



www.iogeneration.pt



Conceição Calhau

Nutrition & Metabolism

Nova Medical School - FCMUNL

ccalhau@nms.unl.pt



IODINE DEFICIENCY IN EUROPE: A CONTINUING PUBLIC HEALTH PROBLEM

Table 2. Number of iodine-deficient countries, proportion of population, and number of individuals with insufficient iodine intake in school-aged children and in the general population, by WHO region, 2012

WHO region ^b	Insufficient iodine intake (UI < 100 µg/L)				
	SAC ^a			General population ^a	
	Countries (n)	Proportion (%)	Total n (millions) ^c	Proportion (%)	Total n (millions) ^c
Africa	10	39.5	58.1	40.1	322.2
Americas	2	13.7	14.6	13.7	125.7
Eastern Mediterranean	4	38.6	30.7	37.4	199.2
Europe	11	43.9	30.5	44.2	393.1
South-East Asia	0	31.9	78.4	31.7	565.3
Western Pacific	5	19.8	33.9	17.9	319.4
Global total	32	29.8	246.2	28.7	1924.9

^aSAC defined as children 6–12 years old; general population defined as all age groups.

^b193 WHO Member States.

Table 3 | Epidemiological indicators and criteria for assessing iodine deficiency

Criteria and population group	Iodine intake (iodine nutrition status) or IDD status
<i>Median UIC in children aged ≥6 years and adults (µg/l)</i>	
<20	Insuff cient (severe iodine def ciency)
20–49	Insuff cient (moderate iodine def ciency)
50–99	Insuff cient (mild iodine def ciency)
100–199	Adequate (adequate iodine nutrition)
200–299	Above requirements (more than adequate intake, may pose a slight risk in the general population)
≥300	Excessive (risk of adverse health consequences)
<i>Median UIC in pregnant women (µg/l)</i>	
<150	Insuff cient
150–249	Adequate
250–499	Above requirements
≥500	Excessive

< 20 %

Abbreviations: IDD, iodine deficiency disorder; TGR, total goitre rate; UIC, urinary iodine concentration. Permission to adapt obtained from the WHO © WHO, UNICEF & International Council for the Control of Iodine Deficiency Disorders. *Assessment of Iodine Deficiency Disorders and Monitoring Their Elimination: A Guide for Programme Managers* 3rd edn [online]. Accessed: February 2012. http://whqlibdoc.who.int/publications/2007/9789241595827_eng.pdf (2007).¹¹

Iodine deficiency in Europe

A continuing public health problem



... 2016

350 milhões de cidadãos europeus com deficiência de iodo

Pode comprometer até 15 pontos o QI

Por cada ponto a menos, baixa em cerca de 0,11% o poder de compra

Sal iodado em APENAS 27% dos domicílios

Progress against IDD in Europe

Aldo Pinchera Regional Coordinator, ICCIDD West Central European Region

Overview

Although West Central Europe is an industrialized and wealthy part of the world, there still remain areas of iodine deficiency in several countries. Legislation also differs widely among European countries. There are those who have established effective legislation while others continue to battle with the authorities to get IDD on the official agenda. Within the region of West Central Europe unfortunately not all countries have been able to successfully establish official governmental iodine deficiency control programs. Slovenia, Hungary, Greece, Portugal, France and Ireland have yet to move in this direction.

Selected Country Update

France

Household salt has been iodised in France since the early sixties. This is done on a voluntary basis and iodized salt for industrial use has been officially barred. Unfortunately the health authorities are not interested in the matter of IDD; a recent application to the National Drug Agency for an iodine supplement to pregnant women was turned down or, rather, accepted in such a limited way that implementation is not feasible. The last national evaluation was carried out in 1999 with results showing mild iodine deficiency but there has been no update of this data. Although there is no current concern by specialists of the iodine status of pregnant women, with no specific national programme being considered, future activities will focus on evaluation and management of the iodine status during pregnancy.



