POLICY ENVIRONMENT AND NATIONAL HEALTH PROGRAMMES: A CASE STUDY OF THE NATIONAL IODINE DEFICIENCY DISORDERS CONTROL PROGRAMME (NIDDCP) IN INDIA

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Key words:
Iodine Deficiency Disorders, Ban on sale of iodized salt, National Iodine Deficiency Disorder Control Program, Universal Salt Iodization, Institutional structure for decision making, Policy environment, Values

Contents:
Objective: To understand the complex policy environment in which National Health Programmes are operating, using case study approach
Design: A case study approach applying the criteria of policy formulation and policy implementation to National IDD Control Programme.
Setting: The decision-making process in policy making is based primarily on the recognition of a problem, for example a health problem, as a social or public health problem. The social problem and the policy governing its elimination is a multifactor process. The other factors involved, namely the information in hand, the values and beliefs of the population concerned and the formal and non-formal structure for decision making, are mainly influenced by the actual problem being tackled.
Results: The main information source leading to the genesis and implementation of the National IDD Control Programme (Social Problem or issue) has come from the academic bodies. In the context of Indian programme, efforts were primarily focused on formal and informal institutional structure for decision making for formulating the policy of universal salt iodization. The political support and commitment, backed by administrative infrastructure contributed to the achievement of nearly 50% coverage of adequately iodized salt at the household level. However, the situation has remained static for the last six years. As per the National Family Health Survey (NFHS) 3 conducted during 2005-06 the coverage of adequately iodized salt is 51%. This is hardly an increase in comparison to NFHS 2 conducted during 1998-99 when the coverage was 49%. There was a major setback to the programme when the Government's act of revoking the ban on the sale of non-iodized salt meant for human consumption in 2000. This retrograde step had resulted in putting brakes to a successful and important nutrition program. The major limiting factor in the implementation of NIDDCP was that the community perceptions about IDD and

iodized salt and their interests and beliefs (Values) were not explicitly considered as part of the implementation process. After five years of extensive re-advocacy to the government, the ban has been reinstated in 2005. However, the task now is to effectively implement the ban and build up a strong monitoring process linked to corrective decisions with participation of all key stakeholders.

Conclusion: In formulating National Health Programmes in a policy environment, scientific inputs (information), political will and administrative support (institutional structure for decision making) are necessary but not sufficient. One of the issues to be considered, especially when programmes have to be sustainable is pro-active recognition and inclusion of beliefs and interests (Values) of key stakeholders, which is vital in formulation and implementation of sustainable programmes.

Introduction:

Low Iodine dietary intake leads to increased mortality and a wide spectrum of disability ranging from overt cretinism to milder forms like goiter in all age groups in humans. According to WHO, Iodine deficiency is the single most preventable cause of mental retardation and brain damage. According to one estimate Iodine deficiency in diet leads to loss of 13 IQ points[1]. Iodine Deficiency Disorders (IDD) are estimated to result in loss of 2.5 million Disability Adjusted Life-Years (DALYs) (0.2% of total) globally[2]. More than 2 billion people worldwide continue to be at risk of Iodine deficiency disorders due to insufficient dietary intake (<150 µg per person per day). [3] Recognizing the importance of preventing IDD, the World Health Assembly adopted in 1990 the goal of eliminating iodine deficiency as a public health problem. In 1993, WHO and UNICEF recommended Universal Salt Iodization (USI) as the main strategy to achieve elimination of IDD.[4]

India is the second most populous country in the world with a population of 1027 million[5]. High prevalence of goiter and cretinism exists in Himalayan and sub-Himalayan goiter belt, from Jammu and Kashmir in the west to, to Arunachal Pradesh in east and along, this entire length, extending at least 500 kms south of the Himalayas into the flat sub-Himalayan terai (plains). In India, it is estimated that 200 million people are at risk of IDD whereas another 70 million suffer from goiter and other iodine deficiency disorders[6]. In India considering the public health importance of IDD in India, National Goiter Control Program (NGCP) was launched by Government of India in 1962. The program was renamed as National Iodine Deficiency Disorders Control Programme (NIDDCP) in 1992 and Universal Salt Iodization (USI) was identified as the main strategy to eliminate IDD from India. In 1997 salt iodization was made mandatory in India. Though the ban on sale of non-iodized salt was lifted in 2000, it was again reinstituted in 2005.

