



# **JFPR 9005: IMPROVING NUTRITION OF POOR MOTHERS AND CHILDREN IN ASIAN COUNTRIES IN TRANSITION**

## **Issues Paper on Nutritional and Micronutrients Status of Women and Children**



**Shamil Tazhibayev  
Vice-President of the Kazakh Academy of Nutrition  
Almaty, Kazakhstan  
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## I. POPULATION

1. The Project covers six countries with the population of 62,2 million, including 14,7 million of women of the reproductive age, and 24,2 million of children under 15 (Fig. 1, Table 1). The largest country in terms of population is Uzbekistan (25,272 mln), and then follow Kazakhstan (14,863 mln), Azerbaijan (8,141 mln), Tajikistan (6,438 mln), Kyrgyzstan (4,965 mln), and Mongolia (2,475 mln).

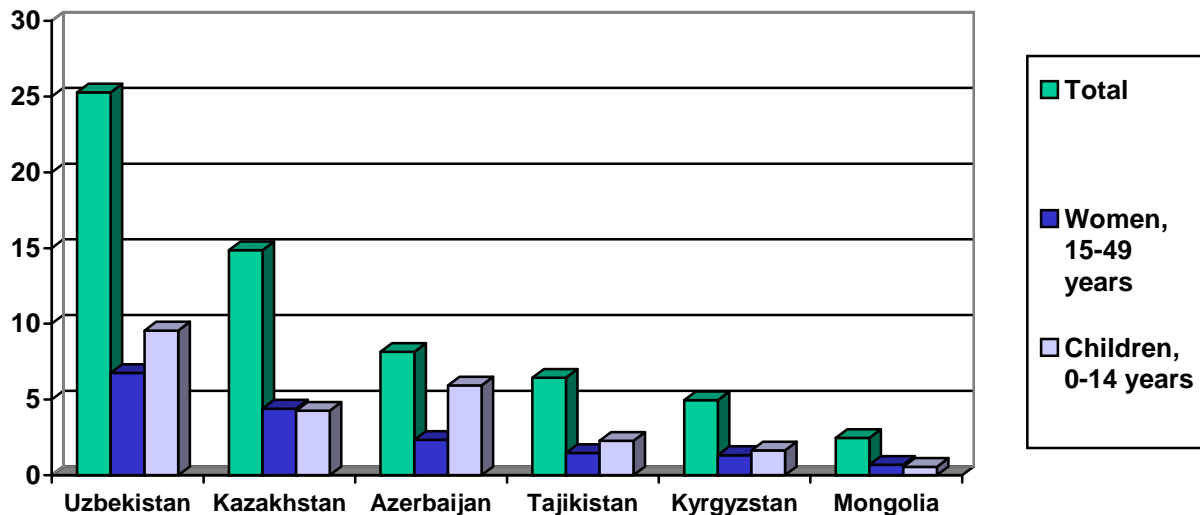


Fig. 1. Population in countries involved in JFPR Project, million

## II. NUTRITIONAL STATUS OF WOMEN OF REPRODUCTIVE AGE

2. Nutritional status of adult people is characterized by Body Mass Index (BMI), which is determined as weight in kg/height in  $m^2$ . BMI reflects calorie consumption of people during a long period of time. Insufficient calorie consumption during quite a long period of time results in decreasing of BMI, and overconsumption of calorie results in increasing of BMI. In accordance with WHO criteria:

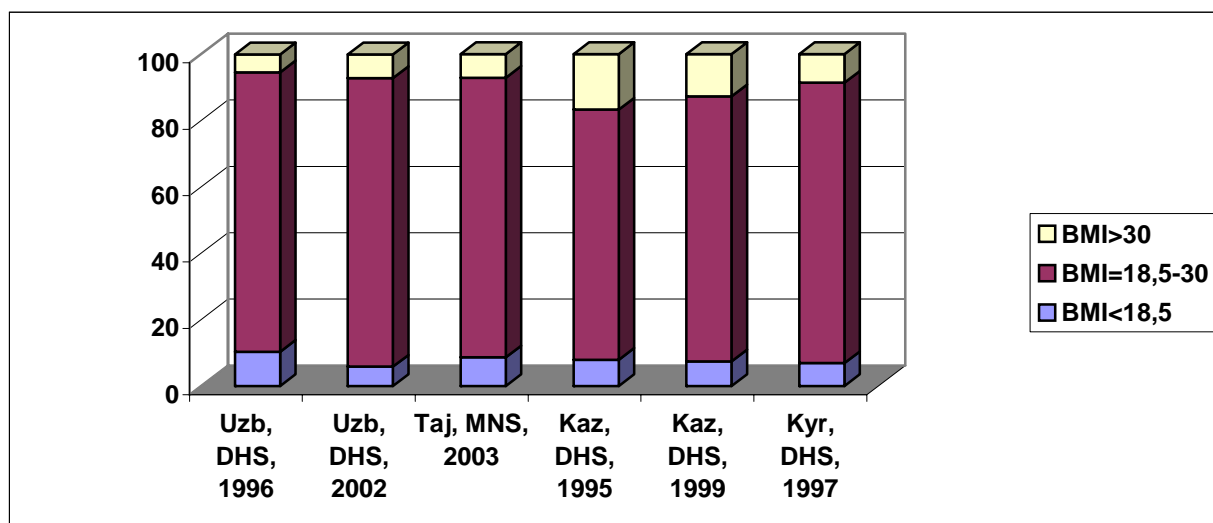
- normal nutritional status – if BMI = 18,5-25;
- underweight - if BMI < 18,5;
- overweight – if BMI = 25,1-30;
- obesity – if BMI > 30.

3. The majority of women within the age brackets of 15-49 in all countries consume a sufficient amount of food calorie and therefore have a normal BMI (Fig. 2, Table 2). In accordance with the latest research results the highest level of low BMI (8,6%) is found in Tajikistan in 2003, and the highest level of obesity (12,7) – in Kazakhstan, 1999. These levels of underweight and obesity are comparable with the appropriate results in European countries.

4. It is known that low birth weight rate corresponds to a low level of calorie intake by pregnant women <sup>1, 2</sup>. The highest level of low birth weight (13,3%) was revealed in Tajikistan in 2000 (Table 3).

<sup>1</sup> Mercedes de Onis. Intrauterine growth retardation. 2020 Vision Focus, (Brief 5), 2001. Editors: Rafael Flores and Stuart Gillespie: Washington, DC: International Food Policy Research Institute

<sup>2</sup> Gro Harlem Brundtland. "Perinatal Mortality and Morbidity - a Global View". XVIII European Congress of Perinatal Medicine Oslo, 19 June 2002



**Fig. 2. Nutritional status of women of 15-49 years of age**

Note:

BMI – Body Mass Index

DHS – Demographic and Health Survey

MNS – Micronutrients Status Survey

### III. CHILD UNDERNUTRITION, AND PROTEIN ENERGY MALNUTRITION

5. Nutritional status of children under five years of age is characterized by the following three criteria:

- The percentage of height for age below - 2 SD characterizes a protein energy malnutrition, or stunting, or chronic malnutrition.
- The percentage of weight for height below -2 SD characterizes a protein energy malnutrition, or wasting, or acute malnutrition.
- The percentage of weight for age below -2 SD characterizes underweight, or undernutrition, which can be a consequence of acute, and/or chronic malnutrition.

