

Assessment of Salt Concentration in Cheese Commonly Consumed in Armenia

**A.A. Bazarchyan¹, H.Ts. Aslanyan¹, A.S. Ghazaryan¹,
D.M. Andreasyan¹, C.L. Sujyan², A.Yu. Shirvanyan³,
R.S. Stepanyan¹, G.Z. Petrosyan²**

¹*National Institute of Health after S.Avdalbekyan,
Ministry of Health (NIH/MoH);*

²*“STANDARD DIALOG” LLC;*

³*Ministry of Economy (Food Safety Division), Republic of Armenia;
1st and 2nd - 0010, Yerevan, 49/4 Komitas Ave.;
3rd-0010, Yerevan, 5 M. Mkrtychyan str.*

Key words and acronyms: non-communicable disease (NCD), blood pressure (BP); cardiovascular disease (CVD); risk factor; cheese; salt; content; intake; Armenia

Introduction

There is a strong evidence that elevated salt intake increases blood pressure (BP) and thereby increases the risk of CVD (hypertension, strokes, heart attacks, heart failure) - the leading cause of death and disability worldwide [1, 10, 16, 21, 26, 30, 37, 39, 42]. The current salt intake in most countries around the world – 9-12g per day – is much more than is physiologically necessary [11, 15, 25, 36]. The reduction in salt intake may notably reduce BP and the risk of associated non-communicable diseases; it is considered the most cost-effective measure to improve public health [1, 2, 5, 11, 17, 18, 26, 36, 39]. The WHO has recommended salt reduction as one of the top three priority actions to tackle the NCD crisis [3]. At the 66th World Health Assembly, it was unanimously agreed that all countries should reduce their salt intake by 30% towards a target of 5 g/day, by 2025 [31]. The Council of the European Union has provided its support to the EU framework for national salt initiatives to reduce salt intake [9]; within the EU, most of the member states recommend 2.4 g sodium (6 g salt) daily [4].

Numerous comprehensive reviews highlight salt reduction programmes worldwide [1, 16, 18, 27, 33, 35, 36, 40]. By end-2015, a total of 75 countries had national salt reduction strategies, that include industry engagement to reformulate products (n=61), establishment of sodium content targets for foods (39), consumer education (71), front-of-pack labeling schemes (31), taxation on high-salt foods (3), etc. Legislative actions related to salt reduction such as mandatory targets, front of pack labeling, food procurement policies and

taxation have been implemented in 33 countries; 12 - reported reduction in salt intake, 19 - reduced salt in foods, 6 - improvements in consumer knowledge, attitudes or behaviors relating to salt [35]. The majority of programmes apply target-based approach, prioritizing top contributors to daily salt intake, such as bread, cheese, processed meat products (ham, sausages), sauces, etc. [4, 7, 14, 24, 40]. The totality of the evidence supports efforts to achieve population-wide lowering of salt intake. Most successful programmes (in the UK and Finland) serve as a guide for other countries [7, 15, 16, 27, 35, 36]. The well-functioning programmes are underpinned by effective surveillance systems that monitor population salt consumption patterns and major sources of salt in diet. However, many countries lack data on key areas of salt consumption such as national salt intake levels and the amounts of salt in local food products. These data are essential for planning a programme that would target the area of greatest weakness and have the greatest impact in terms of health and investment [38, 42].

National context. Like many countries, Armenia is facing a growing NCD burden [22, 41]. Over past 30 years, the NCD prevalence and related mortality saw in the country a 2-fold increase. In 2016, the mortality due to most prevalent NCDs comprised 80%, with CVD being the lead cause (55,6%), followed by cancer (20,6%), diabetes (3%) external causes (3,8%), other (2,4%) [22]; risk factors that account for the most disease burden in Armenia include dietary risks. The country is confronted with excessive salt intake of its population. NCD STEPS Survey (2016) found a mean salt intake at 9,8 g/day among 18-69 aged people: 11 g/day in men, 8,4 g/day in women [22]. In a parallel study [15], sodium content was measured in urine of reproductive age women: UNaC/UCr ratios approximated an average sodium intake of 5,5 g/24h, equivalent to a salt intake of 13,9 g/24h.

