendix I) was collected using a pre-structured and pre-tested schedule when they came for the routine antenatal examination at the health centre.

The socio-demographic data included age, religion, education, occupation, income, parity and type of the family, namely, nuclear and joint. Families consisting of married couples and their dependent children were identified as 'nuclear family' and the families consisting of number of married couples and their children who live together in the same household, wherein all men are related by blood were defined as the 'joint families' (Shah 1998). In addition to the preferences and avoidance of various foods by the pregnant women, the dietary history also included nutritional supplements consumed during pregnancy.

To assess the diet quantitatively using 24-h recall method as suggested by Thimayamma & Rao (2003), a set of utensils standardized at the Department of Nutrition, Lady Irwin College was used. In order to standardize the vessels for various preparations before the start of every season, two focus group discussions (one in each village and eight pregnant women with gestation period between more than 20th weeks in each group) were conducted before the start of every season to obtain the information about the commonly preparations consumed. In focus group discussions, the information about the weights of raw ingredients used in different preparations was also obtained to get an idea about the quantities and the proportions of different ingredients used in different preparations, in addition to the information about the consistency of the vegetable preparations and pulses preparations by showing them the specimen of vegetable preparations and pulses preparations. These preparations were standardized before the actual data collection.

To work out the amount of food items consumed in last 24 h, pregnant women were visited individually at their homes and they were shown standardized utensils of varying sizes to indicate the exact amounts of raw and cooked form that they had consumed in the last 24 h. In case the preparation consumed by them was not standardized by us, then measurement of amount of foodstuffs consumed was done as sug-

Table 1. Mean nutrient intake during pregnancy in a rural Indian community

Nutrients		Pregnant women <i>n</i> (%)	RDA	Mean intake $\pm$ SD	% of RDA
Calories (kcal)	<2500	114 (100.0)	2500	1541.36 $\pm$ 410.1	61.64
	$\geq$ 2500	0 (0.0)			
Protein (g)	<65	101 (91.2)	65	47.1 $\pm$ 13.9	72.46
	$\geq$ 65	10 (8.8)			
Iron (mg)	<38	112 (98.2)	38	15.00 $\pm$ 6.4	39.47
	$\geq$ 38	2 (1.8)			
Folic acid (μ g)	<400	113 (99.1)	400	152.2 $\pm$ 72.4	38.05
	$\geq$ 400	1 (0.9)			
Vitamin C (mg)	<40	75 (65.8)	40	40.6 $\pm$ 53.2	101.5
	$\geq$ 40	39 (34.2)			

RDA, recommended dietary allowance; SD, standard deviation.

gested by Pekkarinen (1970). The women were also shown the standardized specimen of fruits, breads, rusk, samosa and vegetables which are used as salad and asked to tell size of the particular food item that they had consumed in the last 24 h with reference to the specimen.

From the raw amounts of foods consumed by the pregnant women, the intake of various foods per day was calculated. The mean intake of calories, proteins, iron, folic acid and Vitamin C was calculated with reference to *Nutritive Value of Indian Foods* (Gopalan *et al.* 2002). The local-currency equivalent of the \$1.08-a-day international poverty line for the year 2006–2007 was computed as suggested by Sillers (2006). The data were analysed by using Epi Info 3.4.2 and the Student's *t*-test was applied to compare the unpaired means.

Results

Analysis was run on 114 women, as complete information on diet of two women could not be collected. Majority of pregnant women were Hindus (92.1%); the rest were Muslims (6.1%) and Sikhs (1.8%). The age of the women ranged from 15 to 35 years. Majority (70.2%) belonged to joint family and 85.1% were educated less than eighth grade.

The intake of calories, protein, iron, folic acid and Vitamin C was found to be less than the recommended dietary allowance (RDA) in 100%, 91.2%, 98.2%, 99.1% and 65.8% of women respectively and the mean

consumption of calories, protein and Vitamin C was found to be 61.7%, 72.5% and 101.5% of RDA respectively (Table 1). The mean intake of iron and folic acid was observed to be extremely low – 39.5% and 38.1% of RDA respectively (Table 1).

It was observed that the mean calories, protein and iron intakes were not related to any of the predictor variables (Table 2). The only statistically significant associations were observed between folic acid intakes and younger, primiparous and poorly educated women from low-income families (Table 2). Vitamin C intake was lower among non-Hindus only (Table 2).