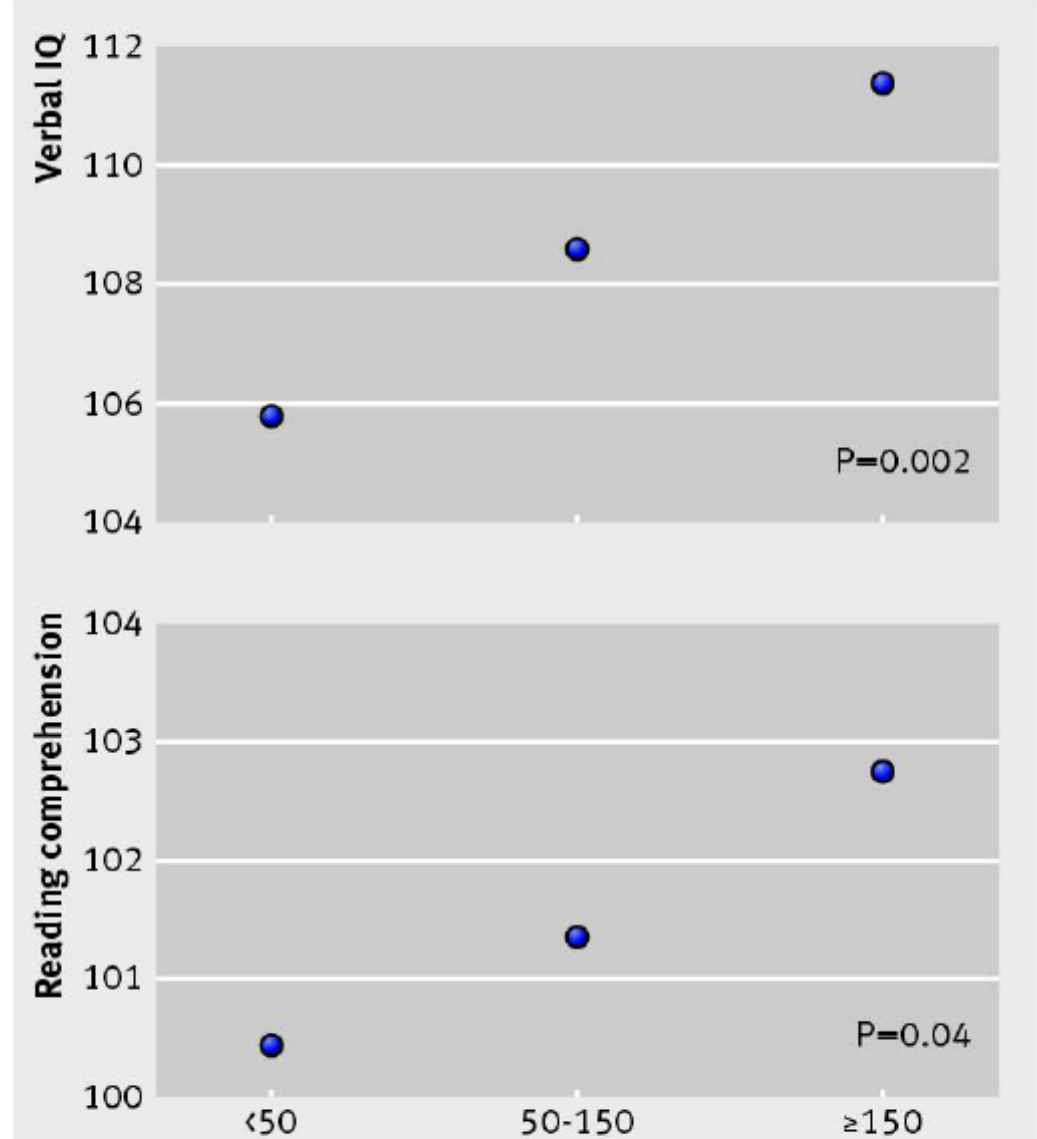
Finland

The National Institute for Health and Welfare is involved in iodine deficiency control programs together with the National Nutrition Council which provides contact with WHO. Iodine deficiency goitre was eradicated in the 1960s and since then sporadic iodine intake studies have been carried out, the latest assessment of urinary excretion being done in 2002. Finland has had voluntary iodization of table salt since 1949 and legislation since 1972. The food industry uses mainly non iodized salt. An ad hoc working group was appointed in 2008 to propose an iodine/thyroid status monitoring program at the National Institute for Health and Welfare. In 2009 a systematic iodine monitoring program was initiated which will involve measurement of urinary iodine excretion, iodine intake and thyroid function, twice every ten years in random population samples of

BMJ 2013;346:f340

Maternal

Dose response effect



Maternal iodine to creatinine ratio in the first trimester (ug/g)

Iodine deficiency and women's health



Globally, an estimated 20 million infants are born each year at risk of brain damage from iodine deficiency. In Tanzania, iodine deficiency in utero predicts lower schooling attainment ten years later, and this effect appears to be stronger in girls.

Adequate dietary iodine is an important determinant of cognitive ability in humans (1). In areas of severe iodine deficiency, poor thyroid status during pregnancy can cause cretinism and adversely affect cognitive development in children; to prevent fetal damage, iodine should be given before or early in pregnancy.

THE INTERNATIONAL COUNCIL FOR CONTROL OF IODINE DEFICIENCY DISORDERS (ICIDD) is a nonprofit, nongovernmental organization dedicated to sustained optimal iodine nutrition and the elimination of iodine deficiency throughout the world. Its activities have been supported by the international aid programs of Australia, Canada, Netherlands, USA, and also by funds from UNICEF, the World Bank and others.



e-Library of Evidence for Nutrition Actions (eLENA)

eLENA

A-Z list of interventions

Health conditions

Life course

Nutrients

Intervention type

Interventions by category

Global targets

About eLENA

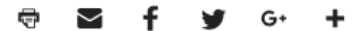
How to use eLENA

Iodine supplementation in pregnant and lactating women

Iodine is essential for healthy brain development in the fetus and young child. A woman's iodine requirements increase substantially during pregnancy to ensure adequate supply to the fetus.

