

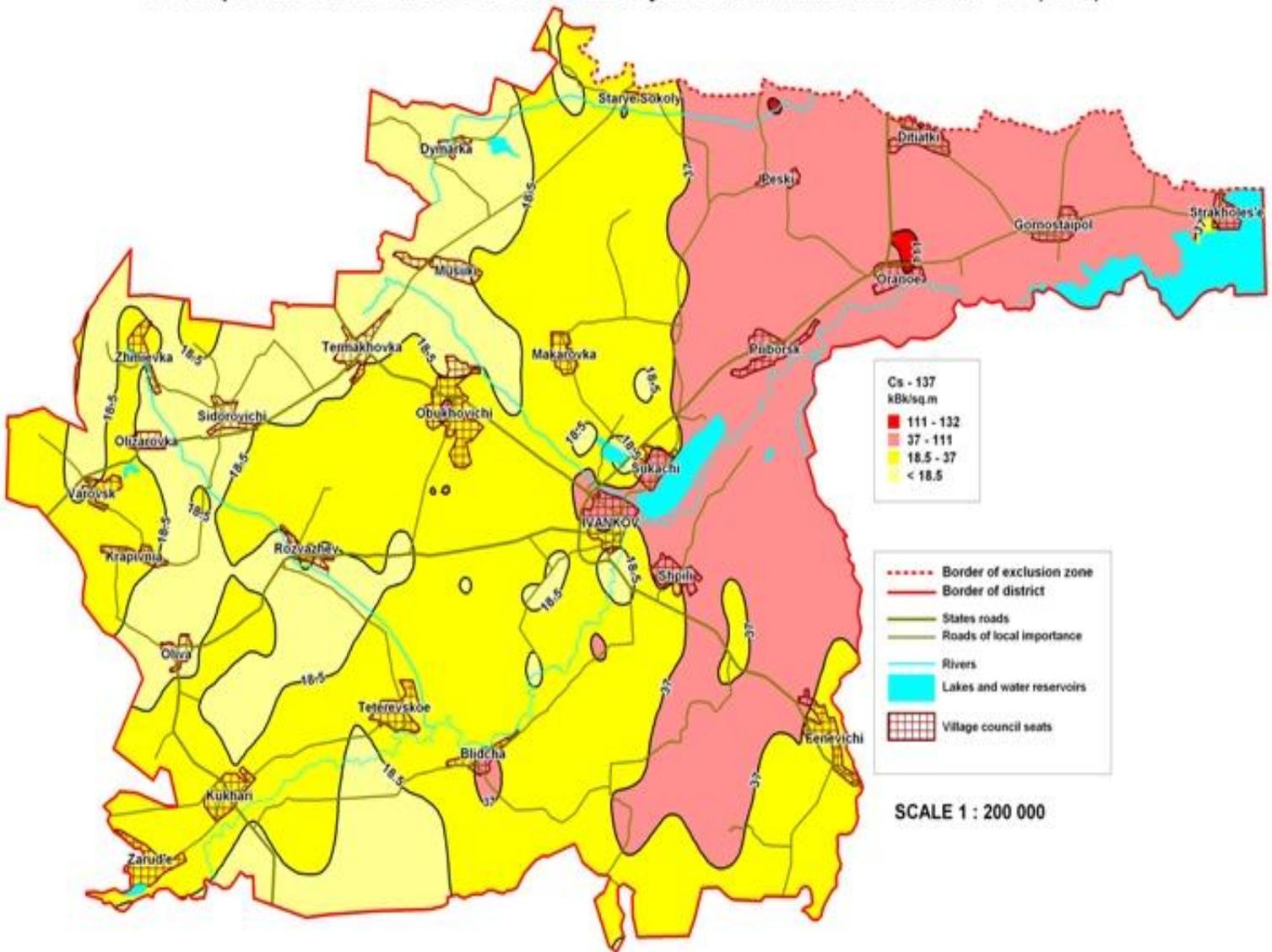
**COORDINATION AND ANALYTICAL CENTER
“ECOLOGY AND HEALTH”**

CHERNOBYL: PROSPECTS FOR THE SECOND GENERATION*

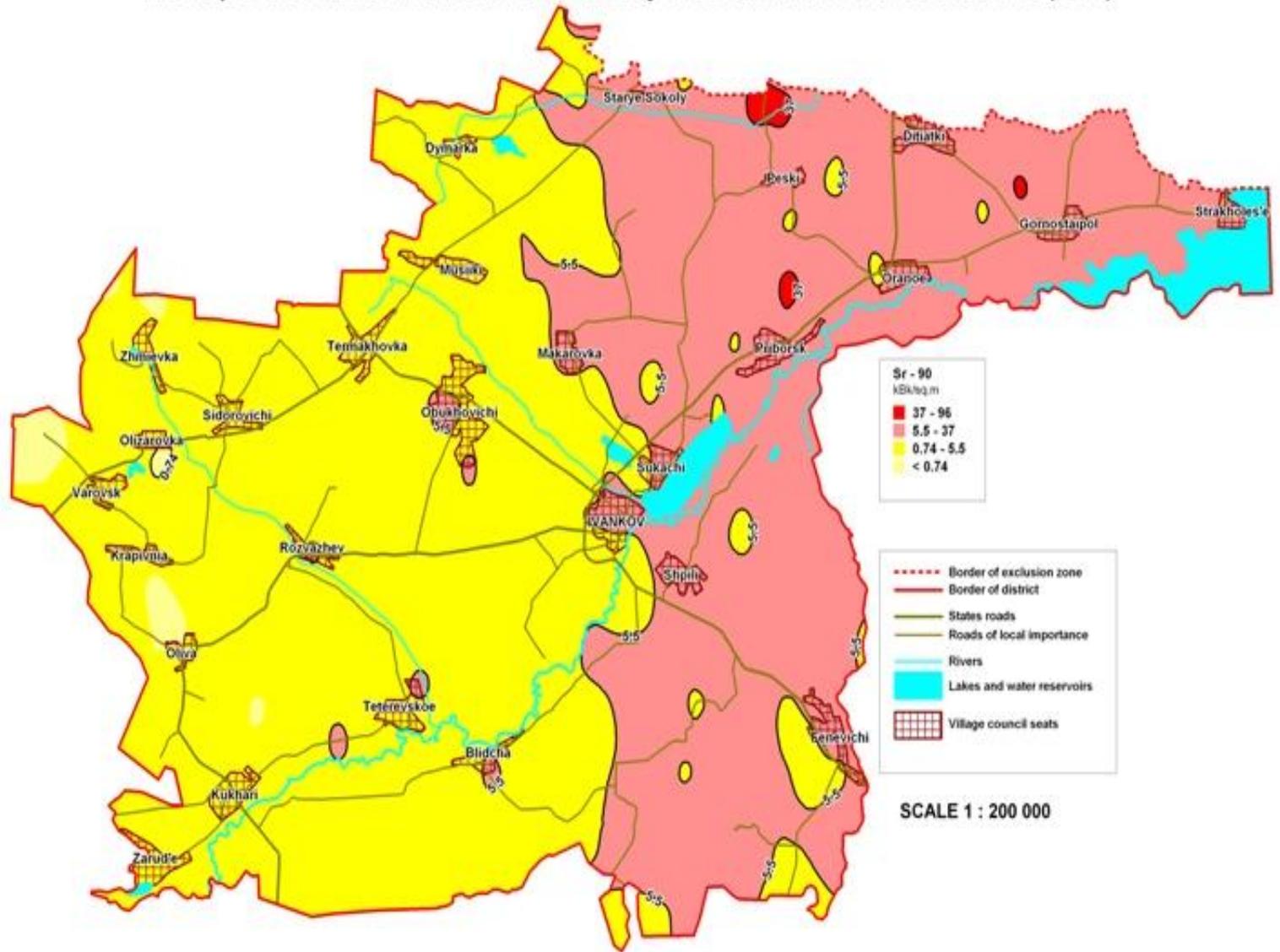
*Professor
Bandazhevsky Yu. I.
2015*

*** Demonstration materials contain the results of scientific research by Professor Yu.I. Bandazhevsky, Associate Professor N.F. Dubovaya, Associate Professor G.S. Bandazhevskaya.**

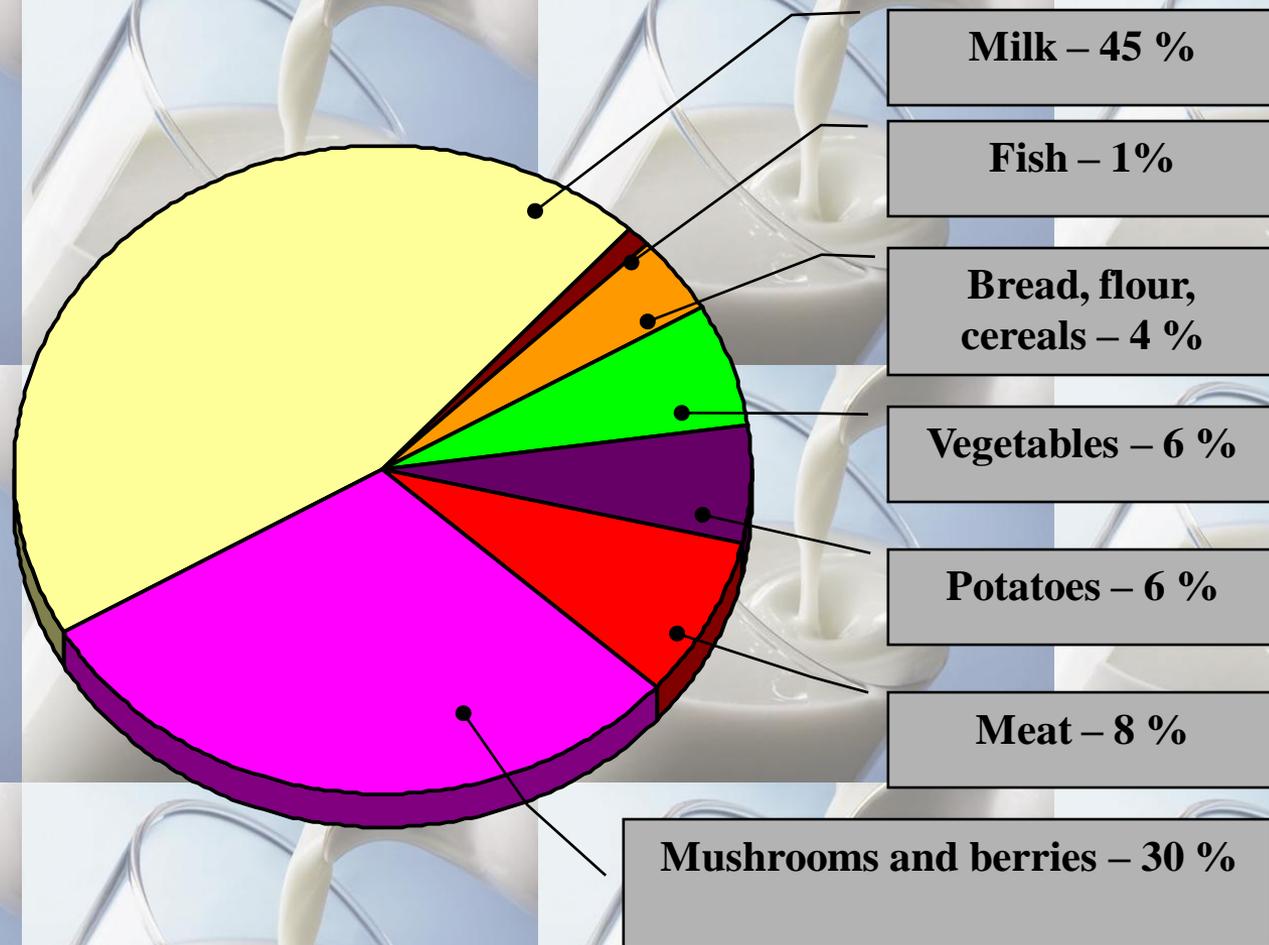
The map of the Ivankov district terrestrial density of contamination with cesium-137 (2014)



