Trends in Maternal and Child Nutrition in the MENA Region: Findings from Jordan, Kuwait, and Saudi Arabia

March 29, 2022

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Jordan Nutrition Innovation Lab Webinar

Trends in Maternal and Child Nutrition in the MENA Region: Findings from Jordan, Kuwait, and Saudi Arabia

Tuesday, March 29, 2022
2:00-3:30 pm Jordan Time | 7:00-8:30 am US Eastern
Zoom

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Assessing trends in infant and young child feeding practices:
Analysis of Demographic Health Surveys data from Jordan

Shibani Ghosh, Ph.D.
INTRODUCTION

• Appropriate and optimum nutrition and feeding practices during the first 2 years of life can directly affect the survival, health, and development of children to their full potential.

• Poor nutrition during early life is associated with irreversible damage to physical and cognitive development, with an increased risk of obesity, hypertension, and diabetes in later life.
IYCF PRACTICES

• Early initiation of breastfeeding (provision of mother’s breastmilk to infants within one hour of birth),
• Exclusive breastfeeding (only breastmilk from birth until 6 months)
• Continued breastfeeding (until two years of age)

• Complementary feeding is defined as the feeding period when breastmilk is no longer sufficient to meet the nutritional requirements of infants.

• Appropriate and timely introduction of complementary foods ensure that children are consuming nutrient-dense diets, thereby promoting optimal physical and cognitive growth and development.
STUDY OBJECTIVES

• Trends and changes in breastfeeding and complementary feeding practices in Jordan

• Factors associated with breast feeding and complementary feeding practices

• Factors associated with consumption of breast milk substitutes, ultra-processed foods such as juices and sugar sweetened beverages versus consumption of micronutrient rich foods and food groups.
STUDY METHODS

• Data source: Demographic Health Surveys conducted in Jordan: Six surveys from 1990 through 2017

• Nationally representative household surveys that provide data on a wide range of monitoring and impact evaluation indicators in the areas of population, health, and nutrition.

• Information on households, children under 5 years of age, and men and women between the age of 15-49 years.

• Location characteristics (governorate and urban/rural), child’s age, child’s anthropometry, mother’s education, and wealth index variables, infant dietary recall variables
<table>
<thead>
<tr>
<th>Survey Year</th>
<th>Children under 6 months</th>
<th>Children under 24 months</th>
<th>Children 6-23 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>657</td>
<td>1685</td>
<td>1028</td>
</tr>
<tr>
<td>1997</td>
<td>449</td>
<td>2264</td>
<td>1765</td>
</tr>
<tr>
<td>2002</td>
<td>380</td>
<td>2225</td>
<td>1845</td>
</tr>
<tr>
<td>2007</td>
<td>540</td>
<td>2081</td>
<td>1541</td>
</tr>
<tr>
<td>2012</td>
<td>568</td>
<td>2561</td>
<td>1993</td>
</tr>
<tr>
<td>2017-18</td>
<td>1131</td>
<td>4058</td>
<td>2927</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3725</strong></td>
<td><strong>14874</strong></td>
<td><strong>11099</strong></td>
</tr>
</tbody>
</table>
STUDY METHODS

• Data from all six surveys were merged into a single database and reviewed for consistency across surveys.

• Differences in types of questions asked and/or types of foods tracked were found in this process. The study analyst reviewed all the differences and developed new standardized variables as needed.

• Descriptive statistics, and proportions were used to describe relevant demographic and diet characteristics.

• Multi-variate logistic regression analyses to assess differences in outcome variables across survey years, by education, geographic location, wealth and age of the infant/young child.
OUTCOME/DEPENDENT VARIABLES

• Breastfeeding indicators prior to 6 months of age: Percent exclusively breastfed, Percent currently breastfed, Early initiation of breastfeeding (percent within one hour of birth)

• Consumption of breast milk substitutes and other liquids prior to 6 months of age: Percent consuming tea, juice, sugar water, milk and/or infant formula

• Complementary feeding indicators from 6-23 months of age: Percent meeting minimum dietary diversity (MMD), minimum meal frequency (MMF) and minimum adequate diet (MAD) indicators, Consumption of specific foods and specific food groups in the past 24 hours
Three out of four children under 6 months failed to receive the protective benefits of exclusive breastfeeding in the last three decades.