Most foods are relatively low in iodine content. To ensure that everyone has a sufficient intake of iodine, WHO and UNICEF recommend universal salt iodization as a global strategy. However, in certain countries salt iodization may not be feasible in all regions. Evidence suggests that in settings where universal salt iodization is not fully implemented, pregnant and lactating women and children under two years of age may not be receiving adequate amounts of iodized salt.

Depending on the percentage of households in a particular area with access to iodized salt, iodine supplementation may be necessary to ensure pregnant women are receiving adequate intake.



Last update:
27 April 2016 06:10 CEST

Category 2 intervention

Systematic review(s) have been conducted but no recent guidelines yet available that have been approved by the WHO Guidelines Review Committee

— [More about categories of interventions](#)

WHO recommendations

WHO and UNICEF recommend iodine supplementation for pregnant and lactating women in countries where less than 20% of households have access to iodized salt, until the salt iodization programme is scaled up.

Countries with a household access to iodized salt between 20 and 90% should make efforts to accelerate salt iodization or assess the feasibility of increasing iodine intake in the form of a supplement or iodine fortified foods by the most susceptible groups.

Additional information, including a suggested scheme for supplementation, can be found in the guidance summary, and in the guidance document under 'WHO documents' below.

– [Guidance summary](#)

Aporte do Iodo nas Crianças das Escolas em Portugal

Iodine Intake in Portuguese School Children



ARTIGO ORIGINAL

Tabela 1-Valores globais



Med = 105,5 µg/L		
IU (µg/L)	Nº de crianças	%
<25	83	2,2
<50	436	11,8
50-100	1290	35,1
<100	1726	47,1
>100	1954	52,9
TOTAL	3680	100



CLINICAL STUDY

Iodine intake in Portuguese pregnant women: results of a countrywide study

E Limbert¹, S Prazeres², M São Pedro², D Madureira², A Miranda³, M Ribeiro³, J Jacome de Castro⁴, F Carrilho⁵, M J Oliveira⁶, H Reguengo⁷, F Borges⁸ and Thyroid Study Group of the Portuguese Endocrine Society

¹Department of Endocrinology, ²Laboratory of Endocrinology and ³Department of Epidemiology, Instituto Português de Oncologia de Lisboa de Francisco Gentil, Rua Professor Lima Basto, 1099-023 Lisboa, Portugal, ⁴Department of Endocrinology, Military University Hospital, 1200-023 Lisboa, Portugal, ⁵Department of Endocrinology, University Hospital, 300-075 Coimbra, Portugal, ⁶Department of Endocrinology, Centro Hospitalar de Vila Nova de Gaia, 4430-502 Vila Nova de Gaia, Portugal, ⁷Laboratory of Clinical Pathology and ⁸Department of Endocrinology, St António Hospital, 4099-001 Porto, Portugal

(Correspondence should be addressed to E Limbert; Email: elimbert@ipolisboa.min-saude.pt)

- Em Portugal apenas 1 em 6 mulheres grávidas apresentavam consumo adequado de iodo

Results: Median UIC value was 61.9 µg/l (range 0.10–121.1) in Continental Portugal, 67.9 µg/l in Madeira, and 50.0 µg/l in Açores. The percentage of satisfactory values (>150 µg/l) was 16.8, ranging from 8.8 to 34.1 in the Continent, and being 8.2 in Madeira and 2.3 in Açores. The percentage of values below 50 µg/l was 23.7, ranging from 14.0 to 37.4 in the Continent, 33.7 in Madeira, and 50.0 in Açores.

Conclusions: Our results point to an inadequate iodine intake in pregnant women assisted in most Portuguese maternity hospitals. Considering the potential deleterious effects of inadequate iodine supply in pregnancy, iodine supplementation is strongly recommended in this period of life.

NÚMERO: 011/2013

DATA: 26/08/2013

Francisco
Henrique
Moura
George

Digitally signed by
Francisco Henrique Moura
George
DN: cn=PE, o=Ministério da
Saúde, ou=Direção-Geral
da Saúde, c=Francisco
Henrique Moura George
Date: 2013.08.26 15:17:58
+01'00'

ASSUNTO: Aporte de iodo em mulheres na preconção, gravidez e amamentação

PALAVRAS-CHAVE: Iodo; Iodúria; Ingestão de iodo; Gravidez; Suplementação; Fortificação; Preconção; Amamentação.