Despite the sufficient scientific data

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[1] Bleichrodt N, Born MP. A meta-analysis of research on iodine and its relationship to cognitive development. In: Stanbury JB, ed. *The damaged brain of iodine deficiency*. New York, Cognizant Communication, 1994: 195–200.

[2] The World Health Report 2002. Reducing Risks, Promoting Healthy Life, Geneva, World Health Organization, 2002.

[3] Iodine status Worldwide WHO Global Database on Iodine Deficiency. Department of Nutrition for Health and Development World Health Organization Geneva 2004.

[4] World Summit for Children – Mid Decade Goal: Iodine Deficiency Disorders. UNICEF–WHO Joint Committee on Health Policy. Geneva, United Nations Children's Fund, World Health Organization, 1994 (JCHPSS/94/2.7).

[5] Registrar General of India. Census of India, 2001. Registrar General of India Office, Government of India.

[6] Revised Policy Guidelines on National Iodine Deficiency Disorders Control Programme; IDD and Nutrition Cell; Ministry of Health and Family Welfare, Oct 2006.

availability, a national programme in place the current level of adequately iodized salt consumption at household level is only 51.6% (National Family Health Survey, NFHS 3, 2005-06) [7]. The levels of iodised salt consumption have stagnated over last half a decade or so and a paradigm shift and rejuvenated efforts are needed to attain the elimination goal of >90% households using adequately iodised salt. The dynamic evolution of NIDDCP in India provides a unique opportunity to study the interaction between research, policy and programme and identify solutions for the future. The current analysis was undertaken with an objective to understand the complex policy environment in which National Health Programmes are operating, using a case study approach.

Setting:

The iterative loop of research, policy and program is a dynamic process which translates research into program (Fig 1). Results of program implemented also in turn affects and determine future research agenda. The decision-making process in policy making is based primarily on the recognition of a problem, for example a health problem, as a social or public health problem. The social problem and the policy governing its elimination is a multifactor process. The other factors involved, namely the information in hand, the values and beliefs of the population concerned and the formal and non-formal structure for decision making, are mainly influenced by the actual problem being tackled.

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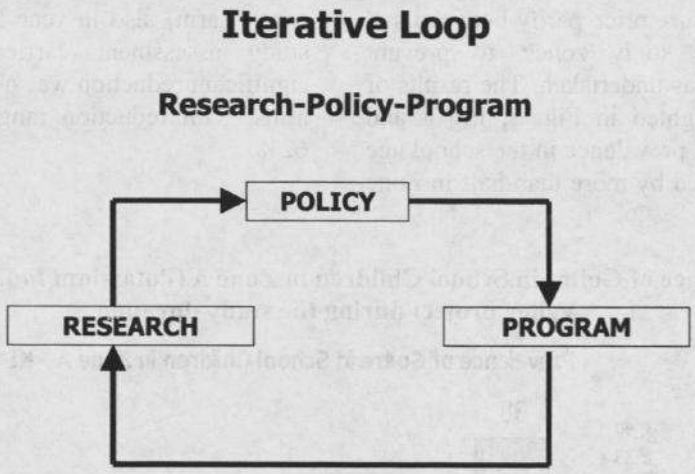
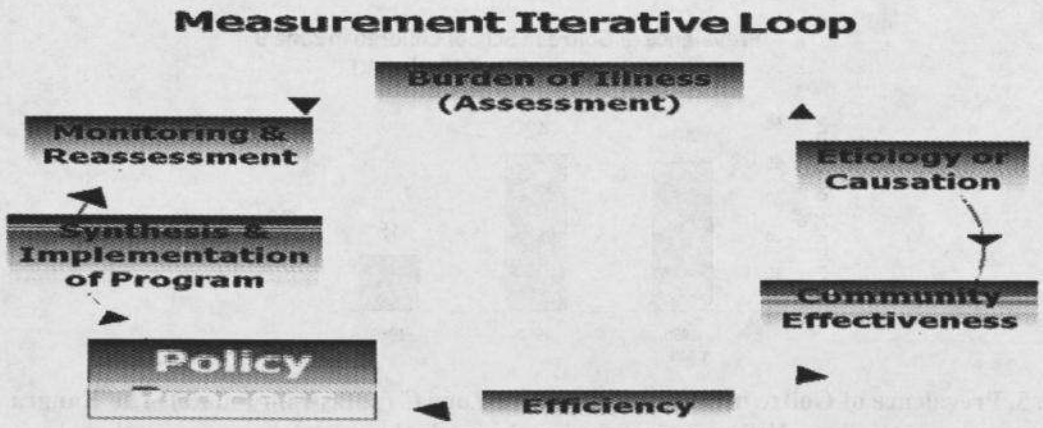
National Family Health Survey (NFHS) - Indi a NFHS-3(2005-06): Main Report, International Institute for Population Sciences, Mumbai, India.