The NCD prevention and control in Armenia is a stated priority: several policy documents call for a comprehensive health system response to reduce the NCD burden. However, there is a lack of pragmatic implementable recommendations on which such a response should be based [41]. The country does not have maximum population salt intake targets. There is no surveillance system to measure, monitor and evaluate population salt consumption patterns and the major sources of salt in the diet; there is a lack of information on the salt content of the main salt-containing foods. In particular, very little work has been conducted looking at the salt content of cheese, commonly consumed in Armenia. Therefore, we conducted an indicative study to measure and evaluate the salt content in various cheese products, so that policymakers can decide on the appropriate action to achieve salt reduction and whether cheese is a priority for such action in the country.

Material and Methods

The initial plan was to categorize and estimate average daily intake of cheese products in Armenia; then, once an estimate of salt content for a specific

type of product is determined, to calculate average daily intake of salt from the product. To this end, the following **basic facts** on cheese consumption were considered:

- 91,8% of the population in Armenia consume milk and dairy products [28]; 89,4%- consume cheese and 98,3% of consumers prefer cow milk cheese [8]; producers of dairy products produce over 20 types of cheese made from cow, goat or sheep milk; more than 95% of total production is cow milk cheese [13, 34].
- 85% of cheese consumers prefer domestically produced cheese - taste is the dominant factor (Armenian consumers are different with their salt preferences in cheese, and while American and European types of cheese usually have a low percentage of salt, Armenians prefer saltier cheese) [8]; ethnic cheese types are Lori, Chanach, Chechil and Buried cheese; import substitution is promoted through production of Suluguni, Gouda, Edam, Emmental, Feta, Blue cheese, Cheddar, etc. [8, 13, 34]; more than 60 large and medium-size enterprises and small factories or family farms operate in the sector; almost all the cheese-makers are engaged in production of Lori and Chanakh cheese types [23].
- On average, people in Armenia consume approximately 10 kg of cheese per year [32, 34]. The average for recent 6 years (mean \pm SD) is $9,95 \pm 0,37$ kg with standard error of the mean (SEM) - 0,33, 95%CI - $9,62 \div 10,28$ and coefficient of variation (CV) -3,69%, all together indicating low level of variability of cheese consumption in the country.
- **Cheese priorities** (cheese most needed/wanted). Consumers prioritize semi-soft cheese Lori (66%) and soft Chanakh (26.4%), both aged in brine; for most consumers, Lori cheese has an optimal combination of fat and salt that together with the affordable price makes this type of cheese the market leader [8, 13, 34]; Chanakh - the second most popular cheese - is cheaper across the range of all types of cheese; it has rather salty taste. Far from ratings of the above two types of cheese, categorized as I and II groups, the remaining 10-12 types of domestically produced cheese constitute third, fourth or lower preferences (all together 7,6%): these are categorized as III group of cheese - less affordable though having a reasonably low salt content (Suluguni, Chechil, Mozzarella, Gouda, cottage cheese, etc.).

Sample size

Throughout 2019, a total of 62 samples of cheese products were collected (included in the study), out of which, 20 were delivered by cheese-making enterprises or sole proprietors directly to our two laboratories of the NIH/MoH and STANDARD DIALOG for direct chemical analysis of salt in the products (along with a range of quality and safety indicators); 9 samples were randomly collected from Yerevan supermarkets (one per each supermarket) by the study

group itself and tested in the same laboratories; the remaining 33 samples were tested for salt content by cheese industry units (11 large cheese-making companies) and, then, upon request of the Food Safety Division of the Ministry of Economy, the results were reported to the study group (we relied on accuracy of the data, provided by manufacturer's laboratories). All the samples were specified by cheese type only (for grouping of the results in accordance of their categories above).

Determination of the concentration of chloride (from sodium chloride) in cheese

The content of the sodium chloride in all cheese samples was determined through measurement of the concentration of chloride ion, using titrimetric method (with silver nitrate) in accordance with the national standard – GOST 3627-81: details of the method are presented elsewhere [12]. The final result of analysis for each sample was the arithmetic mean of two parallel measurements.

