REPORT ON THE IODINE DEFICIENCY DISEASES SURVEY IN THE UNION TERRITORY OF PONDICHERRY

December 2014 – March 2015

Department of Community Medicine
Indira Gandhi Medical College & Research Institute
(*A Govt. of Puducherry Institution*)
Kathirkamam, Pondicherry

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LIST OF ABBREVIATIONS:

IDD	Iodine deficiency disorders
IQ	Intelligence Quotient
NGCP	National Goitre Control Programme
NIDDCP	National Iodine Deficiency Disorders Control Programme
PPM	Parts per million
PPS	Population Proportionate to Size
TGR	Total Goitre Rate
UIE	Urinary Iodine Excretion
UT	Union Territory

INTRODUCTION

Globally, Iodine Deficiency Disorder (IDD) is a major public health problem, particularly for pregnant women and young children. The most devastating outcomes are increased perinatal mortality and mental retardation.[1] IDD is documented to be the world's most prevalent, yet easily preventable, cause of brain damage. People living in areas affected by severe IDD may have an intelligence quotient (IQ) of up to about 13.5 points below that of those from comparable communities in areas where there is no iodine deficiency. [2]

In India, IDDs have been in existence since centuries yet continue to be a major health problem. The simplest, the most effective and inexpensive mode recognised to prevent the broad spectrum of IDD is to consume iodated salt daily.[3] However, globally, India has the largest number of children vulnerable to iodine-deficiency. Of the 325 districts surveyed in India, 263 districts are IDD-endemic, *i.e.* the prevalence of IDD is above 10 per cent in the population.[4]The Government of India launched National Goitre Control Programme (NGCP) in 1962 which was later renamed as the National Iodine Deficiency Disorders Control Programme (NIDDCP). The goal of the program was to reduce the prevalence of IDDs to below 10 percent in endemic districts of the country by the year 2000. In order to eliminate iodine deficiency in India and to comply with the international goal of universal iodization, compulsory iodization of all table salt was introduced in 1983 and sale of non-iodated salt for direct human consumption was banned in the entire country in 2006.[3, 5]

As reported by the Indian Council of Medical Research, significant progress has been made by NIDDCP; 15 districts of 11 states showed a goitre prevalence of less than 5% in 2006.[6] However, two studies done in Pondicherry indicated that Puducherry is endemic for goitre with a total goitre prevalence of 15.2% and 27.5% in 2008-09.[5,7] The programme emphasizes on the periodic evaluation and assessment of IDD situation. Thus, it is recommended that prevalence surveys should be conducted every 5 years

along with measurement of urinary iodine levels and analysis of salt iodine content among school children aged 6-12 years.[3]

Hence, our study was undertaken to track the progress made towards reducing the burden of iodine deficiency diseases in the union territory of Puducherry.

OBJECTIVES

1. To estimate the prevalence of goitre in school going children aged between 6-12 years through clinical examination.
2. To determine the median urine iodine concentration in a sample of the children.
3. To assess the level of iodine in salt samples at the household levels.

METHODOLOGY

Study Area:

The total population of the Union Territory of Puducherry is 12,44,454 and encompass an area of 492 sq km with four regions namely, Pondicherry (Population 9,46,600; 76% of the total), karaikal (Population 2,00,314; 16% of the total) being located in the state of Tamil Nadu, Mahe, in the state of Kerala (Population 31,934; 3.5% of the total) and Yanam in the state of Andhra Pradesh (Population 55,616; 4.5% of the total).(6) It has 6 towns and 8 talukas with 90 villages with Mahe and Yanam regions being purely urban and 68.3% of the total population is urban.

There are 712 schools in the UT with 1,80,464 students enrolled in 1st to 8th standards, majority being in the age group of 6-12 years. At any given point of time we expected less than 5-10 percent absentees from schools.

Study population:

A study sample of 3360 school children in the age-group of 6-12 years were selected from 30 schools (112 from each school) in the 4 districts of Puducherry using the method of Population Proportionate to Size (PPS) sampling. As the school attendance in Puducherry was more than 90%, the sample was restricted only to the school children. [9]

Sample size: was calculated using the following formula [10]