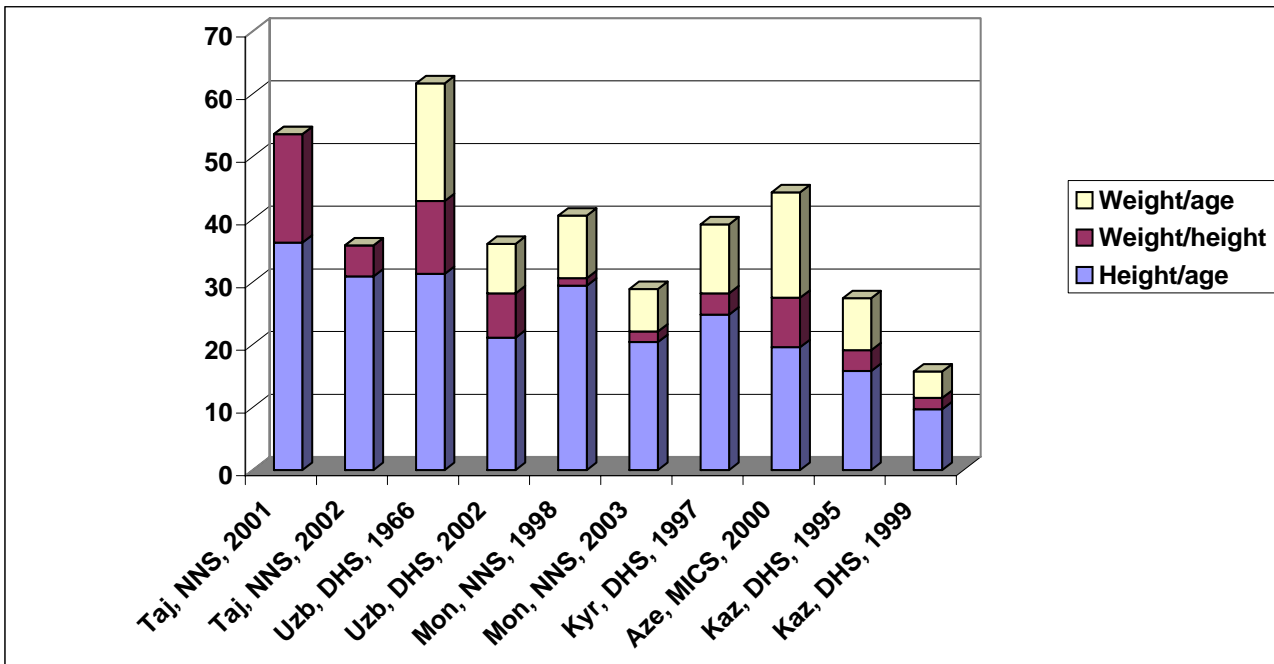
6. Undernutrition and protein energy malnutrition rates among children under five years age in all the countries are quite high, especially in Tajikistan, Azerbaijan and Mongolia. In Tajikistan a criteria weight/age wasn't determined, but nevertheless the total rate of chronic and acute malnutrition is quite high. It should be noted that all the undernutrition, and protein energy malnutrition rates of children were decreased quite significantly as times goes by if the results of the first and the second studies in Tajikistan, Uzbekistan, Mongolia and Kazakhstan are compared (Fig. 3, Table 3). Nevertheless, even in 2002 DHS in Uzbekistan the total rate on malnutrition was 36,1%.

7. The results of these studies reveal that there are problems with malnutrition among children under five years of age in all the countries. These problems, perhaps, are concerned with untimely implementation of complementary feeding. Breastfeeding rate is quite high in all the countries. More than 95% of women breastfeed their baby after delivery, and exclusive breastfeeding rate exceeds 90% at the time of discharging from the maternity hospital. Around 40-50% of children are breastfed until 24 months after birth.

8. It is known that malnutrition can contribute to the development of micronutrient deficiency, and increasing the morbidity and mortality of children<sup>3, 4</sup>.

<sup>3</sup> WHO Global Database on Child Growth and Manutrition, 1999

<sup>4</sup> [http://www.who.int/nut/malnutrition\\_worldwide.htm](http://www.who.int/nut/malnutrition_worldwide.htm)



**Fig. 3. Undernutrition, and protein energy malnutrition rates in children under five years of age**

**Note:**

MNS – Micronutrients Status Survey

DHS – Demographic and Health Survey

MICS – Multiple Indicator Cluster Survey

#### **IV. IRON DEFICIENCY ANEMIA (IDA)**

9. Iron deficiency anemia is a public health problem in all six countries, which are involved in JFPR 9005 Program because of high rate of IDA both among women of reproductive age, and children (Fig. 4, Table 4). According to National representative research data (DHS – Demographic and Health Survey; MNS – Micronutrient Status Survey; NNS – National Nutrition Survey) anemia rate both in women of reproductive age, and children decreased in Uzbekistan, Kazakhstan and Tajikistan during last few years.

10. National representative Micronutrient Status Survey in Tajikistan was conducted in 2003 with the support of ADB, UNICEF and WHO in collaboration with Country Team, National Institute for Research on Food and Nutrition-Italy (INRAN), and the Kazakh Academy of Nutrition-Kazakhstan (KAN).

11. The main objectives of the Micronutrient Status Survey in Tajikistan were:

- to identify levels of anaemia
- to evaluate iron status
- to identify levels of iodine deficiency

in women of child-bearing age (15-49 years) and in children under 5 years of age (6-59 months) at the national level and at the regional level.

