International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 05 May 2022
DOI: 10.47191/ijcsrr/V5-i5-20, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

Prevention of Iron Deficiency Anaemia in Pre-School Children

Shaykhova G.I.[1], Kurbanova Kh.A.[2]

[1]Professor, Tashkent Medical Academy
[2]Assistant, Samarkand State Medical University

ABSTRACT: The article is devoted to the role of iron, vitamins and minerals in the development of iron deficiency anaemia in children of early and pre-school age. Iron deficiency (ID) is one of the most common nutritional-dependent states in the world, which, according to WHO [1], affects more than 1.5 billion people. Iron deficiency is in the form of iron deficiency anaemia (IDA) [1, 2] in about half of the cases (over 700 million of the world's population). ID is mostly due to nutritional reasons, but age and socio-economic factors are also important.

KEYWORDS: Causes, Iron Deficiency, Iron Deficiency Anaemia, Hemoglobin, Erythrocytes, Malnutrition, Prevention.

INTRODUCTION

Anemia can be defined as a decrease in the amount of hemoglobin, erythrocytes and possible alteration of the morphology of erythrocytes. [1]. There are many types of anemia, and they are caused by many factors.

The most common type of anaemia is iron deficiency anaemia (IDA), which affects more than 25 per cent of the world's population. [2]. Iron deficiency anaemia is the third leading cause of disability worldwide and contributes to child morbidity and mortality. [4]. Iron deficiency anaemia is a widespread disease that mainly affects children, adolescent girls, pregnant and lactating women [5]. Rapidly growing children (0-15 years) can consume iron reserves that accumulate during pregnancy, which physiologically can lead to absolute ferritin deficiency, making them one of the population groups, Most at risk of infection Iron deficient anemia. [6].

IDA may also be associated with low birth weight and a higher risk of maternal and perinatal mortality. [7]. Symptoms arise from reduced oxygen delivery to body tissues and may include shortness of breath, headache, lethargy, pallor, difficulty concentrating, and may affect motor and mental development [8]. Severe IDA may also increase the risk of premature birth, low birth weight, mortality during delivery, higher infection rates, and heart failure. [9.10].

THE MAIN FINDINGS AND RESULTS

Malnutrition is the most serious public health problem affecting many children in the world and in developing countries. This is the cause of at least half of the world's infant mortality. It, malnutrition, alone accounts for more than a third of these deaths. Stunting rates among children under five years of age are also very high in many countries of the southern and eastern Mediterranean: 26.3 per cent in Albania, 14.9 per cent in Algeria, 28.9 per cent in Egypt and 22.5 per cent in Morocco. Iron deficiency and iron deficiency anaemia are considered to be the main forms of malnutrition worldwide, accounting for 50 per cent of the estimated 600 million cases of anaemia in pre-school and school-age children in the world. The World Health Organization reported that just over 2 billion people are anaemic. The prevalence of anaemia among schoolchildren is 25.4 per cent, with the highest rate among pre-school children (47.4 per cent worldwide and 67.6 per cent in Africa). In the Russian Federation, the incidence of anaemia in 2017 was 1,123.6 cases per 100,000 of the population. This includes all age groups. In some regions, particularly in the Volga Federal District, the overall incidence of anaemia in 2017 was 1.32 times higher than the national rate. IDA is one of the most urgent problems for the health care of the Republic of Uzbekistan. Thanks to a series of preventive and curative measures, the incidence of anaemia among children had fallen to 49.2 per cent in 2002. However, despite significant progress, the rate still exceeded the 40 per cent suggested by WHO, UNICEF and the United Nations University for estimating the prevalence of anaemia. It should be noted that this problem has also been relevant for neighboring countries, especially those bordering the Aral Sea region. [11.12].

A UNICEF multi-center study conducted in Uzbekistan in 2017 found that approximately one in seven children in the country (15.6%) suffered from anaemia. According to the study, 533,000 children under the age of 5 suffer from anaemia, representing 5

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 05 May 2022
DOI: 10.47191/ijcsrr/V5-i5-20, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

per cent of the total in the country. About 20 per cent of women of reproductive age and 32 per cent of pregnant women also had severe symptoms of anaemia. The distribution of children aged 6 months to 5 years suffering from anaemia by region showed that Bukhara (23 per cent), Samarkand (17.9 per cent) and Tashkent (17.8 per cent) ranked first in 2017. High morbidity rates were also reported in Karakalpakstan (16.7 per cent), Andijan (16 per cent), Navoi (14 per cent), Surkhan Darya (14.8 per cent) and Kashkadarya (12.6 per cent) provinces. [7]. In Tashkent, the anaemia rate among the child population was also high at 13.7 per cent. It is interesting to note that when comparing the prevalence of anaemia in urban and rural areas, urban populations have higher rates of IDA and iron deficiency. It should also be pointed out that in the general population of children under 5 years of age, anaemia and iron deficiency are prevalent among boys. In 2018, the total incidence rate per 100,000 populations was 21619. [7].