PARA: Sistema de Saúde

CONTACTOS: secretariado.dsr@dgs.pt; pnpas@dgs.pt

Nos termos da alínea a) do nº 2 do artigo 2º do Decreto Regulamentar nº 14/2012, de 26 de janeiro, emite-se a Orientação seguinte:

I – ORIENTAÇÃO

1. As mulheres em preconção, grávidas ou a amamentar devem receber um suplemento diário de iodo sob a forma de iodeto de potássio – 150 a 200 µg/dia, desde o período preconacional, durante toda a gravidez e enquanto durar o aleitamento materno exclusivo, pelo que deverá ser prescrito o medicamento com a substância ativa de iodeto de potássio na dose devidamente ajustada;

iodo – IMPORTÂNCIA PARA A SAÚDE E O PAPEL DA ALIMENTAÇÃO

Dezembro 2014

Autores

Diana Teixeira

Conceição Calhau

Diogo Pestana

Lisa Vicente

Pedro Graça

CIRCULAR

Data: 2013/08/02

Número do Processo:

Circular nº.: 3/DSEEAS/DGE/ 2013

23 - SAL IODADO

Higienizado grosso, em sacos de plástico de 1 Kg.

	<input checked="" type="checkbox"/>
Escolas Secundárias	<input checked="" type="checkbox"/>
Escolas Secundárias Tecnológicas	<input checked="" type="checkbox"/>
Escolas Secundárias Profissionais	<input type="checkbox"/>
Escolas Profissionais	<input type="checkbox"/>
Est. Ens. Part. e Coop. c/ paralelismo	<input checked="" type="checkbox"/>
CIREP	<input checked="" type="checkbox"/>
Secretaria-Geral do MEC	<input type="checkbox"/>
Direções de Serviços Regionais da DGEstE	<input checked="" type="checkbox"/>

MEDIAN URINARY IODINE CONCENTRATION (UIC) IN EUROPE



IODINE NUTRITION MONITORING PROGRAMS IN EUROPE

- YES
- NO
- NO DATA





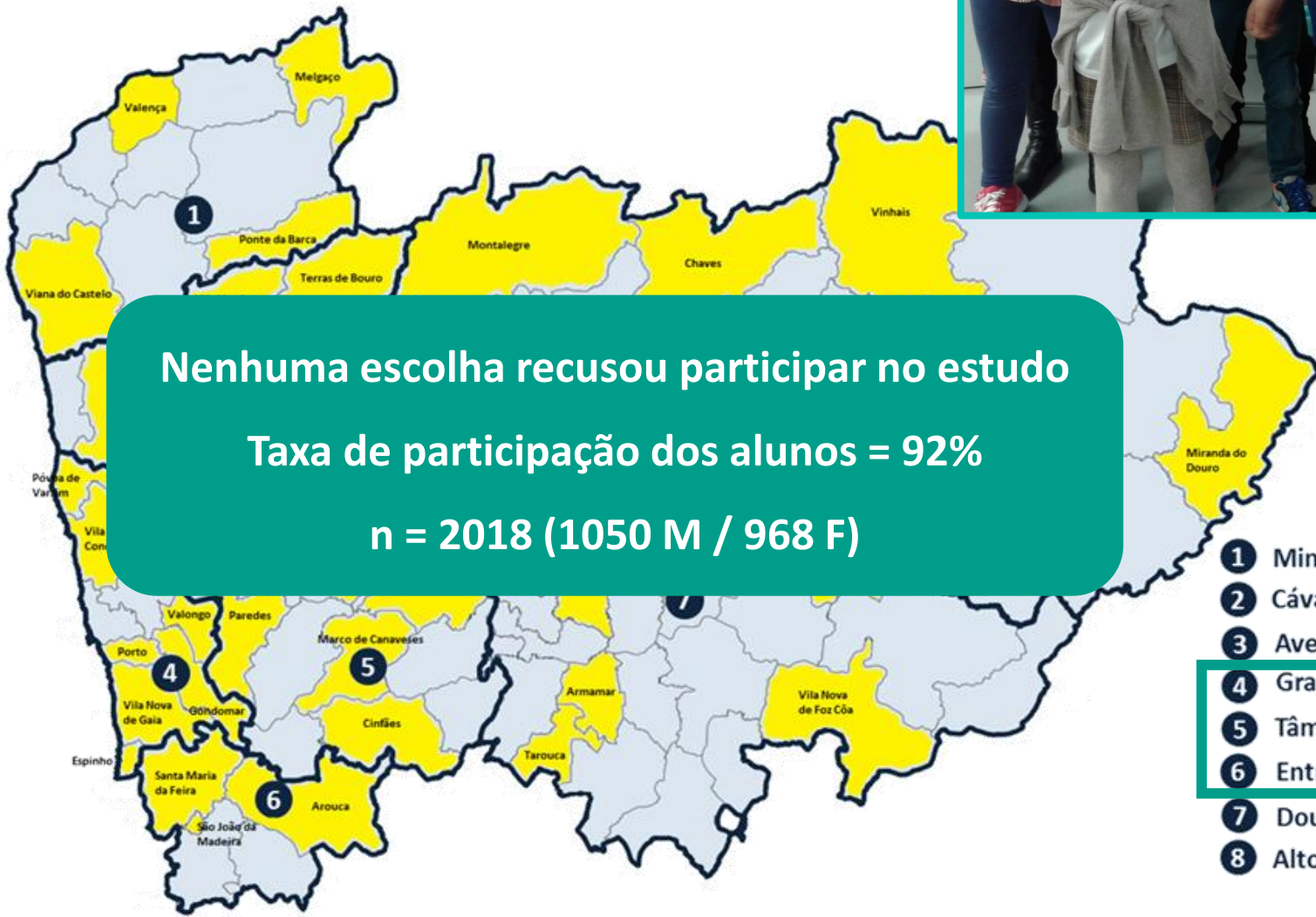
Descobre a **iogeneration** 

Equipa de investigação **MULTIDISCIPLINAR**

(nutricionistas, médicos, psicólogos, biólogos, bioquímicos, químicos, gestão, design....).