Median duration of exclusive breastfeeding in Jordan is less than a month and this has not changed in three decades.
Consumption of breast milk substitutes and sugar sweetened beverages prior to 6 months of age

In 2017, the percentage of infants introduced to breast milk substitutes (formula/milk) prior to 6 months of age was twice as high as the percentage introduced in 1990.
FACTORS ASSOCIATED WITH BREASTFEEDING PRACTICES

• Infants living in households in higher wealth quintiles more likely to be given formula

• Urban households were more likely to provide dairy milks prior to 6 months of age

• No difference in breastfeeding practices and/or provision of breastmilk substitutes either by governorate or by mother’s educational attainment.
COMPLEMENTARY FEEDING INDICATOR DEFINITIONS

• **Minimum dietary diversity (MDD):** consumed 5 or more of the 8 food groups

• **Minimum meal frequency (MMF):** defined as the number of times a child receives meals, snacks, or milk feeds in the previous 24 hours

• **Minimal acceptable diet (MAD):** proportion of breastfed children 6-23 months of age who achieved both MDD and MMF during the past 24 hours.
Complementary Feeding Indicators 6-23 months of age

- **MMF**: less than half of infants and young children aged 18-23 months being fed the minimum number of meals for their age as of 2017.

- **MDD**: only 1 out of 3 children met MDD in 2017, and is lowest among youngest children, for whom it is most critical.

- **MAD**: only 1 in every 6 children received a minimal acceptable diet and is lowest among the youngest age group (6-8 months), for whom it is most critical.
FACTORS ASSOCIATED WITH COMPLEMENTARY FEEDING PRACTICES (IRRESPECTIVE OF SURVEY YEAR)

- Significant differences by education level of the mother

- Higher the education, higher the odds of achieving the three complementary feeding indicators

- Only in Irbid and Mafraq, odds of achieving MAD were significantly lower compared to Amman (Survey years 2012 and 2017)

- Higher the wealth index score of the household, higher odds of achieving all three indicators
Only 1 in 6 children aged 6-23 months consumed dark green leafy vegetables and consumption of fruits and vegetables are lowest in younger children.

4 out of 5 children aged 6-23 months consume ASFs, and while consumption is higher there has been an overall decline in the consumption of eggs, meat, fish, and poultry over time.
There has been a significant increase in the consumption of juice from 1990 to 2017. Currently, 1 in 2 children above 12 months and older consume sugar sweetened beverages.

Consumption of infant formula has increased over time and is higher in younger infants (under 12 months).
FACTORS ASSOCIATED (6-23 MONTHS)

• Education of the mother and wealth of the household

  Higher odds of being given Vitamin A rich fruits and vegetables and specific animal source foods including eggs, meat, poultry and fish
  But also, higher odds of being given infant formula, dairy milks, juices (sugar sweetened)

• Some differences at governorate level (Compared to Amman)
  Higher odds of consumption of DGLV in Balqa
  Lower odds of consumption of vitamin A rich fruits and vegetables in Balqa and Zarqa
  Higher odds of consumption legumes/beans in Zarqa but lower odds of consuming eggs, formula and baby foods
  Higher odds of juice consumption in Aqaba but lower odds of consuming infant formula
Caveats

• Data across years while standardized might be collected using different methods

• We do not have a complete picture of the consumption patterns of this age group since the DHS survey collects data to focus on specific indicators

• No information on the extent and types of sugar sweetened beverages (other than juices) and other ultra processed foods
• The analysis used 4 rounds of Household Expenditures and Income Survey (2002-2013). The Household Expenditures and Income Survey (HEIS) uses a two-stage stratified cluster random sampling method.