Thus, an analysis of the development of anaemia in the Republic of Uzbekistan has shown that, overall, there has been a significant reduction in the incidence of anaemia in the country over the past 25 years. A significant role in reducing the prevalence of anaemia has been played by the peer review activities carried out with the participation of international organizations. Nevertheless, against the background of the general epidemiological situation in the world, the indicators of regions such as Bukhara oblast and the Republic of Karakalpakstan remain unfavourable and require the development of improved tactics to combat anaemia [7.9].

These figures clearly show that anaemia continues to be one of the most significant problems for health care in the Republic of Uzbekistan. Despite the efforts made over the past 25 years in the country, the problem of anaemia and iron deficiency is far from being resolved. In this connection, the public health sector is faced with the challenge of analysing in greater detail the factors that play a role in the development of this disease and developing new measures for its prevention. Taking into account modern tendencies, today due to the abundance of drugs for the treatment of anaemia in the country's market, the study of their pharmaco-epidemiology and pharmaco-economics [7] comes to the forefront.

One in six teenage girls (16.5 per cent) in Uzbekistan suffer from anaemia. Three quarters of young girls with anaemia suffer from IDA. Iron deficiency among teenage girls is alarmingly high at around 50 per cent. Every fifth woman of reproductive age (WBW) suffers from anaemia. Of this number, 80% suffer from IDA. WBW in Uzbekistan suffers from severe hidden hunger. Half of women of reproductive age have iron deficiency. About half of women start their pregnancies at high risk of having a baby with neural tube defects. One in five women suffers from vitamin B12 deficiency. The prevalence of anaemia in this group varies significantly from region to region. The highest levels of anaemia are found in the Tashkent and Karakalpakstan regions, while the lowest rates of anaemia are found in the Namangan and Kashkadarya regions. [7.9]. Studies have shown that almost one third of pregnant women suffer from anaemia, which according to the WHO classification is a significant public health problem. [20, 21].

According to statistics, the Bukhara region is the most problematic in terms of anaemia in the Republic. The total morbidity rate per 100,000 populations was 23,145 in 2007. Despite the fact that the data for 2018 show that in the past 11 years the number of patients has been reduced by more than half (10,362 cases), the indicators of the Bukhara region for anaemia significantly exceed the indicators of the other regions. Anaemia particularly affects children under 14 years of age and adolescents [9] in the region.

According to the literature, the role of iron in the developing child body has been established. It is both the transfer of oxygen (HB) to tissues and organs, and participation in the processes of growth, physical and intellectual development of children, in the formation and functioning of the immune system, in the resistance of the child's body to adverse environmental effects, in the accumulation of toxicants (lead) in the organism of growing children (3,4,7,8,9,13,14). Particularly sensitive to foetal iron deficiency. The notion that the decrease of hemoglobin does not affect the development of the fetus is erroneous. Foetal iron deficiency causes irreversible disruption of brain mass growth and myelination and nerve impulses through synapses. These changes are irreversible and cannot be corrected with iron drugs prescribed after birth. In the subsequent child is noted retarded mental and motor development, impaired cognitive functions. American researchers have shown that even five years after IDA, ferritin is an acute phase of inflammation protein, so its concentration increases with inflammation, infections, and liver diseases, malignant neoplasms, and leukaemia. Serum ferritin can be used reliably for the diagnosis of iron deficiency only if the above conditions are excluded, that is, the absence of clinical and laboratory signs of inflammation. (13.14).

According to statistics, the Bukhara region is the most problematic in terms of anaemia in the Republic. The total morbidity rate per 100,000 population was 23,145 in 2007. Despite the fact that the data for 2018 show that in the past 11 years the number of patients has been reduced by more than half (10,362 cases), the indicators of the Bukhara region for anaemia significantly exceed the indicators of the other regions. Anaemia particularly affects children under 14 years of age and adolescents [9] in the region.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 05 May 2022
DOI: 10.47191/ijcsrr/V5-i5-20, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