Fig 1: The Iterative loop of research, policy and program.



The further refinement of iterative loop focuses on measuring the different aspects of health problem under consideration like burden of illness, aetiology, effectiveness levels, and efficiency of intervention. Policy formulation and programme implementation are further followed up with regular monitoring and reassessment of both determinants and outcome of health problem.

Fig 2: Measurement iterative loop which focuses on role of measurement and monitoring of research problem.



Results

Genesis of NGCP in India:

The pioneer study titled "the Kangra Valley Project (1956-1972)" formed the scientific basis of the use of iodized salt to combat IDD in India. It was a community based prospective controlled trial in which the study area of Kangra Valley, Himachal Pradesh was divided into 3 zones –A , B , C. More than 100,000 school age children were enrolled in the study and followed up for 16 years. Both technical and administrative interventions were undertaken. Indigenously manufactured iodized salt (with support of UNICEF) was distributed in Zone A(in form of Potassium iodide) and Zone C (in form of Potassium

iodate). Zone B received unfortified salt, and served as control zone. Each study participant received 15 gms of salt /day, so as to ensure 200 µg of Iodine. In addition administrative interventions in form of legislation to ensure availability of iodised salt in intervention zones and to ensure price parity between salt prices in three study zones, to prevent contamination was undertaken. The results of study are highlighted in Fig. 3, Fig 4 and Fig.5. The goitre prevalence in the school age children decreased by more than half in Zone A and Zone C while Zone B actually showed increase in prevalence of goitre in mid-term analysis done in year 1962 (i.e. six years after introducing iodised salt) . Subsequent to the dramatic result observed in mid-term analysis, iodised salt was introduced in Zone B (the control arm) also in year 1962. In an end of study assessment carried out in 1968, significant reduction was observed in all three arms, with reduction ranging from 86% to 62%.

Fig. 3. Prevalence of Goitre in School Children in Zone A (Potassium Iodide), The Kangra Valley project during the study duration

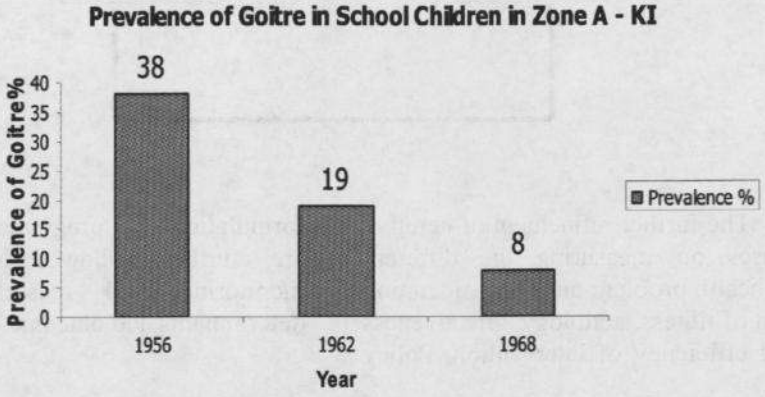


Fig. 4. Prevalence of Goitre in School Children in Zone B (control arm), The Kangra Valley project during the study duration

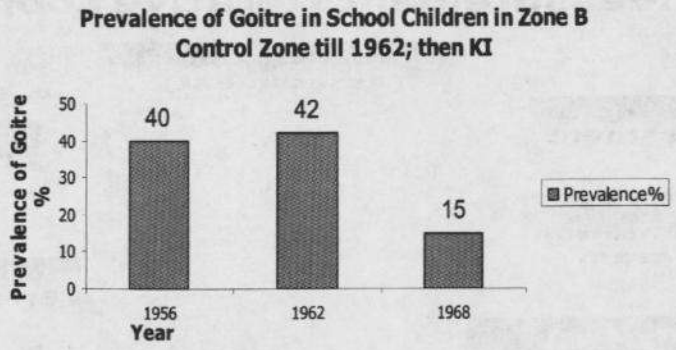
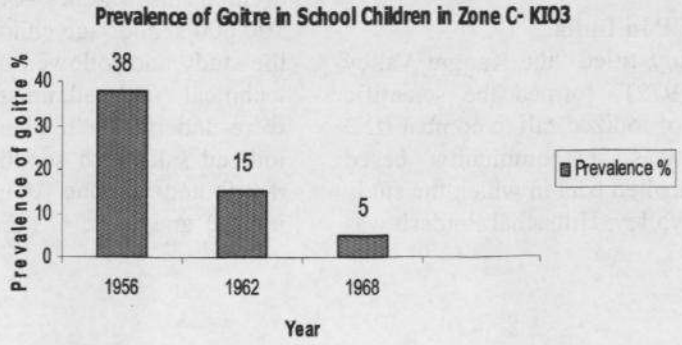