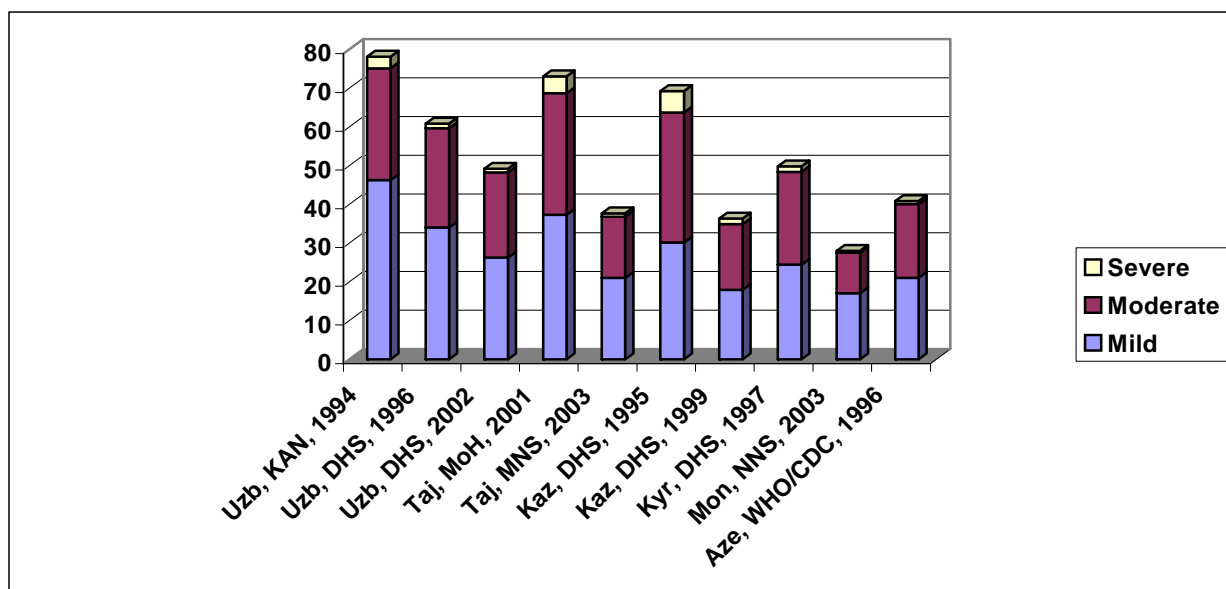
12. Additional objectives were:

- to evaluate feeding patterns of infants and young children (0-24 months)
- to assess dietary intake of non-pregnant women of reproductive age

- to assess plasma folate level of non-pregnant women of reproductive age

13. The information collected and presented in the report of the Survey will be used as a baseline for future nutritional programme aimed to improve children's nutritional status in Tajikistan and as a baseline for Nutrition Monitoring Activities.

14. Sentinel Study (SS) was designed for evaluating the effectiveness of JFPR 9005 Program implementation in pilot regions. The first round of SS was conducted in pilot regions of all six countries before launching the production and distribution of fortified foods (FF – fortified wheat flour; and IS – iodized salt) for collecting baseline data in 2002-2003. The second round of SS was conducted about 12 months later, or in a year after beginning the large-scale production and distribution of fortified foods. SS reflects the situation in pilot regions, and SS results are not National representative. The second round of sentinel study in each country was conducted with the same children and women, who were sampled in the first round of SS in appropriate pilot regions.



**Fig. 4. Anemia rate among children under five, by countries and years**

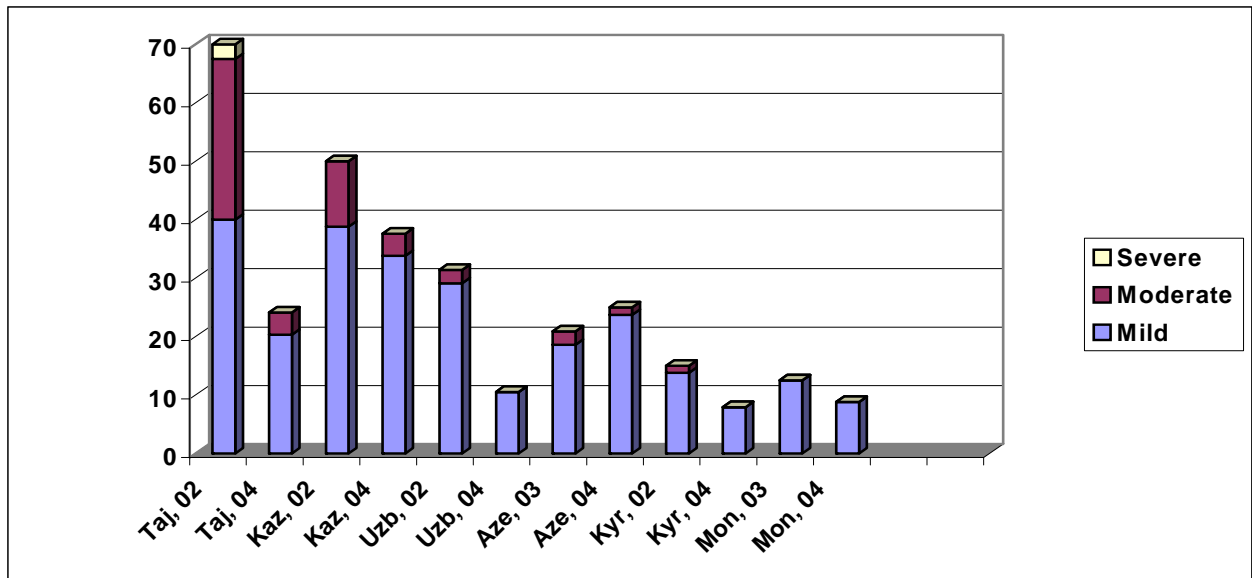
15. The objectives of SS:

- Measure the overall effectiveness of iodizing salt and fortifying wheat flour and promoting their effect in terms of improving the micronutrient status of families in six countries.

16. Procedures of the SS:

- Record the baseline data on iron, folic acid, and iodine status of selected groups of families in each of the six countries in which the population was expected to have access to iodized salt and fortified wheat flour within twelve months of the initial survey and in which improvement in fortified salt and flour distribution is expected. The initial round of survey for obtaining baseline data was to be completed before the first improvements in salt iodization and flour fortification in a country.
- Obtain data on the iron, folic acid, and iodine status of then same selected group of families in each of six countries 12 months after beginning of wide range of food fortification and the initial round of the survey.
- Evaluate the impact of salt iodization and wheat flour fortification program on iron, folic acid, and iodine status of a selected group of families in each of the six countries, by comparing the data received in two rounds of the survey.

17. The comparative results of two rounds of SS reveal a decrease in anemia rates among children of 2-15 years of age in some countries, especially in those countries where households had fortified flour (Fig. 5, Table 5). In Uzbekistan, where 80% of households had fortified flour (Table 11) during 11,5 months, the decrease in anemia rates was statistically significant. Threefold decrease of anemia rate among children was revealed in Tajikistan, where 46% of households consumed fortified flour products, and 74% of women and 74% of children took iron tablets. In Kazakhstan and Mongolia, where respectively 2,5% and 10% of households had fortified flour (Table 6), there were no any significant differences between the results of SS rounds one and two.