The map of the Ivankov district terrestrial density of contamination with strontium-90 (2014)



THE CONTRIBUTION OF FOOD TO THE FORMATION OF INTERNAL EXPOSURE DOSES OF THE UKRAINE'S POPULATION



CONTENTS CS-137 IN PRODUCTS FOOD IN IVANKOV DISTRICT OF THE KIEV REGION IN 1986-2009 *

Year	Milk (Bq/l)		Meat (Bq/kg)		Bread (Bq/kg)		Potatoes (Bq/kg)	
	Mean	Max.	Mean	Max.	Mean	Max.	Mean	Max.
1986	673	9472	240	1780	96	962	144	962
1990	260	877	1213	3996	15	155	259	492
1995	54	207	2656	19870	56	186	59	111
2000	28	309	1025	10900	24	29	7	25
2005	12	26	117	509	13	19	19	26
2009	6	25	350	5013	4	8	7	14

*NOTE. * Results of area measurements of Ivankov's SES*

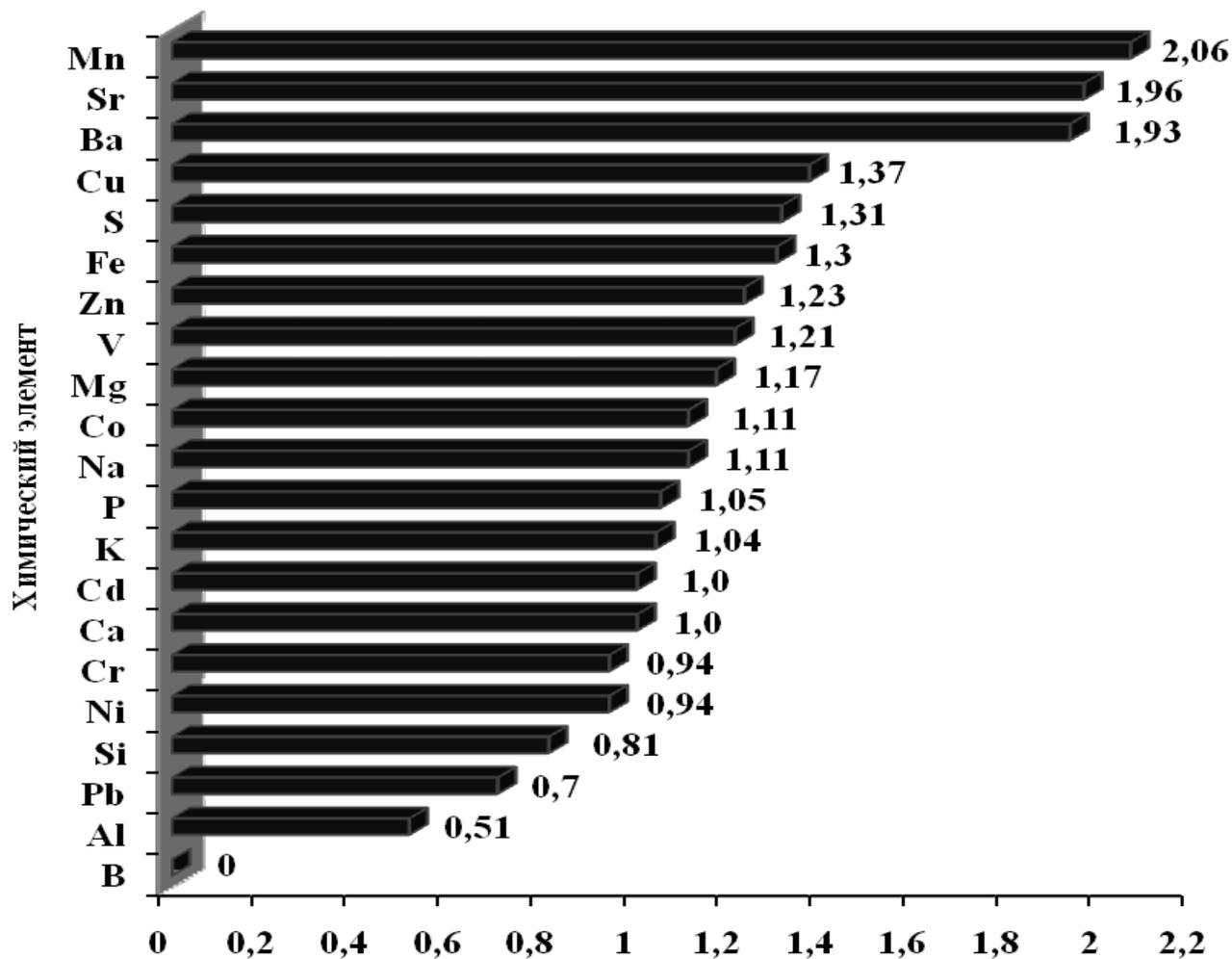
CONTENTS CS-137 IN PRODUCTS FOOD IN IVANKOV DISTRICT OF THE KIEV REGION (2013)

Name of product	Number of samples, n	Cs-137, Bq/kg(l)			SL 2006	Sr-90, Bq/kg(l)			SL 2006
		mean	min	max	Cs-137	mean	min	max	Sr-90
Grain products	13	3,8±0,6	1,8	8,0	50,0	23,6±3,4	12,0	52,0	20,0
Milk	5	16,2±0,8	14,3	19,1	100,0	4,8±0,3	2,5	16,4	20,0
Potatoes	10	12,6±1,1	8,0	18,4	60,0	9,5±0,9	2,7	24,3	20,0
Forest mushrooms	21	711,7±234	43,0	4700,0	500,0	-	-	-	50,0
Bilberry	11	180,9±48	50,0	510,0	500,0	-	-	-	50,0

CONTENTS CS-137 IN PRODUCTS FOOD IN IVANKOV DISTRICT OF THE KIEV REGION (2014)

Name of product	Number of samples, n	Cs-137, Bq/kg(l)			SL 2006	Sr-90, Bq/kg(l)			SL 2006
		mean	min	max	Cs-137	mean	min	max	Sr-90
Grain products	14	7,7±4,6	2,1	20,0	50,0	24,6±4,0	5,0	60,0	20,0
Milk	65	13,3±0,3	1,6	26,7	100,0	5,7±0,5	2,3	17,0	20,0
Potatoes	57	12,4±0,6	3,7	26,9	60,0	10,1±1,4	2,1	32,6	20,0
Forest mushrooms	13	652,0±161	90,0	2300,0	500,0	-	-	-	50,0
Bilberry	7	144,3±21,4	70,0	210,0	500,0	-	-	-	50,0

CORRELATION OF CHEMICAL ELEMENTS IN OAT GRAIN (SAMPLE NUMBER 1 / PROBA NUMBER 2)



**CONGENITAL MALFORMATION
IN THE EMBRYOS OF SYRIAN HAMSTERS
THE MAIN GROUPS**



**LEFT TO RIGHT: EXENCEPHALY AND CLEFT UPPER LIP AND PALATE; DUPLEX
CLEFT LIP; CRANIOCEREBRAL HERNIA.**

CONGENITAL MALFORMATION IN THE EMBRYOS OF SYRIAN HAMSTERS THE MAIN GROUPS



CLEFT UPPER LIP

Bandazheuski Yu.I. Teratogenicity of oats grown in an area affected by the Chernobyl nuclear power plant accident /

Yu. I. Bandazheuski, N.F. Dubovaya, V.V. Schwartau, I.P. Kozyarin // *Pediatrics. Eastern Europe.* – 2014. - № 3(07). - C. 40-45.

DISTRIBUTION OF THE EXAMINED CHILDREN AGED 3-17 YEARS FROM POLESIE AND IVANKOV DISTRICTS BY RADIONUCLIDE LEVELS IN THE BODY

Number of children underwent measurement using a WBC	¹³⁷ Cs levels in the body, Bq/kg				
	< 4,99	5,0-19,9	20,0-39,9	40,0-59,9	> 60
Absolute number of cases	1081	62	25	11	14
% of cases from the total number of examined children	90,6	5,2	2,1	0,9	1,2

Bandazhevsky Yu.I. Assessment of the cardiovascular system in children from Polesie and Ivankov districts / Yu.I. Bandazhevsky, N.F. Dubovaya, G.S. Bandazhevskaya et al. // Scientific and practical collection «Chernobyl: ecology and health» / General addition by prof. Yu.I. Bandazhevsky. – Ivankov: PI Coordination and Analytical Center «Ecology and health», - Dnipropetrovsk: Serednyak T.K., 2015. - Issue 2. – P. 22-35.

MONITORING OF CHILDREN'S HEALTH (2014-2015)

■ **3088** children from Polesie and Ivankov districts have been examined.

■ **Required** laboratory and instrumental examination, including assessment of physical development, cardiac function, metabolism and the state of the hematopoietic system, has been carried out in the majority of children who arrived at the clinic of Ivankov Central District Hospital.

However, there have been cases when a child has not been able to pass all tests. This was mostly due to the lack of proper organisation of processes on the part of medical personnel or refusal of parents.