Fig. 5. Prevalence of Goitre in School Children in Zone C (potassium Iodate), The Kangra Valley project during the study duration



The Kangra Valley Project successfully demonstrated that iodine supplementation in the form of adequately iodized salt on a regular and continuous basis reduces goitre prevalence.

Establishment of a National Goitre Control Programme (1962) in India: Based on the findings and recommendations of the Kangra Valley project, the Government of India launched National Goitre Control Program (NCGP) in 1962 with the objective of conducting baseline surveys to identify endemic areas, promote production and supply of iodised salt to endemic areas and to carry out impact assessment surveys after five years. The NCGP had an area specific approach i.e. it focused on targeting highly endemic areas like Himalayan goiter belt at priority. Under the NGCP (1962-1983) a total of 12 salt iodization plants were established (with UNICEF assistance) with total production capacity 0.38 million tons/ year (38% of total estimated need). Actual production was only 0.15 million tons/ year (15% of total estimated need).

From 1962 to 1983 the progress towards elimination of goitre was very slow primarily because of "area specific" approach of the program and recognition of IDD as mild cosmetic problem (goitre) restricted to a select population of country. Thus, NGCP remained a low priority health program since its inception.

"The Turning Point": But all this changed 1983 in a meeting with the then Prime Minister of India, Mrs Indira Gandhi. Researchers, academicians, concerned about the brain damage that iodine deficiency was inflicting on the population made a presentation to the Prime Minister. She was briefed on current status of iodine deficiency disorders in India. Recently available scientific data linking iodine deficiency to IQ loss was explained to her. It was emphasized that in order to fulfil the commitment of her government to "Education for all" and consequent human resource development it was imperative to address IDDs at the earliest.

The response from the Prime Minister was immediate and definitive. IDD was redefined as a National Development problem, with far reaching consequences. Universal Salt Iodization was accepted as the strategy for IDD elimination. As compared to the area specific salt iodization that had been carried out under the activities of the NGCP till then, this move underlined the earnest commitment of the Prime Minister in addressing this issue. The most farsighted action that was made by Mrs. Gandhi was the liberalization of the production of iodized salt. The private sector was permitted and encouraged to produce iodized salt. A package of incentives was given to them. The private sector responded overwhelmingly. Within a period of two years, the capacity of production went up eight times from 0.2 million tons per year to 1.6 million tons per year with actual production from 0.2 million tons to 0.7 million tons[8].

The Prime Minister also made it a point to include the elimination of goitre (the term IDD had not been used widely then) as "Point eight" in the Prime Minister's "20-point National Development Program, thus giving it a high priority. This inclusion also ensured regular monitoring of the program at the highest level.

Progress since 1984:

Since its inception in 1962, the NGCP was languishing. With the boost given in 1984, the program activities accelerated. The installed capacity of iodized salt production increased from 1.6 million tons in 1986 to 14 million tons in 2000, an almost 9-fold increase! The actual production of iodized salt, which was close to 0.2 million tons in 1986, increased manifold to 4.4 million tons in 2000 (Fig. 6)[9]. The current production in year 2007-2008 stands at 4.96 million tons[10].

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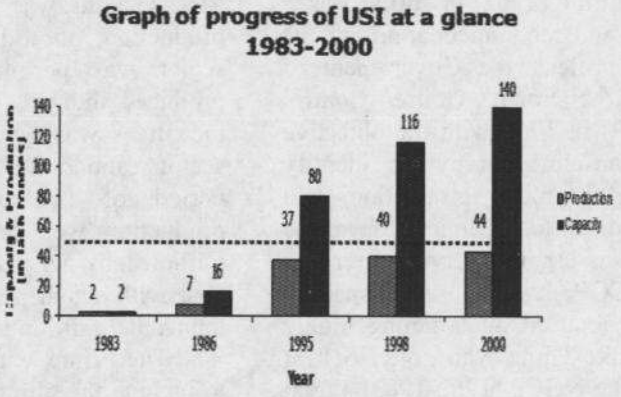
[8] Prakash R, Sundaresan S, Pandav CS. Sustaining elimination of Iodine Deficiency Disorders. Universal Salt Iodization in India. Historical overview and future strategies. Salt Department, Government of India. 2000.