$n = 1.96^2 p(1-p)(DEFF) / d^2$

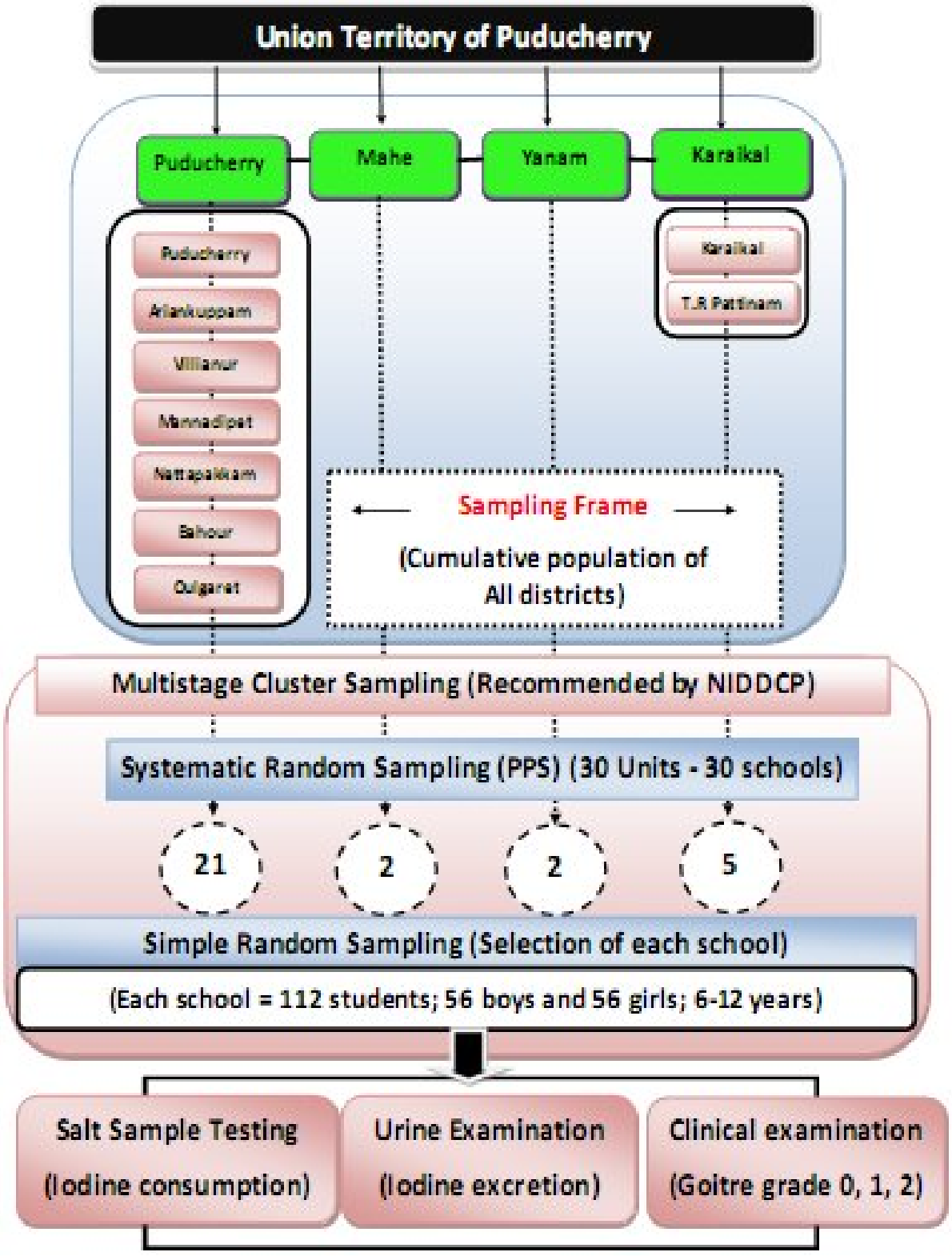
With assumed proportion p= 0.50, 1-p= 0.50; desired level of precision, d= ±5% and design effect, DEFF=2, the estimated sample size was 3073.

Sampling procedure:

Multi-stage cluster sampling with population proportional to size as recommended by NIDDCP [3,8]was used. The sampling frame comprised of cumulative population of each village/ ward (cluster) of the 4 districts of Puducherry. Schools were selected from the respective communes of each district. A total of 30 units (schools) were selected by systematic random sampling using PPS. Of these 30 units, 21 schools were from Puducherry, 5 from Karaikal, and 2 each from Mahe and Yanam (Annexure 2). A list of all schools (primary, middle, secondary and higher secondary schools) was made showing the total number of enrolled children. Each school was selected from each selected cluster by simple random sampling. About 112 children; 56 boys and 56 girls aged between 6-12 years were selected from Class I to Class VII by systematic random sampling. Equal representation in each gender and age category was ensured.

Study Procedure:

The study was initiated after approval from the Institutional Research Committee and Institutional Ethical Committee. Prior permission was obtained from the Director of Health & Family Welfare Services and Director of Education. The school Principals were contacted and informed about the survey and their consent was obtained. Informed consent forms both in Tamil and English were sent to the parents of the selected students with the help of the school Principal and teachers. All those children below 6 years or above 12 years as per the records in the school were excluded from the study. A pre-designed and pre-tested proforma was used to record demographic and physical examination findings of the students.