<table>
<thead>
<tr>
<th>Survey Year</th>
<th>Sub-Sample of households</th>
<th>Sub-sample %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>5243</td>
<td>21.76</td>
</tr>
<tr>
<td>2008</td>
<td>5420</td>
<td>22.50</td>
</tr>
<tr>
<td>2010</td>
<td>5533</td>
<td>22.96</td>
</tr>
<tr>
<td>2013</td>
<td>7898</td>
<td>32.78</td>
</tr>
</tbody>
</table>
Expenditure on Ultra Processed foods and Beverages (Households with children under 2)

- Juice
- Soda
- Sweet PPF
- Savory PPF
- Linear (Juice)
- Linear (Soda)
NOVA CLASSIFICATION

• The NOVA system developed by the Public Health Faculty of the University of Sao Paulo (Brazil) classifies food according to the extent and purpose of their industrial processing.

• **Group 1: Unprocessed or minimally processed foods**: edible parts of plants (seeds, fruits, leaves, stems, roots) or of animals (muscle, offal, eggs, milk), and also fungi, algae and water, after separation from nature.

• **Group 2: Processed ingredients**: oils, butter, sugar and salt, are substances derived from Group 1 foods.

• **Group 3: Processed foods**: bottled vegetables, canned fish, fruits in syrup, cheeses and freshly made breads.

• **Group 4: Ultra-processed foods**, such as soft drinks, sweet or savory packaged snacks, reconstituted meat products and pre-prepared frozen dishes.
1a. Minimally processed F&V
1b. Minimally processed other foods
2. Processed ingredients
3. Processed foods
4. Ultra-processed foods
<table>
<thead>
<tr>
<th>Variable</th>
<th>NOVA in % of food budget with wealth quintiles</th>
<th>NOVA in % of food budget with wealth index &amp; NOVA group and wealth interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of food budget</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOVA 1b</td>
<td>-5.378***</td>
<td>0.612</td>
</tr>
<tr>
<td>NOVA 2</td>
<td>-5.464***</td>
<td>0.553</td>
</tr>
<tr>
<td>NOVA 3</td>
<td>-1.873*</td>
<td>0.802</td>
</tr>
<tr>
<td>NOVA 4</td>
<td>-6.972***</td>
<td>0.659</td>
</tr>
</tbody>
</table>

Outcome: JD/capita spent on F&V (NOVA 1a)

Adjusted for governorates, survey year, residence (urban/rural)
CONCLUSIONS

• Trends showing increasing consumption of breast milk substitutes and sugar sweetened beverages starting early in life

• Some improvements in early initiation of breast feeding but overall indicators show little improvement

• Complementary feeding period is the most critical period of growth
  Most IYCF indicators were not significantly different across geographic location or area of residence.
  Differences by education of mother and wealth of household
  Food group consumption has not varied over time. Some differences by geographic location

• Need for more in-depth dietary data to enumerate dietary patterns in this age group
CONCLUSIONS

• Further understanding of expenditure pattern and ultra processed food consumption particularly in pediatric populations needed

• A study in Northern Jordan found almost 25% of children aged 6-12 years were classified as either overweight or obese

• Rates of overweight and obesity reported in the DHS 2012 in children under five are lower (at 5%) but high in infants under 6 months of age at 13%.
REFERENCES

Dietary patterns associated with CVD Risk Factors in Adult Kuwaitis:
Implications for reproductive age women in the MENA region

Lynne M. Ausman, D.Sc., R.D. and Badreya Al-Lahou, Ph.D.
Background: Adult Kuwaitis are experiencing a rapid rise in cardiovascular disease and its risk factors. Dietary patterns have not been adequately examined.