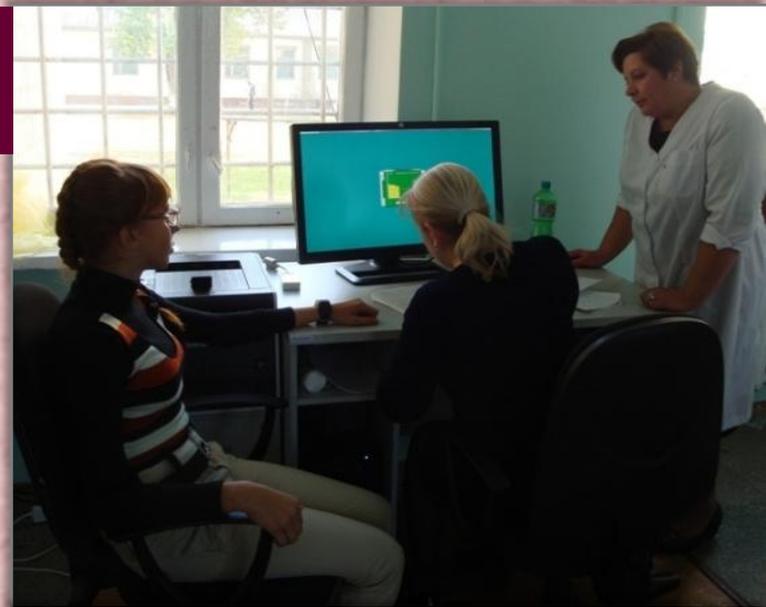


«Development, training and coordination of health-related projects»

MONITORING OF CHILDREN'S HEALTH (2014-2015)

■ The preliminary analysis of children health results has showed that a significant part of children exhibits reduced indices of physical development, cardiac abnormalities (**81,9 %** of the examined children according to data of the electrocardiographic examination), metabolism disorders, and in some cases, hyperplastic processes in the thyroid gland (**173 cases from 3088 children (5,6 %)**).

These children need a thorough medical examination at specialized health facilities of Kyiv region and Kyiv.



«Development, training and coordination of health-related projects»

MONITORING OF CHILDREN'S HEALTH (2014–2015)

■ Because there's no sufficient quantity of a dietary supplement Ziravit, it will be given to children from disadvantaged families after completion of the assessment of health of all children to be examined.



■ Monitoring of radioactivity and health of pregnant and parturient women, including the determination of Cs-137 and Sr-90 concentrations in the placenta, has been initiated.



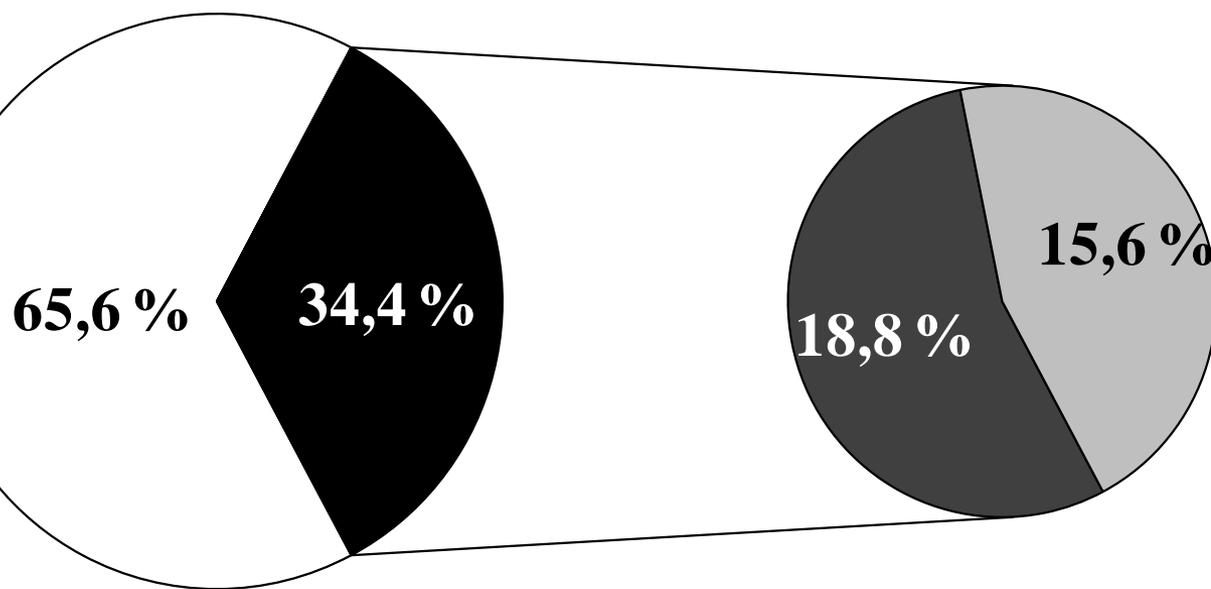
«Development, training and coordination of health-related projects»

**QUANTITATIVE CHARACTERISTICS OF CHILDREN FROM
POLESIE AND IVANKOV DISTRICTS WHO UNDERWENT
SCHEDULED MEDICAL EXAMINATION IN 2014-2015 AND WERE
INCLUDED FOR THE EVALUATION OF THE CARDIOVASCULAR
SYSTEM**

Age groups, years	Number of children, persons		
	both sexes	boys	girls
3-6	153	78	75
7-11	533	264	269
12-17	507	257	250
Total:	1193	599	594

Bandazhevsky Yu.I. Assessment of the cardiovascular system in children from Polesie and Ivankov districts / Yu.I. Bandazhevsky, N.F. Dubovaya, G.S. Bandazhevskaya et al. // Scientific and practical collection «Chernobyl: ecology and health» / General addition by prof. Yu.I. Bandazhevsky. – Ivankov: PI Coordination and Analytical Center «Ecology and health», - Dnipropetrovsk: Serednyak T.K., 2015. - Issue 2. – P. 22-35.

DISTRIBUTION OF THE EXAMINED CHILDREN FROM IVANKOV AND POLESIE DISTRICTS BY ABP LEVELS, %

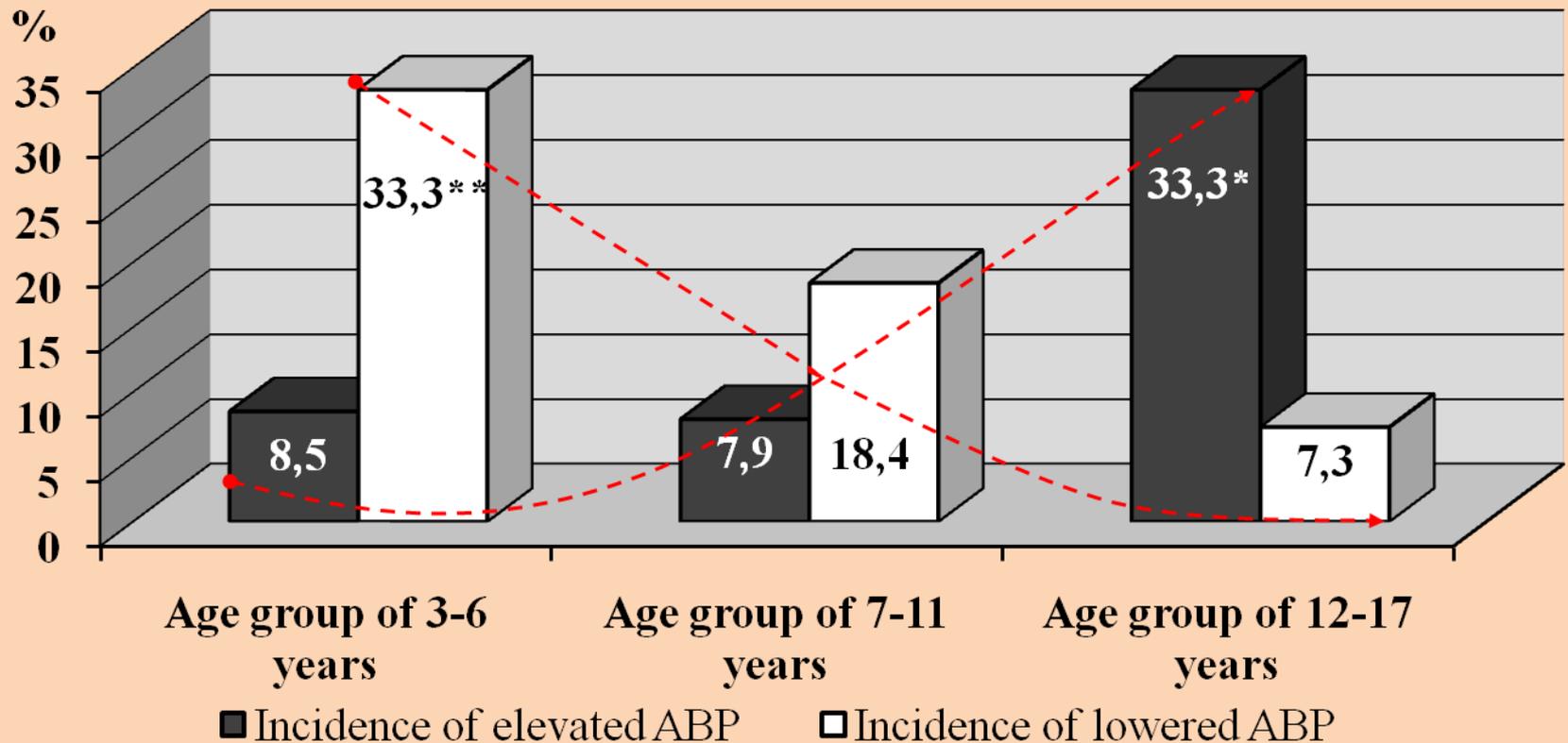


- ABP within the norm values**
- ABP with deviations from the norm**
- ABP above the age norm**
- ABP below the age norm**

Bandazhevsky Yu.I. Assessment of the cardiovascular system in children from Polesie and Ivankov districts / Yu.I.

Bandazhevsky, N.F. Dubovaya, G.S. Bandazhevskaya et al. // Scientific and practical collection «Chernobyl: ecology and health» / General addition by prof. Yu.I. Bandazhevsky. – Ivankov: PI Coordination and Analytical Center «Ecology and health», - Dnipropetrovsk: Serednyak T.K., 2015. - Issue 2. – P. 22-35.