Union Territory of Puducherry
Puducherry
Mahe
Yanam
Karaikal
Puducherry
Arianku ppam
Villianur
Mannadipet
Nettapakkam
Bahour
Oulgaret
Karaikal
T.R Pattinam
Sampling Frame
(Cumulative population of All districts)
Multistage Cluster Sampling (Recommended by NIDDCP)
Systematic Random Sampling (PPS) (30 Units - 30 schools)
21
2
2
5
Simple Random Sampling (Selection of each school)
(Each school = 112 students; 56 boys and 56 girls; 6-12 years)
Salt Sample Testing
(Iodine consumption)
Urine Examination
(Iodine excretion)
Clinical examination
(Goitre grade 0, 1, 2)

Goitre examination: Each selected child was examined clinically by a research team comprising of trained medical officers and interns under the supervision of a faculty from the department of Community Medicine. Training was imparted to the medical officers and interns involved in the project by the Investigators. Examination for goitre was done by palpatory method and classified as Grade 0, 1 and 2 according to the prescribed guidelines of NIDDCP and WHO/ UNICEF.

Urine samples testing: Spot urine samples were collected from every 10th selected student in a labelled wide mouthed screw capped plastic container of 50 ml capacity. The samples were transported to the clinical biochemistry lab of IGMC&RI for processing and for quantitative estimation of iodine in urine, using the method based on Sandell-Kolthoff reaction. For school-aged children an adequate iodine intake was defined as a median urinary iodine level in the range of 100-299 micrograms/litre. One of the indicators for sustainable elimination of IDD is to have fewer than 20% of school-age children with urine specimens having an iodine concentration of less than 100micrograms/ litre.

Salt samples testing: Every 5th selected child was given an airtight self-sealing plastic pouch to bring a spoonful salt consumed by their families from their homes. These samples were tested with the kits provided by the GOI. Iodine concentration was recorded and a value of > 15ppm was considered adequate.

For operational feasibility, it was decided to select two students (1 boy, 1 girl) from each class to give urine samples for analysis and four students (2 boys, 2 girls) from each class for salt sample testing ensuring that the sample size requirements are met. The details of the selection of students from each class are given in annexure IV.

A list of all children with goitre (grade 1 & 2) identified was provided to the Principal of the respective schools, so that necessary action like intimating the parents and referral for further management can be undertaken.

Data Analysis: Epi Data Entry 3.1 was used to prepare data sheets foe minimising data entry errors. Data was analysed using professional statistical package EPI Info 7.0 version for windows. Descriptive data represented as mean ±for numeric variables and proportions for categorical variables.

Guidelines of the National Iodine Deficiency Disorders Control Programme (NIDDCP) for analysis of results

1. **Endemic District:** The district is declared as endemic district if the total goitrerate (TGR) is above 5% in the children of the age group 6-12 year surveyed.
2. **Severity of Public Health** is graded as: Mild (TGR 5-19.9%); moderate (TGR 20-29.9%) and severe (TGR>30%).
3. **Severity of Public Health** is graded as mild (median UIE 50-99); moderate (median UIE 20-49) and severe (median UIE < 20).
4. **Proportion of urine samples with low median UIE** < 100 should be <20%
5. **Iodine level of salt samples** should be > 15 ppm at the consumer/ household level
6. **Proportion of households consuming adequately iodised salt**(>15ppm) should be > 90%

OBSERVATIONS & DISCUSSION:

The IDD survey was conducted between the time period of December 2014 to March 2015.A total of 3358 students; 1680 boys and 1678 girls were included in the survey. These students were enrolled from 30 schools of the UT of Pondicherry.The list of schools selected for the survey is mentioned in annexure II & III. The age and sex distribution of the students included region-wise is shown in table 1.

Results of the survey would be discussed in three sections:

Section A: District wise distribution of total goitre prevalence

Section B: District wise distribution of consumption of iodised salt and iodine content in salt samples

Section C: District wise distribution of median urinary iodine excretion

TABLE 1: AGE AND SEX DISTRIBUTION OF THE STUDENTS INCLUDED IN THE SURVEY

AGE (Yrs)	PONDICHERRY		KARAIKAL		YANAM		MAHE		TOTAL		
	M	F	M	F	M	F	M	F	M	F	Total
6	168	168	40	40	16	16	16	14	240	238	478
7	168	168	40	40	16	16	16	16	240	240	480
8	168	168	40	40	16	16	16	16	240	240	480
9	168	168	40	40	16	16	16	16	240	240	480
10	168	168	40	40	16	16	16	16	240	240	480
11	168	168	40	40	16	16	16	16	240	240	480
12	168	168	40	40	16	16	16	16	240	240	480
Total	**1176**	**1176**	**280**	**280**	**112**	**112**	**112**	**110**	**1680**	**1678**	**3358**