Pattern of consumption of foodstuff

The diet was observed to be essentially cereal-based as all and 89.5% reported consumption of wheat and rice respectively (Table 3). Consumption of pulses was not a regular feature of diet as only nine (9.1%) had eaten these $\geq$ 7 times a week (Table 3). Majority (65.8%) of women preferred lentils to other pulses (Table 3). Consumption of soybean was rare (7.9%).

Consumption of the dairy products was reported by 89 (78.1%) women and majority (81%) of these had consumed it $\geq$ 7 times a week (Table 3). Furthermore, 39.5% were non-vegetarians but consumption of meat was not a regular feature as only 35.9% reported consuming meat during the last week (Table 3).

The consumption of green leafy vegetables (GLV) was reported by 79 (69.3%) and only 15 (19%) of these had consumed it $\geq$ 7 times a week (Table 3). Spinach

Table 2. Mean nutrients intake by pregnant women and socio-demographic characteristics

Characteristics	n	Calories (kcal)		Protein (g)		Iron (mg)		Folic acid (µg)		Vitamin C (mg)	
		Mean ± SD	P-value	Mean ± SD	P-value	Mean ± SD	P-value	Mean ± SD	P-value	Mean ± SD	P-value
Age (in completed years)											
<21	43	1622.9 ± 409.5	0.831	49.5 ± 15.7	0.299	14.3 ± 4.5	0.211	145.3 ± 59.2	0.021*	40.8 ± 45.2	0.851
≥21	71	1491.9 ± 405.2		45.7 ± 12.6		15.5 ± 7.3		156.4 ± 79.4		40.5 ± 57.8	
Religion											
Hindu	105	1559.3 ± 392.1	0.167	47.3 ± 13.9	0.889	15.3 ± 6.4	0.645	154.3 ± 72.4	0.878	42.7 ± 54.8	0.037*
Non-Hindu	9	1332.5 ± 568.4		45.6 ± 13.7		12.1 ± 5.8		128.1 ± 72.0		15.4 ± 11.7	
Type of family											
Nuclear	34	1433.1 ± 342.5	0.202	44.5 ± 14.1	0.884	13.5 ± 4.3	0.121	141.0 ± 80.9	0.697	31.9 ± 42.1	0.236
Joint	80	1587.4 ± 429.4		48.2 ± 13.8		15.7 ± 7.1		156.9 ± 68.5		44.3 ± 57.1	
Per capita income <\$1.08 per day at PPP (<INR 512 per month)											
<512	29	1422.3 ± 466.3	0.610	44.5 ± 12.5	0.257	14.8 ± 7.2	0.923	133.0 ± 47.7	0.017*	26.8 ± 35.8	0.059
≥512	85	1581.9 ± 383.6		48.0 ± 14.3		15.1 ± 6.2		158.7 ± 78.3		45.3 ± 57.3	
Self-education											
<Eighth grade	72	1600.1 ± 419.8	0.402	44.7 ± 12.3	0.096	15.2 ± 6.6	0.644	131.6 ± 50.3	0.005*	33.1 ± 38.9	0.074
≥Eighth grade	42	1440.7 ± 376.7		48.5 ± 14.7		14.9 ± 6.4		164.2 ± 80.6		44.9 ± 59.8	
Education of husband											
<Eighth grade	95	1555.5 ± 429.4	0.129	44.6 ± 13.8	0.263	17.3 ± 7.9	0.678	159.4 ± 56.3	0.501	55.0 ± 56.8	0.416
≥Eighth grade	19	1470.8 ± 293.7		47.6 ± 13.9		14.6 ± 6.0		150.7 ± 75.4		37.7 ± 52.3	
Gravidity											
Primipara	49	1605.7 ± 403.7	0.863	49.3 ± 15.8	0.059	14.8 ± 6.6	0.685	145.8 ± 55.1	0.030*	39.8 ± 47.3	0.878
Multipara	65	1492.8 ± 411.2		45.5 ± 12.1		15.2 ± 6.4		157.0 ± 83.2		41.3 ± 57.6	
Type of diet											
Vegetarian	62	1485.1 ± 400.8	0.582	45.6 ± 12.4	0.142	14.8 ± 6.7	0.990	148.5 ± 63.0	0.197	39.1 ± 59.8	0.194
Non-vegetarian	52	1608.5 ± 414.8		48.9 ± 15.4		15.2 ± 6.2		156.5 ± 82.7		42.4 ± 44.6	

SD, standard deviation; PPP, purchasing power parity; INR, Indian Rupees.