[9] Annual Report 2000-2001, Salt Commissioner of India, Salt Department, Ministry of Commerce And Industry, Government of India.

[10] Annual Report 2007-2008, Salt Commissioner of India, Salt Department, Ministry of Commerce And Industry, Government of India.

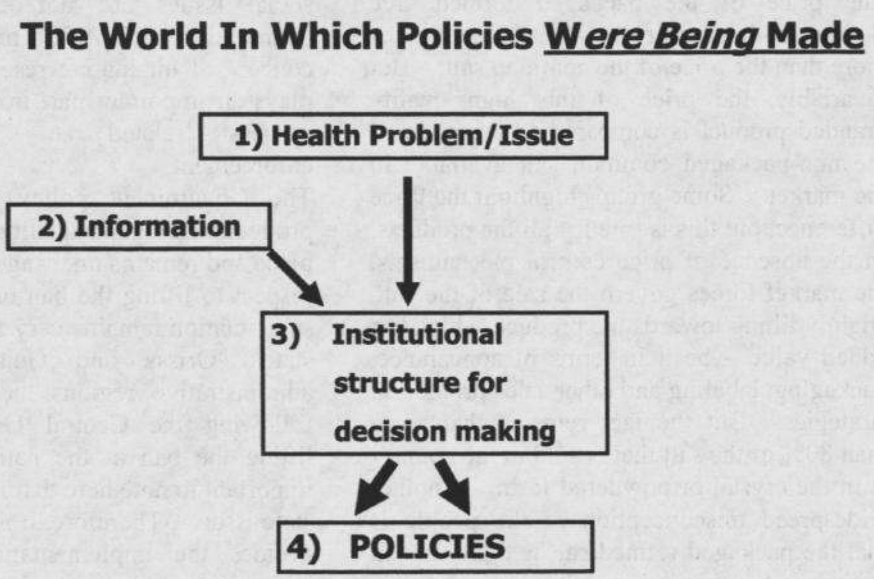
Fig 6: Progess in annual iodized salt production in India from 1983-2000.



In keeping with the new scientific evidence being discovered, the National Goitre Control Program (NGCP) was renamed as the National Iodine Deficiency Disorders Control Program (NIDDCP) in 1992. The government perceived the importance of eliminating the whole spectrum of disorders that is caused by iodine deficiency and not just goitre - which is only the tip of the iceberg.

The success of IDD control program from 1983 onwards highlighted the dynamic nature of policy and programme implementation in India (Fig 7). The recognition of IDD as a health problem existed since 1962 ("Kangra Valley Project) with the same study providing adequate information as to the "solution" of this problem. But from 1962-1983 what was lacking was an decision making input. The meeting with Mrs Indira Gandhi, the Prime Minister of India in 1983 changed all this and provided much needed impetus in form of institutional decision making. The role played by formal decision making structure formed by the Executive (Law making decisions), Legislature (Political support), Bureaucracy (Policy decisions) was the catalyst that rejuvenated the programme. In addition to this Informal Structure Networks in form of NGOs, health care providers, public health experts coalition, partnership of educationists & communication experts, stakeholders like salt industry, salt regulators and citizen consumers groups also played a role to lead to priority implementation of NGCP.

Fig. 7. The interaction of health problem, Information and institutional decision making to formulate policy.



National Family Health Survey – 2 (1998-1999)

The National Family Health Survey–2 was the second in the series of all India surveys carried out to monitor the maternal and child health indicators in the country, using a representative sample [11]. In the second edition of the survey, the consumption of iodized salt at the household level was included as one of the parameters. The salt at the household level was tested with the use of the rapid Salt Testing Kits (STK). The results showed that 49% of the households in the country were using adequately iodized salt, iodine content $\geq$ 15 parts per million (ppm), as measured by the salt testing kits. A total of 28% of the households were found to be using non-iodized salt. Another 22% were using salt that had iodine less than the recommended levels of 15 parts per million. The encouraging aspect of the results was that 71% of the population is consuming salt with some amount of iodine in it. Now the focus would be to sustain these achievements, improve the quality assurance and focus on the remaining 28% of the population, which is yet to be covered. Efforts are on to make the consumption of iodized salt universal.