After determining the salt content in the cheese, the average daily intake of salt from this product was calculated using the percent product weight as salt multiplied by the estimated average daily intake of the product (ARMSTAT list of consumed specific food products [39]). Values are reported as arithmetic mean, standard deviation (SD), standard error of the mean (SEM, using *t* test) and, then, the confidence intervals (95%) and coefficient of variation (CV).

Results and Discussion

The table below shows salt levels in different types of cheese per 100 g. In general, the salt content in cheese was very high and there was a large variation in salt content between different types of cheese and within the same type of cheese. This is evident from high (24,7%) and very high (>30%) coefficients of variation, referring to relevant CV classifications [6].

Table

Salt content in various types of cheese in Armenia

Cheese category (group)	n	Mean± SD (g/100 g)	95% CI	CV%
I. Semi-soft brine cheese of Lori type, market leader (N 1) with preference rate 66%	25	3,82 ± 1,53	3,15 ÷ 4,49	40,1
II. Soft brine cheese of Chanakh type, N2 bestselling cheese with preference rate 26,4%	25	4,77 ± 1,18	4,25 ÷ 5,29	24,7
III. Group of 10-12 types of locally produced cheeses with lower preferences (7,6%) and low salt content (less affordable)	12	1,85± 0,98	1,23 ÷ 2,47	53,0

Weighted average: $\{(3,82 \times 66\%) + (4,77 \times 26,4\%) + (1,85 \times 7,6\%)\} : 100\% = 3,92 \pm 1,40$ (CI 3,29 ÷ 4,55)

Salt levels of popular brine cheese (I-II categories) were much higher (2-2,5 times) compared with salt content of locally produced foreign types of cheese (1,85 g/100g), though the latter are similar to those observed in the UK, the Netherland and several other countries [14, 24, 29]. On average, the soft brine cheese of Chanakh type ($4,77 \pm 1,18$ g/100 g) contained the highest amounts of salt. However, the **weighted average** ($3,92 \pm 1,40$ g/100 g) for salt content in the overall cheese product (aggregated) was close to the mean level of salt of semi-soft brine cheese Lori, because of its rather large share in cheese consumed in the country.

In Armenia, the average daily per capita intake of cheese is 28 g [19]. Given the percent salt content of typically consumed cheese (3,92%), the average daily salt intake from cheese is estimated to be $0.0392 \times 28 = 1,1$ g salt, which constitutes 11,2% of the mean salt intake (of 9,8 g/day) in the country. This percentage exceeds the share that cheese contributes to salt intake in many other countries such as the UK, the USA, Australia, New Zealand and Canada [14]: these are known of their rather long history of implementing salt reduction programmes with reduction targets, set for many salt-containing food including cheese products.

Conclusion

This research demonstrates that salt content in cheese, commonly consumed in Armenia, is rather high; there is a wide variation in the salt content in different types of cheese and even within the same type of cheese. The product is widely consumed in the country and, with its high salt content, tangibly contributes to salt intake of the population. When developing a salt reduction programme, among other salt-containing food cheese can be targeted, helping to lower the levels of dietary salt.

Оценка содержания соли в сырах, обычно потребляемых в Армении

**А.А.Базарчян, Г.Ц.Асланян, А.С.Казарян, Д.М.Андреасян,
К.Л.Суджян, А.Ю.Ширванян, Р.С.Степанян, Г.З.Петросян**

Проанализированы оригинальные статьи и крупные обзоры (в основном, англоязычные), в т.ч. тематические доклады и руководства ВОЗ, представляющие доказательные данные о том, что повышенное потребление соли приводит к повышению кровяного давления и, тем самым, к развитию ряда сердечно-сосудистых заболеваний (ССЗ), а сокращение потребления соли может снизить кровяное давление и риск ассоциированных ССЗ.

Определено содержание хлорида натрия (по иону хлора) в 62 образцах производимых в Армении традиционных сыров – лидеров рынка

(Лори и Чанах), а также местных аналогов ряда зарубежных сортов; 33 анализа выполнены сыроделами. Результаты разделены на три группы с учетом типа продукта и степени предпочтения потребителей (%) при его выборе.

