



# Analysis of the condition of the nutritional status of early age orphan children in children's homes of the Republic of Kazakhstan

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## Abstract

Research objective was an assessment of adequacy of food with needs of an organism for energy and the main feedstuffs, and also improvement of a measure of prevention of the main forms of food violations at orphan children and children without parental support, in children's homes of health system.

**Methods.** The principle of the analysis of the nutritional status of children in our research consisted in comparison of the received results of anthropometry with reference standard sizes for children of this age category. The standards of reference population recommended by WHO and used in the present report conform to standards of the national center for medical statistics of the USA (NCHS).

In research results of inspection of orphan children as the main group (n=226) and children who are brought up in the families (n=100) which made group of control were used.

**Results.** As it became clear, from 74 orphan children at the age of 6-12 months of 18.9% suffer from chronic insufficiency of food (-2 WITH), 6.8% from them have the expressed growth inhibition (-3 WITH), and 9.3% exceed standards of the age category.

In control group of 10% have the expressed growth inhibition, and 2.04% advance own development.

**Conclusion.** Analysis showed that the actual children nutrition scheme is obsolete and needs to be revised in a short time.

**Keywords:** orphans - children's home - the power status - the Republic of Kazakhstan - vitamins.

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## ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДАҒЫ БАЛАЛАР ҮЙІНДЕГІ ЕРТЕ ЖАСТАҒЫ ЖЕТІМ БАЛАЛАРДЫҢ ТАМАҚТАНУ ЖАҒДАЙЫНЫҢ АНАЛИЗІ

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### Тұжырымдама

Жұмыстың мақсаты ата-ананың қарауынсыз қалған және балалар үйінде тәрбиеленетін ерте жастағы жетім балалардың тамақтану сапасын ағза қажеттілігімен салыстыра отырып бағалау және тамақтану бұзылыстарының негізгі түрлерінің алдын алу жолдарын жетілдіру.

**Әдістері.** Жетім балалардың тамақтану сапасын зерттеу олардың антропометриялық жағдайын осы жас тобындағы балалардың стандартты антропометриялық көрсеткіштерімен салыстыру арқылы жүзеге асырылды. Осы зерттеуде қолданылған стандарттар ДДСҰ ұсынған және АҚШ Ұлттық медициналық статистика орталығының стандарттарына сәйкес болды.

Зерттеуде негізгі топ ретінде балалар үйінде тәрбиеленудегі жетім балалар (n=226), ал бақылау тобында жанұя жағдайында тәрбиеленудегі 100 бала болды.

**Нәтижесі.** Зерттеудің нәтижесінде 6-12 жас аралығындағы 74 жетім баланың 18,9 пайызы созылмалы тамақтану жетіспеушілігінен (-2 С) зардап шегеді, оның 6,8% өсудің едәуір басылуына (-3 С) шалдыққаны анықталды. Бұл осы жас шамасының стандарттық көрсеткішінен 9,3% артық.

Ал бақылау тобының 10%-ында өсудің едәуір тежелуі анықталса, 2,04%-ында өсудің аванстық дамуы бар екені байқалды.

**Қорытынды.** Балалар үйіндегі жетім балалардың қазіргі кезде қолданылып келген тамақтану схемасы ескірген және қысқа уақыт ішінде қайта қарауды талап етеді.

**Маңызды сөздер:** жетім балалар - балалар үйі - тамақтану жағдайы - Қазақстан Республикасы - витаминдер.

## АНАЛИЗ СОСТОЯНИЯ ПИТАНИЯ ДЕТЕЙ - СИРОТ РАННЕГО ВОЗРАСТА В ДЕТСКИХ ДОМАХ РЕСПУБЛИКИ КАЗАХСТАН

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### Резюме

Целью исследования была оценка адекватности приема пищи в сравнении с потребностями организма в энергии и питания, а также улучшение мер профилактики по основным формам нарушения питания у детей-сирот и детей, оставшихся без попечения родителей.

Методы. Принцип анализа состояния питания детей - сирот состояла в сравнении полученных результатов антропометрии со стандартными показателями у детей этой возрастной категории. Стандарты, рекомендованные ВОЗ и используемые в настоящем исследовании, соответствуют стандартам Национального центра медицинской статистики США (НЦСЗ).

