

## **Jeevan Bindi : Issues and Challenges**

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### **Abstract**

*The Jeevan Bindi or the Life-Saving Dot seems like a brilliantly simple idea. According to the claimers the iodine-coated bindis will provide users with their daily dose of the essential element through the skin on their foreheads. Dr PrachiPawar, president of the Neelvasant Medical Foundation and Research Centre that partnered with Grey to distribute the bindis in Nashik, explains that the stickers, which are coated with 150-200 micrograms of iodine, are supposed to work like a nicotine patch. Dr ChandrakantPandav, professor and head of the Centre for Community Medicine at the All India Institute of Medical Sciences says that the body will take up only what it requires but it has to go internally first," said "If I have 500 micrograms and my body needs only 150 micrograms, the rest will be excreted in urine. Dr. Pandav said applying iodine to the skin might work, provided that it is in a high concentration. A solution to a medical problem like iodine deficiency typically needs many tests and the success of the Jeevan Bindi would depend on passing those tests. "Urinary iodine estimation is the gold standard to know what is happening to the iodine metabolism, the second one is radio-iodine uptake, and the third is the thyroid hormones." There has been no follow-up in the Jeevan Bindi campaign to see if the bindi-wearing women's iodine-related health problems have been addressed. But the idea of incorporating Iodine in Bindi or Sticker which is used by many of Indian women as culture, custom, beauty tip and fashion is a good idea. Where there is less work naturally there is lot of scope for research in life science. So its responsibility of life science people to look into the possibilities of iodine bindi scientifically by more and more research, thus contributing to the betterment of mankind health.*

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## Introduction

The Jeevan Bindi or the Life-Saving Dot seems like a brilliantly simple idea. According to the claimers the iodine-coated bindis will provide users with their daily dose of the essential element through the skin on their foreheads. "It's the difference between life and death," Grey For Good, the philanthropic arm of Singapore-based direct marketing and advertising firm Grey Group, claimed in a video that has received wide media coverage. Dr Prachi Pawar, president of the Neelvasant Medical Foundation and Research Centre that partnered with Grey to distribute the bindis in Nashik, explains that the stickers, which are coated with 150-200 micrograms of iodine, are supposed to work like a nicotine patch. "The absorption [of iodine] is subdermal through the skin," said Pawar who is an ophthalmologist. "What is required in a day is only 150-200 micrograms. When there is a deficiency, only then the absorption takes place."

If we go into deep, the Jeevan Bindi is supposed to function on the same principle as the iodine patch test, in which a solution of iodine is applied to an arm or abdomen. If the iodine disappears, the person who is undergoing the test may have an iodine deficiency, which is indicated by the fact that the solution was quickly absorbed by the skin. However, medical literature is also replete with references to how most of any iodine solution applied to the skin evaporates and less than 12% is actually absorbed by the body. If 150 micrograms had to be available in the thyroid gland and other tissues where iodine is processed, a far bigger dose may be required on the skin.

## What is Iodine?

Iodine is a trace element and is essential micronutrient that is naturally present in some foods, added to others, and available as a dietary supplement. Iodine is an essential component of the thyroid hormones thyroxine (T4) and triiodothyronine (T3). Thyroid hormones regulate many important biochemical reactions, including protein synthesis and enzymatic activity, and are critical determinants of metabolic activity. They are also required for proper skeletal and central nervous system development in fetuses and infants. Getting enough iodine is important for everyone, especially infants and women who are pregnant. Iodine may have other physiological functions in the body as well. For example, it appears to play a role in immune response and might have a beneficial effect on mammary dysplasia and fibrocystic breast disease

On the whole human body contains minerals which are inorganic elements found in body fluids and tissues. The important macro minerals are sodium, 14 Food

Groups potassium, calcium, phosphorus, magnesium and sulphur. While zinc, copper, selenium, molybdenum, fluorine, cobalt, chromium and **iodine** are micro minerals. They are required for maintenance and integrity of skin, hair, nails, blood and soft tissues. They also govern nerve cell transmission, acid/base and fluid balance, enzyme and hormone activity as well as the blood- clotting processes.

### **Common Nutrition Problems in India**

Protein Energy Malnutrition (PEM), micronutrient deficiencies such as vitamin A deficiency (VAD) , Iron Deficiency Anemia (IDA), Iodine Deficiency Disorders(IDD) and vitamin B-complex deficiencies are the nutrition problems frequently encountered, particularly among the rural poor and urban slum communities.