Ban on non-iodized salt lifted:

On September 13, 2000, the Government of India lifted the ban at the national level on the sale of non-iodized salt (India Gazette 2000). The reason given was that, "When the question was of individual choice, compulsion is undesirable".

Some of the factors that may have been responsible for the government taking this drastic move were:

1) Price difference between iodized and common salt

2) Difficulties faced by the salt producers under the Prevention of Food Adulteration (PFA) Act, 1954.

3) Politics and economics of Liberalization

[11] National Family Health Survey (NFHS) - India NFH S-2(1998-99): Main Report, International Institute for Population Sciences, Mumbai, India.

4) Principle of Choice

The two main reasons can possibly be the price difference between packaged refined free flowing iodized salt and the common salt available and the difficulties faced by the small scale salt producers under the PFA Act, which had stringent penalty for not conforming to the standards set by the government.

The price of the packaged refined free flowing iodized salt is two to three times more than the price of the common salt. But, invariably, the price of this high quality branded product is compared to the price of the non-packaged common salt available in the market. Some groups highlight the price difference, but this is true for all the products. In the absence of price control mechanisms, the market forces govern the sale of the salt, slightly tilting towards the product, which has added value – be it in terms of appearance, packaging, labeling and other sales promotion strategies. But the fact remains that more than 80% of the salt that is sold in the country is in the crystal or powdered form. Another widespread misconception of the people is that the packaged refined salt is the only salt in the market that is iodized. In point of fact, even crystal and powdered salt can be effectively iodized.

The second objection was raised to the interpretation given by the government officials to the Prevention of Food Adulteration Act, under which iodized salt sale was governed. Under this Act, if the salt sample did not have 30 parts per million (ppm) of iodine at the production level or 15 parts per million of iodine at the consumption level, then the salt manufacturer could be taken to Court in the area or state where the salt sample was collected and analysed, regardless of the place of origin of the salt and the salt manufacturer. This was treated akin to a criminal offence, punishable with a monetary fine and a jail sentence. The PFA inspectors, in their efforts to rigidly implement the rule, ignored some of the genuine problems that the salt producers were facing, where the salt produced by someone else had their address on its cover and they were being summoned in court for someone else's negligence. The salt producers, who had actively gone out of their way to support this program from the very beginning, were unhappy with the treatment and consequent harassment being meted out to them. These social issues are not easily tackled by quantitative scientific methods and the concept of qualitative research methodology plays an important part in understanding the process related to legislation and enforcement.

The Government policy of promotion of production of good quality iodized salt is in place and remains unchanged. The status with respect to lifting the ban on sale of common salt situation remains very fluid. So far, two states, Orissa and Gujarat out of 35 administrative regions have lifted the ban following the Central Governments order lifting the ban at the national level. It is important to note here that in India, health is a state issue. Therefore, it is the state ban that decides the implementation of legislation with respect to iodized salt.

The realization: The sudden lifting of ban on sale of non-iodized ban in India was a shock for academician and researchers engaged in IDD research. The arguments forwarded by the proponents advocating removal of ban highlighted the importance of "values" in influencing the formulation of policies in a democratic setup like India. The academicians and researchers realized, though in hindsight, that the lack of focus in previous years on influencing the "Values" of different stakeholders and community at large was one of the major failure of NIDDCP in India(Fig. 8). "Values" operated at three different level, namely the core values or ideologies, beliefs and interest level (Fig 9).