Показано, что содержание соли в обычно потребляемых в Армении сортах сыра довольно высоко (в среднем $3,92 \pm 1,40$ г/100г); уровень соли в разных типах сыров и даже в одном типе продукта (от разных производителей) сильно варьирует (2-2,5 раза). Сыры составляют группу широко потребляемых молочных продуктов (89,4%, в среднем 28 г/день), и поэтому высокое содержание соли в сырах вносит ощутимый вклад в общее потребление соли населением (11,2%). Следовательно, при разработке программ по сокращению потребления соли могут быть установлены целевые показатели, как для основных солесодержащих продуктов (хлеб, мясные изделия, соусы), так и для сыров, способствующие снижению уровня приема соли с пищей.

Հայաստանում սովորաբար սպառվող պանրի մեջ աղի խտության գնահատումը

**Ա.Ա.Բազարյան, Հ.Ց.Ասլանյան, Ա.Ս.Ղազարյան, Դ.Ս.Անդրեասյան,
Կ.Լ.Սուջյան, Ա.Յու.Շիրվանյան, Ռ.Ս.Ստեփանյան, Գ.Զ.Պետրոսյան**

Կատարվել է օրիգինալ հոդվածների և ծավալուն ակնարկների, այդ թվում՝ ԱՀԿ-ի թեմատիկ զեկուլյցների և ուղեցույցների վերլուծություն: Համաձայն ուսումնասիրված աղբյուրների՝ չափից ավելի քանակներով աղի սպառումը բերում է արյան ճնշման բարձրացման և որպես հետևանք՝ մի շարք սիրտ-անոթային հիվանդությունների զարգացման, իսկ աղի սպառման սահմանափակումը կարող է իջեցնել արյան ճնշումը և կրճատել համապատասխան հիվանդությունների զարգացման ռիսկը:

Որոշվել է նատրիումի քլորիդի պարունակությունը (ըստ քլորի իոնի) ավանդական հայկական պանրատեսակների՝ շուկայի առաջատարներ Լոռի և Չանախ պանիրների, ինչպես նաև տեղական արտադրության օտարերկրյա ապրանքանիշների 62 նմուշներում, 33 նմուշների անալիզներն իրականացվել են պանրագործական ֆիրմաներում: Արդյունքները բաժանվել են երեք խմբի՝ հաշվի առնելով պանրի տեսակը և սպառողների նախընտրության ցուցանիշը (%-ը):

Պարզվել է, որ աղի խտությունը Հայաստանում սովորաբար սպառվող պանրի տեսակներում բավականին բարձր է (միջինը՝ $3,92 \pm 1,40$ գ/100գ), աղի մակարդակը պանրի տարբեր տեսակներում և նույնիսկ մեկ տեսակի արտադրանքի մեջ (տարբեր ֆիրմաներից)

տատանվում է 2-2,5-ի սահմաններում: Կաթնամթերքի դասում պանրի տարբեր տեսակները կազմում են լայն սպառում ունեցող մթերքների խումբ (89,4%, միջինը՝ 28 գ/օր), և, ուրեմն, աղի բարձր պարունակությունը պանրի տարբեր տեսակներում զգալի ներդրում է ունենում բնակչության կողմից սպառվող աղի ընդհանուր քանակի մեջ (11,2%): Հետևաբար՝ աղի սպառման կրճատմանն ուղղված ծրագրերի մշակման ժամանակ կարող են սահմանվել թիրախային ցուցանիշներ ինչպես աղ պարունակող հիմնական պատրաստի սննդամթերքի (հաց, մսամթերք, սոուսներ), այնպես էլ պանրի տարբեր տեսակների համար՝ դրանով իսկ նվազեցնելով սննդի հետ ընդունվող աղի քանակը:

References

1. *Al-Jawaldeh A., Al-Khamaiseh M.* Assessment of salt concentration in bread commonly consumed in the Eastern Mediterranean Region, *EMHJ*, 2018, V. 24 , No. 1, 18-24.
2. *Asaria P., Chisholm D., Mathers C., et al.* Chronic disease prevention: health effects and financial costs of strategies to reduce salt intake and control tobacco use. *Lancet*, 2007; 370: 2044–53. <https://www.ncbi.nlm.nih.gov/pubmed/18063027>
3. *Beaglehole R., Bonita R., Horton R., et al.* Priority actions for the non-communicable disease crisis. *Lancet* 2011, 377: 1438–47.
4. *Belz M.C.E., Ryan L.A.M., Arendt E.K.* The Impact of Salt Reduction in Bread: A Review, *Critical Reviews in Food Science and Nutrition*, 2012, 52:6, 514-524. <http://dx.doi.org/10.1080/10408398.2010.502265>
5. *Bibbins-Domingo K., Chertow G.M., Coxson P.G. et al.* Projected effect of dietary salt reductions on future cardiovascular disease. *New England Journal of Medicine*, 2010, 362(7):590–599 <http://www.ncbi.nlm.nih.gov/pubmed/20089957>
6. *Braz Vaz M.A., Pacheco P.S., Seidel E.J. et al.* Classification of the coefficient of variation to variables in beef cattle experiments. *Cienc. Rural* v.47 no.11, 2017. <http://dx.doi.org/10.1590/0103-8478cr20160946>
7. *Brinsden H., He F.J., Jenner K.H., MacGregor G.A.* Surveys of the salt content in UK bread: Progress made and further reductions possible, 2013, *BMJ Open* 3(6)e002936.
8. Cheese consumption trends in Yerevan. Center for Agribusiness & Rural Development, 2006, 58 pages. http://card.am/storage/uploads/files/our_publications/03vBI3mHg2ehiGXH5FLvprnEwTwPmmy3m4TSyuE.pdf
9. Council of the European Union. Council Conclusions on Action to Reduce Population Salt Intake for Better Health, 2010, (Official Journal of the European Union) <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:305:0003:0005:EN:PDF>
10. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: US Gov. Printing Office, 2010, p.112. <https://health.gov/dietaryguidelines/dga2010/DietaryGuidelines2010.pdf>
11. *Elliott P.* Sodium intakes around the world. Background document prepared for the Forum and Techn.Meeting on Reducing Salt Intake in Populations, (Paris, 5–7 October, 2006), Geneva, WHO, 2007. <https://www.who.int/dietphysicalactivity/Elliott-brown-2007.pdf>
12. GOST 3627-81: Milk products. Methods for determination of salt (sodium chloride) content 01.10.2009. <https://meganorm.ru/Index2/1/4294824/4294824446.htm> or <http://vsegost.com/Catalog/22/22288.shtml>
13. Grant Thornton: Report on the study of milk processing and dairy production sector in Armenia (in Armenian). Rural development foundation in Armenia, 2017.