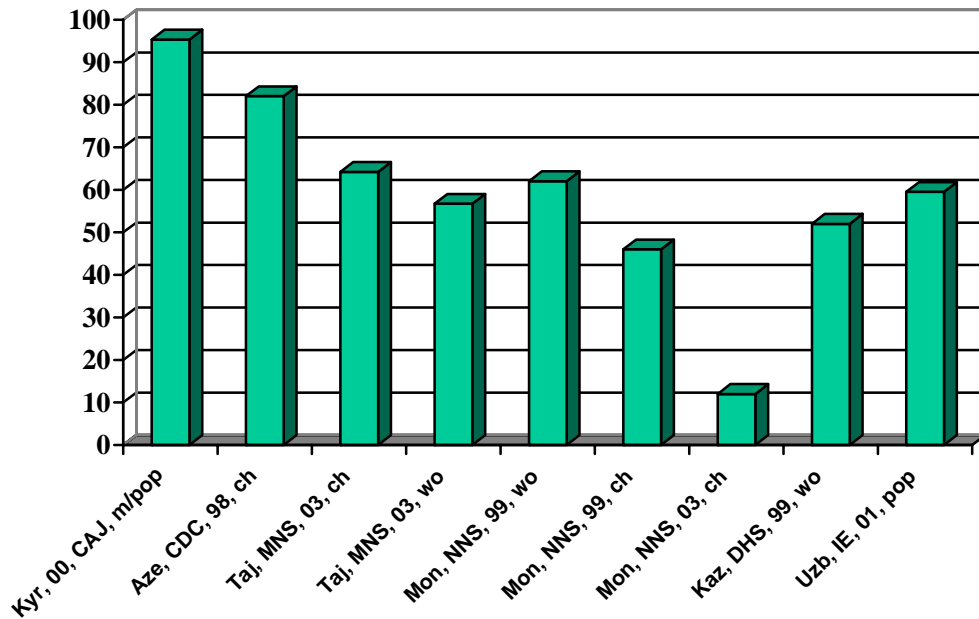


**Fig. 5.** Anemia prevalence among children, Sentinel Study data, 2002-2004

18. The availability of fortified flour in households in pilot regions does not reflect the level of the production of fortified flour. It reflects the status of distribution of fortified flour in pilot regions and the acceptance of the flour by families. For example, in Kazakhstan more than 10% of the annual demand in fortified wheat flour for the population had been already produced. This amount is more than enough to supply 100% of demand of the population in pilot regions with fortified wheat flour, but unfortunately, the distribution of fortified flour was not effective in reaching the pilot population.

## V. IODINE DEFICIENCY DISORDERS (IDD)

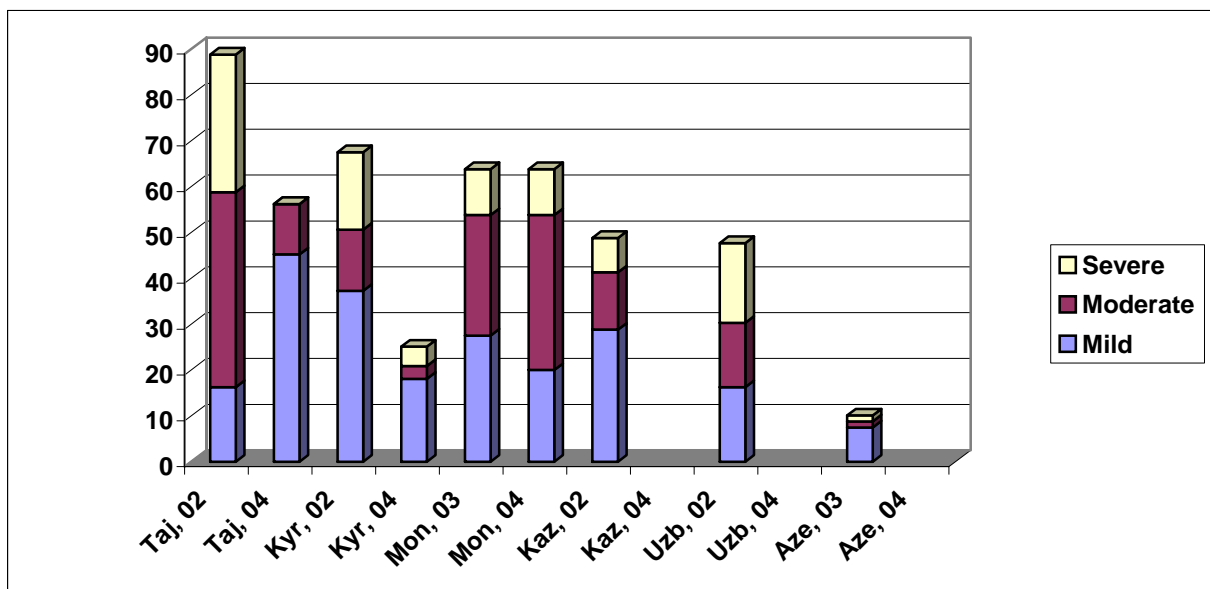
19. Iodine deficiency disorders is a public health problem in all six countries as well. High rates of goiter and IDD both among women of reproductive age, and children are revealed in some surveys (Fig. 6, Tables 7, 8). According to the results of national representative surveys, median level of urine iodine is  $<100 \mu\text{g/L}$  in Tajikistan and Mongolia (Table 9).



**Fig. 6. IDD rate (%), low urine iodine, by countries and groups of population**

Note: CAJ – Central Asian Medical Journal; m/pop – mountain population; ch – children; wo – women; MNS – Micronutrient Status Survey; NNS – National Nutrition Survey; DHS – Demographic and Health Survey; IE – Institute of Endocrinology.

20. Comparative results of two rounds of SS reveal a decrease of IDD rate among children of 2-15 in countries, with the exception of Mongolia (Fig. 7, Table 10). The main cause of this decrease of IDD rate may be due to the increased iodized salt production and its better distribution (Fig. 8, Table 11).



**Fig. 7. IDD prevalence (low urine iodine) among children, Sentinel Study, 2002-2004**

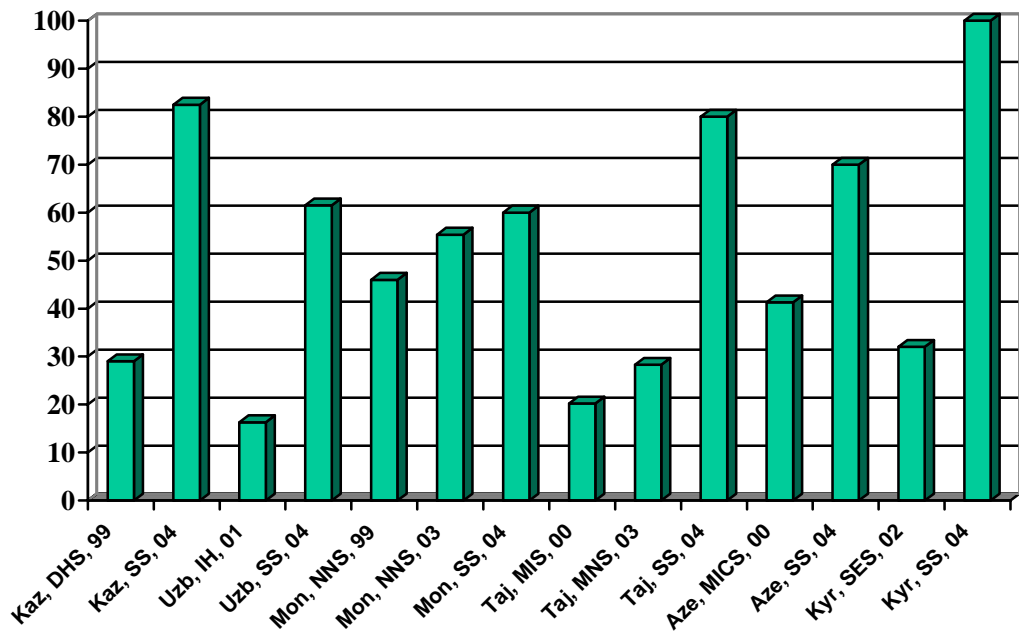


Fig. 8. Adequately iodized salt used in households (%), by countries and by years

## VI. FOLIC ACID DEFICIENCY (FAD)

21. High prevalence of folic acid deficiency was revealed by the analysis of the baseline data for the SS in all countries with the exception of Uzbekistan, where folic acid deficiency rate was 16,3% (Fig. 9, Table 12). Folic acid is one of the six micronutrients in the composition of premix “KAP Complex”, which is used for wheat flour fortification in the framework of JFPR 9005 Project.

