Appendix 1: Search strategy

* 1. Systematic Search Strategy and Search Results for Peer-Reviewed Literature

We applied a systematic search to MEDLINE, Web of Science and Scopus in February 2022.

|  |  |  |  |
| --- | --- | --- | --- |
| Database searched | Date searched | Search string | Number of results |
| MEDLINE via EBSCO | 02.02.2022 | "AB ( salt or sodium ) AND AB ( consum\* or intake or excretion\* ) AND AB ( Albania OR Andorra OR Armenia OR Austria OR Azerbaijan OR Belarus OR Belgium OR Bosnia Herzegovina OR Bulgaria OR Croatia OR Cyprus OR Czech\* OR Denmark OR Estonia OR Finland OR France OR Georgia OR Germany OR Greece OR Hungary OR Iceland OR Ireland OR Israel OR Ital\* OR Kazakhstan OR Kyrgyz\* OR Latvia OR Lithuania OR Luxembourg OR Malta OR Monaco OR Montenegro OR Netherlands OR Norway OR Poland OR Portugal OR Moldova OR Romania OR Russia\* OR San Marino OR Serbia OR Slovakia OR Slovenia OR Spain OR Sweden OR Switzerland OR Tajikistan OR North Macedonia OR Turkey OR Turkmenistan OR Ukraine OR United Kingdom OR Uzbekistan ) Date of Publication: 20000101-20220131; Human | 882 |
| Web of Science Core Collection | 02.02.2022 | ((AB=(sodium or salt) AND AB=(consumption or intake) AND AB=( (Albania OR Andorra OR Armenia OR Austria OR Azerbaijan OR Belarus OR Belgium OR Bosnia Herzegovina OR Bulgaria OR Croatia OR Cyprus OR Czech\* OR Denmark OR Estonia OR Finland OR France OR Georgia OR Germany OR Greece OR Hungary OR Iceland OR Ireland OR Israel OR Ital\* OR Kazakhstan OR Kyrgyz\* OR Latvia OR Lithuania OR Luxembourg OR Malta OR Monaco OR Montenegro OR Netherlands OR Norway OR Poland OR Portugal OR Moldova OR Romania OR Russia\* OR San Marino OR Serbia OR Slovakia OR Slovenia OR Spain OR Spanish OR Sweden OR Switzerland OR Tajikistan OR North Macedonia OR Turkey OR Turkmenistan OR Ukraine OR United Kingdom OR Uzbekistan))) NOT TS=(animal\* or mice\* or mouse or soil)) | 1,294 |
| Scopus | 02.02.2022 | TITLE-ABS-KEY ( ( diet\*  PRE/1  ( salt  OR  sodium )  AND  ( intake  OR  consum\* ) ) )  AND  PUBYEAR  >  2000  AND  ( LIMIT-TO ( AFFILCOUNTRY ,  "United Kingdom" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Germany" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Italy" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Netherlands" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "France" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Switzerland" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Denmark" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Spain" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Sweden" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Turkey" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Poland" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Belgium" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Ireland" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Greece" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Finland" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Israel" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Austria" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Portugal" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Russian Federation" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Czech Republic" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Hungary" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Croatia" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Norway" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Georgia" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Romania" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Slovakia" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Bosnia and Herzegovina" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Slovenia" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Lithuania" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Serbia" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Iceland" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Luxembourg" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Monaco" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Bulgaria" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Cyprus" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Estonia" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Montenegro" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "North Macedonia" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Ukraine" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Albania" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Andorra" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Armenia" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Azerbaijan" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Belarus" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Kazakhstan" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Kyrgyzstan" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Latvia" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Malta" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Moldova" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "San Marino" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Tajikistan" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Turkmenistan" )  OR  LIMIT-TO ( AFFILCOUNTRY ,  "Uzbekistan" ) )  AND  ( LIMIT-TO ( SUBJAREA ,  "MEDI" ) )  AND  ( LIMIT-TO ( DOCTYPE ,  "ar" )  OR  LIMIT-TO ( DOCTYPE ,  "re" )  OR  LIMIT-TO ( DOCTYPE ,  "sh" ) )  | 1,059 |

* 1. Grey Literature Searches

We complemented the dataset with data from surveys conducted by the WHO Europe NCD Office, via a questionnaire sent to members of the European Salt Action Network (**ESAN**), as well as the NCD Country Capacity Survey (**CCS**). They were both administered in 2019. We also directly contacted relevant experts and staff at various WHO country offices and national health ministries, to obtain and/or confirm data.