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Nenhuma escola recusou participar no estudo
Taxa de participação dos alunos = 92%
n = 2018 (1050 M / 968 F)

- 1 Minho-Lima
- 2 Cávado
- 3 Ave
- 4 Grande Porto
- 5 Tâmega
- 6 Entre Douro e Vouga
- 7 Douro
- 8 Alto Trás-os-Montes

RECOLHA E ANÁLISE DE URINA E SAL

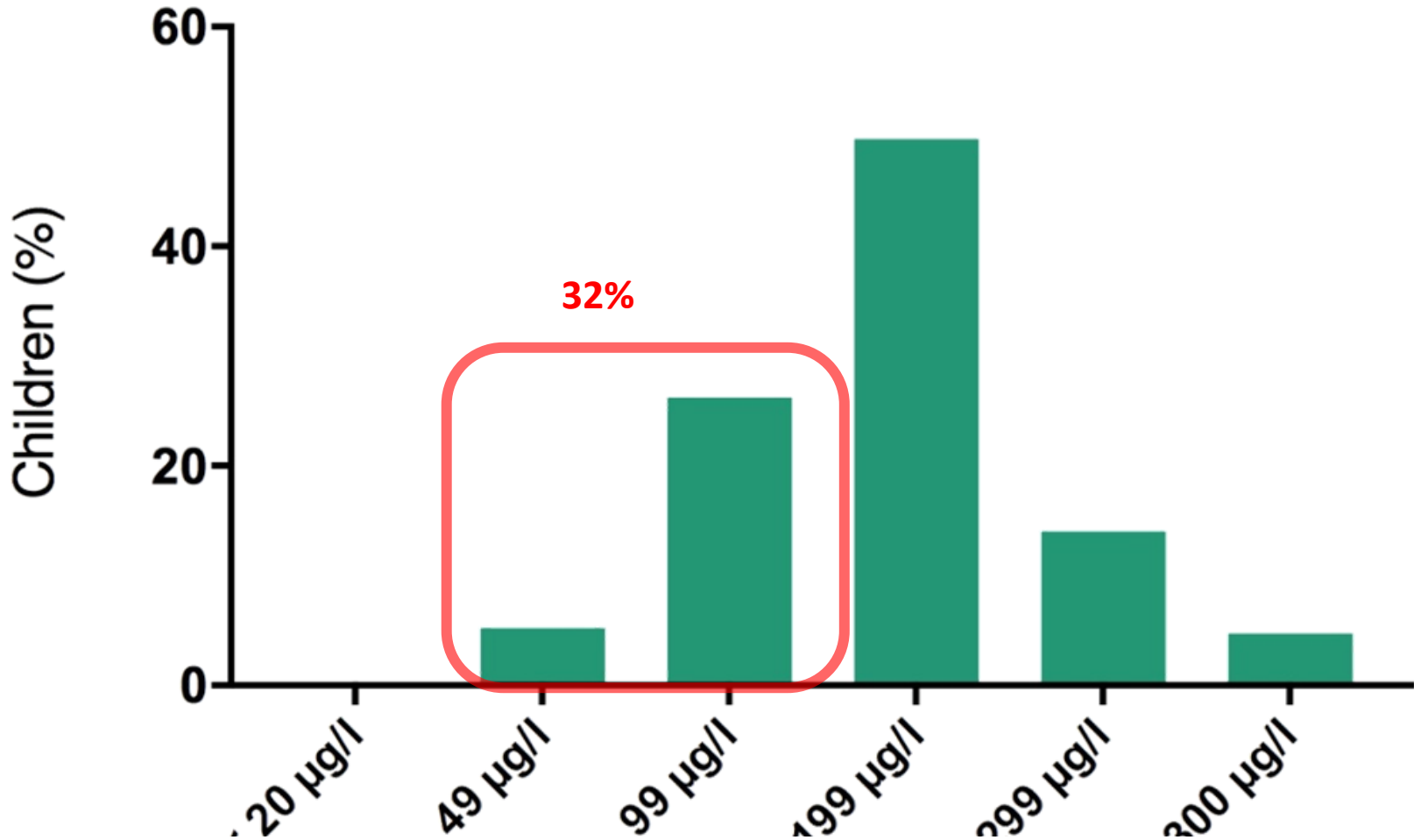


Análise por ICP-MS

(método analítico recomendado
para determinação de iodo)