14. Hashem K.M., He F.J., Jenner KH, et al. Cross-sectional survey of salt content in cheese: a major contributor to salt intake in the UK. *BMJ Open* 2014;4: e005051. doi:10.1136 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4139634/>
15. He F. J., Brinsden H. C., MacGregor G. A. Salt reduction in the United Kingdom: a successful experiment in public health. *Journal of Human Hypertension*, 2014, v. 28, p. 345–352.
16. He F.J., MacGregor G.A. A comprehensive review on salt and health and current experience of worldwide salt reduction programmes. *J. Hum. Hypertens*, 2008, 23, 363–384. <https://doi.org/10.1038/jhh.2008.144>
17. He F.J., MacGregor G.A. Reducing population salt intake worldwide: from evidence to implementation. *Prog. Cardiovasc. Dis.*, 2010, 52: 363–82.
18. He F.J., MacGregor G.A. Salt reduction lowers cardiovascular risk: meta-analysis of outcome trials. *Lancet* 2011, 378: 380–2.
19. Household's Integrated Living Conditions Survey anonymised microdata database (purchased and consumed food and non-food products), 2018. Food consumed at home (SPSS) (XLS) (99513313) <https://www.armstat.am/en/?nid=207>
20. Hutchings N., Aghajanova A., Baghdasaryan S. et al. Constituent analysis of iodine intake in Armenia. *Public Health Nutrition*: 21(16), 2982–2988.
21. Mozaffarian D., Fahimi S., Singh G.M. et al. Global sodium consumption and death from cardiovascular causes. *New Engl. J. Med.*, 2014, 371: 624–34.
22. NCD STEPS National Survey, Armenia, 2018, (D.Andreasyan, et al.). National Institute of Health, Ministry of Health, Republic of Armenia, 2018, p. 199 also WHO, 2017. Armenia STEPS Survey, 2016–2017, Fact Sheet http://www.who.int/ncds/surveillance/steps/Armenia_2016_STEPS_FS.pdf
23. Panorama.am (ECONOMY, 14:47 13/05/2017 ARMENIA). Cheese production increases in Armenia, issues remain a concern. <https://www.panorama.am/en/news/2017/05/13/Cheese-production-Armenia/1776539>
24. Partearroyo T., Samaniego-Vaesken M.L., Ruiz E. et al. Sodium Intake from Foods Exceeds Recommended Limits in the Spanish Population: The ANIBES Study. *Nutrients*, 2019, 11(10): 2451. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6835313/>
25. Powles J., Fahimi S., Micha R., Khatibzadeh S. et al. Global, regional and national sodium intakes in 1990 and 2010: A systematic analysis of 24h urinary sodium excretion and dietary surveys worldwide. *BMJ Open* 2013, 3, e003733. <https://bmjopen.bmj.com/content/bmjopen/3/12/e003733.full.pdf?gathStatIcon=true>
26. Prevention and control of non-communicable diseases in the European Region: a progress report WHO Regional Office for Europe, 2014, 62 p.
27. Quilez J., Salas-Salvado J. Salt in bread in Europe: potential benefits of reduction. *Nutrition Reviews* 2012, 70(11):666-78
28. Report on the research regarding nutritional status of the RA population (OXFAM Armenia, 2015) http://oxygen.org.am/images/content/publications/Nutrition-report-FINAL_eng.pdf
29. Salt content in Gouda cheese again reduced by ten percent. FrieslandCampina, 23 February, 2016. <https://www.frieslandcampina.com/en/news/salt-content-in-gouda-cheese-again-reduced-by-ten-percent/>
30. "Salt". US Centers for Disease Control, Department of Health and Human Services, Atlanta, GA. 1 June 2016. <https://www.cdc.gov/salt/index.htm>
31. Sixty-Sixth World Health Assembly. Follow-up to the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases. http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R10-en.pdf
32. "Social snapshot and poverty in Armenia", ARMSTAT (Summary Report for 2017), Yerevan, 2018. <https://www.armstat.am/en/?nid=82&id=2095>.
33. Sodium Reduction: An Annotated Bibliography, July 2019, <https://www.linkscommunity.org/toolkit/sodiumreduction>

34. Study of cheese production and export (in Armenian), Development Foundation of Armenia, WB Group, IFC, Yerevan, 2017, 68 pages.
<https://www.mineconomy.am/media/5925/1.pdf>
35. *Trieu K., Neal B., Hawkes C., Dunford E., Campbell N., Rodriguez-Fernandez R. et al.* 2015, Salt Reduction Initiatives around the World – A Systematic Review of Progress towards the Global Target. PLoS ONE 10(7): e0130247.
doi:10.1371/journal.pone.0130247
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4511674/pdf/pone.0130247.pdf>
36. *Webster J. L., Dunford E.K., Hawkes C. et al.* Salt reduction initiatives around the world. J Hypertens 2011, 29:1043–50.
37. WHO. Prevention of recurrent heart attacks and strokes in low and middle income populations: Evidence-based recommendations for policy makers and health professionals. Geneva, WHO, 2003.
http://www.who.int/cardiovascular_diseases/resources/pub0402/en/
38. WHO, 2011, 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. Geneva: World Health Organization.
<https://apps.who.int/iris/handle/10665/44614>
39. WHO, 2012, Guideline: Sodium intake for adults and children. Geneva, World Health Organization.
https://apps.who.int/iris/bitstream/handle/10665/77985/9789241504836_eng.pdf?sequence=1
40. WHO (2014, Features). Kuwaitis lower blood pressure by reducing salt in bread.
<https://www.who.int/features/2014/kuwait-blood-pressure/en/>
41. WHO (2016). Better non-communicable disease outcomes: challenges and opportunities for health systems. Armenia Country Assessment (J.Farrington, A.Korotkova et al), Techn.Report, 2017, 53 pages
http://www.euro.who.int/data/assets/pdf_file/0018/336123/HSS-NCDs-Armenia.pdf
42. WHO, 2016, The SHAKE technical package for salt reduction. World Health Organization. <https://apps.who.int/iris/handle/10665/250135>