SECTION A: DISTRICT-WISE DISTRIBUTION OF TOTAL GOITRE PREVALENCE RATE

Table 2: Prevalence of Goitre among Male and Female Students In Different Age Groups In Puducherry District

AGE (Yrs)	SEX	TOTAL EXAMINED	GOITRE			TOTAL GOITRE CASES	PERCENTAGE
			Grade 0	Grade 1	Grade 2		
6	Males	168	139	21	8	29	17.3
	Females	168	140	19	9	28	16.7
7	Males	168	135	20	13	33	19.6
	Females	168	130	19	19	38	22.6
8	Males	168	132	23	13	36	21.4
	Females	168	137	16	15	31	18.5
9	Males	168	143	13	12	25	14.9
	Females	168	124	29	15	44	26.2
10	Males	168	128	20	20	40	23.8
	Females	168	126	24	18	42	25.0
11	Males	168	125	21	22	43	25.6
	Females	168	114	26	28	54	32.1
12	Males	168	128	22	18	40	23.8
	Females	168	132	20	16	36	21.4
Total	Males	1176	930	140	106	246	20.9
	Females	1176	903	153	120	273	23.2
Grand total		**2352**	**1833**	**293**	**226**	**519**	**22.1**

Table 3: Prevalence of Goitre among Male and Female Students In Different Age Groups In Karaikal District

AGE (Yrs)	SEX	TOTAL EXAMINED	GOITRE			TOTAL GOITRE CASES	PERCENTAGE
			Grade 0	Grade 1	Grade 2		
6	Males	40	38	2	0	2	5.0
	Females	40	38	1	1	2	5.0
7	Males	40	35	5	0	5	12.5
	Females	40	35	2	3	5	12.5
8	Males	40	35	5	0	5	12.5
	Females	40	28	7	5	12	30.0
9	Males	40	32	8	0	8	20.0
	Females	40	28	7	5	12	30.0
10	Males	40	34	6	0	6	15.0
	Females	40	26	8	6	14	35.0
11	Males	40	37	2	1	3	7.5
	Females	40	31	2	7	9	22.5
12	Males	40	38	2	0	2	5.0
	Females	40	29	7	4	11	27.5
Total	Males	280	249	30	1	31	11.1
	Females	280	215	34	31	65	23.2
Grand total		**560**	**464**	**64**	**32**	**96**	**17.1**

Table 4: Prevalence of Goitre among Male and Female Students In Different Age Groups In Yanam District

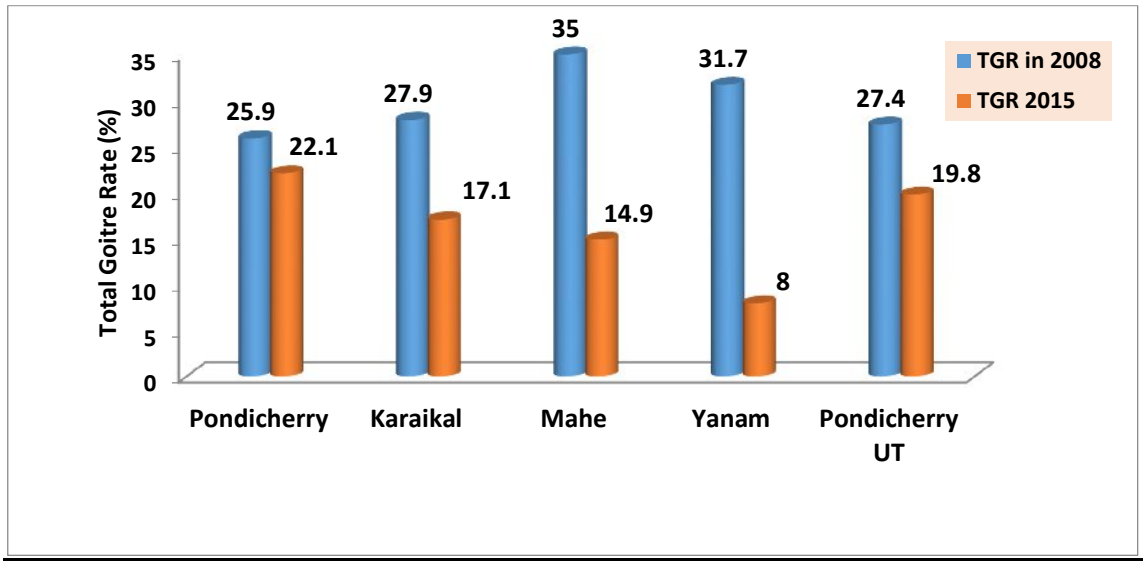
AGE	SEX	TOTAL EXAMINED	GOITRE			TOTAL GOITRE CASES	PERCENTAGE
			Grade 0	Grade 1	Grade 2		
6	Males	16	15	0	1	1	6.3
	Females	16	16	0	0	0	0.0
7	Males	16	15	1	0	1	6.3
	Females	16	14	1	1	2	12.5
8	Males	16	16	0	0	0	0.0
	Females	16	14	2	0	2	12.5
9	Males	16	15	1	0	1	6.3
	Females	16	14	2	0	2	12.5
10	Males	16	14	2	0	2	12.5
	Females	16	14	1	1	2	12.5
11	Males	16	15	1	0	1	6.3
	Females	16	15	1	0	1	6.3
12	Males	16	14	2	0	2	12.5
	Females	16	15	0	1	1	6.3
Total	Males	112	104	7	1	8	7.1
	Females	112	102	7	3	10	8.9
Grand total		**224**	**206**	**14**	**4**	**18**	**8.0**

