

## The Salt - Still Killer

Zbigniew Szybiński\*

*Dept of Endocrinology in Krakow, Jagiellonian University, Collegium Medicum, Krakow, Poland, 31-501 Krakow, Kopernika 17 str. Poland.*

**\*Corresponding Author:** Zbigniew Szybiński, Dept of Endocrinology in Krakow, Jagiellonian University, Collegium Medicum, Krakow, Poland, 31-501 Krakow, Kopernika 17 str. Poland.

**Received:** July 07, 2020; **Published:** July 20, 2020

### Abstract

Sodium is one of the risk factors of hypertension and some neoplastic processes (4). Arterial hypertension is observed in over 8 million people and in other 8 million is not diagnosed. The risk factors of hypertension are modified mainly by style of life and in minor degree - some genetic mutation. World Health Organisation recommended NaCl intake of less than 5 g per day and 30% reduction in salt intake by 2025. WHO Member States have agreed to reduce the global population's intake of salt by a relative 30% by 2025. In the United Kingdom in 1996 Action on Salt was set up - known as Consensus Action on Salt & Health (CASH). In the majority of European countries daily intake of NaCl is much higher 8,2-11,7 in Poland 11,5 g/day. In 1994 international organizations: WHO, UNICEF and ICCIDD indicated salt - Sodium Chloride as a main carrier of iodine in the prophylactic systems in the iodine deficient areas over the world. Following this recommendation 24 European countries introduced the model of iodine prophylaxis based on the salt iodization. In Poland - salt iodization is mandatory - as the most effective model on the population level.

Around 10 years after implementation of the model of iodine prophylaxis, the prevalence of goiter in children aged 6-12 years fell from 24,5 % to 4,7 % - below endemic levels, in pregnant women from 80 % to 19%, frequency of TSH, over 20 uIU/ml in neonates fell from 2,0 % to 0,14 %, increase of thyroid and stomach cancer were inhibited. Iodized salt is the main carrier of iodine in the prophylaxis systems. Following WHO recommendation on salt intake reduction to 5 gr/day, additional carriers of iodine should be introduced on the food market - mineral water and cows milk after iodization of the cows licks. Up to 80% of the salt comes from food industry. A very important factor it is a proper information and education on the population level. Reduction of daily intake of NaCl is under control of the Polish Council for Control of Iodine Deficiency Disorders (PCCIDD) established in 1991 following the example of the International Council for Control of Iodine Deficiency Disorders (ICCIDD) (24). The Polish model of iodine prophylaxis adopted in 1996 is still acting, is very effective and has been accepted by the International Council for Control of Iodine Deficiency Disorders (ICCIDD).

**Key words:** *References, Article, Salt, Still, Killer*

## Introduction

In the lights of the last publications, style of life and nutrition are most important risk factors of the civilization diseases(1,2,3). Sodium is one of the risk factors of hypertension and some neoplastic processes (4). Arterial hypertension is observed in over 8 millions people and in other 8 millions is not diagnosed.

The risk factors of hypertension are modified and depend on increased daily intake of sodium, alcohol, cigarettes smoking and obesity and -another words- depend on the style of life. Are also - in minor degree - nonmodified risk factors and depend on some genetic mutation and may be observed in the family members. Arterial hypertension creates a risk of dangerous complications like brain stroke or heart failure.

## Salt Intake

World Health Organisation recommended NaCl intake of less than 5 g per day and 30% reduction in salt intake by 2025. WHO Member States have agreed to reduce the global population's intake of salt by a relative 30% by 2025. In the United Kingdom in 1996 Action on Salt was set up - known as Consensus Action on Salt & Health (CASH) based at Queen Mary University of London and supported by 25 scientific experts. Action on Salt cooperates with the food industry and Government to reduce the amount of salt in processed foods as well as salt added to cooking, and to the table (5). Similar situation is observed in Poland (6,7). However in the majority of European countries daily intake of NaCl is much higher (Table. no 1).

### Daily Intake Of Sodium Chloride In The European Countries (G/Person/Day)

- Belgium 8,3 - 8,7
- Italy 9,2 - 10,8
- Portugal 9,0 - 11,0
- France 7,9 - 8,4
- UK 9,7 - 11,7
- Germany 8,2 - 8,8
- Denmark 8,2 - 8,4
- Poland 1998 - 15,0, 2003 - 13,5, 2009 - 11,5
- WHO recommendation 5,0 g NaCl/person/d

**Table 1**

## Iodine Prophylaxis

In 1994 international organizations: WHO, UNICEF and ICCIDD indicated salt - Sodium Chloride as a main carrier of iodine in the prophylactic systems in the iodine deficient areas over the world. Following this recommendation 24 European countries introduced the model of iodine prophylaxis based on the salt iodization (8,9). In Poland - salt iodization is mandatory - as the most effective model on the population level (Table 2).