creatinina

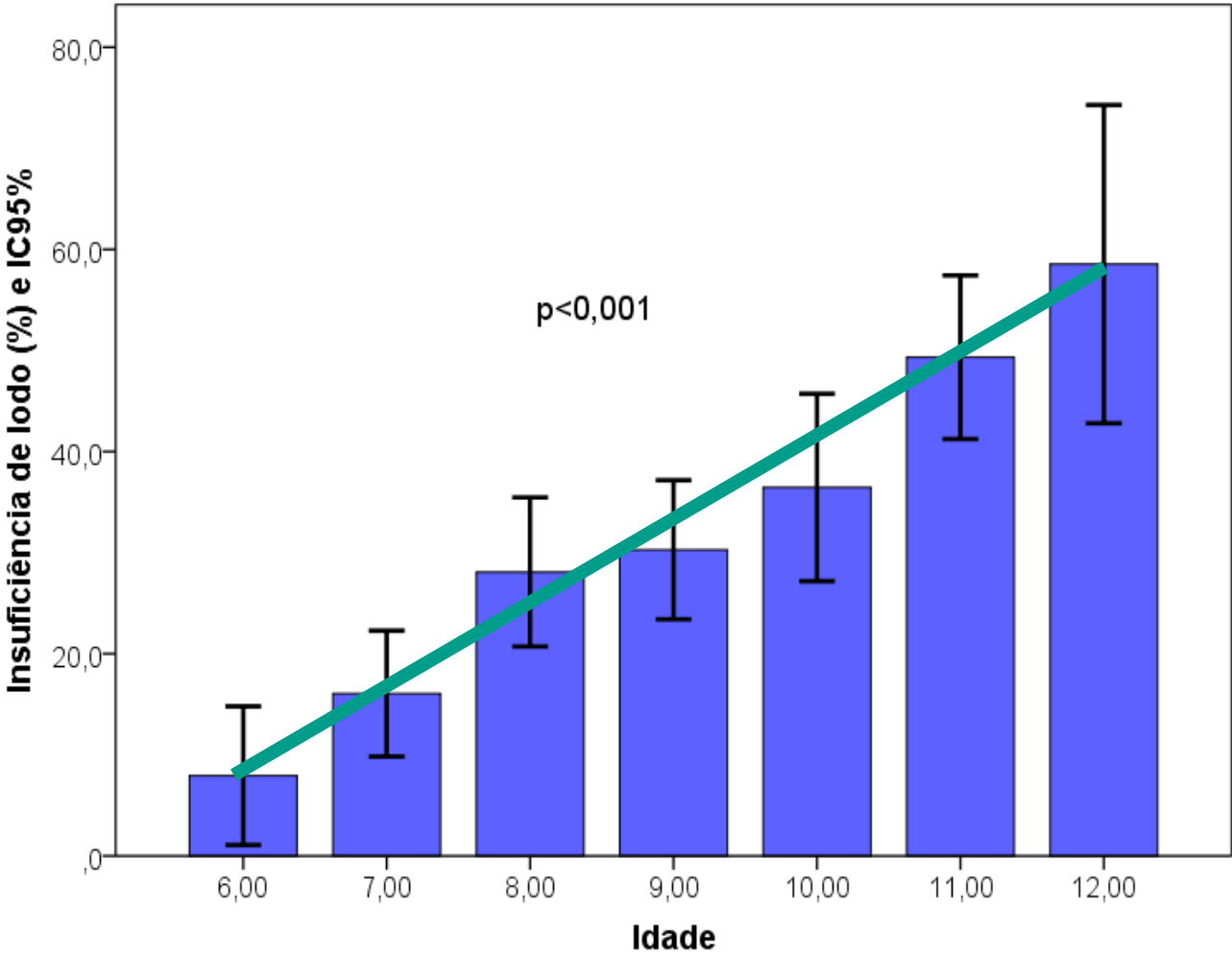
Monitorizar sódio
excretado



mediana UIC = $129 \mu\text{g/l}$

32% apresentam níveis abaixo do recomendado
(37% no Grande Porto vs 27% nos restantes)