*However, the small numbers mean that tests may have been underpowered (e.g. Religion and Vitamin C). Therefore, P-values need to be interpreted with caution.

Table 3. Pattern of consumption of most commonly eaten foodstuffs amongst pregnant women in rural North India

Name of foodstuff	Number of women consuming these foodstuff <i>n</i> (%)	Frequency of consumption (% of consumers) during the past week		
		≤3 times <i>n</i> (%)	4–6 times <i>n</i> (%)	≥7 times <i>n</i> (%)
Cereals	114 (100.0%)	0 (0.0%)	0 (0.0%)	114 (100.0%)
Wheat	114 (100.0%)	0 (0.0%)	0 (0.0%)	114 (100.0%)
Rice	102 (89.5%)	60 (58.8%)	8 (7.8%)	34 (33.3%)
Pulses	99 (86.8%)	77 (77.8%)	13 (13.1%)	9 (9.1%)
Lentil	75 (65.8%)	61 (81.3%)	9 (12.0%)	5 (6.7%)
Green leafy vegetable	79 (69.3%)	63 (79.7%)	1 (1.3%)	15 (19.0%)
Spinach	50 (43.9%)	48 (96.0%)	1 (2.0%)	1 (2.0%)
Cabbage	27 (23.7%)	26 (96.3%)	0 (0.0%)	1 (3.7%)
Roots and tubers	109 (95.6%)	43 (39.4%)	18 (16.5%)	48 (44.0%)
Potato	107 (93.9%)	50 (46.7%)	21 (19.6%)	36 (33.6%)
Other vegetables	109 (95.6%)	56 (51.4%)	14 (12.8%)	39 (35.8%)
Brinjal	63 (55.3%)	59 (93.7%)	3 (4.8%)	1 (1.6%)
Cluster beans	37 (32.5%)	37 (100.0%)	0 (0.0%)	0 (0.0%)
Nuts and oilseeds	47 (41.2%)	23 (48.9%)	5 (10.6%)	19 (40.4%)
Dry coconut	16 (14.0%)	11 (68.7%)	1 (6.3%)	4 (25.0%)
Meat and poultry	41 (35.9%)	39 (95.1%)	0 (0.0%)	2 (4.9%)
Mutton	31 (27.2%)	31 (100.0%)	0 (0.0%)	0 (0.0%)
Egg	25 (21.9%)	23 (92.0%)	0 (0.0%)	2 (8.0%)
Milk and milk products	89 (78.1%)	14 (15.7%)	3 (3.3%)	72 (81.0%)
Milk	67 (58.8%)	9 (13.4%)	0 (0.0%)	58 (86.6%)
Curd	52 (45.6%)	27 (51.9%)	3 (5.8%)	22 (42.3%)
Fruits	106 (92.9%)	42 (39.6%)	7 (6.6%)	57 (53.8%)
Banana	87 (76.3%)	67 (77.0%)	5 (5.7%)	15 (17.3%)
Mango	65 (57.0%)	36 (55.4%)	8 (12.3%)	21 (32.3%)
Lemon	48 (42.1%)	12 (25.0%)	0 (0.0%)	36 (75.0%)
Papaya	34 (29.8%)	28 (82.3%)	1 (2.9%)	5 (14.7%)
Grapes	26 (22.8%)	21 (80.8%)	2 (7.7%)	3 (11.5%)
Pomegranate	28 (24.6%)	21 (75.0%)	2 (7.1%)	5 (17.9%)

Category 'others' for each foodstuff has not been shown here in the table.

was the most (43.9%) preferred GLV. The consumption of other vegetables was also not regular, as only 39 of 114 (34.2%) had consumed it ≥7 times a week. Majority (93.9%) had consumed potato (Table 3).

Although 106 (93%) women had consumed fruits in past week, yet only 57 (53.8%) reported consuming fruits ≥7 times a week (Table 3). Majority (76.3%) had consumed banana followed by mango (57%), lemon (42.1%) and papaya (30%) (Table 3). Dry fruits were consumed by 47 (41.2%) women and 19 (40.4%) of these consumed it ≥7 times a week (Table 3). Jaggery, rich source of iron, was reported only being consumed by 13 (11.4%).

Mustard oil was exclusively used as cooking medium by 71.2% of women and rest used hydrogenated fats.