Objectives: Cross sectional survey to examine dietary patterns of 555 adult Kuwaitis with a 24-hour food recall from the 2008-2009 National Nutrition Survey. Individuals with diagnosed heart disease and diabetes were omitted from sample (avoid problem of reverse causation). [Al-Lahou et al 2020]

Outcome measures: CVD risk factor (body mass index)
Abdominal obesity (waist circumference)
Elevated blood pressure
Dyslipidemia (blood lipid levels)
Diabetes (glucose and Hb1AC)

Statistical Analysis: Dietary patterns using principal component analysis
Association between dietary patterns and risk factors evaluated using survey-weighted multivariable linear and logistic regression models.
### Characteristics of the 555 Kuwaiti Adults Surveyed

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean ± SEM</th>
<th>Characteristic</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
<td>34.5 ± 0.65</td>
<td>Non-smoker</td>
<td>63.9</td>
</tr>
<tr>
<td>Body mass index</td>
<td>28.9 ± 0.58</td>
<td>Sedentary (%)</td>
<td>79.0</td>
</tr>
<tr>
<td>Weight (%)</td>
<td>%</td>
<td>Underweight/normal</td>
<td>32.7</td>
</tr>
<tr>
<td>Female</td>
<td>51.3</td>
<td>Overweight</td>
<td>30.5</td>
</tr>
<tr>
<td>Education - at least some college</td>
<td>44.7</td>
<td>Obese</td>
<td>36.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FOOD OR FOOD GROUPS</th>
<th>Sugar-sweetened beverages</th>
<th>French fries</th>
<th>Unprocessed red meat</th>
<th>Pizza</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuts and seeds</td>
<td>Snacks</td>
<td>Processed meat</td>
<td></td>
<td>Sweet condiments</td>
</tr>
<tr>
<td>Dark green vegetables</td>
<td>Whole fruit</td>
<td>Egg</td>
<td></td>
<td>Western sweet</td>
</tr>
<tr>
<td>Red and orange vegetables</td>
<td>100% juice</td>
<td>Whole grains</td>
<td>Traditional Sweet</td>
<td></td>
</tr>
<tr>
<td>Tomatoes</td>
<td>Dates</td>
<td>Refined grains</td>
<td></td>
<td>Arabic coffee</td>
</tr>
<tr>
<td>Starchy vegetables</td>
<td>Legumes</td>
<td>Full-fat dairy products</td>
<td></td>
<td>Western coffee</td>
</tr>
<tr>
<td>Other vegetables</td>
<td>Fish and shellfish</td>
<td>Low-fat dairy products</td>
<td></td>
<td>Black tea</td>
</tr>
<tr>
<td>White potatoes</td>
<td>Poultry</td>
<td>Burgers and sandwiches</td>
<td></td>
<td>Herbal tea</td>
</tr>
</tbody>
</table>

THREE MAJOR DIETARY PATTERNS WERE IDENTIFIED

- Vegetable-rich dietary pattern loaded high with vegetable (except potato)
- Fast-food dietary pattern loaded high in burgers/sandwiches, French fries, and sugar sweetened beverages.
- Refined-grains/poultry dietary pattern loaded high in refined grains and poultry and low in whole grains.

Al-Lahou et al, 2020
# COMPARISON OF RISKS IN HIGHEST VS LOWEST TERTILES

<table>
<thead>
<tr>
<th>Dietary Pattern</th>
<th>Comparing highest (T3) vs lowest (T1) tertile</th>
<th>OD ratio of T3 vs T1</th>
<th>Result of 1 std increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetable-rich</td>
<td>Older and more likely to be women and non-smokers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast-food rich</td>
<td>Younger, more likely to be women and having received higher levels of education</td>
<td>OD 1.94 being obese; OD 2.38 having high BP; OD 2.66 met syndrome</td>
<td>1.62 mm Hg diastolic BP; 0.94 increase in BMI; 2.05 increase in waist circumference</td>
</tr>
<tr>
<td>Refined-grains/poultry</td>
<td>Highest score more likely to be younger</td>
<td>OD 2.14 dyslipidemia; OD 1.95 met syndrome</td>
<td></td>
</tr>
</tbody>
</table>

Al-Lahou et al, 2020
CONCLUSIONS FOR REPRODUCTIVE WOMEN

- Younger adults, more likely to be women of reproductive age, are adopting a more Western fast-food type dietary patterns.
  - Associated with significant CVD risk factors of metabolic syndrome, overweight/obesity and elevated blood pressure.