В результатах исследований в качестве основной группы обследованы дети-сироты (n=226) и дети, воспитывающиеся в семьях (n=100), которые были использованы в группе контроля.

**Результаты.** Как выяснилось, из 74 детей-сирот в возрасте 6-12 месяцев 18,9% страдают от хронической недостаточности питания (-2 С), 6,8% из них имеют выраженное ингибирование роста (-3 С) что на 9,3% превышает стандарты возрастной категории.

В контрольной группе 10% имеют выраженное ингибирование роста, и 2,04% авансовое собственное развитие.

**Выводы.** Анализ показал, что фактическая схема питания детей сирот является устаревшим и нуждается в пересмотре в течение короткого времени.

**Ключевые слова:** сироты, детский дом, состояние питания, Республика Казахстан, витамины.

## Introduction

Nowadays in the country in 205 establishments for orphan children and children without parental support live and brought up 17 486 children. Including in 26 children's homes of health system - 2 134 children, in 19 orphanages of disabled people of system of social protection of the population - 1 249 children, in 160 organizations of an education system - 14 103 children.

Thus according to data of health care authority, more than 80% of these children have diseases of nervous system; have deviations in mentality and activity of a brain. In 2006 in Kazakhstan under the auspices of UNICEF a number of researches were done. Those researches showed that most of children in children's homes are under risk of deficiency of the main nutrients. During researches it is established that 50% of this contingent of children have iron deficiency anemia, about 57% of children under 5 years have deficiency of vitamin A, D, folic acid and other vitamins of group B.

In confirmation to it, in January, 2008 Ministry of Health of Republic of Kazakhstan published a fact: «40% of orphans lag behind in physical development, over 25% of orphans have anemia of various degree and 16% have various forms of disorders of food and rickets».

The analysis showed that the lowest threshold of learning ability is registered amongst this category of children: they hardly acquire the school program and experience difficulties in receiving a profession (from pupils of orphan establishments no more than 7% get higher education).

Anthropometrical indicators of growth and weight of children allow to estimate the nutritional status and to reveal groups of the children having high risk of a growth inhibition and developing of the diseases connected with insufficiency of food.

The nutritional status of orphan children and children without parental support in Children's homes of health system according to the international standards and standards of WHO is for the first time studied.

The specified norms of need for energy and the main feedstuffs by orphan children in Children's homes of health system according to WHO recommendations are offered [1,2,3].

Evidence-based methodical recommendations about catering services of children of orphans and children without parental support in Children's homes of health system (drawing up the two-week cyclic menu of apportion) are offered.

Political effect - the implementation of the project aimed at providing guarantees of the rights of orphan children and children without parental support, at good and healthy nutrition will allow lifting the international prestige of the Republic of Kazakhstan that will create bases for integration with the world community, especially in days of a chairmanship of our country in OSCE.

Development of scientifically based norms of consumption of main types of food products for rationalization of food of orphan children and children without parental support will conform to the international standards.

Economic effect - improvement of quality of life and level of health of orphan children and children without parental support, activation of a domestic production of products of baby food and their rational use.

Social effect - the indicators characterizing quality of life of children of early age and an index of their development towards their approach to the international standards are reconsidered.

**Research objective** was an assessment of adequacy of food with needs of an organism for energy and the main feedstuffs, and also improvement of a measure of prevention of the main forms of food violations at orphan children and children without parental support, in children's homes of health system.

## Materials and Methods

The principle of the analysis of the nutritional status of children in our research consisted in comparison of the received results of anthropometry with reference standard sizes for children of this age category. The standards of reference population recommended by WHO and used in the present report conform to standards of the national center for medical statistics of the USA (NCHS).

The anthropometrical index growth/age reflects growth indicator. The child at whom growth/age index less than two standard deviations from average value of reference population of NCHS (-2CO), are regarded as undersized and having a delay in growth that reflects at its existence of chronic insufficiency of food. If the child has values of this indicator lower than three standard deviations (-3CO), such state is regarded as the expressed growth inhibition.

On weight/growth indicator we might judge the status of food of the child in the present. Children, who have values of an indicator lower than two standard deviations from the average recommended size (-2CO), are regarded as the having lowered weight and moderate degree of exhaustion, and such state reflects the sharp insufficiency of food taking place in the recent past. If at the child the deviation from average on is revealed (-3CO), the condition of such child admits as exhaustion of the expressed degree.