Table 5: Prevalence of Goitre among Male and Female Students In Different Age Groups In Mahe District

AGE	SEX	TOTAL EXAMINED	GOITRE			TOTAL GOITRE CASES	PERCENTAGE
			Grade 0	Grade 1	Grade 2		
6	Males	16	14	2	0	2	12.5
	Females	14	13	1	0	1	7.1
7	Males	16	12	4	0	4	25.0
	Females	16	14	0	2	2	12.5
8	Males	16	13	3	0	3	18.8
	Females	16	14	2	0	2	12.5
9	Males	16	13	2	1	3	18.8
	Females	16	15	1	0	1	6.3
10	Males	16	14	1	1	2	12.5
	Females	16	12	2	2	4	25.0
11	Males	16	14	0	2	2	12.5
	Females	16	15	1	0	1	6.3
12	Males	16	14	2	0	2	12.5
	Females	16	12	2	2	4	25.0
Total	Males	112	94	14	4	18	16.1
	Females	110	95	9	6	15	13.6
Grand total		**222**	**189**	**23**	**10**	**33**	**14.9**

All the four districts of Pondicherry are endemic for goitre with a total goitre rate of more than 5%. The severity of public health problem of goitre is mild (TGR 5-19.9%) in the districts of Karaikal, Yanam and Mahe; whereas for Pondicherry district it is moderate (TGR 20-29.9%). But there is decline in the total goitre prevalence in all the districts of Pondicherry since the last IDD survey done in 2008[5]as shown in figure1.

Figure 1: Total Goitre Rate (TGR) In 2008 & 2015 in Districts of Pondicherry (UT)



SECTION B: DISTRICT WISE DISTRIBUTION OF CONSUMPTION OF IODISED SALT AND IODINE CONTENT IN SALT SAMPLES

Table 6: District-Wise Distribution of Proportion of Households Using Iodised Salt

IODISED SALT CONSUMPTION	TOTAL NUMBER OF SALT SAMPLES COLLECTED IN ALL DISTRICTS			
	PONDICHERRY (n =587)	KARAIKAL (n =140)	YANAM (n =56)	MAHE (n=56)
Consuming	538 (91.7)	126 (90.0)	33(58.9)	56 (100.0)
Not Consuming	49 (8.3)	14 (10.0)	23 (41.1)	0 (0.0)

Table 7: District-Wise Distribution of Proportion of Households Using Adequately Iodised Salt.

IODINE CONTENT IN SALT	TOTAL NUMBER OF SALT SAMPLES COLLECTED IN ALL DISTRICTS				
	PONDICHERRY n =587 (%)	KARAIKAL n =140 (%)	YANAM n =56 (%)	MAHE n =56 (%)	OVERALL n= 839 (%)
>15 ppm	509 (86.7)	109 (77.9)	31 (55.4)	56 (100.0)	705 (84.1)
<15 ppm	78 (13.3)	31 (22.1)	25 (44.6)	0 (0.0)	134 (15.9)

Figure 2: District-Wise Distribution of Proportion of Households Using Adequately Iodised Salt.