### **IDD(Iodine deficiency disorders)**

According to “Dietary Guidelines for Indians – A Manual” issued by National Institute of Nutrition, ICMR, Hyderabad, *Iodine deficiency disorders (IDD)* are very common among large sections of population in several parts of the country. About 167 million are estimated to be living in IDD endemic areas. Iodine deficiency causes goiter (enlargement of thyroid gland in the neck), neonatal hypothyroidism, and cretinism among new borns, mental retardation, delayed motor development, stunting, deaf-mutism and neuromuscular disorders. The most important consequence of iodine deficiency in mothers is cretinism in which the children suffer from mental and growth retardation right from the birth. About 90,000 still-births and neonatal deaths occur every year due to maternal iodine deficiency. Around 54 million persons are estimated to have goiter, 7.2 million have cretinism and 6.6 million suffer from mild psycho-motor handicaps. The surveys conducted by the Central and State Health Directorates, Indian Council of Medical Research (ICMR) and Medical Institutes have clearly demonstrated that not even a single State/Union territory is free from the problem of IDD. Samples surveys have been conducted in 28 states and 7 Union territories which have revealed that out of 324 districts surveyed so far, 263 districts are IDD endemic, i.e. the prevalence of IDD is above 10 per cent.

Pregnancy is a demanding physiological state. In India, it is observed that diets of women from the low socioeconomic groups are essentially similar during prenatal, pregnant and lactating periods. Consequently, there is widespread maternal malnutrition leading to high prevalence of low birth weight infants and very high maternal mortality.

### **Requirement**

The amount of iodine one needs each day depends on their age. Average

daily recommended amounts are listed below in micrograms (mcg).

| <b>Life Stage</b>             | <b>Recommended Amount</b> |
|-------------------------------|---------------------------|
| Birth to 6 months             | 110 mcg                   |
| Infants 7–12 months           | 130 mcg                   |
| Children 1–8 years            | 90 mcg                    |
| Children 9–13 years           | 120 mcg                   |
| Teens 14–18 years             | 150 mcg                   |
| Adults                        | 150 mcg                   |
| Pregnant teens and women      | 220 mcg                   |
| Breastfeeding teens and women | 290 mcg                   |

### **What foods provide iodine?**

Iodine is found naturally in some foods and is also added to salt that is labeled as “iodized”. We can get recommended amounts of iodine by eating a variety of foods, including the following:

- Fish (such as cod and tuna), seaweed, shrimp, and other seafood, which are generally rich in iodine.
- Dairy products (such as milk, yogurt, and cheese) and products made from grains (like breads and cereals), which are the major sources of iodine.
- Fruits and vegetables, which contain iodine, although the amount depends on the iodine in the soil where they grew and in any fertilizer that was used.
- Iodized salt, which is readily available.
- Processed foods like Iodine fortified floors etc.

### **What kinds of iodine dietary supplements are available?**

Iodine is available in dietary supplements, usually in the form of potassium iodide or sodium. Many multivitamin-mineral supplements contain iodine. Dietary supplements of iodine-containing kelp ( seaweed) are also available.

### **National Iodine Deficiency Disorders Control Programme**

The Government is implementing the [National Iodine Deficiency Disorders Control Programme](#)(External website that opens in a new window) (NIDDCP) formerly known as National Goiter Control Programme (NGCP) since 1962 a 100% centrally assisted programme with a focus on the provision of Iodated salt, IDD survey/ resurvey, laboratory monitoring of Iodated salt and Urinary Iodine excretion, health education and publicity. The annual production of Iodated salt is about 52.00 lakh M.T. Government of India has banned the sale of non iodated salt in the entire country for direct human consumption under Prevention of Food Adulteration Act,

1954 with effect from 17th May, 2006. For effective implementation of the Programme at the State level, the Ministry of Health is providing financial assistance to all the States/UTs for establishment of an IDD Control Cell, and IDD Monitoring Laboratory in addition to assistance for conducting surveys and Health Education & Publicity for consumption of iodized salt by the population. The Ministry of Health is also conducting information, education and communication.

#### **Does JeevanBindi work?**

**After all this discussion the question arises is Does Jeevan Bindi works?** Dr Chandrakant Pandav, professor and head of the Centre for Community Medicine at the All India Institute of Medical Sciences says that the body will take up only what it requires but it has to go internally first,” said “If I have 500 micrograms and my body needs only 150 micrograms, the rest will be excreted in urine. Dr. Pandav said applying iodine to the skin might work, provided that it is in a high concentration. There are instances in historical records of people applying Lugol’s solution, a concentrated iodine solution, to the neck area where the thyroid gland is located. But Pandav questions the use of the iodine bindi when it has been well established that ingesting iodine orally with salt or bread or even toffees is effective.

#### **Scope for Research**

A solution to a medical problem like iodine deficiency typically needs many tests and the success of the Jeevan Bindi would depend on passing those tests. “Urinary iodine estimation is the gold standard to know what is happening to the iodine metabolism, the second one is radio-iodine uptake, and the third is the thyroid hormones.” There has been no follow-up in the Jeevan Bindi campaign to see if the bindi-wearing women’s iodine-related health problems have been addressed. But the idea of incorporating Iodine in Bindi or Sticker which is used by many of Indian women as culture, custom, beauty tip and fashion is a good idea. Where there is less work naturally there is lot of scope for research in life science. So its responsibility of life science people to look into the possibilities of iodine bindi scientifically by more and more research, thus contributing to the betterment of mankind health.

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