Fig. 8: Wisdom by Hindsight, realization of role of values in policy formulation

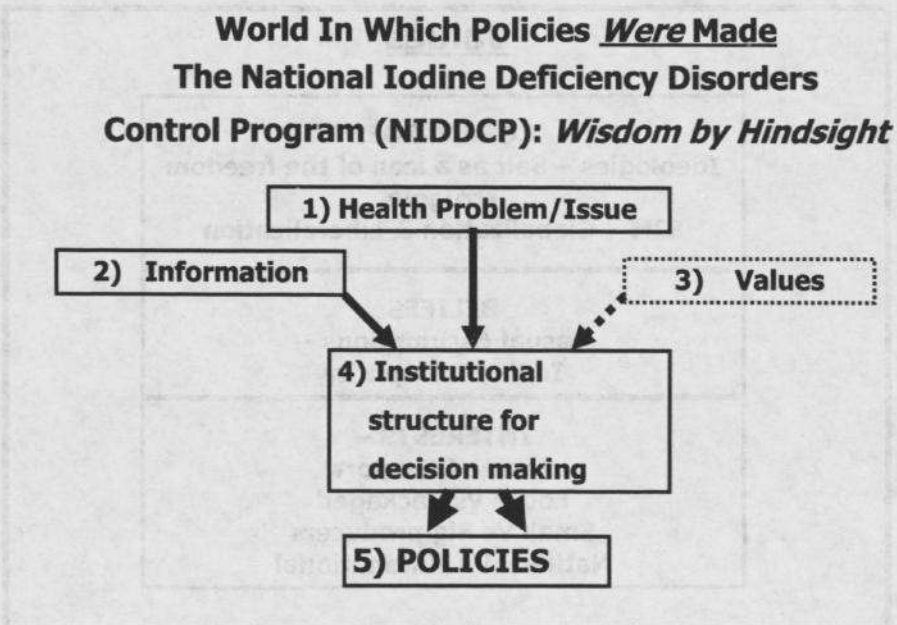
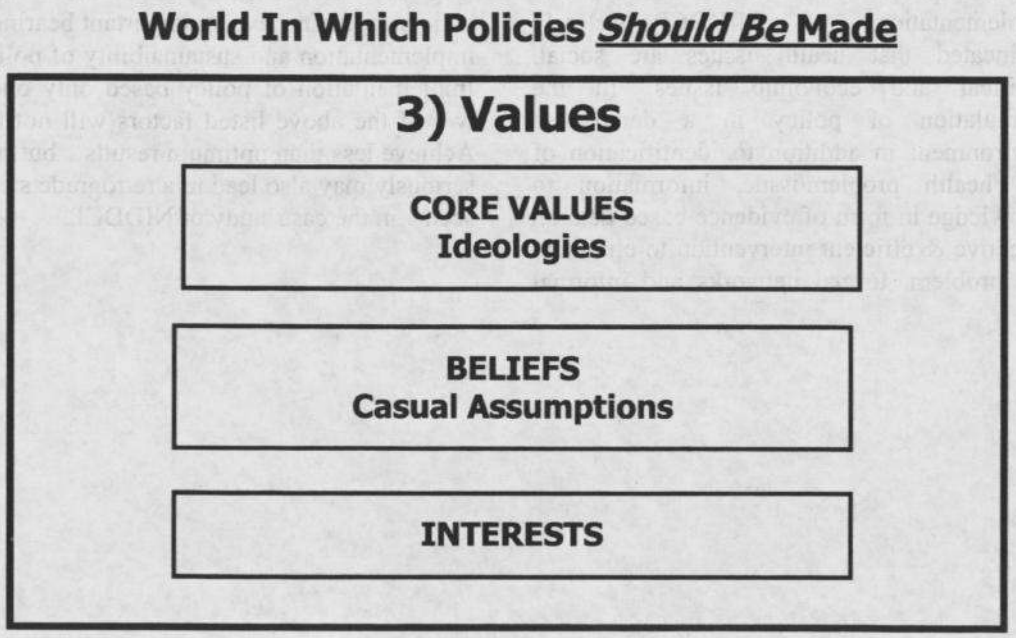
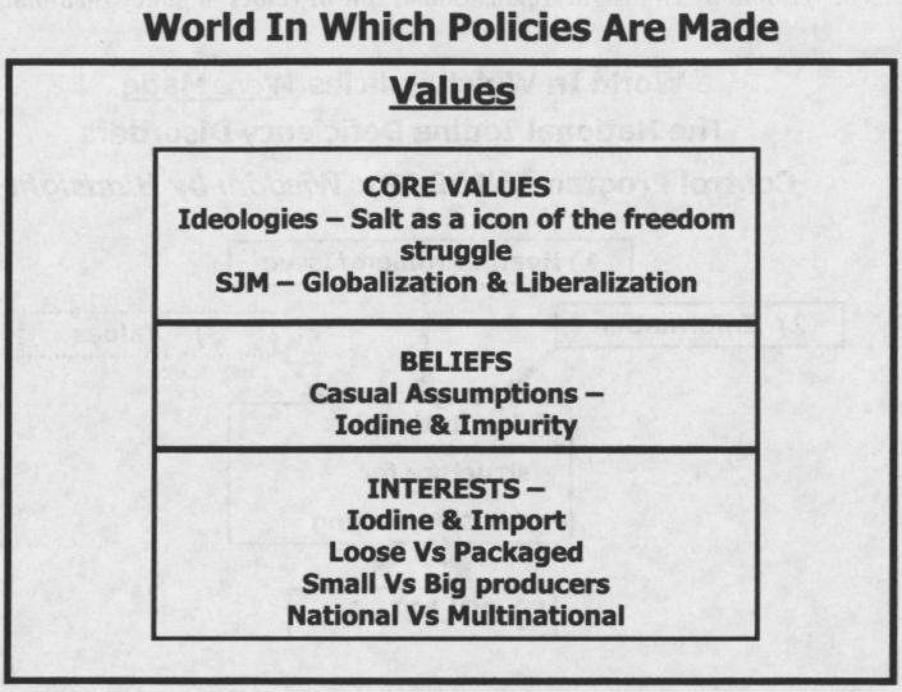