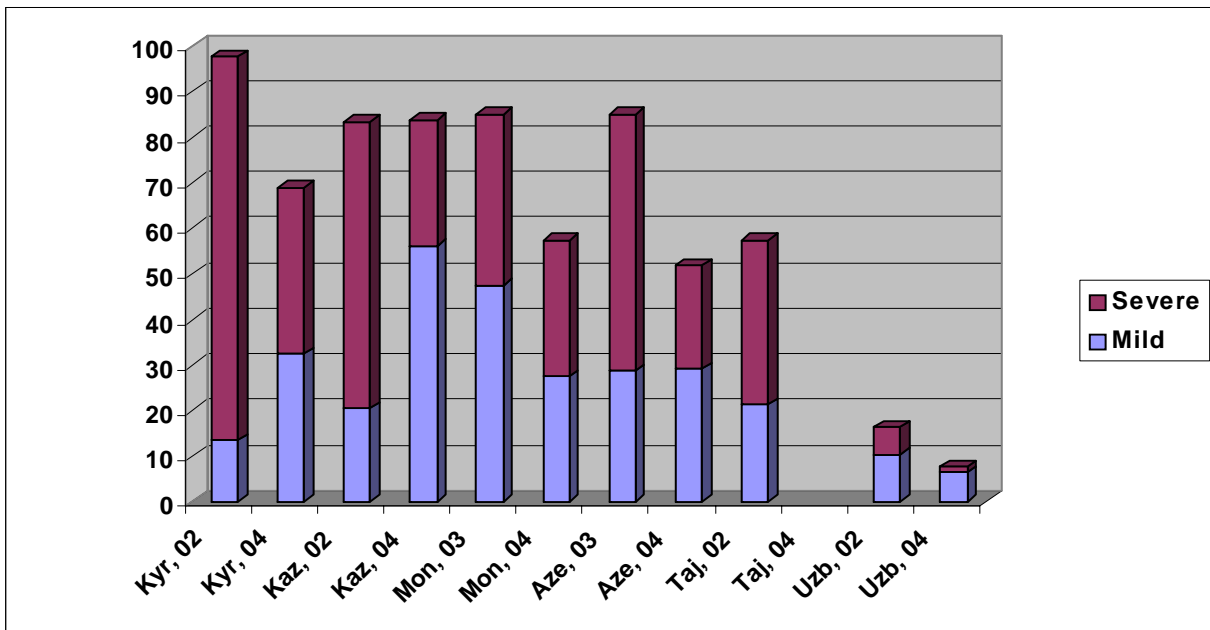


Fig. 9. Folic acid deficiency prevalence among children, Sentinel Study, 2002-2004

22. Folic acid deficiency rate among children in the second round of SS was lower in Kyrgyzstan, Mongolia, Azerbaijan and Uzbekistan in comparison with the appropriate results of the

first round of SS. It is likely that lower rates of folic acid deficiency among children in pilot regions supplied by fortified wheat flour relate to household use of this flour.

## **VII. KNOWLEDGE AND INFORMATION DISTRIBUTION ON IDA/FF AND IDD/SI**

23. The results of Sentinel Study reveal that the knowledge and information level of women sampled for the Sentinel Survey, regarding micronutrients and the use of fortified flour and iodized salt is high (Table 13). 90-100% of sampled women in Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan and Uzbekistan answered that they had heard about iodization of edible salt, and 80-100% of them use iodized salt. Most of these women keep salt in a closed container, and know that iodized salt prevents goiter and/or IDD. The level of knowledge and use of iodized salt in Azerbaijan is lower.

24. 100% of women in Kyrgyzstan and Uzbekistan, 62% of women in Kazakhstan and Tajikistan, and 13% of women in Azerbaijan answered that they had heard about wheat flour fortification with vitamins and microelements. 85% of women in Uzbekistan, 49% of women in Kyrgyzstan, and 46% of women in Tajikistan use fortified flour for food preparation on a permanent basis. It should be noted that specifically in these countries the rate of anemia was decreased within the period between two rounds of sentinel study. Not a single woman in Azerbaijan and Kazakhstan, and only 2,5% of women in Mongolia answered that they usually use fortified flour for food preparation. No significant progress in anemia prevention took place in pilot regions in these countries for the same period of time.

25. Most women in Azerbaijan, Tajikistan and Kazakhstan answered that they usually bake bread at home. In Uzbekistan, Kyrgyzstan and Mongolia most women usually buy bread at a grocery/shop. But it should be noted that these data reflect the situation only in pilot regions, which were sampled for the purposes of a sentinel study, and they do not represent the picture in whole country.

**Table 1. Population in Asian Countries involved in JFPR Project, million**

<b>Country</b>	<b>Population:</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Azerbaijan	Total population	7,9534	8,0162	8,081	8,141	
	Women, 15-49 years old		2,2874	2,3365		
	Children of 0-14 years		6,3335	5,932		
Kazakhstan	Total population	14,957	14,896	14,841	14,863	
	Women, 15-49 years old	-	4,042	4,327	4,401	
	Children of 0-14 years	-	1,142	1,145	4,266	
Kyrgyzstan	Total population	4,8368	4,888	4,927	4,965	5,011
	Women, 15-49 years old	1,2542	1,283	1,311	1,339	1367
	Children under 5 years	0,5475	0,518	0,501	0,492	0,490
	Children of 6-14 years		1,181	1,174	1,156	1,138
Mongolia	Total population	2,359	2,380	2,443	2,475	2,504
	Women 15-49 years	0,641	0,661	0,683	0,702	0,723
	Children of 0-5 years	0,242	0,229	0,278	0,272	0,281
	Children of 7-11 years		0,292	0,284	0,283	0,292
Tajikistan	Total population	6,127	6,188	6,250	6,438	6,441
	Women 15-49 years	1,4793	1,486	1,540	1,481	1,657
	Children of 0-4 years		0,882	0,855	0,914	0,876
	Children of 5-14 years		1,306	1,325	1,358	1,694
Uzbekistan	Total population		24,650	24,964	25,272	
	Women, 15-49 years old		6,381	6,568	6,752	
	Children under 5 years		3,499	3,364	3,240	
	Children of 0-14 years				9,554	
<b>Total for six countries</b>	<b>Total population</b>		<b>61,018</b>	<b>61,506</b>	<b>62,154</b>	
	<b>Women, 15-49 years old</b>		<b>16,140</b>	<b>16,766</b>	<b>14,675</b>	
	<b>Children of 0-14 years</b>				<b>24,227</b>	