THE AGE DISTRIBUTION OF EXAMINED CHILDREN WITH ELEVATED AND LOWERED ARTERIAL BLOOD PRESSURE (IN % OF THE TOTAL NUMBER OF CHILDREN IN THE AGE GROUP)



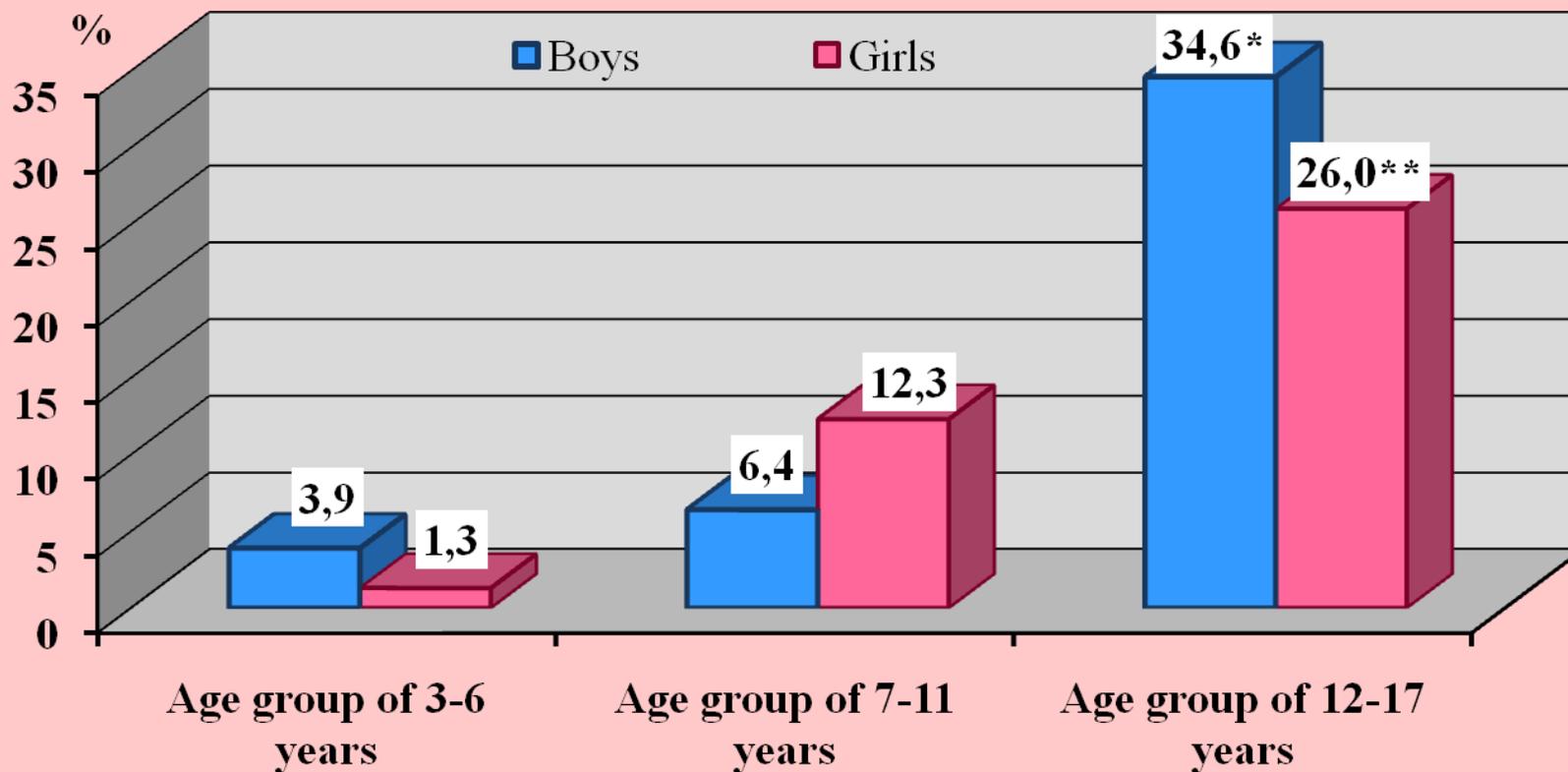
Note: * - $p < 0,05$ compared with the age group of 3-6 years;

** - $p < 0,05$ compared with the age group 7-11 years and 12-17 years.

Bandazhevsky Yu.I. Assessment of the cardiovascular system in children from Polesie and Ivankov districts / Yu.I.

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THE AGE DISTRIBUTION OF CASES OF DETECTED ELEVATED PULSE PRESSURE IN EXAMINED BOYS AND GIRLS, %



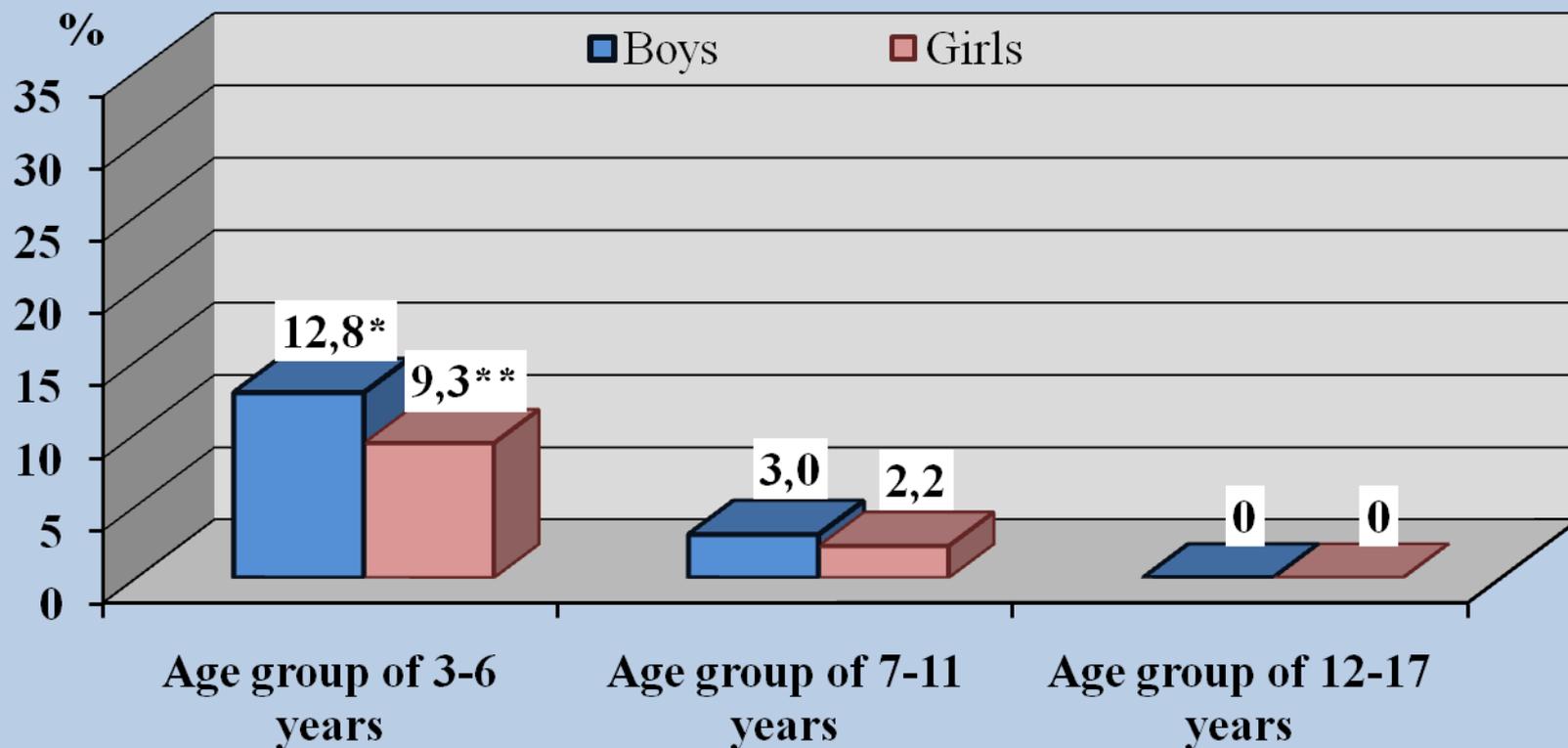
Note: * - $p < 0,05$ compared with the age group of 3-6 years;

** - $p < 0,05$ compared with the age group 3-6 years and 7-11 years.

Bandazhevsky Yu.I. Assessment of the cardiovascular system in children from Polesie and Ivankov districts / Yu.I.

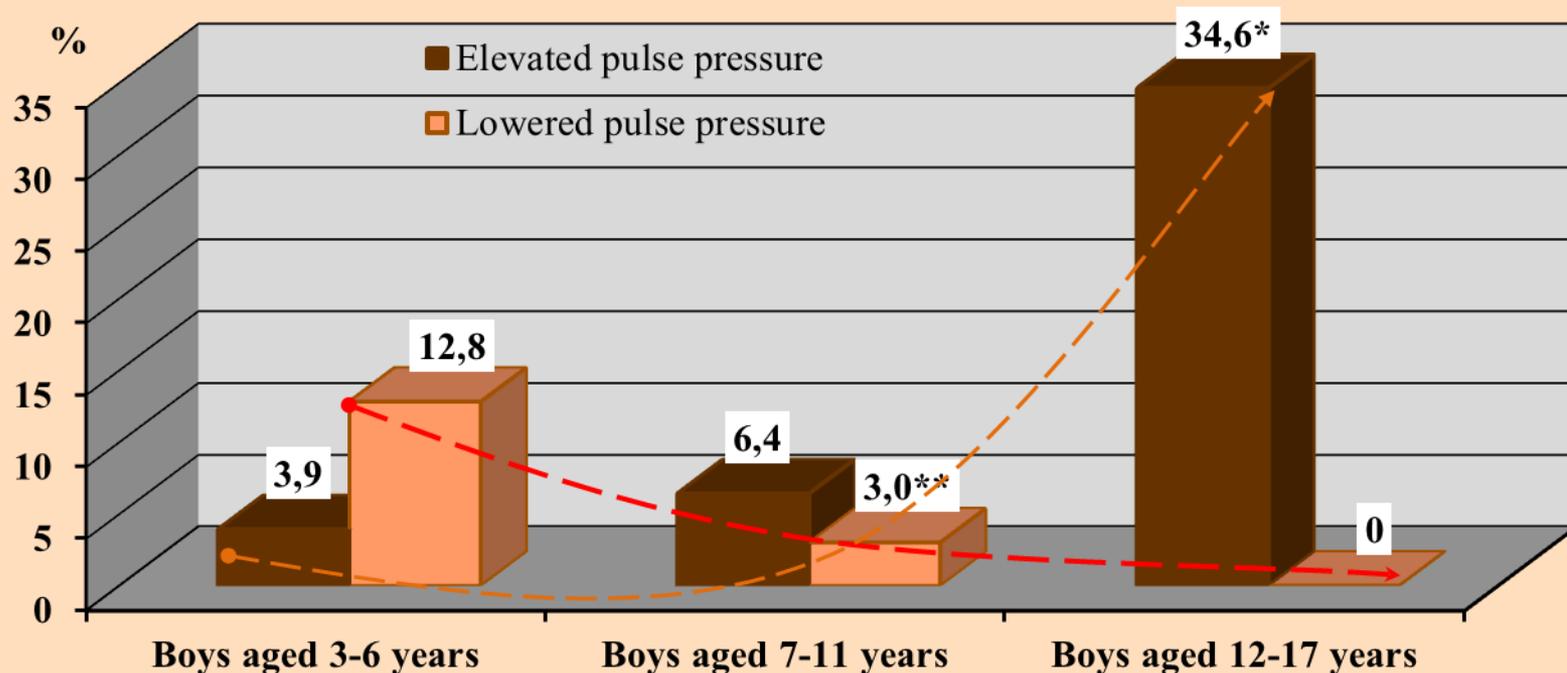
Bandazhevsky, N.F. Dubovaya, G.S. Bandazhevskaya et al. // Scientific and practical collection «Chernobyl: ecology and health» / General addition by prof. Yu.I. Bandazhevsky. – Ivankov: PI Coordination and Analytical Center «Ecology and health», - Dnipropetrovsk: Serednyak T.K., 2015. - Issue 2. – P. 22-35.