- The refined grains/poultry dietary patterns is associated with higher fasting glucose and HbA1c which is also reflected in the higher prevalence of prediabetes (19.4%) and diabetes (18.8%) in the general Kuwaiti population.

- The vegetable rich diet pattern followed by older Kuwaitis and more likely to be women not linked to any CVD risk outcomes.

Al-Lahou et al, 2020
University students (Al-Awwad et al 2021)
• 540 students at Hashemite University
• 36% overweight; 30% hookah smokers 15% cigarette smokers
• Majority consumed fruits/vegetables 1-2 times/wk and cereals, grains, starchy vegetables 5 times/wk
TWO EXAMPLES FROM OB/GYN HOSPITAL CLINICS

Obstetrics and Gynecology clinics - (Bustami et al 2021)
• 428 subjects ≥ 18 years of age at Jordan University Hospital Clinics
• 70.6% overweight or obese (36.4% obese) - Related to high parity and low education level
• Obesity increase > age 30

Pregnant Jordanian women - (Tayyem et al 2020)
• 283 women at Jordan University Hospital maternity clinics; FFQ in 1st through 3rd trimester
• 38% overweight/obese and 70% ≥ diploma
• Grains - 2-3 servings higher than recommended; fat - 14 servings/day was higher than recommended and unhealthy
• Percent not meeting Dietary Guidelines for food groups:
  1st trimester – fruits 20, vegetables 38, grains 26, meat 88 and dairy 74
  3rd trimester – fruits, 42; vegetables 64; grains 39; meat 90, and dairy 77.283
NAFLD AND DIET/LIFESTYLE FACTORS

Non-alcoholic fatty liver disease (NAFLD) – 20-30% general population worldwide
  Prevalence in Type 2 Diabetes is 76%
  Adults with obesity 80-90%
  Patients with hyperlipidemia - 90%

Metabolic syndrome associated with NAFLD
  • Central obesity, elevated blood pressure, dyslipidemia, hyperglycemia, insulin resistance.
  • Associated with excess refined carbohydrate and fat intake
CASE CONTROL STUDY OF NAFLD ADULTS

Case control study Jordanian adults 30 – 60 yr/age (Tayyem et al 2019)

- 60 NAFLD patients and 60 controls (ultrasonagrapy)
- NAFLD patients:
  - Significantly higher BMI, WC and weight
  - Significantly less physical activity
  - Significantly higher macronutrient intakes
PREGNANCY AND NAFLD

- Pregnant women with NAFLD or impaired liver function test – higher risk of preterm birth (Zhuang et al 2017)
- Pregnant women with NAFLD have significantly increased relative risk for pregnancy outcomes (Hagström et al 2016):
  - Gestational diabetes – 2.78
  - Pre-eclampsia – 1.95
  - Caesarean section -1.52
  - Preterm birth - 2.50
  - Low birth weight - 2.40
Maternal overweight and obesity is significantly associated with the odds of infant/child overweight at delivery, 4 years, adolescence and young adulthood.

All associated with increased liver fat.

