

Q1- Is vitamin D deficiency a public health problem in Australia?

Vitamin D deficiency can be considered as a public health problem in Australia, particularly in recent times. Approximately one third of the adult population of Australia adults are discovered to be affected by vitamin D deficiency, as per a study that took into consideration above 11,000 adult citizens from various parts of the nation. This was then regarded as being the foremost national study to assess the vitamin D levels of Australian residents. The sections that were at the highest risk of such a deficiency included women, the aged, the overweight, people who are involved in fewer than 2.5 hours of bodily activity on a weekly basis, and individuals who belong to a non- European lineage. One of the primary reasons for this recent pandemic has been the stress on avoiding being in the sun for too long for fear of developing serious health problems such as cancers. It is for this reason that people, over the years, have been advised to work indoors or to shield their skin from the sun when working outdoors in the sunlight.(1)

The outcomes indicated vitamin D deficiency as being a significant public health concern for the nation of Australia that needs prompt consideration. Vitamin D deficiency is soon becoming a significant health problem all over the world as well. It is evident from the outcomes of the research carried out that, even though there is no dearth of vitamin D enriched sunlight, the residents of Australian are far from being immune to such a deficiency.(2)

Reduced amounts of vitamin D can give rise to a range of grave, possibly life-threatening, ailments including softened bones; ailments that give rise to progressive muscle weakness causing a heightened threat of falling, osteoporosis, cardiovascular sickness, and various kinds of cancer as well as type 2 diabetes. A condition such as Rickets could be tracked down to approximately the 1600s, during which a pandemic broke out among children all over the world due to Vitamin D deficiency.

The insufficient absorption of UV rays eventually causes children to develop a range of health conditions like growth impedance, muscle feebleness, skeletal malformations, hypocalcaemia, and a range of other disorders. In the later part of the 19th century, autopsies that were carried out in the region of the Netherlands reached the conclusion that 80-90 per cent of infants were victims of Rickets. The cases of people suffering from rickets noted in the case of Sydney hospitals between the 2003 and 2004 have risen to practically double. This considerable increase could be accredited to the rising number of

migrants in the nation of Australia, a number of whom can be assessed as being at a greater risk of the deficiency of vitamin D as compared to others.(3)(4)

Due to the increase in the occurrence of the deficiency of vitamin D, afflictions like osteoporosis in Australia's elderly residents has become the cause of numerous Australians above sixty years of age being affected by such a rapidly spreading condition in the case of aged residents. Osteoporosis is primarily a condition of excessively fragile and delicate bones, due to which major fractures can take place with a minor bump or tumble. An organisation named Osteoporosis Australia has projected that one half of all the women, along with one third of the total number of men all men above the age of sixty years will bear the destructive consequences of osteoporosis.(3)

Osteoporosis is also considered to be a silent ailment, as in a majority of cases, the sufferers are unaware that they are afflicted with it till the time they suffer a fracture to any of their bones due to a fall. The country's vitamin D deficit amounts in current times has been steadily increasing, primarily because of factors like the long term accomplishment of government initiatives such as like Cancer Council Australia which have boosted the overall population's consciousness of the threats and dangers linked with prolonged exposure to the sun, along with a range of skin cancers.(4) In the year 1988, the 'sun smart' initiative was launched, which considerably affected the population's attitude and actions concerning exposure to the sun. The accomplishment of this initiative minimised the sunburn proportion by 50 per cent, which is also what researchers feel has given rise to an increase in the number of vitamin D deficiencies all over the nation of Australia.(5)

Along with the lessening of sun exposure in the case of Australia people, there has also been a reduction in terms of dietary intake. This is primarily due to the fact that a huge majority of residents have stopped consuming fatty fish oil, in the form of tablets, as a means of stabilising the amount of vitamin D in the body.(5)

Q2- What action is currently being taken in Australia to address Vitamin D deficiency at a population level?

Given the fact that vitamin D deficiency is continually on the rise in Australia, it is vital that the government and other health authorities take the necessary steps to ensure that this pandemic is

brought under control. The drastic rise of vitamin D deficiencies in Australia has alarmed the government, which is why a compulsory fortification of the necessary vitamins and minerals. Primarily due to the rise in cases of vitamin D deficiency all over the nation of Australia, the federal government has initiated a range of such fortification of the necessary vitamins as well as minerals (including vitamin D). This has been done in the case of a range of food items such as eatable oil spreads as mentioned in the Australian Standard. Additionally, it has also been considered necessary for every food production unit manufacturing table spreads like butter and margarine must have nothing less than 55 mg of vitamin D per kilogram, as a reaction to a rising public health necessities.(5)(6)

In reply to current advances, a range of public strategies are being looked into once again so as to make sure that vitamin D is unmistakably being assessed. Due to the deficiency of this vitamin resurfacing, the reference value rules for each nutrient were recognised, which then resulted in the creation of the prescribed dietary vitamin D references. These dietary vitamin D strategies are taking into consideration restricted exposure to UVB sun rays, which is 5 µg/day for babies and young children, the same for adults till the age of fifty years, 10 µg/day for adults older than fifty years of age, and 15 µg/day for adults older than seventy years of age.(7)

As far as treatment is concerned, the everyday necessities of this vitamin are roughly an approximate 800-100IU so as to ensure health. In a majority of cases, this cannot be obtained from sun exposure. Additionally, a greater amounts is necessary for those individuals who have already been identified as being deficient. In the case of average deficiencies, supplements can be taken orally along with the diet at amounts of 3000 to 5000 IU on a daily basis for anywhere between six to twelve weeks, after which an extended minimised amounts of 1000 to 2000 IU on a daily basis so as to stabilise reserves in the human body.(7)(8)