### The model of iodine prophylaxis in Poland

1. Obligatory iodization of table salt (30+/-10mg KI/1 kg).
2. Obligatory iodization of neonatal formula (10 ug KI/100 ml).
3. Recommended additional daily dose of iodine
3. 100-150 ug for pregnant and breast feeding women.
4. Recommended increased consumption of iodine carriers : see fish, eggs, milk fruits and vegetables.

**Table 2**

This model covers daily iodine requirement on the population level (Table 3).

### Daily Iodine Requirement Population Groups (Ug/Day)

- • Nursery children 0 – 55 months 90
- • Schoolchildren 6 – 12 years 120
- • Adults > 12 years 150
- • Pregnant and breast feeding women 250

**Table 3**

One of the most dangerous consequences of iodine deficiency on the population level was endemic goiter (10). Around 10 years after implementation of the model of iodine prophylaxis, exceptional improvement of the basic markers was found. For example, the prevalence of goiter in children aged 6-12 years fell from 24,5% to 4,7% - below endemic levels (11,12,13,14), in pregnant women from 80% to 19% (15), frequency of TSH, over 20 uIU/ml in neonates fell from 2,0% to 0,14% (16), sharp increase of thyroid cancer observed between 1991-1998 was stopped (17) and decrease of stomach cancer incidence rate was also (18).

Salt intake of less than 5 grams per day for adults helps to reduce blood pressure and risk of cardiovascular disease, stroke and coronary heart attack. The principal benefit of lowering salt intake is

a corresponding reduction in high blood pressure. However most people consume too much salt—on average 9–12 grams per day. When global prevalence of iodine deficiency disorders is observed (19), iodized salt became the main carrier of iodine in the prophylaxis systems. Following WHO recommendation on salt intake reduction to 5 gr/day, additional carriers of iodine should be introduced on the food market (20,21). The most accessible products recommended by the National Program for the Elimination of Iodine Deficiency Disorders (22) are iodized mineral water and cows milk after iodization of the cows licks (23). The source of salt is salt from the salt shaker. However up to 80% of the salt comes from salt present in processed, packaged food - such as bread, breakfast cereal or ready meals. A very important factor it is a proper information and education on the population level. This action is under control of the Polish Council for Control of Iodine Deficiency Disorders (PCCIDD) established in 1991 following the example of the International Council for Control of Iodine Deficiency Disorders (ICCIDD) (24).

The Polish model of iodine prophylaxis adopted in 1996 is still acting, is very effective (25), and is very well appreciated by the International Council for Control of Iodine Deficiency Disorders (ICCIDD) (26).

## Final Conclusions

1. NaCl is one of the most important risk factor of the cardiovascular diseases and some neoplastic processes. World Health Organisation recommended NaCl intake of less than 5 g per day and 30% reduction in effective salt intake by 2025.
2. Following to WHO, UNICEF and ICCIDD recommendations Sodium Chloride as a main carrier of iodine in the iodine deficient prophylaxis programmes in the areas over the world.
3. In Poland in 1996 a very effective model of iodine prophylaxis was introduced - based on iodization of household salt 20-40 mg KI/kg.
4. In the light of the WHO recommendation on necessary daily salt intake reduction, additional carriers of iodine have been introduced in Poland on the food market: iodized mineral water and milk - after introducing iodization of the salt licks for milky cows.