THE AGE DISTRIBUTION OF CASES OF DETECTED LOWERED PULSE PRESSURE IN EXAMINED BOYS AND GIRLS, %



*Note: * - $p < 0,05$ compared with the age group of 7-11 years;*

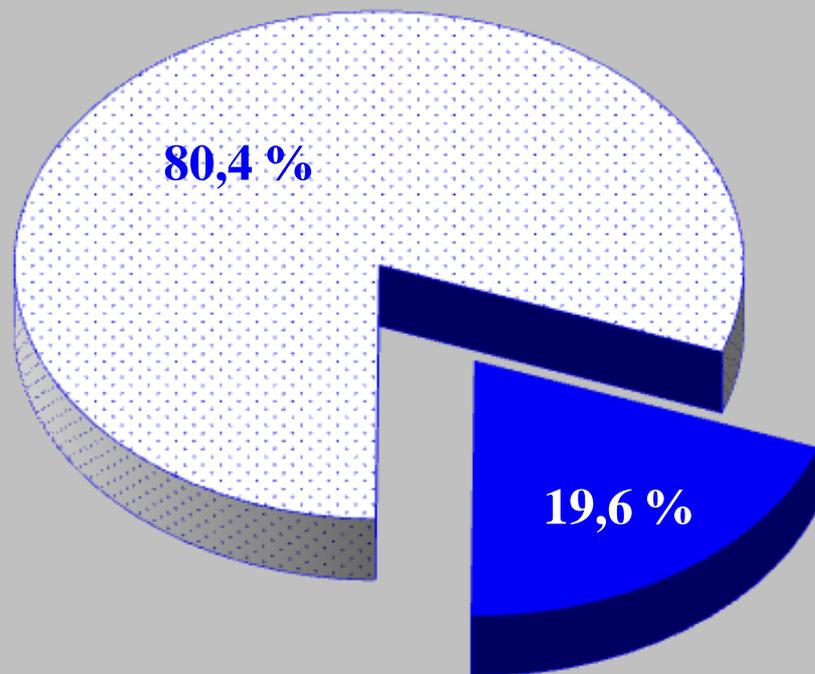
THE AGE DISTRIBUTION OF DETECTED CASES OF ELEVATED AND LOWERED PULSE PRESSURE IN EXAMINED BOYS, %



Note: * - $p < 0,05$ compared with the age group of 3-6 years;

** - $p < 0,05$ compared with the age group 3-6 years.

DISTRIBUTION OF CHILDREN WITH A HEART RATE, % (BASED ON TOTAL NUMBER OF EXAMINED)

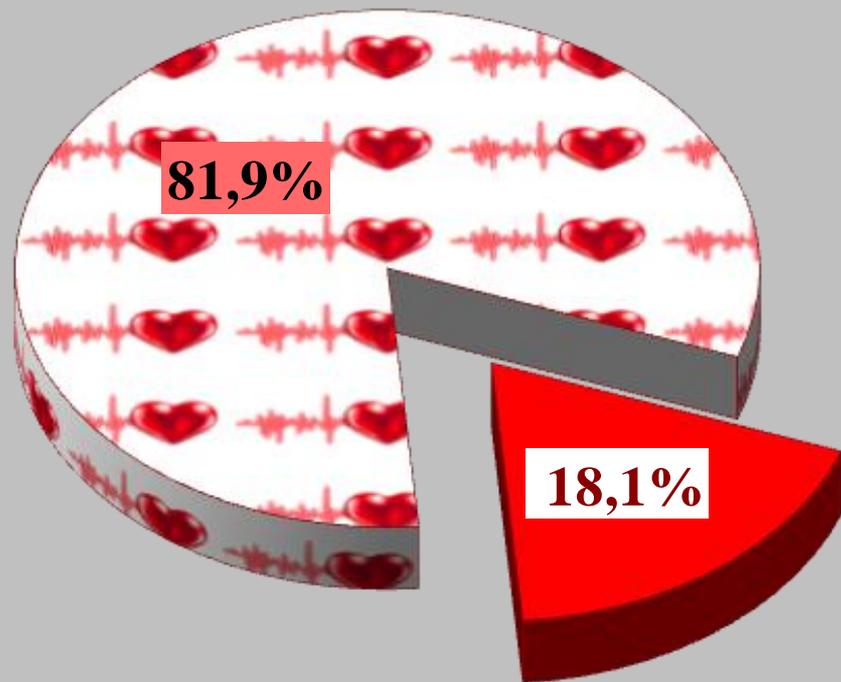


- HEART RATE without departing from the age norm
- HEART RATE deviation from the age norm

Bandazhevsky Yu.I. Assessment of the cardiovascular system in children from Polesie and Ivankov districts / Yu.I.

Bandazhevsky, N.F. Dubovaya, G.S. Bandazhevskaya et al. // Scientific and practical collection «Chernobyl: ecology and health» / General addition by prof. Yu.I. Bandazhevsky. – Ivankov: PI Coordination and Analytical Center «Ecology and health», - Dnipropetrovsk: Serednyak T.K., 2015. - Issue 2. – P. 22-35.

DISTRIBUTION OF CHILDREN WITH IDENTIFIED DISORDERS OF THE CARDIOVASCULAR SYSTEM AS A RESULT OF THE ECG DIAGNOSIS, % (OF THE TOTAL EXAMINED)



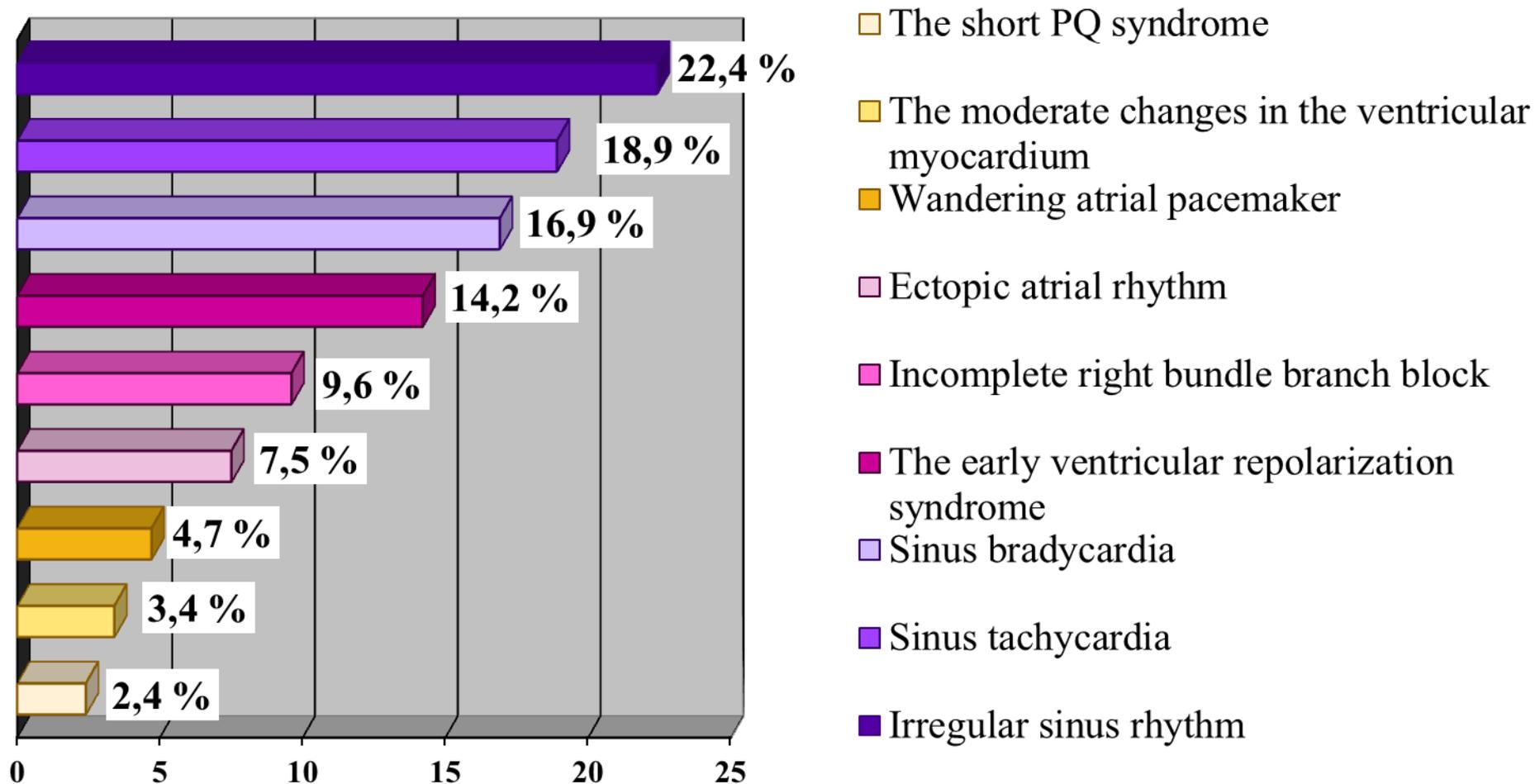
■ Without ECG revealed infringements

□ ECG with the revealed infringements

Bandazhevsky Yu.I. Assessment of the cardiovascular system in children from Polesie and Ivankov districts / Yu.I.

Bandazhevsky, N.F. Dubovaya, G.S. Bandazhevskaya et al. // Scientific and practical collection «Chernobyl: ecology and health» / General addition by prof. Yu.I. Bandazhevsky. – Ivankov: PI Coordination and Analytical Center «Ecology and health», - Dnipropetrovsk: Serednyak T.K., 2015. - Issue 2. – P. 22-35.