In cases of extreme deficiencies, the government has come forth with treatment procedures that involve 'megadoses' in which a patient is given doses approximately 100 000 IU in strength so as to help in boosting stores at a rapid rate. This helps in ensuring that physical wellbeing is re-established to avoid additional illnesses or ailments.(8)

Additionally, public policies are vital, so as to ensure the necessary vitamin D consumption in terms of public health and nourishment, particularly in the case of industrialized nations such as Australia, as well

as developing nations. Groups of migrant populations, who have dark skin and who are migrating to northern areas, particularly the ones who cover their bodies extensively for religious purposes are considered to be at a far greater risk for such as vitamin deficiency. Also, breastfed infants of such mothers are also said to be at a greater risk unless they are given the necessary supplements of vitamin D.

Teens and very young adults find themselves being less open to the rays of the sun because of work and a hectic lifestyle. Provisions concerning overexposure are acceptable, but average sun exposure around midday is particularly vital for elderly adults.(9)

The inadequacy of Vitamin D is so common that a blend of food strengthening for the complete population and personal screening for residents in sets who are at risk for such a deficiency is to be instituted. Clinical analysis and population statistics of such levels needs to be vital for population health assessment and evaluation. Consciousness by the universal public, along with healthcare providers as well as health insurance units, concerning the necessity of vitamin D sufficiency will have a powerful effect on the health as well as wellbeing of not only Australian children but also adults.(7)

Mandate have thus been put in order for the strengthening of milk, (inclusive of milk formulas, precipitates as well as evaporated milk), soft foods from milk (such as yoghurt, curd, cottage cheese and a range of other products) as a vital means for the prevention of lack of vitamin D, in Australia. International organisations like the WHO, UNICEF and a range of other significant units have been urged to endorse fortification as a vital element of health and wellbeing in Australia. Also, it has been recommended that every health system must integrate routine clinical analysis of 25(OH)D amounts for residents who are discovered as being at risk as well as supplementing of vitamin D as a form of routine preventive strategies among specific age groups. The acceptance of this pandemic places an obligation on the Australian government to take the necessary steps to regulate the compulsory fortification and evaluation of compliance by the food and medicinal sectors.(9)

Q3- What strategies are recommended for future focus to reduce the burden from Vitamin D deficiency in Australia?

The amount of Vitamin D that the body receives naturally is dependent on a number of factors, such as the location, the colour of the person's skin, the degree to which the skin is covered on a regular basis and the occurrence of such a deficiency in the family or community. When considering strategies for

future emphasis in order to minimise the rates of Vitamin D deficiency in Australia, it is vital to consider strategies that focus on children and babies. The vital factor, as far as the advancement of vitamin D deficiency in the case of young children is the vitamin D level of the mother. It is necessary that pregnant women, particularly the ones who wear veils or the ones who have dark skin, ensure that their concentration of serum 25-OHD is assessed within the first three months of the pregnancy. In cases where the women are reasonably to majorly deficient in this vitamin, pregnant females must be prescribed 3000–5000 IU on an everyday basis till the time the concentration of serum 25-OHD reaches beyond 50 nmol/L.(9) Such treatments must not be inclusive of vitamin A, which might give rise to fetal poisonousness. Post the attaining of such a serum concentration, the pregnant mothers need to be given 400 IU on an everyday basis, along with those expectant women who have a mild deficiency. Regular vitamin D supplementing for pregnant females is a debateable topic, and till the time local data is accessible on the occurrence of such a deficiency, this is not suggested.(10)

Another strategy could be the endorsing of breastfeeding for each and every infant in Australia. Having said that, breast milk is looked upon as being an inadequate source of this vitamin. Paediatricians are of the opinion that the supplementing of every breastfed child with this vital vitamin till the time of their weaning is necessary. Though such recommendations have already been implemented in other nations, it requires research before they can be implemented in Australia. For this, data needs to be available on the status of this vitamin in the case of infants at a lower risk of deficiency, breastfed young ones of mothers who wear veils or dark-skinned mothers must be given supplements with an approximate 400 IU of vitamin D on a daily basis till the time they are around one year old. A range of vitamin D treatments are also accessible at hospital drugstores.(10)

In the case of infants and toddlers, it is important to note that even though a majority of healthy infants in Australia receive the necessary amount of sunlight exposure so as to sustain the necessary vitamin D amounts, a considerable number of people in the increasingly temperate regions develop minor forms of vitamin D deficiency in the winter season. In the case of Tasmania, a total of eight per cent of children who are eight years of age and sixty eight percent of children who are sixteen years of age have serum 25-OHD concentrations that are lower than 50 nmol/L. If the younger population can be motivated to take part in a range of everyday outdoor tasks and play, blanket vitamin D supplementing for infants and teenagers is not necessary.(11)

Having said that, children who have dark skin, those who wear veils, those who are exposed to minimal degrees of sunlight or the ones who possess any kind of medical problem, need to be at the receiving end of 400 IU of this vitamin on a daily basis (for example, in the form of a multivitamin tablet or capsule) to avoid the occurrence of vitamin D deficiency. Additionally, the siblings of any child who has been diagnosed with such a deficiency also needs to be checked. The aid of the local groups as well as that of the cultural units will be of primary importance when it comes to making sure that there is distribution of such prevention procedures and strategies. However, in a majority of cases, where the deficiency is minor, the matter can be resolved by ensuring that the affected person is exposed to the sun for around five to fifteen minutes on a daily basis.(10)(11)

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