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MANIFESTATION OF ZINC DEFICIT IN KARACHI PAKISTAN; A CROSS SECTIONAL STUDY

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ABSTRACT

The research study was aimed to document the awareness of zinc importance in human health as, Zinc is involved in numerous aspects of cellular metabolism. Zinc is so important because it is found in every tissue in the body and is directly involved in cell division. It is a powerful antioxidant, helping to prevent cancer, but zinc also is directly involved in the maintenance of that ideal hormone levels. Zinc deficiency is characterized by growth retardation, loss of appetite, and impaired immune function. zinc deficiency causes hair loss, diarrhea, delayed sexual maturation, impotence, hypogonadism in males, and eye and skin lesions ,Weight loss, delayed healing of wounds, taste abnormalities, and mental lethargy can also occur.The participants was selected randomly and asked to fill a questionnaire form that presents with the symptoms related to zinc deficiency. The majority of the peoples are found to be having just a few symptoms of zinc deficiency while minority of the peoples are facing symptoms related to zinc deficiency problem and they are still unaware of this. The majority of the group of populations is unaware that they are concerned with the symptoms which are mainly caused due to the deficiency of zinc and it should not be neglected. They should readily recommend those diets or zinc supplements which could be helpful to reduce such symptoms.

Keywords: zinc deficiency, Attention deficit-hyperactivity disorder (ADHD), immune system, Loss of appetite.

Introduction

Zinc is one of the essential trace elements and, as such, a member of one of the major subgroups of the micronutrients that have attained such prominence in human nutrition and health. Zinc (Zn) is a transition metal belonging to group 12 of the periodic table. As an "essential trace element" zinc has substantial biological importance for plants and animals.[1] Zinc is not found in large amounts in plant foods, but as far as can be detected, vegetarians have similar zinc status to non-vegetarians. The best, common plant sources of zinc are legumes, nuts, seeds, and oatmeal. The exceptional ability of the zinc atom to participate in strong but readily exchangeable ligand binding, together with the notable flexibility of this metal's coordination geometry, has proved to be extraordinarily useful in biological systems [2]. Zinc is ubiquitous in sub cellular metabolism. It is, for example, an essential component of the catalytic site or sites of at least one enzyme in every enzyme classification [3]. Altogether, several hundred zinc metallo-enzymes have been identified in the plant and animal kingdoms. Zinc is important for a healthy immune system, properly synthesizing DNA, promoting healthy growth during childhood, and healing wounds. The human body needs zinc to activate T lymphocytes (T cells).T cells help the body in two ways: by controlling and regulating immune responses attacking infected or cancerous cells.[4,5] Zinc deficiency can severely impair immune system function. According to a study published in the American Journal of Clinical Nutrition, "zinc-deficient persons experience increased susceptibility to a variety of pathogens" [6] .zinc is so important because it is found in every tissue in the body and is directly involved in cell division. It is powerful antioxidant, helping to prevent cancer but zinc also is directly involved in the maintenance of ideal hormone level, helping treat the common cold. Wound healing Zinc may help protect the skin and mucosal membranes. Zinc prevents cellular damage in the retina, which helps in delaying the progression of AMD and vision loss, according to a study published in the *Archives of Ophthalmology*.[8] Zinc may also be effective for the treatment of: Acne - One study, published in JAMA, showed promising results of zinc sulfate for the treatment of acne. Attention deficit-hyperactivity disorder (ADHD) Osteoporosis Preventing and treating pneumonia.[9] Usually zinc deficiency is due to insufficient dietary intake. However, it may also be due to mal absorption and chronic illnesses such as diabetes, malignancy (cancer), liver disease, sickle cell disease. Signs of zinc deficiency include: loss of appetite anemia slow wound healing abnormal taste depressed growth altered cognition diarrhea hair loss. Organ systems known to be affected clinically by severe zinc deficiency states include the epidermal, gastrointestinal, central nervous, immune, skeletal and reproductive systems [10]. Excessive zinc intake can be harmful as it suppresses copper absorption, Research. Adverse effects of severely high zinc intake may include: Nausea, Vomiting ,Loss of appetite ,Stomach pains ,Headaches, Diarrhea.[11]

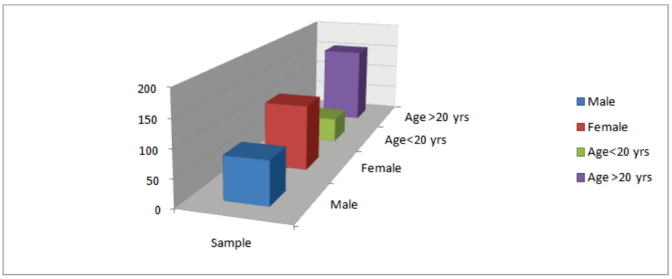
Table 1: Recommended Dietary Allowances (RDAs) for Zinc [7]

Age	Male	Female	Pregnancy	Lactation
0–6 months	2 mg*	2 mg*		
7–12 months	3 mg	3 mg		
1–3 years	3 mg	3 mg		
4–8 years	5 mg	5 mg		
9–13 years	8 mg	8 mg		
14–18 years	11 mg	9 mg	12 mg	13 mg
19+ years	11 mg	8 mg	11 mg	12 mg