Fig 9. Domains of "Values", core values, beliefs and interest.



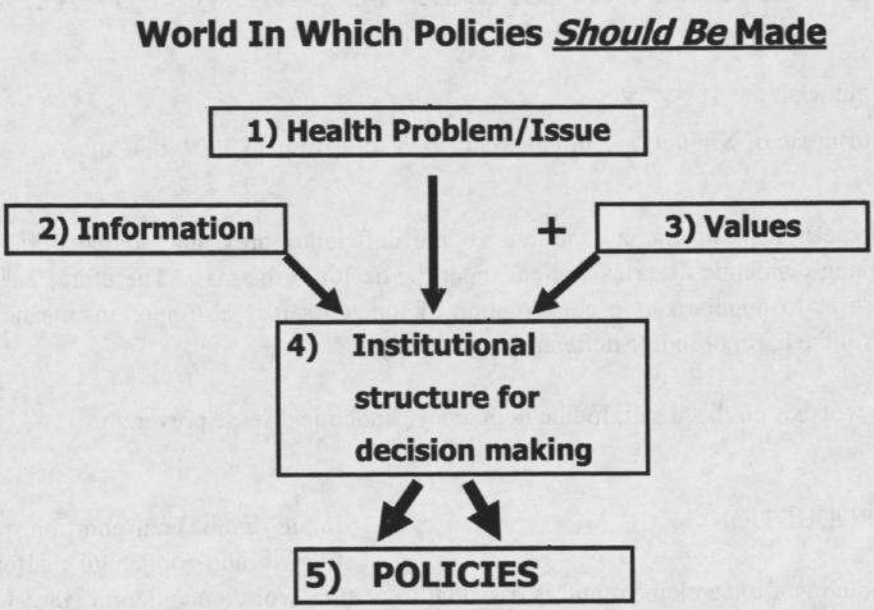
The negative "values" associated with IDD which have been ignored till recently, managed to influence the decision making process and resulted in lifting of ban on sale of non-iodized salt (Fig. 10). The core values relevant in current context was recognition of salt as an icon of freedom struggle, and its positioning in present day milieu as fight between globalization and nationalization. The irrational belief of associating addition of iodine to salt as "impurity" further aggravated the negative "value" of iodized salt. The interest of diverse groups whose immediate benefits were associated with sale of non-iodized salt promoted the negative influence of core values and beliefs.

Fig 10: Domains of "Values" in relation to IDD in India



Lessons Learnt From NIDDCP: The dynamic process involved in evolution and implementation of NIDDCP clearly delineated that health issues are social, political and economic Issues. In the formulation of policy in a democratic environment in addition to identification of the health problem/issue, information to knowledge in form of evidence based data on effective & efficient intervention to eliminate the problem, formal networks and informal networks we also need to factor in "values" (Fig 11). Values in form of core values, beliefs, interests have an important bearing on implementation and sustainaibility of policies. Implementation of policy based only one or two of the above listed factors will not only Achieve less than optimum results but more seriously may also lead to a retrograde step as seen in the case study of NIDDCP.

Fig 11. Ideal scenario where inputs from "Values" are also incorporated into decision making and policy.



The major limiting factor in the implementation of NIDDCP was that the community perceptions about IDD and iodized salt and their interests and beliefs (Values) were not explicitly considered as part of the implementation process. After five years of extensive re-advocacy to the government the ban has been reinstated in 2005. However, the task now is to effectively implement the ban and build up a strong monitoring process linked to corrective decisions with participation of all key stakeholders.

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