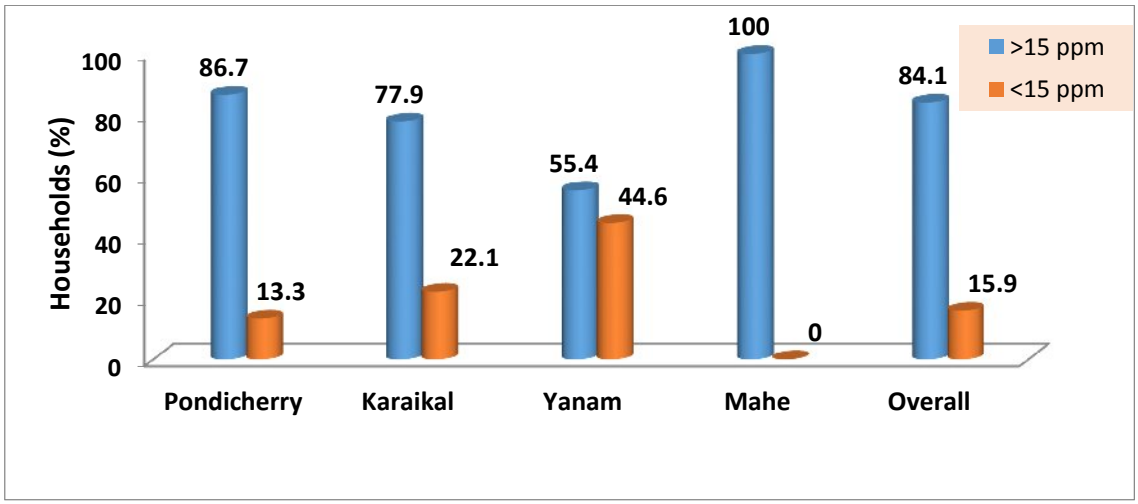


Table 8: District-wise Comparison of Type of Salt Used And the Proportion of Adequately Iodised Salt Samples.

TYPES OF SALT	PONDICHERRY n =587(%)	KARAIKAL n =140(%)	YANAM n =56(%)	MAHE n =56(%)	OVERALL n = 839(%)
Common salt	487(82.9)	75 (53.6)	33 (58.9)	48 (85.7)	643 (76.6)
Rock-salt	100 (17.1)	65 (46.4)	23 (41.1)	8 (14.3)	196 (23.4)

Though the consumption of non-iodised salt has been banned since 2006, un-iodised salt is still being consumed in all the districts of Pondicherry except Mahe. Un-iodised salt is mainly consumed in the form of rock salt. Consumption of adequately iodised salt (Iodine content = 15 ppm) was seen in 84% of the samples analysed. It is recommended that at least 90% of the salt samples should be adequately iodised. But there is increase in the proportion of households

using adequately iodised salt in all the districts of Pondicherry since the last IDD survey done in 2008-09[5].

SECTION C: DISTRICT WISE DISTRIBUTION OF MEDIAN URINARY IODINE EXCRETION

Table 9: Comparison of Mean And Median Urinary Iodine Excretion Levels in The Four Districts of Pondicherry

PARAMETERS	PONDICHERRY	KARAIKAL	YANAM	MAHE
Median UIE	151.5	117.0	474.0	217.0
Mean UIE	206.0	167.4	403.9	260.2

Table 10: District-Wise Distribution of Proportion of Urine Samples with Adequate Urinary Iodine Excretion Levels

UIE (mcg/Lt)	PONDICHERRY n= 294(%)	KARAIKAL n= 70(%)	YANAM n= 28(%)	MAHE n= 28(%)	OVERALL n= 420
>100	215 (73.1)	50 (71.4)	28 (100.0)	26 (92.9)	319 (75.9)
50-99	73 (24.8)	14 (20.0)	0 (0.0)	0 (0.0)	87 (20.7)
20-49	5 (1.7)	6 (8.6)	0(0.0)	1 (3.6)	12 (2.8)
<20	1 (0.3)	0 (0.0)	0(0.0)	1 (3.6)	2 (0.4)
Total samples with UIE<100	79(26.8)	20 (28.6)	0(0.0)	2 (24.1)	101 (24.1)

The median urinary iodine excretion in all the four districts is above the recommended level of 100 microgram/L. It is recommended that atleast 50% of urine samples should have iodine excretion levels of more than 100 micrograms/ litre. In all the districts of Pondicherry, more than 70% of urine samples should have iodine excretion levels of more than 100 micrograms/ litre.

LIMITATIONS OF THE STUDY:

1. All students were examined for the presence of goitre but salt iodine testing and urine iodine testing was done for every fifth and tenth child. Testing for salt iodine and urine iodine in children with grade 1 or 2 goitre may indicate the causal factors for goitre in that child.

2. A subset of the selected students were asked to bring salt samples from their homes for testing for iodine levels. Many households have reported consumption of both common salt and rock salt; but the salt sample testing was done only for one sample that was brought by the students. This may not give the accurate picture of the pattern of consumption of iodised salt in the community.