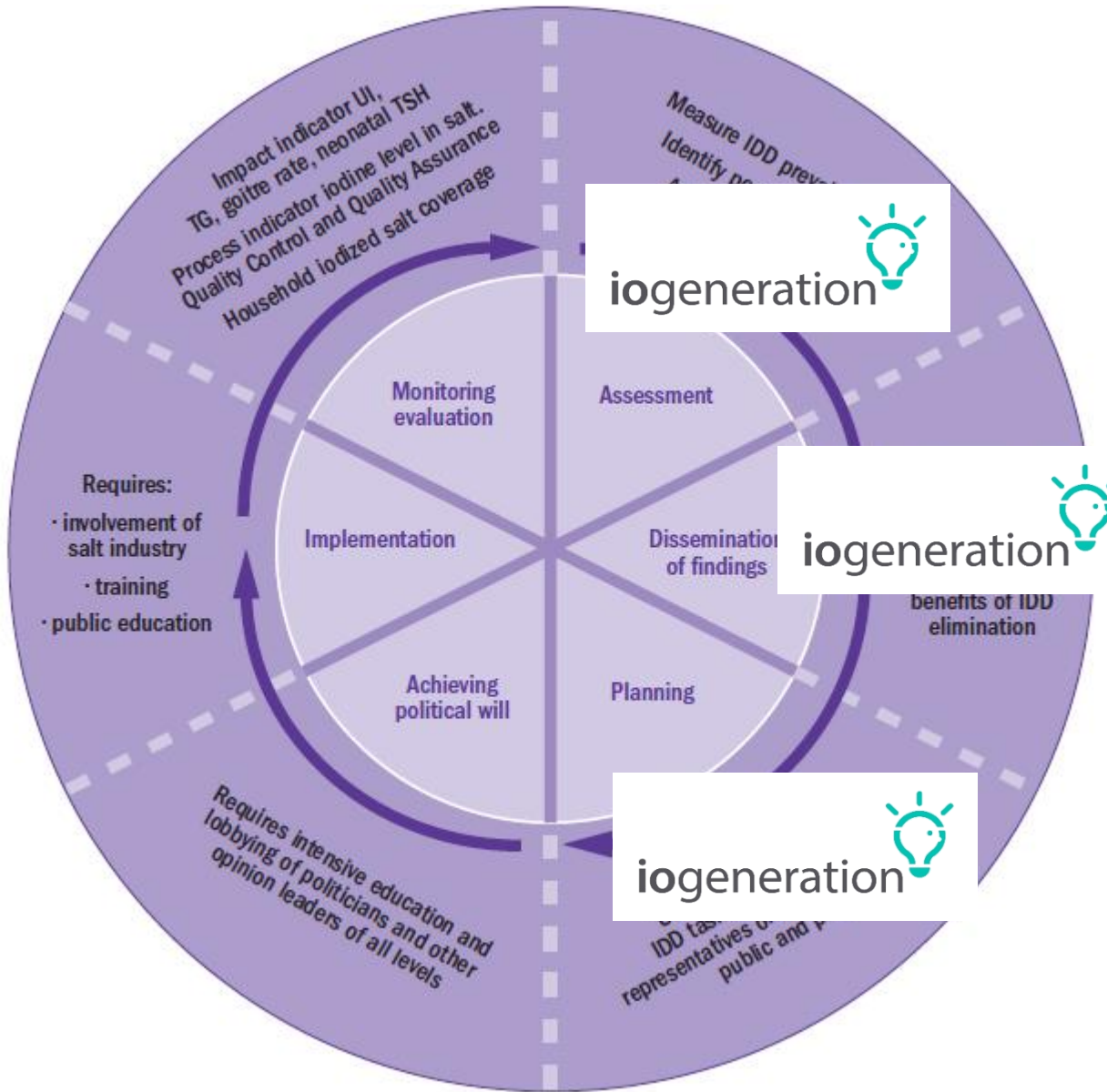
Iodúrias por idade





Sal Iodado

- **Nenhuma cantina escolar utiliza sal iodado**
- **Apenas 8% dos domicílios relata utilizar sal iodado**
- **20% dos “consumidores de sal iodado” utilizam de facto sal iodado**
- **Baixo conhecimento sobre o que é sal iodado**



THERAPY OF ENDOCRINE DISEASE

Impact of iodine supplementation in mild-to-moderate iodine deficiency: systematic review and meta-analysis**Peter N Taylor, Onyebuchi E Okosieme, Colin M Dayan and John H Lazarus**

Thyroid Research Group, Institute of Molecular and Experimental Medicine (IMEM), Cardiff University School of Medicine, Cardiff University, Cardiff CF14 4XN, UK

Correspondence
should be addressed to
P N Taylor
Email
taylorpn@cardiff.ac.uk

Conclusion: Iodine supplementation improves some maternal thyroid indices and may benefit aspects of cognitive function in school-age children, even in marginally iodine-deficient areas. Further large prospective controlled studies are urgently required to clarify these findings and quantify the risk/benefits of iodine supplementation in regions previously believed to be iodine sufficient such as the UK.