The following table gives an overview of the countries for which grey literature provided the population salt intake data.

|  |  |  |
| --- | --- | --- |
| Country | Retrieval method | Reference |
| Albania | WHO NCD Office | Llanaj E, Ádány R, Lachat C, D’Haese M (2018) Examining food intake and eating out of home patterns among university students. PLoS ONE 13(10): e0197874. Obtained report via staff at WHO NCD Office.  |
| Andorra | Personal communication | Ministeri de Salut. Enquesta nutricional d’Andorra 2017-2018. Avaluació de l’estat nutricional de la població d’Andorra 2017-2018 i avaluació de les tendències 2005-2018. Govern d’Andorra; complemented by personal communication with Mr Josep Romagosa Massana, Ministry of Health, Principality of Andorra. |
| Armenia | CCS | Andreasyan D, Bazarchyan A, Saghatelyan A, et al. (2018) Prevalence of Noncommunicable Disease Risk Factors in the Republic of Armenia. STEPS National Survey 2016. Yerevan: National Institute of Health after Academician S. Avdalbekyan, Ministry of Health, Republic of Armenia. |
| Austria | ESAN questionnaire + Personal communication | Rippin H, Hutchinson J, Jewell J, et al. (2017) Adult Nutrient Intakes from Current National Dietary Surveys of European Populations. Nutrients 9, 1288. The data used in this manuscript was taken from the reference above, instead of the original data source (Austrian Nutrition Report 2012) and confirmed with Dr Holly Rippin, WHO Europe. |
| Azerbaijan | CCS | STEPS: prevalence of noncommunicable disease risk factors in Azerbaijan Republic 2017. Copenhagen: WHO Regional Office for Europe. |
| Belarus | CCS | Prevalence of Noncommunicable Disease Risk Factors in Belarus. STEPS 2016. Minsk: WHO Regional Office for Europe. |
| Bulgaria | ESAN questionnaire + Personal communication | Duleva V, Stavreva S, Georgieva R, Dimitrov P, Rangelova L. Study on Salt Intake in Bulgarian Population at the Age of 15-65+ Years Estimated by Sodium Urinary Exretion. Nutrition Science in Prevention and Therapy of Contemporary Diseases. 2019;13-17. Obtained via personal communication with Prof Dr Vesselka Duleva, National Center of Public Health and Analyses, Ministry of Health, Bulgaria. |
| Cyprus | Personal communication | Unpublished study conducted in 2009 by the Cyprus Nutrition Association. Personal communication with Ms Eliza Markidou, Ministry of Health, Republic of Cyprus. |
| Denmark | ESAN questionnaire | Danskernes kostvaner 2011-2013: hovedresultater (Dietary habits in Denmark 2011-2013: main results). Søborg: Danmarks Tekniske Universitet Fødevareinstituttet Afdeling for Ernæring. |
| Estonia | ESAN questionnaire | Estonian National Dietary Survey 2014; https://statistika.tai.ee/pxweb/en/Andmebaas/Andmebaas\_\_05Uuringud\_\_09RTU\_\_e\_Toitained/RTU051.px/ |
| Finland | ESAN questionnaire | Liisa Valsta, Niina Kaartinen, Heli Tapanainen, Satu Männistö, Katri Sääksjärvi, (eds.). Ravitsemus Suomessa – FinRavinto 2017 -tutkimus [Nutrition in Finland – The National FinDiet 2017 Survey]. Institute for Health and Welfare (THL); https://thl.fi/fi/tutkimus-ja-kehittaminen/tutkimukset-ja-hankkeet/finravinto-tutkimus |
| France | Personal communication | Étude individuelle nationale des consommations alimentaires 3 (INCA 3). Maisons-Alfort: Agence nationale de sécurité sanitaire de l’alimentation, de l’environnement et du travail. Obtained via Dr Amélie Schmitt, World Health Organization. |
| Georgia | CCS | Gamkrelidze A, Mebonia N, Sturua L, et al. (2018) Noncommunicable Diseases Risk-Factor STEPS Survey, Georgia, 2016. Tbilisi: National Center of Disease Control and Public Health of Georgia. |
| Hungary | ESAN questionnaire + Personal communication | Unpublished data. Obtained via personal communication with Dr Eszter Sarkadi Nagy, National Institute of Pharmacy and Nutrition, the successor of the National Institute for Food and Nutrition Science. |
| Iceland | Personal communication | Þorgeirsdóttir H, Valgeirsdóttir H, Gunnarsdóttir I, et al. (2011) Hvað borða Íslendingar? Könnun á mataræði Íslendinga 2010-2011 (What do Icelanders eat? A survey of the Icelandic diet). Reykjavík: Embætti landlæknis, Matvælastofnun & Rannsóknastofa í næringarfræði við Háskóla Íslands og Landspítala-háskólasjúkrahús. Confirmed with Ms Hólmfríður Þorgeirsdóttir, Directorate of Health, Iceland.  |
| Ireland | ESAN questionnaire | Perry IJ, Browne G, Loughrey M, et al. (2010) Dietary salt intake and related risk factors in the Irish population. A report for safefood. Cork: Safefood. |
| Israel | Personal communication | Stern N, Buch A, Goldsmith R, et al. (2021) The role of caloric intake in the association of high salt intake with high blood pressure. Sci Rep 11, 15803. Initially obtained unpublished data via Prof Ronit Endevelt and Ms Lesley Nitsan, Ministry of Health, Israel. Manuscript was published since our initial communication. |