**Table 2. Nutritional status of women of reproductive age, distribution by Body Mass Index (BMI as kg/m<sup>2</sup>)**

Countries	Year	<16	16-16,9	17-18,4	<18,5	18,5-25	18,5-30	>30	Number
Azerbaijan, WHO/CDC/ UNICEF/MoH		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Kazakhstan, DHS	1995				7,9		75,4	16,7	3525
Kazakhstan, DHS	1999				7,4		79,9	12,7	2238
Kyrgyzstan, DHS	1997				6,9		84,5	8,6	3518
Mongolia		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Tajikistan, MNS	2003	0,9	1,9	5,8	8,6	65,8	84,3	7,1	1295
Uzbekistan, DHS	1999				10,3		84,2	5,4	4038
Uzbekistan, DHS	2002	0,3	0,8	4,7	5,8	66,4	87,0	7,1	4967

DHS – Demographic and Health Survey

MNS – Micronutrient Status Survey

**Table 3. Low birth weight, under- and malnutrition among children under five years**

Country/Survey	Year	Percentage of children with under- and malnutrition, by the level of:				Low birth weight <sup>4</sup>	Number of observed children
		Height/age <sup>1</sup>	Weight/height <sup>2</sup>	Weight/age <sup>3</sup>	Total		
Azerbaijan, MICS	2000	19,6	7,9	16,8	44,3	10,0	1711
Kazakhstan, DHS	1995	15,8	3,3	8,3	27,4	9,0	717/810
Kazakhstan, DHS	1999	9,7	1,8	4,2	15,7	7,3	612/1449
Kyrgyzstan, DHS	1997	24,8	3,4	11,0	39,2	5,7	1015/1172
Mongolia, NNS	1998	29,4	1,2	10,0	40,6		
Mongolia, NNS	2000	24,6	3,7	12,5	40,8		4157
Mongolia, NNS	2003	20,4	1,7	6,8	28,9		574
Tajikistan, MICS	2000					13,3	827
Tajikistan, NNS, AAH-UK	2001	36,3	17,3		53,6		
Tajikistan, NNS, AAH-UK	2002	30,9	4,94		35,84		4543
Tajikistan, NNS, AAH-UK	2003		4,7				
Uzbekistan, DHS	1996	31,3	11,6	18,8	61,7	4,2	989/1392
Uzbekistan, DHS	2002	21,1	7,1	7,9	36,1		2400/

<sup>1</sup> Percentage, height/age below - 2 SD (protein energy malnutrition, or stunting, or chronic malnutrition).

<sup>2</sup> Percentage, weight/height below -2 SD (protein energy malnutrition, or wasting, or acute malnutrition).

<sup>3</sup> Percentage, weight/age below -2 SD (underweight, or undernutrition, can be a consequence of acute, and/or chronic malnutrition).

<sup>4</sup> Percentage, birth weight below 2500 g.

MICS - Multiple Indicator Cluster Survey

DHS - Demographic and Health Survey

NNS - National Nutrition Survey

MNS - Micronutrient Status Survey

**Table 4. Percentage of children under five years, classified as having anemia**

Country/Survey	Year	Percentage of children with anemia, by severity:				Number of observed children
		Mild <sup>1</sup>	Moderate <sup>2</sup>	Severe <sup>3</sup>	Total	
Azerbaijan, WHO/CDC/ UNICEF/MoH	1996	21,0	19,0	0,8	41,0	1220
Kazakhstan, DHS	1995	30,1	33,6	5,5	69,2	714
Kazakhstan, DHS	1999	17,9	17,0	1,4	36,3	620
Kyrgyzstan, DHS	1997	24,4	24,0	1,4	49,8	1021
Mongolia, NNS	1999				48,5	959
Mongolia, NNS	2003	17,0	10,5	0,5	28,1	1396
Tajikistan, MoH	2001	37,3	31,4	4,3		
Tajikistan, MNS	2003	21,0	15,8	0,9	62,4	1910
Uzbekistan, KAN/UNICEF/ UNDP Survey	1994	46,2	28,9	3,0	78,1	222
Uzbekistan, DHS	1996	34,0	25,6	1,2	60,8	1104
Uzbekistan, DHS	2002	26,2	22,0	1,0	49,2	2305

Anemia cut off points, by hemoglobin (Hb) level:

<sup>1</sup> Mild anemia Hb<11-10 g/dL – for children of 6-59 months; Hb<11,5-10 g/dL – for children of 5-11 years; Hb<12-10 g/dL - for children 12 and more years.

<sup>2</sup> Moderate anemia Hb<10-7 g/dL.

<sup>3</sup> Severe anemia Hb<7 g/dL.

Source: Methods of assessing iron status. In: /Iron Deficiency Anemia. Assessment, Prevention and Control. A Guide for programme managers. UNICEF, UNU, WHO, 2001, p. 33-46.

MICS - Multiple Indicator Cluster Survey

DHS - Demographic and Health Survey

MNS - Micronutrient Status Survey

KAN - Kazakh Academy of Nutrition

**Table 5. Percentage of children 2-15 years, classified as having anemia, Sentinel Study**

Country/Survey	Year	Percentage of children with anemia, by severity:			
		Mild <sup>1</sup>	Moderate <sup>2</sup>	Severe <sup>3</sup>	Total
Azerbaijan, SS	2003	18,6	2,3	0	20,9
	2004	23,7	1,3	0	25,0
Kazakhstan, SS	2002	38,8	11,2	0	50,0
	2004	33,8	3,8	0	37,5
Kyrgyzstan, SS	2002	13,8	1,2	0	15,0
	2004	7,9	0	0	7,9
Mongolia, SS	2003	12,5	0	0	12,5
	2004	8,8	0	0	8,8
Tajikistan, SS	2002	40,0	27,5	2,5	70,0
	2004	20,3	3,8	0	24,1
Uzbekistan, SS	2002	29,1	2,3	0	31,4
	2004	10,5	0	0	10,5

Anemia cut off points:

<sup>1</sup>For mild anemia <11-10 g/dL – for children of 6-59 months; <11,5-10 g/dL – for children of 5-11 years; <12-10 g/dL - for children 12 and more years.

<sup>2</sup>For moderate anemia <10-7 g/dL.

<sup>3</sup>For severe anemia <7 g/dL.

Source: Methods of assessing iron status. In: /Iron Deficiency Anemia. Assessment, Prevention and Control. A Guide for programme managers. UNICEF, UNU, WHO, 2001, p. 33-46.