Iodine supplementation during pregnancy: a public health challenge

Pere Berbel¹, María Jesús Obregón², Juan Bernal^{2,3}, Francisco Escobar del Rey² and Gabriella Morreale de Escobar^{2,3}

¹ Instituto de Neurociencias de Alicante, Universidad Miguel Hernández and Consejo Superior de Investigaciones Científicas (CSIC), Apartado correos 18, Sant Joan d'Alacant, 03550 Alicante, Spain

² Instituto de Investigaciones Biomédicas "Alberto Sols", CSIC and Universidad Autónoma de Madrid, Arturo Duperier 4, 28029 Madrid, Spain

³ Center for Biomedical Research on Rare Diseases (CIBERER), Madrid, Spain

Iodine deficiency remains the most frequent cause worldwide, after starvation, of preventable mental retardation in children. It causes maternal hypothyroxinemia, which affects pregnant women even in apparently iodine-sufficient areas, and often goes unnoticed because L-thyroxine (T₄) levels remain within the normal range, and thyroid-stimulating hormone (TSH) is not increased. Even a mild hypothyroxinemia during pregnancy increases the risk of neurodevelopmental abnormalities, and experimental data clearly demonstrate that it damages the cortical cytoarchitecture of the fetal brain. The American Thyroid Association (ATA) recommends a supplement of 150 µg iodine/day during pregnancy and

factors that contribute to normal development of the CNS through genomic and nongenomic actions in neurons and glial cells [2]. Thyroid hormones are iodinated amino acids, released in the thyroid gland by thyroid-stimulating hormone (TSH)-induced proteolysis of the iodinated thyroglobulin. Therefore, iodine is an essential component of thyroid hormones. The amount of iodine intake per day, which varies according to the age and physiological state of individuals (Table 1), is therefore crucial for the thyroid gland to produce adequate amounts of thyroid hormones. In particular, iodine intake is fundamental during gestation and lactation, because in these developmental periods the mother is the only source of T₄ and iodine for

Iodine intake in pregnancy in Ireland – A cause for concern?

2006

ABSTRACT

Background Adequate dietary iodine intake is necessary to maintain maternal thyroid function at a level permitting normal neuropsychological development of the foetus.

Aims and Methods To determine dietary iodine status by measuring urinary iodine excretion (UIE), proportional to dietary intake, in Irish mothers during the first trimester of pregnancy.

Results Median UIE showed seasonal variations, being lower in summer than in winter. The median values in pregnant women were, summer 45µg/l, winter 68µg/l. Equivalent values for controls were 43 and 91µg/l respectively. UIE required to achieve WHO recommended daily iodine intakes would be 120-180µg/l. In the Irish subjects UIE values suggestive of iodine deficiency (<50µg/l) were observed in 55% of pregnant women tested in summer and 23% in winter. Dairy milk iodine, a major dietary iodine source, showed similar variation.

Conclusions While there is as yet no available evidence of widespread thyroid hypofunction in the Irish obstetric population, the findings are a cause of concern, which if confirmed by a more comprehensive investigation, may indicate the need for iodine prophylaxis.

Z Nawoor,
R Burns,
DF Smith,
S Sheehan,
C O'Herlihy,
PPA Smyth

UCD School of
Medicine and
Medical Science,
Conway Institute
of Biomolecular
and Biomedical
Research, University
College Dublin and
National Maternity
Hospital, Holles
Street, Dublin

10 anos depois....

NEWS > RESEARCH

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Iodine ignorance: Irish researchers call for public health campaign



By Annie-Rose Harrison-Dunn+

Post a comment

25-Nov-2016

Last updated on 25-Nov-2016 at 14:34 GMT



Related tags: Taboo, Iodine, Women, Thyroid, Cognitive, Development, Mental, Brain, Baby, Infant, Maternal, Pregnancy, Folic acid, Folate, Mother, Supplements, Seaweed, Mineral, Fish, Cereal, Deficiency, Ireland, UK, Diet, Nutrition

Only one third of Irish women understand the importance of iodine in pregnancy, say researchers calling for a public health campaign.

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The findings were based on a survey of 520 females aged between 18 and 45.

Published in the *British Journal of Nutrition*, the study showed just 43% knew what the nutrient was and only 27% were aware iodine deficiency is a current public health concern in the UK and Ireland.

It found 41% of the women were not able to correctly pick out any health problem related to iodine deficiency.

The researchers from Ulster University in Northern Ireland are calling for increased efforts to improve women's understanding of the mineral.

“As part of a larger public health policy to eradicate iodine deficiency, educational intervention should be considered,” they wrote. “Among women of childbearing age, targeted public health campaigns are warranted to increase iodine nutrition knowledge and intake.”

Most preventable cause of brain damage

Getting enough iodine before conception and during pregnancy is vital for the baby's neuro-development and even mild to-moderate deficiency during pregnancy can impair cognitive development.

The World Health Organisation (WHO) says iodine deficiency is the greatest cause of preventable brain damage in childhood worldwide.



COAST

EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

Open Call Collection OC-2016-2

Proposal Reference OC-2016-2-21393

Title: Coordinating Research and Monitoring of Iodine Status in Europe

Ac



Portugal

Su

Prof Conceição Calhau (CINTESIS [ProNutri])

Eu

Participating as Secondary Proposer

Cc

E-mail: ccalhau@nms.unl.pt

ioc

eff

Telephone: +351218803033

res

Core Expertise: Health Sciences: Nutrition and dietetics

pro

Gender: F

es

Years from PhD: 14.00

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pply is

iodine