CONCLUSION:

All the four districts of Pondicherry are endemic for Goitre but have shown a decline in the prevalence of goitre over time. The median urine iodine excretion levels in all the districts is above the recommended level of 100 micrograms/ liter. The proportion of households consuming adequately iodised salt (median UIE ≥ 100 µg/l) is below the recommended level.

FUTURE IMPLICATIONS:

Further studies to gain insights into reasons for use of un-iodised salt in the community is necessary to tackle the problem of iodine deficiency disorders. Moreover, efforts need to focus on strict implementation of ban on consumption of un-iodised salt. Awareness programmes to educate the community about the hazards of consumption of un-iodised salt should be undertaken.

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ANNEXURES

ANNEXURE I

GOVERNMENT OF PUDUCHERRY
OFFICE OF THE ASSISTANT DIRECTOR (NUTRITION)
M.G.G.L.HOSPITAL COMPLEX, DUBRAYAPET, PUDUCHERRY – 605 001.
PHONE:0413-2336454/2220026

No.AD(N)/NIDDCP/A3/Survey/2014-15/ 1062

Dated 22.12.2014

DEPARTMENT OF COMMUNITY MEDICINE
Received No. 855
Date 23/12/14
IGMC & RI, PUDUCHERRY-09

To

The Director.
Indira Gandhi Medical College and Research Institute,
Kathirgamam.
Puducherry – 9

Sir,

Sub: NIDDCP-IDD (Goitre) Survey in U.T. of Puducherry by IGMC & RI – sanction communicated – DD forwarded - Reg.
Ref: No.952/Community Medicine/2014/388, dt.2/6/2014,Puducherry

With reference to the letter cited above, I am to inform that the Govt. has approved your Project proposal for conducting IDD Survey in all four regions of U. T. of Puducherry and sanctioned the budget of Rs.2,00,000/- as proposed. A Demand Draft bearing No.094387, Dt.19.12.2014 in favour of The Director, IGMC & RI, Puducherry for Rs.2,00,000/-(Rupees Two Lakhs only) is enclosed herewith.

I kindly request you to conduct the survey in all four regions of Puducherry as per the revised policy guidelines of Govt. of India and to complete the same before 15th March 2015. Further, I am to request you to incur the expenditure as per the sub-component (head-wise account) proposed in your Project proposal. The vouchers may please be obtained in the name of The Assistant Director (Nutrition), Puducherry.

I also request you to submit a detailed report along with the Vouchers to this office after completing the survey so as to send the report to Govt. of India and to settle the advance drawn by this office.

Received 23.12.14.

Handed over to Finance on 23.12.14

Yours faithfully

ASSOCIATE PROFESSOR
DEPARTMENT OF COMMUNITY MEDICINE
Indira Gandhi Medical College
& Research Institute
Puducherry - 605 009.

(Dr.S.Jayanthi)
Assistant Director (Nutrition)
Puducherry

Encl: as above

Copy submitted to

1. HOD, Dept. of Community Medicine, IGMC & RI, Puducherry.
2. The Director, Health & Family Welfare Services, Puducherry

23.12.14

Annexure- II

SCHOOL LIST FOR PONDICHERRY, KARAIKAL, YANAM & MAHE REGIONS FOR IODINE DEFICIENCY DISORDERS SURVEY

Region	Name of the School	Location	Commune	Urban / Rural	No. of Students Examined
KARAIKAL	Govt. High School	Kothukulam	Karaikal	U	126
	Servite English High School	Nehru Nagar	Karaikal	U	119
	KaraikalAmmaiyar High School	Karaikal	Karaikal	U	135
	Immaculate English High School	Church St,	T.R. Pattinam	R	101
	NirmalaRanee Girls High Secondary School	Karaikal	Karaikal	U	61
	St. Mary's Higher Secondary School	Karaikal	Karaikal	U	65

Region	Name of the School	Location	Commune	Urban / Rural	No. of Students Examined
MAHE	Govt. Middle School Lower P.S (E. M)	Mahe	Mahe	U	89
	J.N. Govt. High School	Mahe	Mahe	U	37
	Eden Upper Primary School	Mahe	Mahe	U	113

Region	Name of the School	Location	Commune	Urban / Rural	No. of Students Examined
YANAM	PerunthalaivarKamarajarGovt. High School	Gueriampeta	Yanam	R	142
	Sri AlluriSeetharama Raju Govt. Primary School (1-5)	Darialatippa	Yanam	R	89
	Dr. K.R. Narayanan Govt. High School (6 – 10)	Darialatippa	Yanam	R	34