Food avoidances and preferences during pregnancy and their reasons

Majority didn't either prefer (53.5%) or avoid (61.4%) any particular foodstuff. Milk, fruits and GLV were preferred by 9.6% of women. The reasons for these preferences were, 'these foodstuffs provide strength to the mother and baby' and 'increases haemoglobin level'. 'Spices' and GLV were avoided by 7.9% and 5.3% of women respectively, and the reason mentioned for avoidances was 'these might harm the baby'. On the other hand, nine women (7.88%) reported consuming nutrition supplements, namely, Gond ka laddoo, Panjiri and Murraba to name a few, which are rich in carbohydrates, fats and micronutrients.

Discussion

In the current study, the diet consumed by the pregnant women was primarily cereal-based. The intake of calories, protein, iron, folic acid and Vitamin C was less than RDA in 100%, 91.2%, 98.2%, 99.1% and 65.8% of pregnant women respectively and the mean consumption of calories, protein and Vitamin C was found to be 61.7%, 72.5% and 101.5% of RDA respectively (Table 1). Furthermore, the mean intake of iron and folic acid was observed to be extremely low – 39.5% and 38.1% of RDA respectively (Table 1). Majority didn't either prefer (53.5%) or avoid (61.4%) any particular foodstuff. Milk, fruits and GLV were preferred by 9.6% of women, and 7.9% and 5.3% of women avoided 'spices' and GLV respectively. The consumption of body building nutrients was observed to be regular, yet intake of protein was 72.5% of RDA.

As reported by the other studies from various parts of India (e.g. Pasricha 1958; Shanker 1962; Gupta *et al.* 1973; Bhatia *et al.* 1981; Kelly *et al.* 1996; Peterson *et al.* 2000; Rao *et al.* 2001; Siega-Riz *et al.* 2001), the diet consumed by the pregnant women in the current study was primarily cereal-based. This suggests that the diet across India is still primarily cereal-based.

Similar to the earlier studies (e.g. Pasricha 1958; Bose & Bagchi 1962; Shanker 1962; Gupta *et al.* 1973; Bhatia *et al.* 1981; Murty & Reddy 1994; Hutter 1996; Rao *et al.* 2001), the mean intake of calories and protein was low among women. This might be due to the fact that the consumption of calories and protein was less than RDA in 100% and 71.9% of women respectively in the current study. However, the mean intake of calories and protein was more than reported by earlier studies from India (e.g. Pasricha 1958; Bose & Bagchi 1962; Shanker 1962; Gupta *et al.* 1973; Murty & Reddy 1994; Hutter 1996), except Bhatia *et al.* (1981) and Panwar & Punia (1998) who reported the mean protein intake of ≥ 60 g. Bhatia *et al.* (1981) had attributed the adequate protein intake among pregnant women to greater consumption of cereals.

The only statistically significant associations were observed between folic acid intakes and younger, primiparous and poorly educated women from low-income families (Table 2). Vitamin C intake also was

lower among non-Hindus only (Table 2). The association between Vitamin C and non-Hindus should be interpreted with caution as this is an almost surely underpowered study. In contrast to Pasricha (1958) and Hutter (1996), no significant association was observed between per capita income and mean intake of calories and protein.

The area of major concern is the extremely low mean intake of iron and folic acid which is further supported by the fact that 98.2% and 99.1% of women had iron and folic acid intake less than RDA respectively. The earlier studies (e.g. Pasricha 1958; Bose & Bagchi 1962; Shanker 1962; Murty & Reddy 1994; Hutter 1996; Panwar & Punia 1998), except Bhatia *et al.* (1981), have also reported the mean intake of these two nutrients $\leq 50\%$ of RDA. This may be due to the fact that the consumption of GLV, jaggery, pulses and fruits was limited in the current study. The significant low mean folic acid intake was observed among younger women, multiparous and poorly educated women from low-income families. However, the mean iron intake didn't seem to be influenced by any of the predictable variables.

The mean intake of Vitamin C was found to be 101.5% of RDA, yet 65.8% of pregnant women had Vitamin C intake less than the RDA. The earlier studies from India (e.g. Pasricha 1958; Bose & Bagchi 1962; Shanker 1962; Murty & Reddy 1994; Hutter 1996; Panwar & Punia 1998), except Bhatia *et al.* (1981) and Rao *et al.* (2001), have reported less Vitamin C intake than observed in the current study. Like Bhatia *et al.* (1981) and Rao *et al.* (2001), the adequate mean Vitamin C intake in the current study may be ascribed to the greater consumption of citrus fruits as 48.2% of women reported consuming Vitamin C-rich foodstuffs at least every other day.