On weight/age index can't carry out differentiation chronic (low-tallness) and sharp (exhaustion) insufficiency of food. The child can have also lost weight concerning the age for the account as growth inhibitions, and exhaustions, and also due to at the same time both manifestations of insufficiency of food. For this reason weight/age index is considered as an integrated indicator of the nutritional status [4,5].

It is worth noting that even in healthy population about 2, 3% of children might have anthropometrical on two standard deviations (-2CO) below average value of indexes of reference population of NCHS. It is obvious that only at prevalence of insufficiency of food more than 2, 3% can be spoken about true insufficiency of food in this population of children.

In research results of inspection of orphan children as the main group (n=226) and children who are brought up in the families (n=100) which made group of control were used.

For an assessment of the nutritional status of children of both groups we carried out the analysis of anthropometrical indicators. For definition of the above indexes the general passport data (First name, middle initial, last name, a nationality, a gender), indicators of growth and weight at the time of inspection, date of inspection and date of birth were required. Some children of the main group in stories of development of the child (Form 112) had no data on date of birth as these children arrived under guardianship of the state under circumstances when date of birth can't be established, i.e. children were or are found, or thrown [4,5].

## Results

As it became clear, from 74 orphan children at the age of 6-12 months of 18.9% suffer from chronic insufficiency of food (-2 WITH), 6.8% from them have the expressed growth inhibition (-3 WITH), and 9.3% exceed standards of the age category.

In control group of 10% have the expressed growth inhibition, and 2.04% advance own development.

From 92 examined children 12-24 monthly age of the main group of 46.7% are undersized and have a delay in growth that characterizes presence a chronic insufficiency of food. From them at 25% of children the expressed growth inhibition is revealed.

In control group of 35% of children of the specified age are a category with chronic insufficiency of food.

By results of inspection 52 children at the age of 24-36 months in 38.2% chronic insufficiency of food was found, and in 32.7% was the expressed growth inhibition. In control group only 18.7% have insufficiency of food, from which 12.7% - with the expressed growth inhibition.

It was found, that boys of the main group have higher frequency of detection of chronic insufficiency of food is 21% higher than girls, and for 8% - the expressed growth inhibition. Also, In control group the greatest percent of insufficiency of food and a growth inhibition are revealed at males.

As a result, from total number of the examined children from Children's homes of both sexes (218 people) of 35.3% have chronic insufficiency of food, from them 20.6% - the expressed growth inhibition. In control group at 15.2% - chronic insufficiency of food, from them at 12% - the expressed growth inhibition.

For descriptive reasons the represented values we provided schedules of standard deviations in the general population of the examined children aged from 6 till 36 months.

Apparently from figure 1 in the main group there is a deviation from reference population to the left that characterizes existence of a delay in growth and chronic insufficiency of food. In control group a deviation from reference population insignificant, and to the opposite side (to the right) that testifies not only to lack of a growth inhibition, but also its insignificant advancing. For the purpose of definition of the status of food of children in the present we used an indicator weight/growth index reflecting sharp insufficiency of food.

As it appeared, for 21.3% of children 6-12 monthly age of the main group are available the lowered weight and moderate degree of exhaustion, from them for 6.7% - exhaustion of the expressed degree. In control of violation of food it isn't revealed, and in 36.4% - children are paratrophical.

Amongst children of 12-24 months of the main group moderate degree of insufficiency of food meets in 17.4% of

cases at which 4.3% - insufficiency of food is expressed. The last indicator was not so great, but as it was noted above, at prevalence of insufficiency of food more than 2.3% can be spoken about true insufficiency of food in this population of children. Children of control group do not have similar changes; 40% of them have a deviation of a median to the right that testifies to excess food.

The main groups of children of an age category are 24-36 months had worse indicators. From 51 children – at 33.3% moderate degree of insufficiency and at 9.8% from them - exhaustion is noted. In control group only 2% have moderate degree of insufficiency of food, and 42.2% - excess food.

At boys 33.2% more often sharp insufficiency of food, than at girls is registered. From the examined children of genders, 22.5% have sharp insufficiency of food, at 6.4% from them – exhaustion.

Almost same tendency is established and in control group, but with a small difference – 1.5%.