Iron deficiency anaemia in children under five years of age among specific nutritional deficiencies, with a prevalence of 42.6 per cent, affects 273.2 million children worldwide. Its pernicious consequences, often irreversible in adulthood, are that the population becomes disabled and unprepared for the labour market, often being socially excluded. In the child population, the groups at high risk for the development of ID are children of the first 3 years of life and adolescents, which are promoted by several causes and, above all - increased body demand for iron during periods of intensive growth. [1, 3, 4]. However, iron deficiency states (IDC) do not develop in all, but only in cases where the child's body is simultaneously affected by several adverse factors. Increased iron loss associated with blood loss through the intestine when whole unmodified milk and kefir are used in excess of 400 ml per day [4-10] plays a significant role in the emergence of IDC in young children. Long-lasting ID leads to the development of IDA and is accompanied by pronounced impairments of various functions and systems of the body, the effects of which can persist for a long time and even for a lifetime, despite the replenishment of iron reserves by ferropraparates (FP). And although the treatment and prevention of IDC is not a big problem at the present stage, nevertheless, the global medical community attaches global importance to this problem, due to the severe consequences of IDC. [1, 2]. In Russia, according to various authors, IDC is detected in 23-43% of children under 3 years of age, with only cases of IDA [3, 11, 12] registered, which means that ID affected about 80% of young children.

Iron deficiency is a major determinant of anaemia, but iron deficiency is widespread. The context is closely related to socio-economic and cultural factors. Developing countries are characterized by unfavourable social conditions and inefficient public policies that cause health inequities and thus translate into various risks to disease, causing unnecessary human suffering.

Thus, the recognition of the health needs of individuals and families from different social groups is of great importance in the identification of social reproduction and health-related health profiles that enable the control and monitoring of the health status of the population. Especially when it comes to the nutritional problems of children, which is a problem that high-income, middle-income and low-income countries face equally.

Iron is an important mineral that performs many biological functions in our body. Iron demand is very high at a young age due to rapid growth with a sharp increase in muscle mass, red cell mass and blood volume, which increases the iron requirement for hemoglobin in blood and myoglobin in the muscles. However, the inability to meet high iron demand leads to iron deficiency anaemia.

In addition, high iron intake can also cause health problems. In children with a genetic predisposition to absorb more iron than usual, so iron can accumulate in body tissues for many decades, which can lead to damage to tissues and organs. [10, 11]. Because IDA is a very common disease in society, and people usually prefer to take iron oral supplements, so the side effects of oral allopathic iron drugs are very common.

Vitamins and trace elements are for the most part essential substances involved in the performance of complex functions of the body, so it is important that they are sufficiently supplied with a diet. [6, 10]. Insufficient provision of the body with these substances, including those related to irrational nutrition, diets, can lead to changes in metabolism, one of which is impaired blood flow. [2]. Nutritional anaemia must be considered as a polymicronutrient-dependent pathology - the nutrients that matter in their development are iron, zinc, copper, cobalt, vitamin B12, vitamin C, folic acid (B9), vitamins B2, B6, B1, A, E [7].

The synthesis of hemoglobin is performed by erythrocytes, these processes require an energy metabolism (vitamins B1, B2, niacin), protein and nucleic acids (vitamins B2, B6, B12, niacin and folic acid involved), genetic modulation (vitamin D, iodine) protection against oxidation (vitamins C and E, magnesium, selenium, zinc). According to the registration, the average prevalence of anaemia among adults in the region is 1%. However, this is only the tip of the iceberg. According to the results of a specially organized clinical-laboratory study, the real prevalence of anemia syndrome in Omics is 14%. In addition to the 14 per cent with anaemia, it has been found that a further 30.5 per cent of adult Omecha have latent iron deficiency (this stage may be indicated as precemia). Preliminary iron deficiency (in the depot of the organism) is still present in 22% of the population. In the child population, the groups at high risk for the development of ID are children of the first 3 years of life and adolescents, which are promoted by several causes and, above all - increased body demand for iron during periods of intensive growth. [1, 3, 4, 12.14]. However, iron deficiency states (IDC) do not develop in all, but only in cases where the child's body is simultaneously affected by several adverse factors. B Increased iron loss associated with diapedesic blood loss through the intestine when whole unmodified milk and kefir are used in excess of 400 ml per day [4-10] plays a significant role in the emergence of IDC in young children. Long-lasting ID leads to the development of IDA and is accompanied by pronounced impairments of various functions and systems of the body, the effects

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 05 May 2022
DOI: 10.47191/ijcsrr/V5-i5-20, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

of which can persist for a long time and even for a lifetime, despite the replenishment of iron reserves by ferropraparates (FP). And although the treatment and prevention of IDC is not a big problem at the present stage, nevertheless, the global medical community attaches global importance to this problem, due to the severe consequences of IDC. [1, 2].