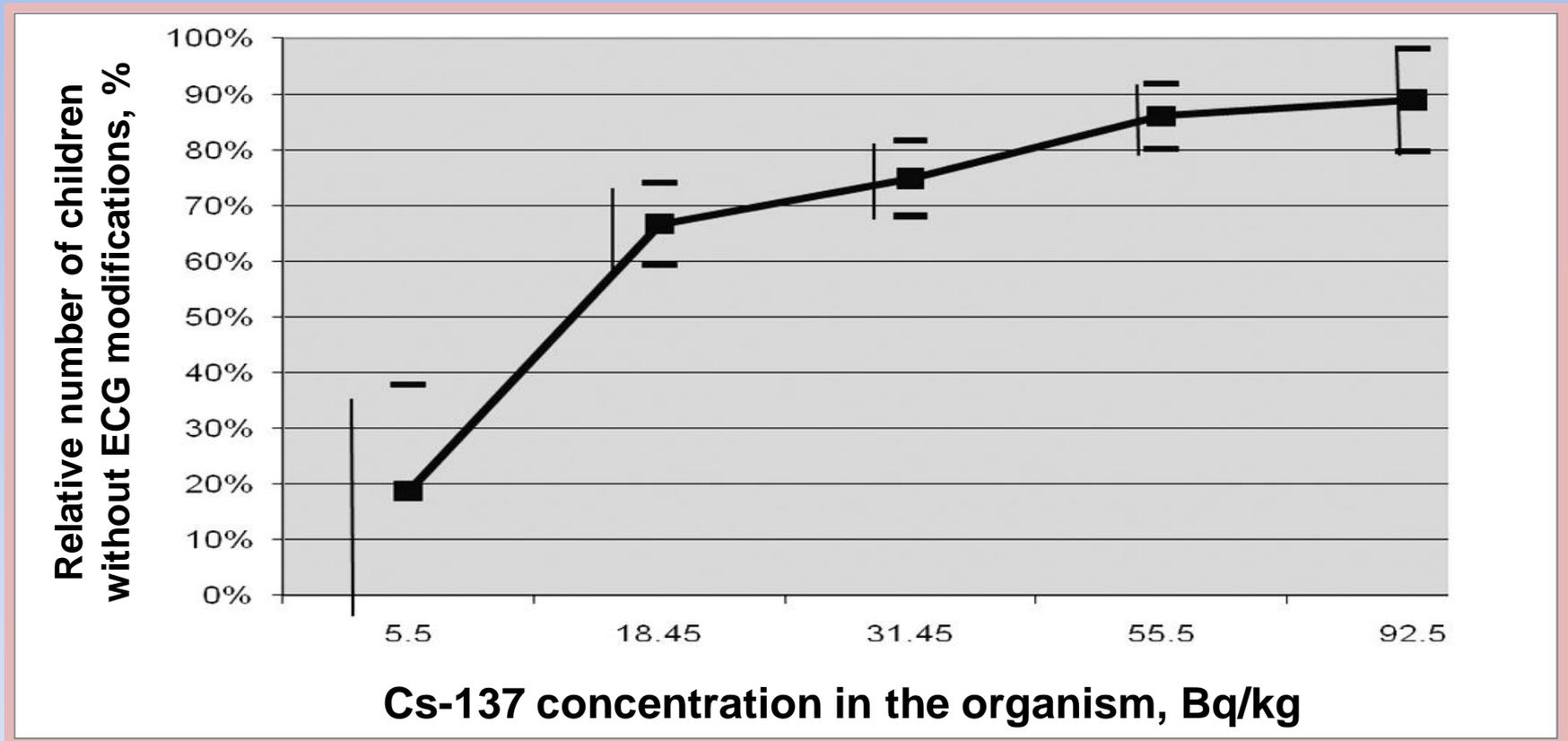
THE STRUCTURE OF CARDIAC DISORDERS IN EXAMINED CHILDREN FROM POLESIE AND IVANKOV DISTRICTS, %



Bandazhevsky Yu.I. Assessment of the cardiovascular system in children from Polesie and Ivankov districts / Yu.I.

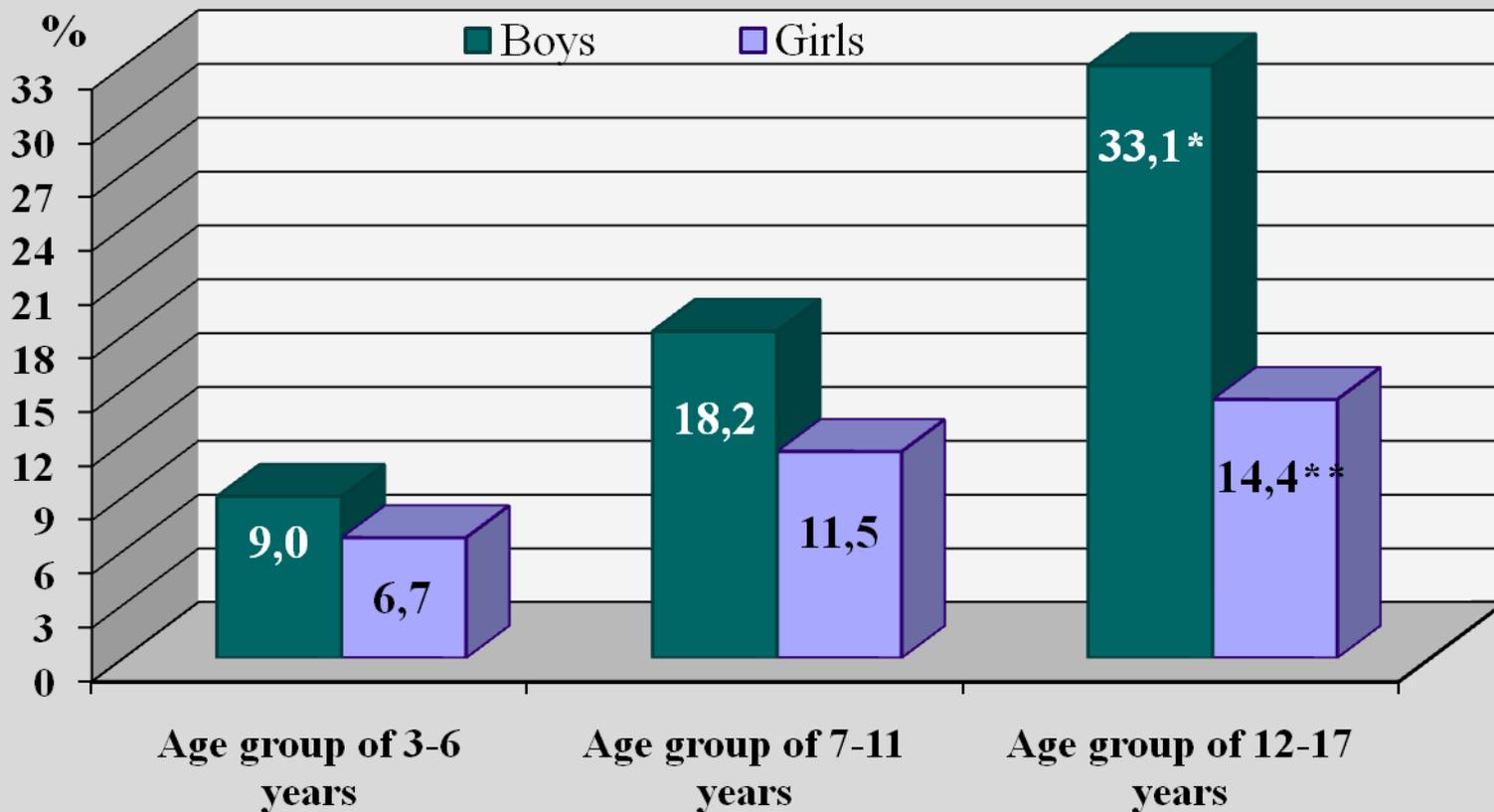
Bandazhevsky, N.F. Dubovaya, G.S. Bandazhevskaya et al. // Scientific and practical collection «Chernobyl: ecology and health» / General addition by prof. Yu.I. Bandazhevsky. – Ivankov: PI Coordination and Analytical Center «Ecology and health», - Dnipropetrovsk: Serednyak T.K., 2015. - Issue 2. – P. 22-35.

NOMBRE D'ENFANTS SANS MODIFICATIONS DE L'ECG, FONCTION DU NIVEAU DE CONCENTRATION DU CS-137 DANS L'ORGANISME¹



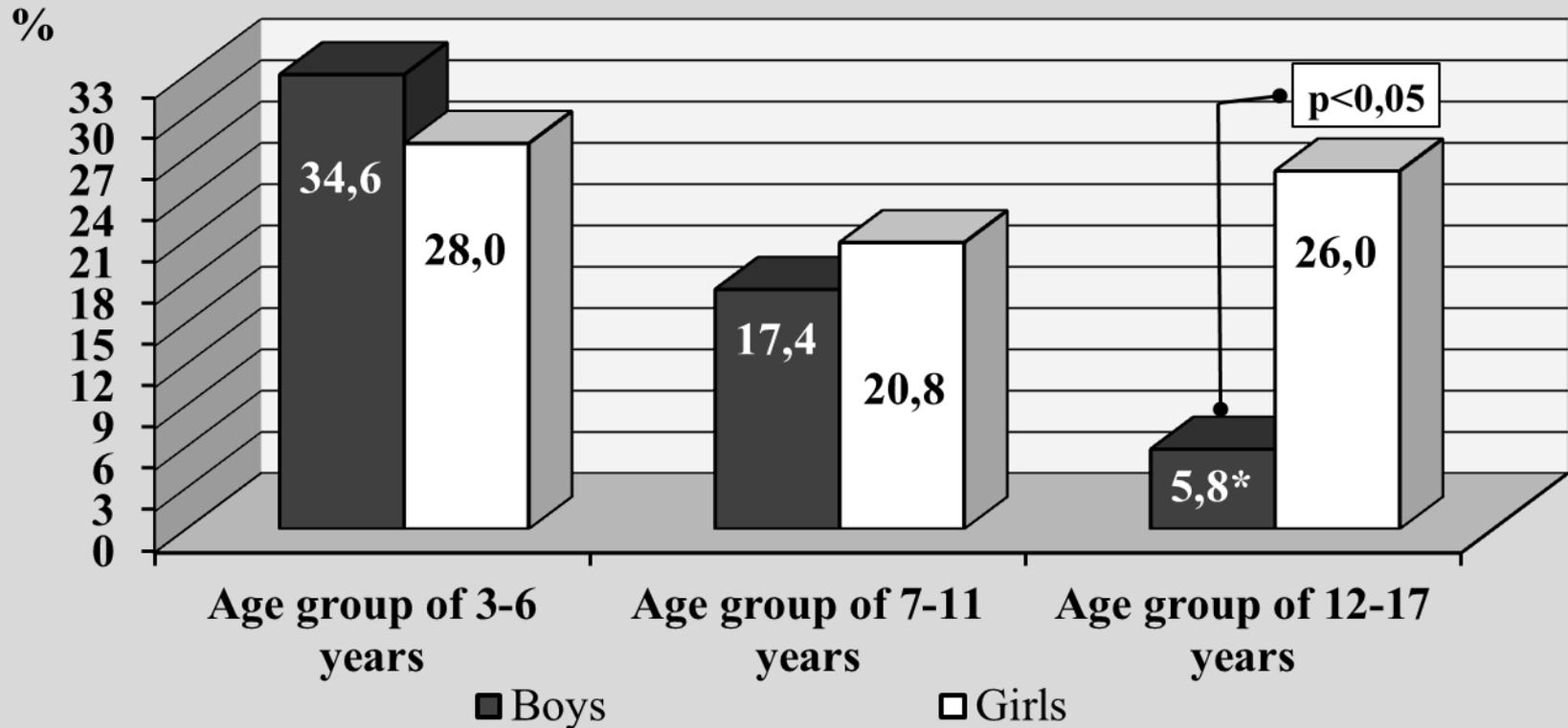
¹*Bandazhevsky Y., Bandazhevskaya G., 1995, 2003, 2009, 2011, 2012.*

THE SEX AND AGE DISTRIBUTION OF EXAMINED CHILDREN FROM POLESIE AND IVANKOV DISTRICTS WITH DIAGNOSED SINUS BRADYCARDIA (IN % TO THE NUMBER OF CHILDREN IN THE RELEVANT AGE GROUPS).