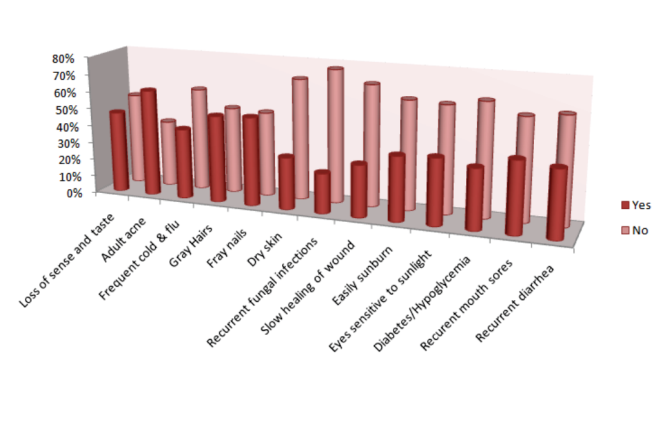
Methodology:

The primary focus of this research survey was to document the awareness of zinc importance in human health. The survey "zinc deficiency in Pakistan" was conducted quantitatively on the sample population of 200 peoples. The participants was selected randomly and asked to fill a questionnaire form with 14 effortless Yes/No questions , that presents with the symptoms related to zinc deficiency.

Observations:



Graph A: Y-axis representing the number of samples of 200 peoples and x-axis representing the samples of male, samples of female, samples of peoples with age <20 years and samples of peoples with age >20years.



Graph B: Y-axis representing the number of samples of 200 peoples and x-axis representing the symptoms which may appears due to the deficiency of zinc.

Result:

According to graph A results are found that from 200 samples 40% samples are of Males, 90% samples are of females in which 25% samples are of age below 20 years and 148% samples are of age above 20 years. According to graph B results are found to be that 47% peoples are related to the problem of loss of sense and taste, 61.50% peoples are infected with adult acne, 40.50% are having frequent cold and flu problem, 50% peoples are chasing the problem of grey hairs and 51% peoples have fray nails, 30% peoples are with dry skin, 23% peoples are confronting recurrent fungal infections, 30% peoples facing difficulty in slow healing wound, 37% peoples get easily sunburn and 38% people's eyes sensitive to sunlight, 34.50% peoples are hypoglycemic patients (diabetes), 41% peoples have problem with recurrent mouth sores and 38.50% peoples are fed up with recurrent diarrhea.

Discussion:

We estimated that majority of the group of populations are unaware that they are concerned with the symptoms which are mainly caused due to the deficiency of zinc and it should not be neglected. They should readily recommend those diets or zinc supplements which could be helpful to reduce such symptoms. People should aware that a little physiological abnormality should never be taken for granted it should be very harmful for health if this deficiency grows slowly time by time.Improve all aspects of your health and well-being by making sure you get enough zinc in your diet. Many people's know about zinc for its immune boosting properties, but this mineral is actually a wonder of health benefits. In one review on the importance of zinc, scientists write that "zinc is such a critical element in human health that even a small deficiency is a disaster."Zinc is so important because it is found in every tissue in the body and is directly involved in cell division. It is a powerful antioxidant, helping to prevent cancer, but zinc also is directly involved in the maintenance of that ideal hormone levels.Zinc deficiency makes both men and women infertile and causes low libido. Low zinc also exacerbates the effects of stress on the body and accelerates aging.Additionally, adequate zinc is necessary for optimal physical performance, energy levels, and body composition. Zinc affects protein synthesis and is required for proper function of red and white blood cells. It is highly concentrated in our bones, the pancreas, kidneys, liver and retina. Be aware that zinc deficiency is not only prevalent in malnourished individuals or developing countries and it is common in areas where the population eats a large amount of cereal and grain proteins.Zinc deficiency occurs from not eating enough zinc-rich foods. Zinc is found in large concentrations in meat, some seafood-oysters contain the largest concentration of all known foods-and dairy. Whole grains and legumes contain zinc, but it is bound to phytates in the plant-bases foods, making the zinc inaccessible by the body. Vegetarians are at greatest risk of zinc deficiency, but alcoholics and people with digestive issues and poor stomach acid are also highly susceptible. Taking medications may produce zinc deficiency and low levels of almost all essential nutrients. Women on the birth control pill or on hormone replacement therapy are at greater risk of deficiency.Low zinc will produce an altered sense of taste leading to cravings of saltier, sweeter food. Deficiency can also be indicated by diarrhea, low energy, chronic fatigue, infertility, poor immunity, bad memory, inability to focus, ADD symptoms, slow wound healing, nerve dysfunction, and ringing in the ears.Take note that symptoms may be present, but because they are so diverse and associated with other health conditions, it's often hard to make the link to zinc deficiency without a test. The best way to test your zinc level is to get a red blood cell zinc test and continually monitor zinc levels when supplementing. Other methods, such as a zinc taste test, provide another option. They tend to be less reliable, especially for people with moderate zinc deficiency.Currently, there are no programs or policy initiatives in place to specifically improve the zinc intakes of human populations. This is true with respect to improving the zinc supply in foods (e.g. interventions to improve intakes of animal products which are good sources of zinc or to reduce phytates in foods which impair zinc absorption). Further, there are no examples of programs utilizing supplemental zinc to improve zinc status, although some are beginning to use supplemental zinc as adjuvant therapy during diarrheal illness, based on research demonstrating the efficacy of zinc in shortening the duration of the current episode and prolonging the time until the next episode in pediatric populations with heavy disease burden. Because of the general lack of policy or programmatic initiatives to address zinc deficiency, we project that the magnitude and distribution of zinc deficiency will remain the same for the years and for this we start a campaign in the form of these articles to built awareness and resolves the health issues in our main the general public[12-17]

Conclusion:

Our symptoms-based survey of zinc on a population group with 200 samples of people results concluded that majority of the peoples found just a few symptoms of zinc deficiency while minority of the peoples are facing symptoms related to zinc deficiency problem and they are still unaware of this problem.

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