Thus, alternative and complementary IDA treatments such as lifestyle changes, especially dietary interventions, have been proposed. Diet is one of the main modifiable factors for restoring normal iron levels in children with IDA, and in addition, dietary interventions as part of lifestyle interventions also improve iron deficiency in children with IDA. Increasing evidence suggests that dietary interventions that promote IDA treatment in children may also improve clinical effects. In turn, anaemia is a socially significant pathology that largely determines the life expectancy and quality of life of the population, the formation of other diseases. [7, 9]. The assessment of anaemia incidence and its consequences should be taken into account in the integrated assessment of health and habitat during the socio-hygienic and nutritional monitoring. [1; 4; 5]. As an alimentary dependent pathology, anaemia shares similar causes and prevention pathways with other micronutrient deficits [8; 11]. These facts determine the need to find the reasons for this situation in order to further justify the prevention of anaemia. [3]. In turn, anaemia is a socially significant pathology that largely determines the life expectancy and quality of life of the population, the formation of other diseases [7; 9]. The assessment of anaemia incidence and its consequences should be taken into account in the integrated assessment of health and habitat during the socio-hygienic and nutritional monitoring. [1; 4; 5]. Belonging to the group of alimentary-dependent pathologies, anaemia have common similar causes and directions of prevention with other micronutrient deficits. [8; 11]. These facts determine the need to find the reasons for this situation in order to further justify the prevention of anaemia [17.18].

CONCLUSION

In this regard, dietary guidance is important among the preventive measures. Iron is present in food in heme and non-heme forms. Sources of the gem iron are products of animal origin (meat of animals and birds), non-gem iron - plant products (vegetables, fruits, cereals), as well as milk and fish. Most of the imported iron (about 90%) comes from non-chemical forms. [22-24].

The level of absorption of the heme gland is 20-30%, its absorption is not affected by other food components. At the same time, animal protein (meat of animals, birds, fish), ascorbic, lactic and succinic acid are significant influence on the absorption of non-volatile. Components such as soy protein, calcium, fitates, tannins, dietary fibres, polyphenols (beans, nuts, tea, cheese and some vegetables) inhibit iron absorption. Ultimately, due to its high bioavailability, the heme gland is the main food source of this trace element. [5,6,12].

A full-fledged and balanced diet on the main ingredients allows only “to cover” the physiological need of the body for iron, but not to eliminate its deficiency;

The next step of IDA prophylaxis is the administration of iron, or vitamin mineral complexes with iron, containing at least 50 mg of elemental iron in one tablet. [12].

Therefore, a more thorough scientific study is needed to further investigate the beneficial effects of dietary interventions on iron deficiency anaemia in pre-school children.

REFERENCES

1. Baranova T.A., Turchaninov D.V., Vilms E.A., Turchaninova M.S. (2007). Prevention of the shortage of selenium in various groups of the population of Omsk region // Methodical recommendations MP 2.3.7.006 –07. – Omsk: Omsk State Medical University.
2. Vilms E.A., Turchaninov D.V., Gogadze N.V., Sokhoshko I.A. (2013) Supervision of nutrition of the population of the Russian Federation: current state and prospects of development // Fundamental research. 7-1. – pp. 31-35.
3. Impact of nutrition and lifestyle on the health of the population / Turchaninov D.V., Vilms E.A., Boyarskaya L.A., Turchaninova M.S. // Food industry. 2015. – pp. 8-11.
4. Vatutin N.T., Taradin G.G., Kanisheva I.V., Venzhega V.V. (2019) Anaemia and iron deficiency in patients with chronic heart failure. // Cardiology. 59. – pp. 4-20.
5. Hygienic justification and assessment of the effectiveness of modern technologies for the prevention of anemia related to nutrition / Glagolev O.N., Turchaninov D.V., Boyarskaya L.A., Bogdashin I.V., Vilms E.A. / Public health and habitat environment. – 2014. – 7. (256). – pp. 37-39

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 05 Issue 05 May 2022
DOI: 10.47191/ijcsrr/V5-i5-20, Impact Factor: 5.995
IJCSRR @ 2022
www.ijcsrr.org