Region	Name of the School	Location	Commune	Urban / Rural	No. of Students Examined
PONDICHERRY Team A	Govt. Primary School	Manaveli	Ariyankuppam	R	95
	National English High school	Abishegapakkam	Ariyankuppam	R	116
	St, Joseph English Middle School	Thanampalayam	Ariyankuppam	R	121
	Govt. High school	Ariyankuppam	Ariyankuppam	U	34
	Immaculate Heart of Mary's High Secondary School	Ariyankuppam	Ariyankuppam	U	124
	Govt. Primary School	Thirukkanur	Mannadipet	R	89
	Govt. High school	Thirukkanur	Mannadipet	R	32
	Bharathi English High school	Sorapet	Mannadipet	R	122
	AnnaiSarada Devi Govt. High school	Vadhanur	Mannadipet	R	130

Region	Name of the School	Location	Commune	Urban / Rural	No. of Students Examined
PONDICHERRY Team B	Govt. Middle school	Kariamanickam	Nettapakkam	R	112
	Govt. High school	Kalmandapam	Nettapakkam	R	112
	Govt. High school	Kanuvapet	Villianur	U	112
	Thiru.Vi.Ka. Govt. High school	Arumbarthapuram	Villianur	U	112
	Govt. High school	Uruvaiyar	Villianur	R	112
	Govt. High school	Keezhparikalpet	Bahour	R	112
	KavignarBharathidasan Govt. High school	Kuruvinatham	Bahour	R	112

Region	Name of the School	Location	Commune	Urban / Rural	No. of Students Examined
PONDICHERRY Team C	Indira Gandhi Govt. High Secondary School	Indira Nagar	Oulgaret	U	32
	Govt. Primary School	Indira Nagar	Oulgaret	U	80
	PanditDuraisamyGovt. High school	Pethuchettipet	Oulgaret	U	32
	Govt. Primary School	Pethuchettipet	Oulgaret	U	80
	ThillaiyadiValliammaiGovt. High school	Kathirkamam	Oulgaret	U	112
	KendriyaVidyalaya	PeriyaKalapet	Oulgaret	U	112
	Govt. Primary School	Thattanchavady	Oulgaret	U	80
	S.R.Subramanian Govt. High school	Saram	Oulgaret	U	32
	ColacaraRangasamyNayagarGovt. Middle school	Lawspet	Oulgaret	U	112
	AkkaswamigalGovt. Middle school	Vaithikuppam	Pondicherry	U	112

Annexure- III

TEAMS FOR IODINE DEFICIENCY DISORDERS SURVEY

Area	Teams	Faculty	Medical Officer	CRRIs	Technical Staff
Pondicherry	A	Dr. Thiruselvakumar D Assistant Professor Dept. of Community Medicine	Dr. Arulmozhi M	Muthathal. S	Mr. Jothi
				Nandhini. S	
				Nisha. C	
				Priyanka. S	
				Rajeswari. S	
	B	Dr. Lopamudra M Assistant Professor Dept. of Community Medicine	Dr. Haridha P	Nithaya. P	Mr. Ramu
				PavithraUmashankar	
				Ramya. P	
				Mounisha. E	
	C	Dr. Yogesh Bahurupi A Assistant Professor Dept. of Community Medicine	Dr. Dhivyalakshmi G	Murugan. S	Mr. Visuwanathan
				Niranjan. V	
				Pragadeesh. S	
				Preveen. D	
Karaikal	D	Dr. Prakash M Assistant Professor Dept. of Community Medicine	Dr. Bhuvaneswary S	Prem Davis. S	Mr. Parthiban
				Ram Kumar. S	
				Prabhakaran. C	
Yanam	E	Dr. Prasanna T Assistant Professor Dept. of Community Medicine	Dr. Radhakrishnan	Raghuraman. S	----------
Mahe	F	Dr. Johnson Cherian Assistant Professor Dept. of Community Medicine	Dr. Bhuvaneswary S Dr. Haridha P	Prem Davis. S	----------
				Prabhakaran. C	

Annexure -IV

SELECTION OF STUDENTS FROM EACH CLASS IN EACH SCHOOL

Age	Class	Boys	G8irls	Total	Salt sample	Urine sample
6	I	8	8	16	2B + 2G = 4	1B + 1G = 2
7	II	8	8	16	2B + 2G = 4	1B + 1G = 2
8	III	8	8	16	2B + 2G = 4	1B + 1G = 2
9	IV	8	8	16	2B + 2G = 4	1B + 1G = 2
10	V	8	8	16	2B + 2G = 4	1B + 1G = 2
11	VI	8	8	16	2B + 2G = 4	1B + 1G = 2
12	VII	8	8	16	2B + 2G = 4	1B + 1G = 2
Each school		**56**	**56**	**112**	**28**	**14**
Total for all (30)schools				**3360**	**840**	**420**