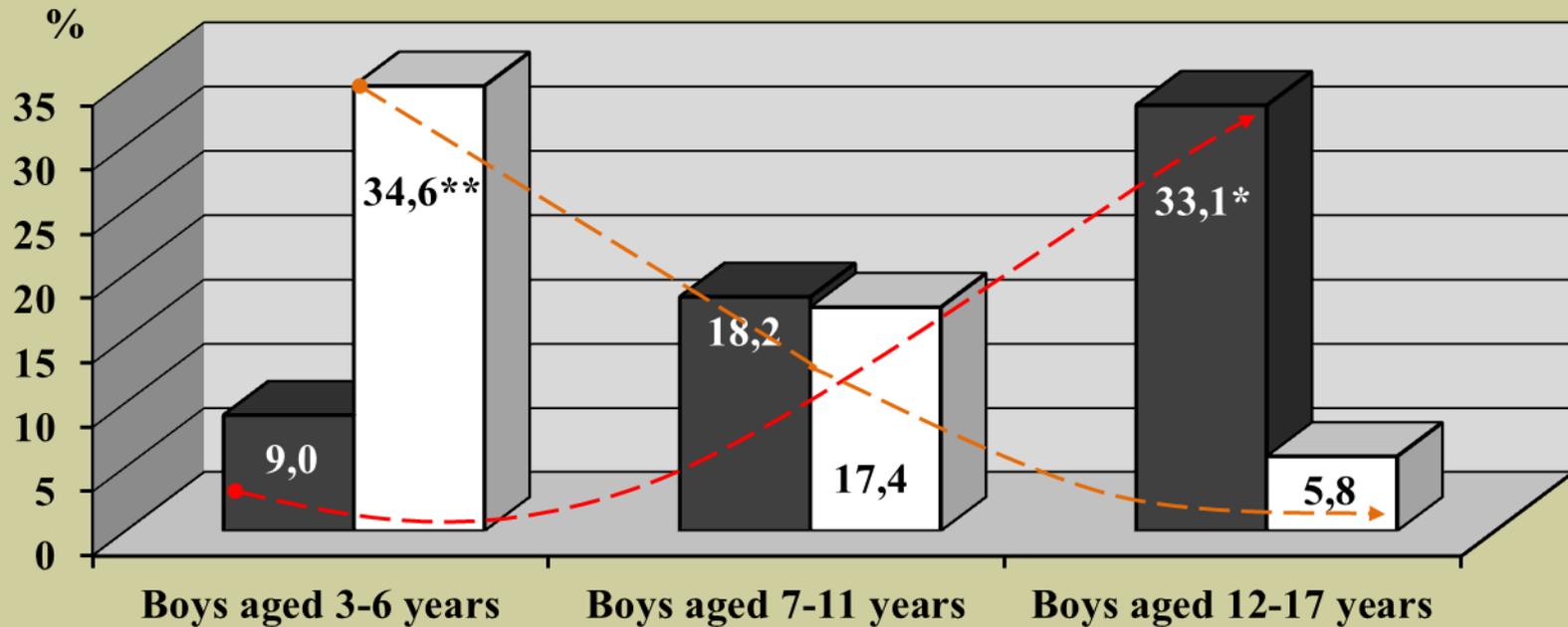
Note: * - $p < 0,05$ compared with the age group of 3-6 years and 7-11 years;
** - $p < 0,05$ compared with the age group 3-6 years.

THE SEX AND AGE DISTRIBUTION OF EXAMINED CHILDREN POLESIE AND IVANKOV DISTRICTS WITH DIAGNOSED SINUS TACHYCARDIA (IN % TO THE NUMBER OF CHILDREN IN THE RELEVANT AGE GROUPS).



Note: * - $p < 0,05$ compared with the age group of 3-6 year and the age of 7-11 years.

THE AGE DISTRIBUTION OF BOYS WITH DIAGNOSED SINUS BRADYCARDIA AND SINUS TACHYCARDIA (IN % OF THE NUMBER OF BOYS IN THE RELEVANT AGE GROUPS).



■ Frequency of sinus bradycardia

□ Frequency of sinus tachycardia

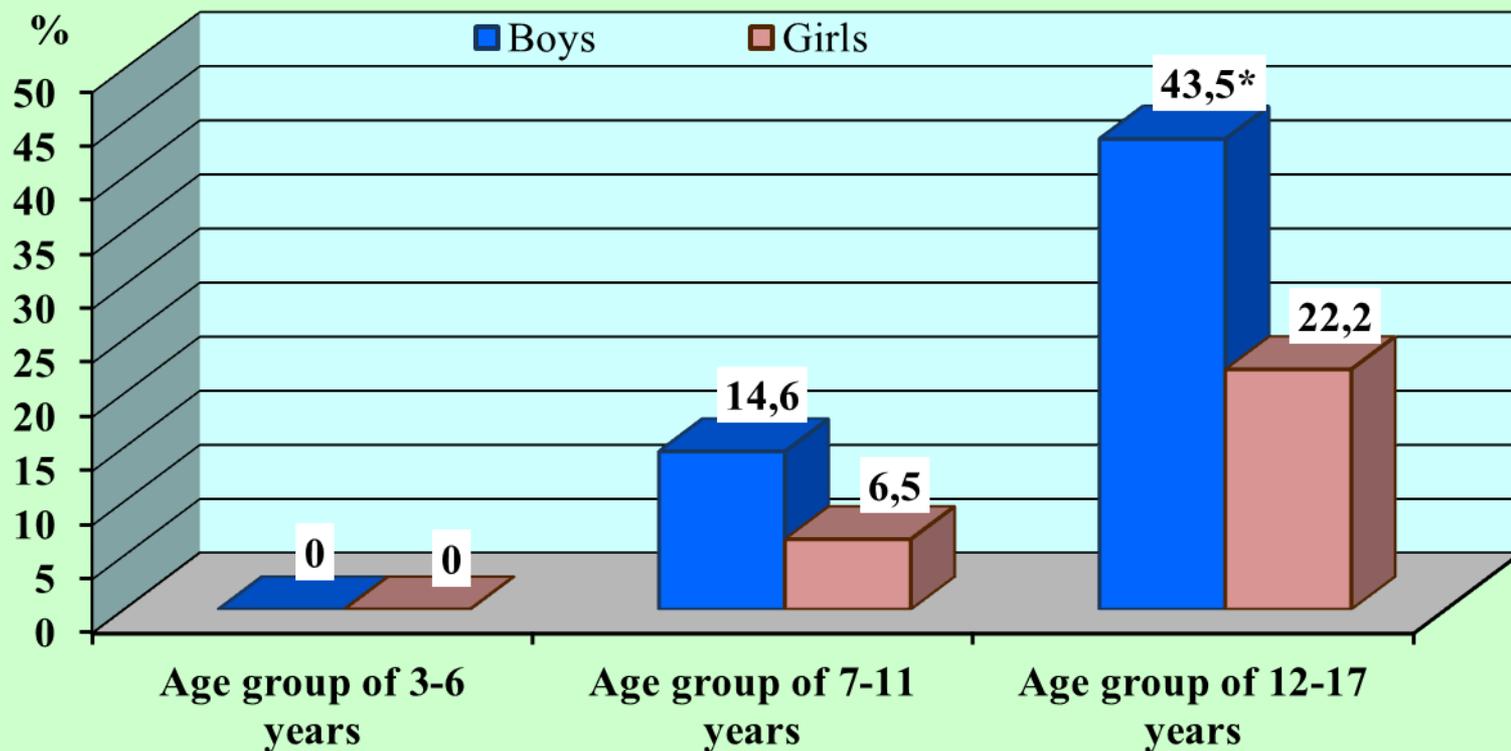
Note: * - $p < 0,05$ compared with the age group of 3-6 years and 7-11 years;

** - $p < 0,05$ compared with the age group 7-11 years and 12-17 years.

Bandazhevsky Yu.I. Assessment of the cardiovascular system in children from Polesie and Ivankov districts / Yu.I.

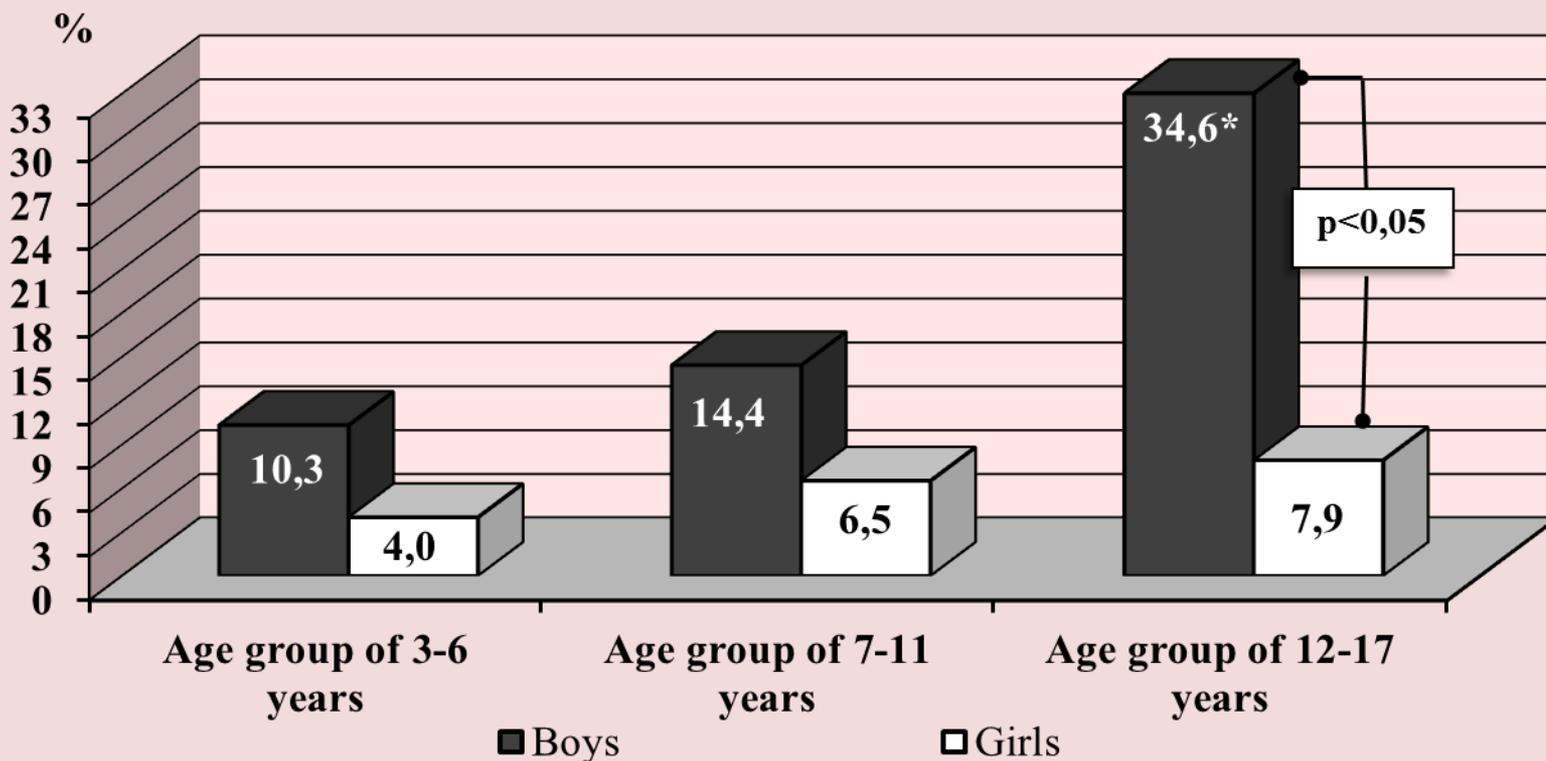
Bandazhevsky, N.F. Dubovaya, G.S. Bandazhevskaya et al. // Scientific and practical collection «Chernobyl: ecology and health» / General addition by prof. Yu.I. Bandazhevsky. – Ivankov: PI Coordination and Analytical Center «Ecology and health», - Dnipropetrovsk: Serednyak T.K., 2015. - Issue 2. – P. 22-35.