6. Butler L.I., 2001; Zakharova I.N., Zaltnikov A.L., Malova N.E. (1997) Iron-deficiency anemia 2003. Russian medical journal. 19. – pp. 1234-1242.
7. Zharylkasynova G.Z. (2021) Anemia: distribution, etiological structure, pharmaco – epidemiology and pharmaco-economics of antianemic drugs in the population of Uzbekistan / autoabstract of the dissertation of the doctor of sciences. – Tashkent. – pp. 3-5.
8. Zubrikhina G.N., Blindar V.N., Matveeva I.I. (2016) Differential diagnosis of anemic syndrome with true iron deficiency and functional iron deficiency in patients with chronic diseases (malignant neoplasms). // Therapeutic archive. 4. – pp. 61-67.
9. Study on nutrition in Uzbekistan. United Nations Children's Fund. – Tashkent. 2019.
10. Konodovodova E.N. Burlev V.A., Tyutyunnik V.L., Yakunina N.A. (2012) Latent Iron Deficiency in Pregnant Women. Russian Herald of Obstetrics-gynecologist. 2. – pp. 41-46.
11. Kurymbaeva B.K. (2011) Anemia of pregnant women. // Medicine and ecology. 1. – pp. 74-76.
12. Jushninikov, V. A., Dakmak A. I., Ryzhko V. B. et al. (2011) Implementation of prevention of iron deficiency anaemia in young children of g. – Minsk. /Medical Journal. 3. – pp. 64-67.
13. Kononova S.V., Lovtsova L.V., Zueva I.A. Farmako-economic analysis of the use of iron medications for the treatment of iron deficient anaemia.
14. Comprehensive study of the health of the population and the habitat at the regional level / Sokhoshko I.A., Shirinsky V.A., Dalmatov V.V., Oglesnev G.A., Demchenko V.G., Goleva O.P., Borovsky I.V. /Scientific Nik 2006. – 3 (37). – pp. 216-219.
15. Leus L.I. Mineicheva Yu.V. Chronic oral: sepsis as a risk factor of systemic diseases // Healthcare. 2002. – 2. – pp. 26-29
16. Leshkevich V.V. 2017; Gromova O.A.2004; T.S. Sharmanov. Nutrition - the most important factor of human health. – Almaty: Asem–Systems, 2010. – 480 p. Iron Deficiency Anemia.
17. Method of collection, processing and complex assessment of indicators of the II stage of social and hygienic monitoring at the municipal level / Shirinsky V.A., Novikova I.I.,Gulyaev E.A., Brusentsova A.V., Storozhenko A.E., Kolbenev Yu.N., Nikitin S.V., Rodkin V.P. // Methodical recommendations. – Omsk. 2002.
18. Turchaninov D.V., Vilms E.A., Turchaninova M.S., Shupina M.I. (2013) Eating disorders of the population of Western Siberia as a risk factor for circulatory system diseases // Preventive and clinical medicine. 2 (47). – pp. 56-61.
19. Turchaninov D.V., Brusentsova A.V., Yunatskaya T.A., Glagoleva O.N., Vilms E.A., Boyarskaya L.A., Rezanova N.V., Turchaninova M.S., Bogdin V.I., Boyarskaya. A. (2012). In the population of Omsk region // Methodological recommendations MP2.3.7/2.3.1.001-2 / Omsk State Medical Academy. – Omsk.
20. Turchaninov D.V. (2012). Complex assessment of the health and quality of life of teenagers of the city of Kemerovo and factors influencing him. Turchaninov D.V., Anfinogenova O.B., Scomorin M.S. // Modern research of social problems: electronic scientific journal. 5. – p. 31.
21. Turchaninov D.V. (2009) Concept of development of the pathology management system related to irrational nutrition, and directions of its introduction / Turchaninov D.V., Vilms E.A., Boyarskaya L.A. Informatics and management system. 4 (22). – pp. 152-154.
22. Shirlina N.G., Stasenko V.L., Vyuskov D.M., Leonov O.V. (2015) The main directions of improvement of breast cancer prevention in the Omsk region //Modern problems of science and education. 2–1. https://scienceeducation.ru/ru/article/viewid 19203.
23. Lopez A, Cacoub P, Macdougall IC, Peyrin-Biroulet L (2016). Iron deficiency anaemia. Lan-cet387: 907-916. [Crossref]; Clénin GE (2017) The treatment of iron deficiency without anaemia (in oth-erwise healthy persons.
24. SwissMedWkly 147: w14434. [Crossref]; Good-nough LT, Nemet E. (2018) Iron deficiency and re-lated disorders. Greer JP, Arber DA, Glader BE, List AF, Means RT, Rodgers GM (eds). InWintrobe's Clinical Hematology. Wolters Kluwer Health. 615-43.; Looker A, Dallman P, Carrol M, Gunter E, John-son C (1997).

Cite this Article: Shaykhova G.I., Kurbanova Kh.A. (2022). Prevention of Iron Deficiency Anaemia in Pre-School Children. International Journal of Current Science Research and Review, 5(5), 1575-1579