Salt intake through bakery products in Slavonia Region

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SVEUČILIŠTE JOSIPA JURJA STROSSMAYERA U OSIJEKU

dabar DIGITALNI AKADEMSKI ARHIVI I REPOZITORIJI

SALT INTAKE THROUGH BAKERY PRODUCTS IN SLAVONIA REGION

UDC 664.66 : 664.644.1(497.54)

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ABSTRACT

The reduction of salt intake is a public health issue in many countries because it has been identified as the main cause of several diseases such as hypertension, heart and kidney diseases, stomach cancer, osteoporosis, stroke and obesity. The WHO has set a worldwide target of a maximum salt intake of 5 g/day for adults as a recommendation to reduce daily salt intake. Of all foodstuffs, bread has been identified as the single highest contributor to the total daily salt intake. Therefore, the aim of this paper was to estimate salt intake through bakery products in Slavonia Region and their dependency on different parameters. The quantity of bakery product intake derived from national food consumption survey. The results showed that consumers in Slavonia eat about 148 g/day of various bakery products, and consequently intake 2.43 g/day of salt, which is half of the recommended daily intake. Research has shown that salt intake by bakery products are almost the same in villages and towns. Related to gender, men's intake is higher than women. The intake is highest at low body mass index, and is higher in younger than in elderly population.

Keywords: salt intake, bakery products consumption, national food consumption survey

INTRODUCTION

One third of all global deaths can be attributed to cardiovascular disease (CVD) including heart attack, stroke and related diseases [1]. Elevated blood pressure is a major, modifiable, causal factor of CVD, and salt (sodium chloride) is the primary cause of raised blood pressure. The main source of salt in the diet is processed foods (about 70-75% of the total intake), with cereal and cereal products contributing 30% of overall intake [2].

The vast majority of people have no idea about the salt contents in the food they eat. Therefore, they do not know how much salt they ingest. As a result of this, high sodium intake occurs without the consumer's knowledge and they cannot control their salt

intake. Therefore people in their households need to reduce the salt they add to food, but most importantly, the food industry needs to lower the salt contents [3].

In UK in 1996, a number of experts set up an action group, the Consensus Action on Salt and Health (CASH) with the aim to negotiate with food manufacturers and suppliers a universal and gradual reduction of the salt content of processed foods as well as to increase community awareness about excess salt intake. Following the example of CASH, a World Action Group on Salt and Health (WASH) was established in 2005, with participation of over 300 international experts. WASH aims at reduction of salt in the diet worldwide by exerting pressure on multi-national food companies to reduce the salt content of their products [4].

In 2006, the First Croatian Congress on Hypertension announced Declaration of salt reducing programme in Croatia, and in 2007 at the 6th Croatian Congress on Atherosclerosis Croatian Action on Salt and Health (CRASH) the national programme for reducing salt intake was launched [5].

The World Health Organization (WHO) has set a worldwide target of a maximum salt intake of 5 g/day for adults as a recommendation to reduce daily salt intake [6].

The aim of this study was to estimate salt intake through bakery products in Slavonia Region and their dependency on different parameters (place of living, gender, BMI and age).

MATERIALS AND METHODS

Croatian Food Agency conducted National Food Consumption Survey in Croatia. The survey was carried out in accordance with EFSA's guidance [7]. It was conducted among the adult population (18-64 years) in two parts (1st part – autumn 2011, 2nd part – summer 2012) on representative sample of 1000 respondents in each part. A 24-hour recall method was used and survey was conducted in two non-consecutive working days (with at least two weeks interval between them) and one day of weekend. Data were collected by face-to-face interview at participants home. Representative sample covered different socio-demographic parameters (regional coverage, the ratio of rural-urban environment, education, monthly income, employment status, family status, level of physical activity, body weight and height). Also, the questionnaire on the frequency of consumption, with classification from several times a day to once a year, was used to determine chronic exposure. The manual from Senta et al [8] was used to specify the amount of consumed food. The household measurement and then weighing of particular food were used for food that is not included in the manual [8]. All participants were asked additionally questions to describe food and drink they consumed (place of consumption, where food was bought, type of preparation, brand, origin of food…) in order to help in identifying specificity of food and drinks in classification.

This research comprises only data from 1st part of the survey and does not include consumption of filled bakery products.

The salt content in bakery products was calculated on the basis of two data sources: data obtained in questionnaire regarding bread and rolls consumption and salt content from paper Ugarčić-Hardi et al [9].

RESULTS AND DISCUSSION

From 175 participants in Slavonia Region, 9 participants are excluded because of missing data. Only consumers of bakery products are included in this paper, and there are 158 consumers in this Region. They consumed approximately 148 grams of bakery products per day.