SEX AND AGE DISTRIBUTION OF EXAMINED CHILDREN FROM POLESIE AND IVANKOV DISTRICTS WITH DIAGNOSED SIGNS OF CONCURRENT SINUS BRADYCARDIA AND INCREASED ARTERIAL PRESSURE (IN % TO THE NUMBER OF CHILDREN WITH THE AGE GROUP OF 7-11 YEARS).



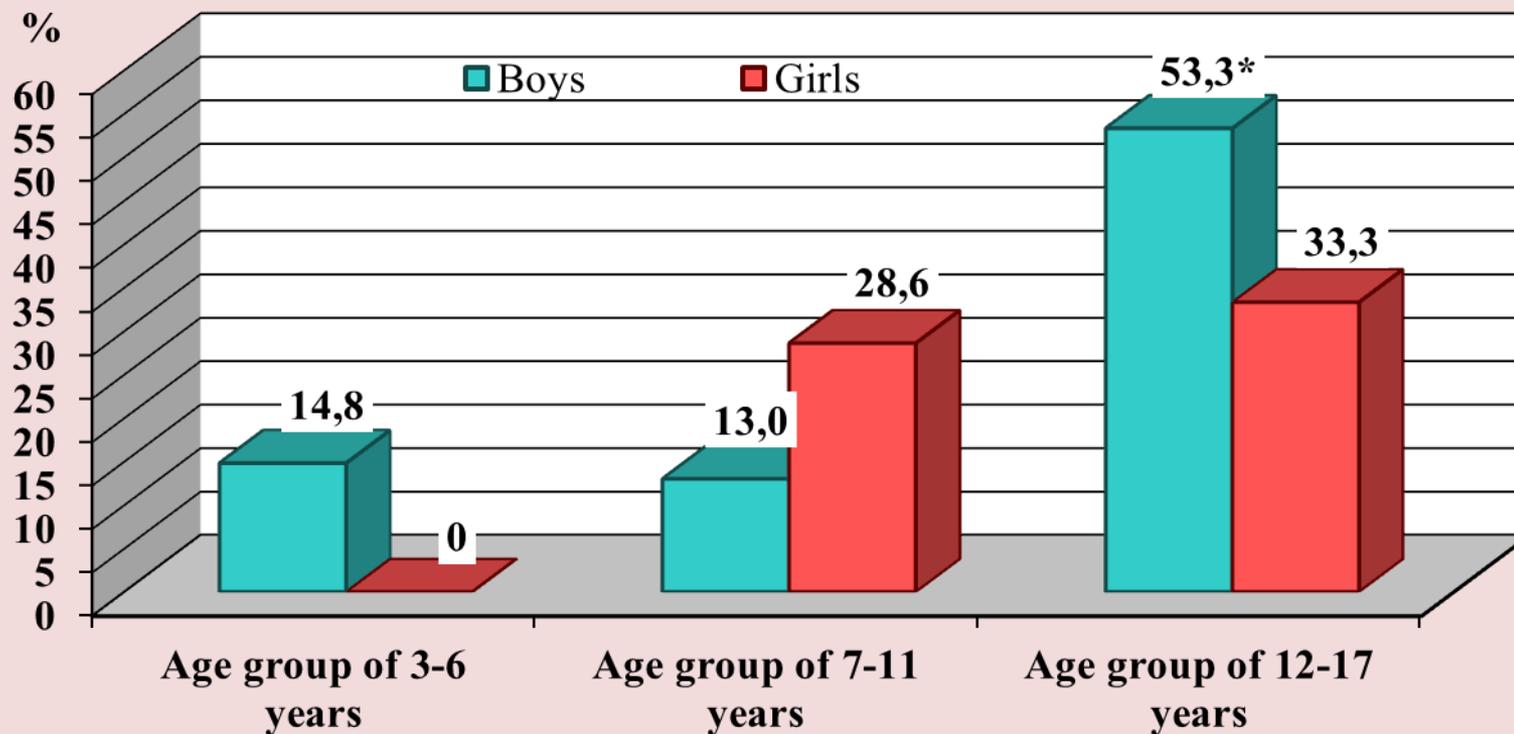
*Note: * - $p < 0,05$ compared with the age group of 7-11 years.*

THE SEX AND AGE DISTRIBUTION OF EXAMINED CHILDREN FROM POLESIE AND IVANKOV DISTRICTS WITH DIAGNOSED EVRS (IN % TO THE NUMBER OF CHILDREN IN THE RELEVANT AGE GROUPS).



Note: * - $p < 0,05$ compared with the age group of 3-6 years.

THE SEX AND AGE DISTRIBUTION OF EXAMINED CHILDREN FROM POLESIE AND IVANKOV DISTRICTS WITH DIAGNOSED SIGNS OF CONCURRENT ELEVATED SINUS TACHYCARDIA AND EVRS (IN % TO THE NUMBER OF CHILDREN IN THE RELEVANT SINUS TACHYCARDIA AGE GROUPS).



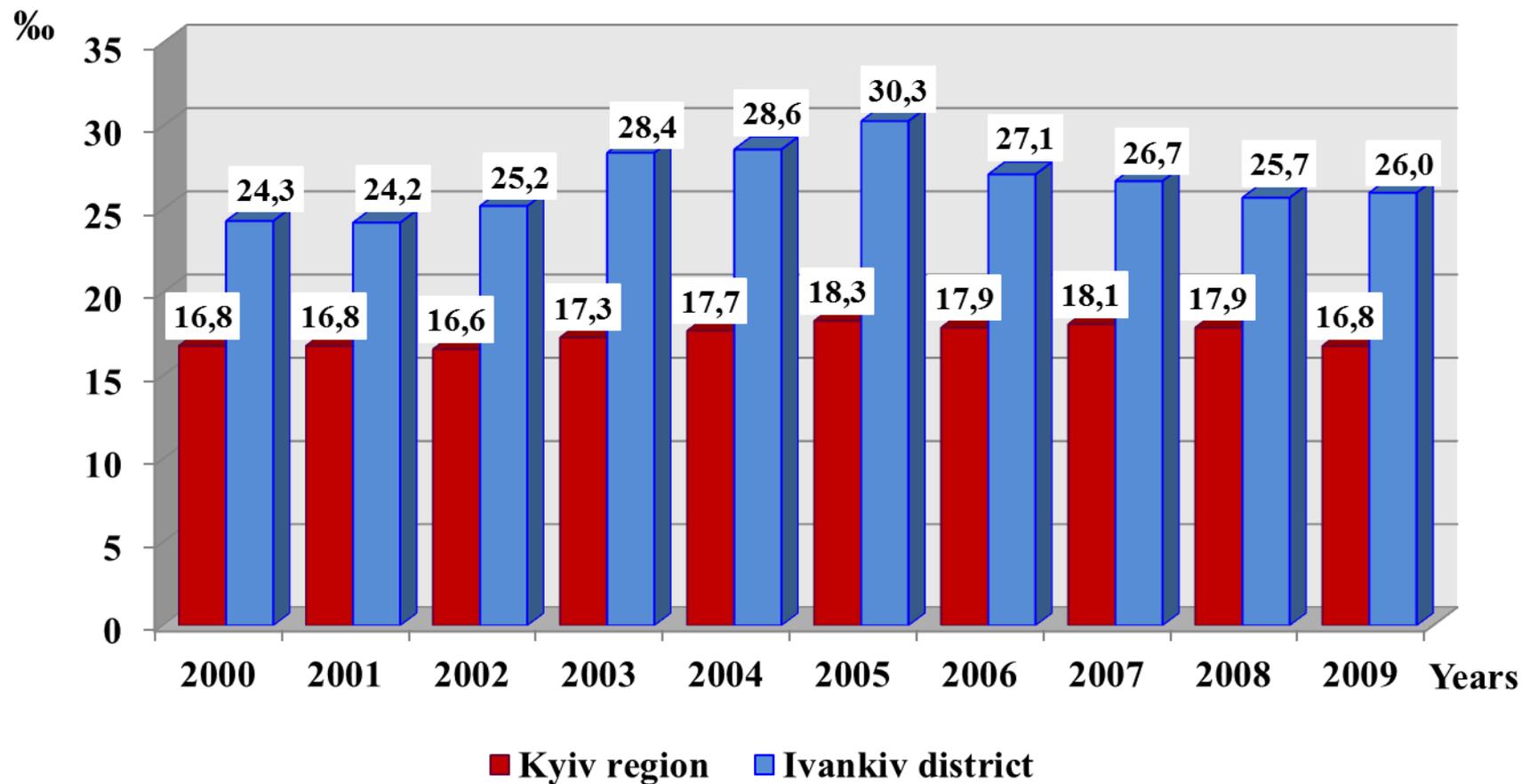
*Note: * - $p < 0,05$ compared with the age group of 3-6 years.*

THE SEX AND AGE DISTRIBUTION OF EXAMINED CHILDREN FROM POLESIE AND IVANKOV DISTRICTS WITH DIAGNOSED SIGNS OF CONCURRENT ELEVATED PULSE PRESSURE AND EVRS (IN % TO THE NUMBER OF CHILDREN WITH ELEVATED PULSE PRESSURE IN THE RELEVANT AGE GROUPS).



*Note: * - $p < 0,05$ compared with the age group of 7-11 years.*

EVOLUTION DU TAUX DE MORTALITÉ DANS LE SECTEUR D'IVANKOV, UKRAINE (POUR HABITANTS)



CONCLUSIONS

- 1. The results of the instrumental examination give evidence of presence of functional changes in heart function in the majority of children from Polesie and Ivankov districts of Kiev region, Ukraine, detected during a routine medical examination in 2014-2015.**
- 2. Particular attention should be paid to the health of boys aged 12-17 years, among whom in comparison with other age groups, there were most frequently cases of increased arterial and pulse pressure, abnormalities of heart beat rhythm in the form of bradycardia and early ventricular repolarization syndrome.**
- 3. Pathologies found in the adolescent period are the basis for the occurrence of serious diseases leading to death in adults.**