| Latvia | WHO NCD Office | Joffe R, Ozoliņš G, Šantare D, et al. (2009) Latvijas iedzīvotāju visaptverošais pārtikas patēriņa pētījums, 2007-2009 (The National Food Consumption Survey of Latvia, 2007-2009). Rīga: Nacionālais diagnostikas centrs & Pārtikas un veterinārā dienesta Pārtikas centrs. Obtained report via staff at WHO NCD Office. |
| Lithuania | Personal communication | Personal communication with Prof Dr Marius Miglinas, Vilnius University. Data from unpublished study "NATRIJOD", conducted between 2018-2020. |
| Malta | Personal communication | Unpublished data, obtained via personal communication with Dr Daniel Cauchi, Ministry of Health. Data from National Food Consumption Survey (Nov 2015 - Jan 2017). |
| Netherlands | ESAN questionnaire | Hendriksen M, Etemad Z, van den Bogaard C, et al. (2016) Zout-, jodium- en kaliuminname 2015 - Voedingsstatusonderzoek bij volwassenen uit Doetinchem (Salt, iodine and potassium intake 2015 - Nutritional status study among adults in Doetinchem). Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu. |
| North Macedonia | ESAN questionnaire | Republic of North Macedonia, State Statistical Office, MakStat Database. http://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\_\_ZivotenStandard\_\_ AnketaZaPotrosuvackaDomakinstva/225\_ZivStand\_mk\_KOLICINI\_ml.px/?rxid=efc62eac-def6-4470-9fa6-017b2da9b931 |
| Norway | Personal communication | Meyer HE, Johansson L, Eggen AE, et al. (2019) Sodium and Potassium Intake Assessed by Spot and 24-h Urine in the Population-Based Tromsø Study 2015–2016. Nutrients 11, 1619. Obtained report via personal communication with Prof Dr Haakon Meyer. |
| Poland | ESAN questionnaire | Calculations of the Department of Food and Nutrition Economics of Institute of Food and Nutrition, based on unpublished data from the Department of Social Research and Living Conditions of the Central Statistical Office. |
| Portugal | ESAN questionnaire + WHO NCD Office | Polonia J, Martins L, Pinto F, Nazare J. Prevalence, awareness, treatment and control of hypertension and salt intake in Portugal: changes over a decade. The PHYSA study. J Hypertens 2014; 32: 1211-1221. Obtained report via staff at WHO NCD Office. |
| Romania | WHO NCD Office | Dorobantu M, Tautu O, Dimulescu D, Sinescu C, Gusbeth-Tatomir P, Arsenescu-Georgescu C et al. Perspectives on hypertensionʼs prevalence, treatment and control in a high cardiovascular risk East European country. Journal of Hypertension. 2018;36(3):690-700. Obtained report via staff at WHO NCD Office. |
| Russian Federation | Personal communication + WHO NCD Office | Выборочное наблюдение рациона питания населения 2018 (The population dietary structure sample survey 2018). Moscow: Russian Federal State Statistics Service. (https://rosstat.gov.ru/free\_doc/new\_site/food18/index.html), table 30.2.9. Obtained data via staff at WHO NCD Office. |
| Slovakia | Personal communication | Unpublished data, obtained via personal communication with Dr Jozef Suvada, Ministry of Health, Slovak Republic. |
| Sweden | ESAN questionnaire | Riksmaten - vuxna 2010–11: Livsmedels- och näringsintag bland vuxna i Sverige. Livsmedelsverket, Uppsala September 2012. |
| Switzerland | ESAN questionnaire | Chappuis A, Bochud M, Glatz N, et al. (2011) Swiss survey on salt intake: main results. Lausanne: Service de Néphrologie et Institut Universitaire de Médecine Sociale et Préventive Centre Hospitalier Universitaire Vaudois. |
| Tajikistan | CCS | STEPS: распространённость факторов риска неинфекционных заболеваний в Республике Таджикистан, 2017 г. (STEPS: prevalence of noncommunicable disease risk factors in the Republic of Tajikistan 2017). Copenhagen: WHO Regional Office for Europe. |
| Turkmenistan | CCS | STEPS: распространённость факторов риска неинфекционных заболеваний в Туркменистане, 2018 г. (STEPS: prevalence of noncommunicable disease risk factors in Turkmenistan 2018). Copenhagen: WHO Regional Office for Europe. |
| Ukraine | CCS | STEPS: prevalence of noncommunicable disease risk factors in Ukraine 2019. Copenhagen: WHO Regional Office for Europe. |
| United Kingdom | Personal communication | Ashford R, Jones K, Collins D, et al. (2020) National Diet and Nutrition Survey - Assessment of salt intake from urinary sodium in adults (aged 19 to 64 years) in England, 2018 to 2019. London: Public Health England. Obtained report via staff at WHO NCD Office. |
| Uzbekistan | WHO Country Office | Определение базового уровня потребления соли населением Узбекистана в возрасте 18-64 лет (Determination of basic level of salt consumption in the population of Uzbekistan aged 18-64). Tashkent: World Health Organization. Unpublished report, obtained via staff at WHO Uzbekistan Country Office. |