If we look at the data of Croatian Bureau of Statistic for 2011 we can see that the consumption of bread and other bakery products was 73.9 kg per year which is approximately 202 g/day per household member [10]. This difference in consumption may be the result of various research methodologies, and because of the fact that we didn't include filled bakery products in our research.

Data from EFSA Comprehensive European Food Consumption Database [11] shows that in each country more than 95% of participants consume bread and rolls, except in Finland where the percentage of consumers is 35%. According to the Database [11] consumption in countries such as Belgium, Germany and Spain, which have used the same method as in our study, consumption was 129.4 g/day; 138.1 g/day and 90.2 g/day, respectively.

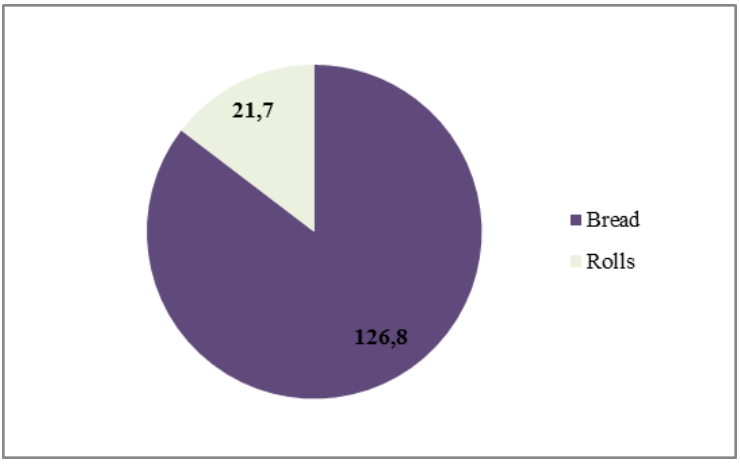

Figure 1. Consumption of bakery products (g/day)

From total daily bakery products intake (148 g/day) bread represent 85.4% (126.8 g/day) and the rest are rolls in quantity of 21.7 g/day (Figure 1).

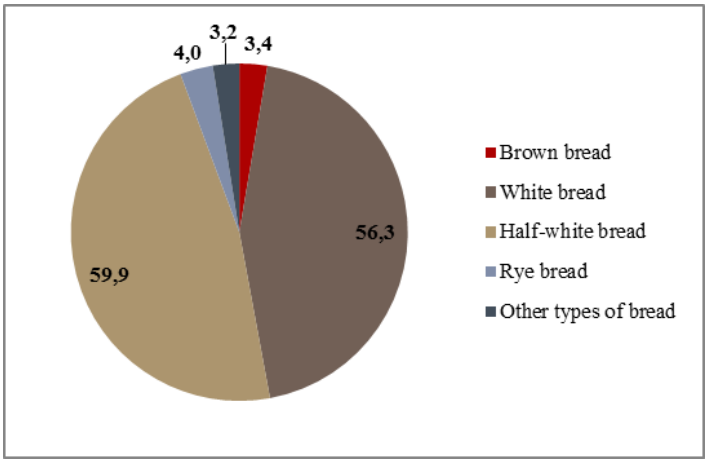

Figure 2. Consumption of bread (g/day)

When we take into account different types of bread, there are two the most common types: half-white bread (47.3%) and white bread (44.4%). It is interesting that brown bread is present in only 2.7%.

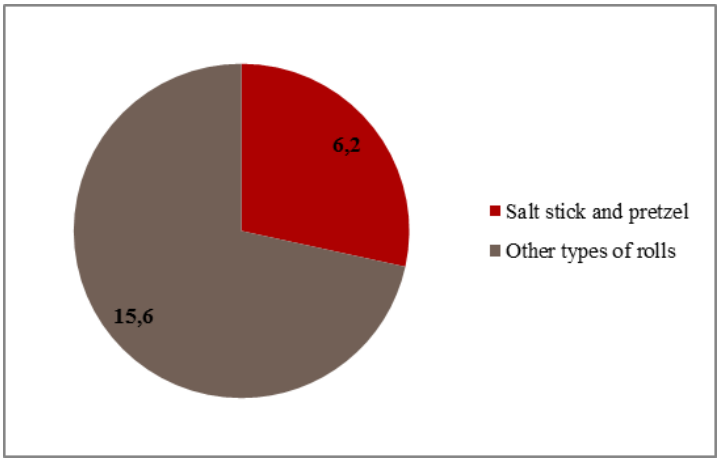

Figure 3. Consumption of rolls (g/day)

Figure 3 shows the consumption of rolls and rolls strewed with salt in g/days, where consumption of salt sticks and pretzel, which have additional salt on the surface, is 1/3 of all consumed rolls.