Another area of concern as reported by Panwar & Punia (1998) was the inadequate consumption of GLV, fruits and dry fruits, which are rich source of Vitamins and minerals. This is further reflected in low mean intake of iron and folic acid. The deficiency of these micronutrients leads to various maternal and foetal problems (WHO Collaborative Study 1995; Vause *et al.* 2006). The limited consumption of GLV in the current study may be ascribed to the belief that GLV causes 'cold' and 'gastro-intestinal upset', as

reported by Shanker (1962), Bishnoi *et al.* (1994) and Panwar & Punia (1998). Similar to the results of Rao *et al.* (2001), 69% of pregnant women reported consuming GLV and one-fifth had consumed it at least four times in a week. This suggests that the pattern of consumption of GLV is almost similar in northern and southern parts of India.

As reported by Rao *et al.* (2001), in the current study, it was also observed that, despite the regular consumption of body building food items such as cereals and dairy products, the mean intake of protein was less than RDA. This suggests that even cereals and dairy products are not consumed in adequate amount, especially cereals in India. This may also be ascribed to the irregular consumption of pulses.

As reported by Pasricha (1958), a very few women had increased their dietary intake because of pregnancy in the current study also. This reflects that we have not been able to instill the importance of extra diet during pregnancy among women even after a gap of almost five decades.

There are several limitations to this study. First, this is almost surely an underpowered study, so *P*-values should be interpreted with caution, especially the association of religion with Vitamin C. We believe that a large sample size or a multicentric study would give clear picture of association of the diet consumed by the pregnant women and socio-demographic variables. Second, duration of training in the Department of Nutrition was not adequate. Department of Nutrition was consulted whenever required, although, the training of longer duration would have been better. Third, 24-h recall method is considered inferior to 3/7-day recall method in context of getting the picture of food consumed; however, women in the current study did not eat a huge variety of food. Moreover, 24-h recall method was supplemented with food frequency method to assess the pattern of food consumption in the current study.

In spite of these limitations of the study, the overall data suggest that the mean intake of nutrients and calories among women were less than RDA, indicating that they were not taking balanced diet. This is further supported by the irregular consumption of pulses, GLV and fruits. Therefore, there is an urgent need to sensitize policy makers, non-governmental

organizations and programme managers about the importance of multidisciplinary teams at the grass root level to support the special needs of pregnant women; individualized education and counselling encouraging optimal dietary choice especially increasing the frequency of intake of GLV; home visits providing prenatal education and support to high-risk women. Nevertheless, greater effects could likely be achieved by applying behaviour-change strategies such as interpersonal communication methods through support/discussion groups like mass media and women's group etc.

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Appendix I Food frequency questionnaire

Food item	Frequency of intake	Food item	Frequency of intake
Cereals		Roots and tubers	
Rice bran		Tapioca	
Bajra		Beet root	
Rice puffed		Potato	
Wheat germ		Onion big	
Wheat whole		Carrot	
Jowar		Turnip	
Maize dry		Other vegetables	
Maize tender		Dry Lotus Stem	
Rice parboiled		Karonda	
Rice raw		Onion stalks	
Pulses		Brinjal	
Bengal gram		Broad beans	
B. gram (roasted)		Cluster beans	
Whole horse gram		Cucumber	
Khesri dal		French beans	
Dry Peas		Giant chilies	
Rajmah		Jack fruit	
Soybean		Ladies finger	
Whole green gram		Pumpkin	
Green gram		Green tomato	
Red gram		Ripe tomato	
Black gram		Sugars	
Nuts and oil seeds		Sugarcane	
Almond		Honey	
Cashew nut		Jaggery, sugarcane	
Coconut dry		Fruits	
Pistachio		Raisins	
Water melon seeds		Water melon	
Chilgonza		Black currants	
Groundnut		Apple	
Roasted groundnut		Bael fruit	
Linseed		Ripe banana	
Fresh coconut		Grapes	
Meat and poultry		Guava	
Egg, duck		Lemon	
Egg, hen		Litchi's	
Mutton		Loquat	
Pork		Ripe mango	
Milk & milk products		Orange	
Khoya, buffalos' milk		Ripe papaya	
Milk, buffalo's		Peaches	
Milk, cows		Phalsa	
Milk, goat's		Pineapple	
Curd, cow's milk		Pomegranate	
Cheese		Fishes and other sea foods	
Butter milk			
Skimmed milk			
Green leafy vegetables			
Cauliflower greens			
Mint			
Radish leaves			
Cabbage			
Bathua leaves			
Spinach			