## References

1. WHO (1990): diet, nutrition and the prevention of chronic diseases. WHO Technical Series Report No 797.
2. WHO (2005): Preventing chronic diseases: a vital investment. WHO, Geneva.
3. WHO (2003): Diet, nutrition and the prevention of chronic diseases. Report of a Joint WHO/FAO Expert consultation. Geneva WHO.
4. WHO (2010) Strategies to monitor and evaluate population sodium consumption and sources of sodium in the diet: report of a joint technical meeting convened by WHO and the Government of Canada. October
5. WHO (2012): Guideline: Sodium intake for adults and children. WHO Geneva
6. Sekuła W, Ołtarzewski M., Boruc T. (2008): Salt consumption in Poland -current situation and developments in the last years. Polish Journal of Human Nutrition and Metabolism 35,4,265.
7. Jarosz M, Sekuła W, Rychlik E, Ołtarzewski M. (2011): Salt consumption in Poland -cardiovascular diseases and gastric cancer. Polish Journal of Human Nutrition and Metabolism XXXVIII 6, 397.
8. WHO, (2006). Forum and Technical Meeting on Reducing Salt intake in Population. Paris, France. October.
9. WHO, (2007). Report of a WHO Expert Consultation : Salt as a Vehicle for Fortification . Luxembourg 21-22 March.
10. Szybiński Z., Żarnecki A.: Prevalence of goiter, iodine deficiency and iodine prophylaxis in Poland. Pol. J. Endocrinol. 44, 373-388
11. Lewiński A., Tomaszewski M. et al. (1993): Occurrence of goiter in relation to iodine deficiency in schoolchildren from city of Łódź, the Łódź metropolitan area and Piotrków, Sieradz, Płock, Włocławek, Radom and Skierniewice voivodship. Pol. J. Endocrinol. 1993, 44, 271
12. Syrenicz A., Napieralski K, Celibała R. et al. (1993): Iodized salt consumption, urinary iodine concentration and prevalence of goiter in children from four districts of north-western Poland. Pol. J. Endocrinol. 44, 343.
13. Rybakowa M., Tylek-Lemańska G., Ratajczak R., Sołtysik-Wilk E (1998): Iodine deficiency in children from Tarnobrzeg district. Pol. J. Endocrinol. 49, (suppl 1/3), 115.
14. Bandurska-Stankiewicz E., Tarasiewicz U. (1998): Iodine deficiency and prevalence of goiter in the Olsztyn region. Pol. J. Endocrinol. 4 (suppl. 1/3), 145

15. Gołkowski F, Bałdys-Waligórska A, Huszno B, Szybiński Z. (1998): Goiter prevalence and urinary iodine concentration in pregnant women. *Polish J. of Endocrinology* 49(suppl) 1/3, 183-189.
16. Ołtarzewski M., Szymborski J. (2003): Neonatal hypothyroid screening in monitoring of iodine deficiency and iodine supplementation in Poland. *J. Endocrinol. Invest. Suppl.* 2, 26, 71-76.
17. Huszn.o B., Szybiński Z., Przybylik-Mazurek E. et al. (2003): Influence of iodine deficiency and iodine prophylaxis on thyroid cancer histiotype and incidence in endemic goiter area. *Endocrinol. Invest. Suppl.* 2, 26, 27-31.
18. Gołkowski F, Szybinski Z. et al (2007): Iodine prophylaxis – the protective factor against stomach cancer. *Eur. J. Nutr.* 46, 251-256.
19. WHO/UNICEF/ICCIDD. (1993 ). Global Prevalence of Iodine Deficiency Disorders. WHO Geneva (Micronutrient Deficiency Information System MDIS. Working Paper No 1)
20. Recommendation of the Polish Council for Control of Iodine Deficiency Disorders and Polish Society of Endocrinology. *Pol. J. Endocrinol.* (1998) Suppl.1, 3, 39, 201.
21. Szybiński Z, Jarosz M, Hubalewska-Dydejczyk A et al. (2010). Iodine deficiency prophylaxis and the restriction of salt consumption — a 21<sup>st</sup> century challenge. *ol J Endocrinol.* 61: 135.
22. Szybiński Z., Lewiński A. (1998): National Program for the Elimination of Iodine Deficiency Disorders in Poland (1999-2003). *Pol.J Endocrinol.* 1/3, 49, 203-212.
23. 23.Brzóska F, Szybiński Z, Śliwiński B. (2009): Iodine concentration in Polish milk - variations due to season in the region. *Pol. J. Endocrinol.* 60, 449-454.
24. Szybinski Z, Gołkowski F. et al. (2008): Effectiveness of the model of iodine prophylaxis adopted in Poland. *J. Endocrinol Invest.* 31(4), 309-313.
25. Szybiński Z. (2012): Work of the Polish Council for Control of Iodine Deficiency Disorders and the model of iodine prophylaxis in Poland. *Pol. J Endocrinol.* 63, 2, 156-160.
26. Delange F, Lewiński A. et al. (2001): A programme of iodine supplementation using only iodized household salt is efficient - the case of Poland. *Eur. J. Endocrinol.* 144, 331-333.

**Benefits of Publishing with EScientific Publishers:**

- ❖ Swift Peer Review
- ❖ Freely accessible online immediately upon publication
- ❖ Global archiving of articles
- ❖ Authors Retain Copyrights
- ❖ Visibility through different online platforms

**Submit your Paper at:**

<https://escientificpublishers.com/submission>