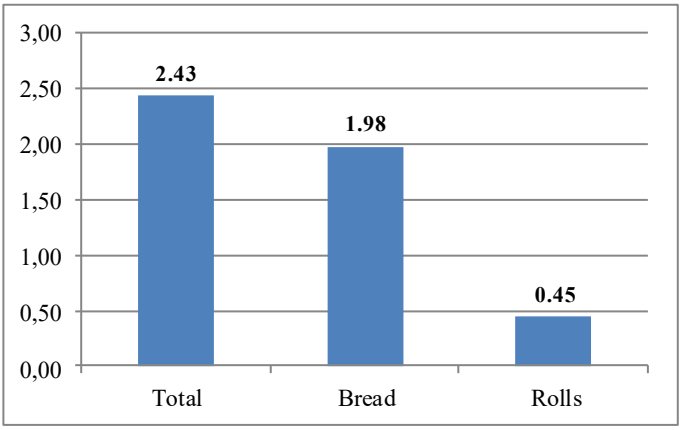

Figure 4. Salt intakes (g/day) from bakery products

Figure 4 shows that salt intake through bread is 1.98 g/day, what is almost 4.5 times more than through rolls, where intake is 0.45 g/day. This is expected when we take into account quantity of consummation of these products.

Figure 5. Salt intakes (g/day) in towns and villages

From a total of 158 consumers, 102 (64.6%) consumers live in towns and 56 (35.4%) in villages. Average salt intakes are 2.46 g/day in towns and 2.37 g/day in villages that shows that salt intake is almost the same.

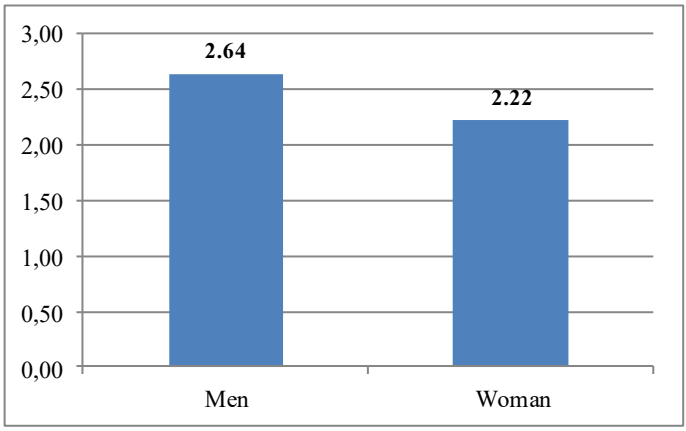

Figure 6. Salt intakes (g/day) according the gender

77 men and 81 women consume bakery products. Their average salt intakes are 2.64 g/day and 2.22 g/day, respectively. Results show that salt intake is higher in male population. But when we consider higher average body weight for men (84 kg) in relation to women (69 kg), we can see that for both gender the average salt intake is 0.03 g/kg of body weight, which means that this difference is not significant.

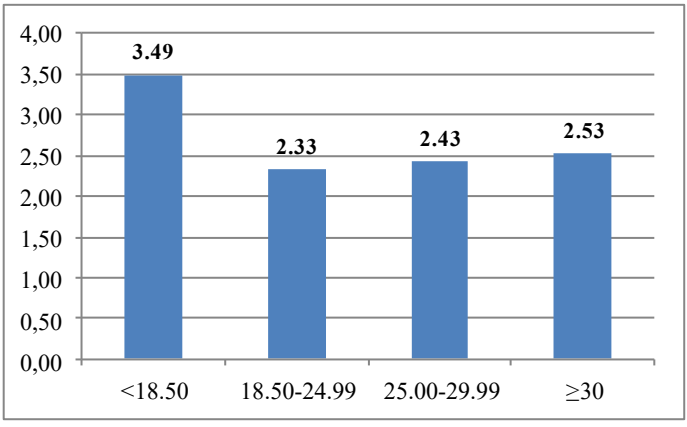

Figure 7. Salt intake (g/day) according BMI

BMI scale is divided in four categories. First category is underweight (<18.50), second is normal weight (18.50-24.99), third is overweight (25-29.99) and fourth is obesity (≥30). The results show that salt intake is highest at low BMI. It could mean that they eat more bakery products than other BMI categories or that they eat more products strewed with salt. Nevertheless, this result should be taken with a reserve, because the number of respondents in this category is very low. Additionally, these should be analyzed more detailed to see which products they consumed, which age classes are at lowest BMI and their monthly income, in order to explain this result.