In the main group the deviation from reference population is noted to the left that points to existence of sharp insufficiency of food here, the curve passes in control on a reference median that testifies to lack of any serious violations in food of these children.

As an integrated indicator of the nutritional status we used weight /age index [4,6,7].

Results of investigation show existence in the main group of 32.7% of cases of the lost weight concerning the age as at the expense of a growth inhibition, and exhaustion, and also due to at the same time both manifestations of insufficiency of food that by 4 times exceeds those indicators in control group. Moreover, as it appeared from this number of children of the main group at 15.2% these manifestations have more expressed character and by quantity of the registered cases is twice more than in the control.

Birth weight corresponded to normal in 67% of children under parental care and 33% of orphans, 56% of orphans are lagging in teething development, in the control group was no lag (1%). 15% of orphans have clinical manifestations of changes in the skin, mucous membranes and bone. Consumption of the main types of products (primarily meat, milk, fish, vegetables and fruit) in children's homes was below current standards and recommendations of the Kazakh Academy of Nutrition, based on international experience. Because of inadequate food intake, the orphans have an expressed protein deficit (25%), PUFAs (32%), vitamin A (44%), pyridoxine (45%), pantothenic acid (53%), vitamin B12 (37%), ascorbic acid (59%) and copper.

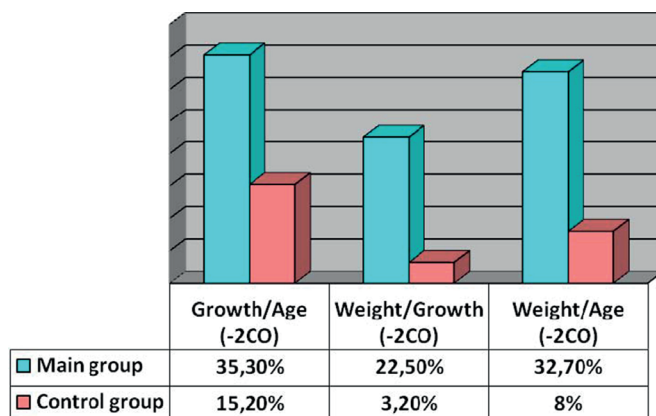


Figure 1 - A ratio of indicators of the nutritional status in the main and control groups

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## Discussion

Thus, from all above it is necessary to draw a conclusion that 35.3% of children – pupils of Children's homes of health system are regarded as undersized and having chronic insufficiency of food of this or that degree that by 2.3 times exceeds these indicators at the children growing with parents (figure 1).

Proceeding from fig., 22. 5% of orphan children have the lowered weight to the age and sharp insufficiency of food while at children from full-fledged families this state is registered in 3.2% of cases (7 times less).

## Conclusion

In 32.7% cases amongst orphans the lost weight concerning the age, as well as at the expense of a growth inhibition, and exhaustion at the same time while at the children who are under the care of own parents, results of these researches don't exceed 8% is noted. Analysis showed that the actual children nutrition scheme is obsolete and needs to be revised in a short time. The study will have indices of more in-depth clinical examination and QoL evaluation with further economical calculation (budget impact, etc.).

## References

1. Physical status: the use and interpretation of anthropometry. Geneva, World Health Organization, WHO Technical Report Series, 1995, No. 854.
2. Waterlow, J.C. ET AL. The presentation and use of height and weight data for comparing nutritional status of groups of children under the age of 10 years. *Bulletin of the World Health Organization*, 1977, No.55, pp.489–498.
3. Use and interpretation of anthropometric indicators of nutritional status. *Bulletin of the World Health Organization*, 1986, No.64, pp.929–941.
4. Weaver, L.T. Feeding the weanling in the developing world: problems and solutions. *International journal of food sciences and nutrition*, 1994, No.45, pp.127–134.
5. Martorell, R. ET AL. Reversibility of stunting: epidemiological findings in children from developing countries. *European journal of Clinical Nutrition*, 1994, No.48 (Suppl. 1), pp.45–57.
6. Sharmanov T.Sh. Kazakhstan is in context of Global nutrition problems, 2000, 223 p.
7. Aydzhanov M.M., Berdenova G.T., Kilybayeva B.A. Methodical recommendations about the organization of hot meals of pupils in school cafeterias, *Almaty*, 2008, 30 p.