SS – Sentinel Study

**Table 6. The results of flour testing by Spot Test, Sentinel Study, second round**

Questions	Answer	The results of testing flour samples by Spot Test in percent, by countries					
		AZER.	KAZ.	KYR.	MON.	TAJ.	UZB.
Whether flour in households is fortified, by the results of Spot Test?	Yes	80,0	2,5		10,0		79,5
	No	20,0	95,0		85,0		20,5
	No flour in home		2,5		5,0		
	Flour not tested						

Table 7. Goiter prevalence (in percentage)

Country	Year	Goiter prevalence in % among:			Number of persons
		Total population	Primary School Children	Other group of population	
Azerbaijan		n/a	n/a	n/a	n/a
Kazakhstan <sup>1</sup>					
East region, total:	1993	Adults			1431
Markakol rayon	1993	56.5	52,1		760 2187
Caton-Karagai rayon	1993	60,3	69,0		671 2103
Kantau city South region	1993		26		1025
Kyrgyzstan <sup>2</sup>	1999	1,4	7,4	62,8 <sup>2</sup> (7-17yrs)	100372
Kyrgyzstan <sup>2</sup>	2000	2,6	13,9	29,7 <sup>2</sup> (7-17yrs)	602491
Kyrgyzstan <sup>2</sup>	2001	3,1	12,2	23,75 <sup>2</sup> (7-17yrs)	7995788
Mongolia <sup>3</sup>	1992		29.2		
Mongolia, NNS	1999		21.4 (7-11yrs)	10.8	3412
Mongolia, NNS	2003		14.2 (7-11yrs)		1936
Tajikistan <sup>4</sup>	2001	17.9%	24.3	12.8	
Tajikistan, MNS	2003	35,0 (women 15-49 years)		1,3 (children 0-59 months)	1953/ 2857
Uzbekistan <sup>5</sup>	1998	60-70	60	50	36368

<sup>1</sup> Kazakhstan: - Results of Kazakh-Russian-American survey, published in book: M.E. Zeltzher, R.B.Bazarbekova. Iodine deficiency among mothers and children.- Almaty, 1999, p.179

<sup>2</sup> Kyrgyzstan: Endocrinology Dispensary data

<sup>3</sup> Mongolia: Nutrition Center data

<sup>4</sup> Tajikistan: Endocrinology Dispanser data

<sup>5</sup> Uzbekistan: Institute of Endocrinology data

NNS – National Nutrition Survey

MNS – Micronutrient Status Survey

**Table 8. Prevalence (in percentage) of low urinary iodine concentration (< 10 µg/dl)**

Country	Year	Prevalence (in %) of low urinary iodine concentration (< 10 microgram/dl) among:				Number of observed people
		Total population	Women 15-49 years old	Children 0-5 years	Other group of population	
Azerbaijan, Survey data	1998			82,0		942
Kazakhstan <sup>1</sup> , DHS	1999		52-65,4			951
Kyrgyzstan <sup>2</sup>	2000				95,3 (mountain residents)	244
Mongolia, NNS	1999				46 (7-11yrs)	830
Mongolia, NNS	2003				12 (7-11yrs)	600
Tajikistan <sup>3</sup>	2000			72,8		1500
Tajikistan, MNS	2003		56,7	64,2		1676/1505
Uzbekistan <sup>4</sup>	2001	59,5	37,6	18,1	Men	1472

Source:

DHS – Demographic and Health Survey

Kazakhstan<sup>1</sup>: results were got using sample of Medical-Demographic Survey 1999. Results are presented in article: F.E.Ospanova. Excretion of iodine with urine in the estimation of iodine status of women at reproductive age.//Astana medical magazine, 2001, №1, p.109-111.

Kyrgyzstan<sup>2</sup>: Central-Asian Medical Magazine, article: Control and prevention of iodine deficiency at residents of mountain Kyrgyzstan.

NNS – National Nutrition Survey

Tajikistan<sup>3</sup>: Data of Republican Endocrinology Dispensary

MNS: Micronutrient Status Survey in Tajikistan, ADB/UNICEF/WHO, 2003

Uzbekistan<sup>4</sup>: Data of Institute of Endocrinology.

**Table 9. Median Urinary Iodine level and percentage of people, classified by severity of low Urinary Iodine values (IDD)**

Country/Survey	Year	Percentage of people with IDD, by the level:				Median level of urine I, $\mu\text{g/L}$	Number of observed people
		Mild <sup>1</sup>	Moderate <sup>2</sup>	Severe <sup>3</sup>	Total		
Azerbaijan, WHO/CDC/ UNICEF/MoH, children	1998				82,0		942
Kazakhstan, DHS, women 15-49 years	1999				52-65,4		951
Mongolia, NNS, pregnant women	1999	31.0%	25.0%	6.0%	62,0	105,3	108
Mongolia, NNS, children of 7-11 years age	1999	31,0	25,0		46,0	98,4	830
Mongolia, NNS, children of 7-11 years age	2003	10,0	2,0		12,0	102	600
Tajikistan, MNS, children <5 years	2003	23,4	14,2	26,3	64,2	73,1	1505
Tajikistan, MNS, women 15-49 years	2003	21,5	13,0	22,2	56,7	93,8	1676

<sup>1</sup> Mild, low Urinary Iodine value – 50-99  $\mu\text{g/L}$

<sup>2</sup> Moderate, low Urinary Iodine value – 20-49  $\mu\text{g/L}$

<sup>3</sup> Severe, low Urinary Iodine value – <20  $\mu\text{g/L}$

DHS - Demographic and Health Survey

NNS – National Nutrition Survey

MNS – Micronutrient Status Survey

**Table 10. Iodine level and percentage of children 2-15 years, classified as having low Urinary Iodine values, Sentinel Study, 2002-2004**

Country/Survey	Year	Percentage of children with IDD, by the level:				Median level of urine I, $\mu\text{g/L}$	Number of observed children
		Mild <sup>1</sup>	Moderate <sup>2</sup>	Severe <sup>3</sup>	Total		
Azerbaijan, SS	2003	7,5	1,3	1,3	10,0	154,7	80
	2004						80
Kazakhstan, SS	2002	28,8	12,5	7,5	48,8	104,5	80
	2004						80
Kyrgyzstan, SS	2002	37,3	13,3	16,9	67,5	77,5	80
	2004	18,1	2,8	4,2	25,0	133,4	80
Mongolia, SS	2003	27,5	26,3	10,0	63,8	68,8	80
	2004	20,0	33,8	10,0	63,8	58,6	80
Tajikistan, SS	2002	16,3	42,5	30,0	88,8	29,1	80
	2004	45,2	11,0	0	56,2	97,1	80
Uzbekistan, SS	2002	16,3	14,0	17,4	47,7	109,3	80
	2004						80