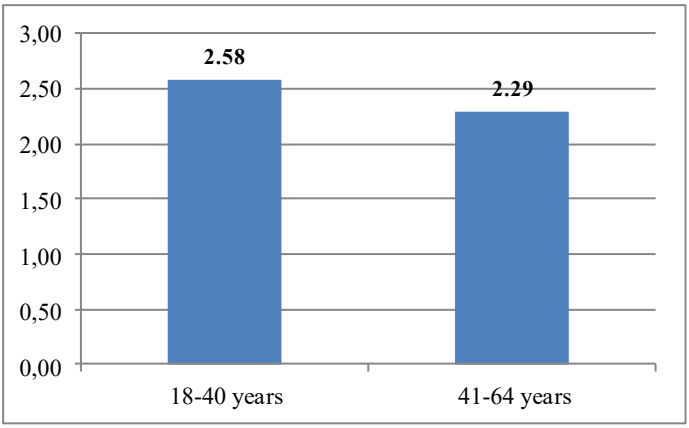

Figure 8 Salt intakes (g/day) according the age

Regarding age there are 2 categories. The first category represents 18-40 years old consumers and the second 41-64 years old. There are 75 consumers in 1st category and 83 consumers in 2nd category. Salt intake is higher at younger population. This also, partly, can be explained by quantity of food that younger people can eat in relation to older people, who eat less quantity of food per day.

CONCLUSION

Our results show that salt intake through bakery products in the Slavonia Region is 2.43 g/day. That can indicate that the total salt intake significantly exceeds the limit of 5 g of salt/day set by the WHO.

Salt intake through bakery products represent half of the recommended amount and various studies show that the amount of salt in bakery products can be reduced without affecting the quality and organoleptic characteristics of the final product. Therefore is

necessary to encourage manufacturers, or it should be legally regulated, to reduce the amount of salt in bakery products as much as possible.

In meantime, it is necessary to raise awareness of this problem through campaign for consumers' education and to influence industry in order to reduce quantity of salt in their products and so become recognized as producers that take care about consumers' health.

REFERENCES

1. WHO/FAO. 2003. Diet, nutrition and the prevention of chronic diseases. In WHO Technical Report Series 916. Geneva, Switzerland. http://whqlibdoc.who.int/trs/who_trs_916.pdf [15.09.2013.]
2. Lynch E.J., Dal Bello F., Sheehan E.M., Cashman K.D., Arendt E.K. 2009. Fundamental studies on the reduction of salt on dough and bread characteristics. Food Res. Int. 42:885-891.
3. Plácido A., Kupers R., Paíga P., Magalhães J., Nouws H. P. A., Delerue-Matos C., and Oliveira M. B. P. P. 2012. Salt content in bread and dough from north Portugal: Method development and comparison. J. Food Compos. Anal. 27:14-20.
4. Strazzullo P., Cairella G., Campanozzi A., Carcea M., Galeone D., Galletti F., Giampaoli S., Iacoviello L., and Scalfi L. 2012. Population based strategy for dietary salt intake reduction: Italian initiatives in the European framework. Nutr. Metab. Cardiovasc. Dis. 22:161-166.
5. Jelaković B., Kaić-Rak A., Milicić D., Premuzić V., Skupnjak B., and Reiner Z. 2009. Less salt – more health. Croatian action on salt and health (CRASH). Liječ Vijesn, 131(3-4):87-92.
6. World Health Organization (WHO). Guideline: Sodium intake for adults and children. Geneva. 2012.
7. EFSA (2009). General principles for the collection of national food consumption data in the view of pan-European dietary survey. EFSA Journal. 7(12):1435.
8. Senta A., Pucarin-Cvetković J., and Doko Jelinić J. 2004. Kvantitativni modeli namirnica i obroka. Medicinska naklada, Zagreb.
9. Ugarčić-Hardi Ž., Dumančić G., Pitlik N., Koceva Komlenić D., Jukić M., Kuleš A., and Sabo M. 2010. The salt content in bakery products in Osječko-Baranjska County. Page 551 in: Proceedings of 5th International Congress Flour-Bread 2009., Opatija, Croatia.
10. Državni zavod za statistiku: Statistički ljetopis Republike Hrvatske 2012. Zagreb, 2012.
11. EFSA (2011). The EFSA Comprehensive European Food Consumption Database. http://www.efsa.europa.eu/en/datexfoodcdb/datexfooddb.htm [17.09.2013.]