<sup>1</sup> Mild Urinary Iodine value – 50-99  $\mu\text{g/L}$

<sup>2</sup> Moderate Urinary Iodine value – 20-49  $\mu\text{g/L}$

<sup>3</sup> Severe low Urinary Iodine value – <20  $\mu\text{g/L}$

SS – Sentinel Study

**Table 11. Adequately Iodized Salt Usage (in percentage)**

Country	Year	Iodized Salt Usage in % among:			Number of persons/ households
		Total population	Households	Other group of population (identify)	
Azerbaijan, MICS	2000		41,3		6166 h
Azerbaijan, SS	2004		70,0		40 h
Kazakhstan*	1999		29,0		5488 h
Kazakhstan, SS	2004		82,5		40 h
Kyrgyzstan*	2002		32,0	Schoolchildren (3-5 class)	3127
Kyrgyzstan, SS	2004		100,0		40 h
Mongolia, NNS	1999		46,0		3254 h
Mongolia, NNS	2003		55,4		876 h
Mongolia, SS	2004		60,0		40 h
Tajikistan, MICS	2000		20,2		3720 h
Tajikistan, MNS	2003		28,3		1965 h
Tajikistan, SS	2004		79,5		40 h
Uzbekistan*	2001	29,55	16,3	Shops 13,25	1693 p.
Uzbekistan, SS	2004		61,5		40 h

\*Kazakhstan: results were got using sample of Medical-Demographic Survey 1999. Results are presented in article: F.E.Ospanova. Usage of iodized salt in estimation of iodine status of the population// Health and Disease, 2000 2(9), p.23-24.

\*Uzbekistan: Information presented by Institute of Hematology

\*Kyrgyzstan: Results of sociological survey conducted by State Sanitary and Epidemiology Service of Kyrgyz Republic, results are presented in article "Level of knowledge on iodine deficiency problem and provision of population by iodized salt in Kyrgyz Republic"/SES and ZI, 2002, 4(10), p.1-11

MICS - Multiple Indicator Cluster Survey

DHS - Demographic and Health Survey

SS - Sentinel Study

MNS - Micronutrient survey

Table 12. Folic acid status of children

Country/Survey	Year	Folic acid deficiency, %			Marginal level <sup>3</sup> of folate, %	Normal level <sup>4</sup> of folate, %	Number of observed children
		Mild <sup>1</sup>	Severe <sup>2</sup>	Total			
Azerbaijan, SS	2003	28,75	56,25	85,0	12,50	2,50	80
	2004	29,11	22,78	51,89	34,18	13,9	80
Kazakhstan, ADB/KAN data	2002	34,76	51,90	86,66	10,40	2,94	817
Kazakhstan, ADB/KAN data	2003	32,18	56,44	88,62	6,94	4,46	202
Kazakhstan, SS	2002	20,51	62,82	83,34	11,54	5,13	80
	2004	56,25	27,5	83,75	16,25	0	80
Kyrgyzstan, SS	2002	13,41	84,15	97,56	2,44	0,0	80
	2004	32,5	36,4	68,8	24,7	6,5	80
Mongolia, NNS	2003			25,7			111
Mongolia, SS	2003	47,5	37,5	85,0	11,25	3,75	80
	2004	27,5	30,0	57,5	22,5	20,0	80
Tajikistan, MNS (women 15-45 years)	2003	38,33	35,33	73,67	21,67	4,67	300
Tajikistan, SS	2002	21,25	36,25	57,50	31,25	11,25	80
	2004						80
Uzbekistan, SS	2002	10,47	5,81	16,28	26,74	56,98	80
	2004	6,4	1,3	7,7	21,8	70,5	80

<sup>1</sup> Mild deficiency of folic acid: 1,3-<3,0 ng/ml or mcg/L

<sup>2</sup> Severe deficiency of folic acid: <1,3ng/ml or mcg/L

<sup>3</sup> Marginal level of folic acid: 3-6 ng/ml

<sup>4</sup> Normal level of folic acid: >6 ng/ml

MNS – Micronutrient Status Survey

NNS – National Nutrition Survey

SS – Sentinel Study

**Table 13. The results of interview of women on fortified food, Sentinel Study, second round**

Questions	Answer	Women's answer in percent, by countries					
		AZER.	KAZ.	KYR.	MON.	TAJ.	UZB.
Did you ever heard on iodization of edible salt?	Yes	57,5	92,5	100,0	100,0	89,7	100,0
	No	32,5	2,5	-	-	7,7	-
	Don't know	10,0	5,0	-	-	2,6	-
What kind of edible salt do you usually use in your household?	IS	47,5	82,5	100,0	87,5	79,5	92,3
	OS	5,0	-	-	12,5		7,7
	Don't know	47,5	17,5	-	-	20,5	-
If you use IS, how long do you use it?	Average number of months	14,8	17,3	22,4	33,6	12,0	4,4
Why it needs to use iodized salt? Prevents:	Goiter	45,0		-	62,5	82,1	
	Foetus disorder			-	-		
	IDD	7,5	62,8	100,0	37,5	5,1	76,9
	Other		2,5	-	20,0		23,1
	Don't know	52,5	34,7	-	5,0	12,8	
The results of salt testing. Salt is:	Not iodized		12,5		27,5		10,3
	Iodized, <15 ppm	30,0			12,5		28,2
	Iodized, =>15 ppm	70,0	82,5		60,0		61,5
	No salt in home		5,0				
	Salt not tested						
Where do you keep salt?	In closed container	52,5	80,0	100,	92,5	79,5	82,1
	In open container	45,0	20,0	-	7,5	17,9	17,9
	In cloth sack	2,5	-	-	-	2,6	
	No salt in home		-	-	-		
Did you ever	Yes	12,5	62,5	100,0	95,0	61,5	100,0

Questions	Answer	Women's answer in percent, by countries					
		AZER.	KAZ.	KYR.	MON.	TAJ.	UZB.
heard on wheat flour fortification by vitamins and microelements?	No	80,0	20,0	-	2,5	35,9	
	Don't know	7,5	17,5	-	2,5	2,6	
What kind of flour do you usually use for food preparation?	OF	42,5	100,0	51,2	97,5	46,2	15,4
	FF		-	48,8	2,5	46,2	84,6
	Don't know	57,5	-	-	-	7,6	
If you use FF and/or bread prepared from FF, how long do you use it?	Average number of months		-	8,1	6	12	11,5
The results of flour testing by Spot Test. Flour is:	Fortified	80,0	2,5		10,0		79,5
	Not fortified	20,0	95,0		85,0		20,5
	No flour in home		2,5		5,0		
	Flour not tested		-		-		
Whether your family usually bakes bread at home or buys it in grocery/shop?	Bake at home	100,0	65,0	29,3	32,5	87,2	28,2
	Buy in grocery		32,5	70,7	67,5	12,8	71,8
	Don't know		2,5	-	-		
Why it needs to use food prepared from fortified flour? Prevents:	Anemia	15,0	50,0	100,0	57,5	61,5	92,3
	Hypovit		-	-	20,0		7,7
	Other	2,5	-	-	10,0		
	Don't know	82,5	50,0	-	20,0	38,5	
Did you take iron tablets during last 12 months?	Yes		25,0	-	27,5	74,4	20,5
	No	100,0	75,0	100,0	72,5	25,6	79,5
	Don't know			-	-		
Did your children take iron tablets during last 12 months?	Yes		10,0	-	35,0	74,4	
	No		90,0	100,0	65,0	25,6	100,0
	Don't know	100,0	-	-			