Cantoral et al 2020
CONCLUSIONS REGARDING WOMEN REPRODUCTIVE AGE

- Poor nutrition during pregnancy (high energy, saturated and trans fat, refined carbohydrates, and sodium)
  - Increased risk of NAFLD and metabolic syndrome
  - Increased risk gestational diabetes
  - Excess weight gain during pregnancy (High infant birth weight and childhood obesity)
  - Pre-term delivery, low birth weight, SGA (Increased risk of children being overweight and obese at 3 years of age)

- Exclusive breastfeeding >6 months without supplements appears protective for fatty liver in adolescence (OR = 0.64)

REFERENCES

• Al-Lahou et al. J Academy of Nutrition and Dietetics 2020;120(3):424-436
• Allehdan et al Nutr Food Sci 2020 (https://doi.org/10.1108/NFS-03-2020-0095)
• Al-Awwad et al, Clin Nutr ESPEN 2021;44:236-242
• Ayonrinde et al, J Hepatology 2017;67:568-576
• Bustami et al, J Multidisciplinary Healthcare 2021;14:1533-1541
• Cantoral et al. British J Obstetrics Gynaecology 2020;127(10):1200-1209
• Hagström et al, Liver Int 2016;36:268-274
• Hu et al Nutrients 2020;12:465 (https://doi.org/10.3390/nu12020465)
• Tayyem et al, Arab J Gastroenterol 2019;20:44-49.
• Tayyem et al, Prev Nutr Food Sci 2020;25:346
• Yong et al, Nutrition Research and Practice 2019;13(3):230-23
• Zhuang et al, EBioMedicine 2017;26:152-156
The role of fiscal policies in improving nutrition:
A case study on sugar-sweetened beverage taxation from Saudi Arabia

Reem F. Alsukait, PhD.
OBESITY IN THE GCC REGION

- Kuwait: 37.00%
- Saudi Arabia: 35.00%
- Qatar: 33.90%
- United Arab Emirates: 29.90%
- Bahrain: 28.70%
- Oman: 22.90%

Share of adults that are obese, 1975 to 2016

Obesity is defined as having a body-mass index (BMI) equal to, or greater than, 30. BMI is a person’s weight (in kilograms) divided by their height (in meters) squared.
SAUDI ARABIA’S CONTEXT

- Diet related diseases are the main driver of disease burden
- Only 8% meet the fruit and vegetable recommendations
- In 2016, Saudis were the 5th largest consumers of calories from SSBs per capita in the world
THE ROLE OF SUGAR-SWEETENED BEVERAGES

- Defined as liquids that are sweetened with various forms of added sugar
- Associated with several NCDs:
  - Weight gain
  - Type 2 diabetes
  - Cardiovascular diseases
SUGARY DRINK TAXATION AROUND THE WORLD
SAUDI ARABIA IMPLEMENTED THE LARGEST TAX ON SSB

- In 2017, 50% tax on carbonated beverage and 100% tax on energy drinks
- In 2019 50% tax expanded to include all sugar-sweetened beverages
- Tax design: excise tax flat rate based on price
RESEARCH QUESTIONS

• Did the tax lead to an increase in prices?

• Did the increase in prices affect sales?

• What is the potential health impact of the tax?
RESEARCH QUESTION 1: DID SSB PRICES INCREASE?

- Data source: Saudi Arabia's General Authority of Statistics
- Data type: Average monthly prices by commodity from 16 cities across KSA from 2009 to date by beverage category
- Statistical analysis:
  - Descriptive pre-post taxation
PRICES DID INCREASE BY 67% FROM 1.5 TO 2.3 SAR

Monthly beverage prices per capita in Saudi Arabia (2010-2018):
RESEARCH QUESTION 2: DID SALES DECLINE?

• Data source: Euromonitor International
• Data type: Annual volume sales (ml per capita) per category from 54 countries in the world including GCC 2007 to date
• Statistical analysis:
  • Descriptive pre-post taxation
  • Difference-in-difference regression(synthetic control) across GCC
PRE-POST SALES DECLINED:

- 41% FOR CARBONATED DRINKS
- 58% FOR ENERGY DRINKS
Annual carbonated sales per capita in GCC countries (2012-2018):  

**COMPARED TO GCC COUNTRIES**  

- **35% DECLINE IN SAUDI ARABIA USING DIFFERENCE IN DIFFERENCE**

Euromonitor’s Passport International
RESEARCH QUESTION 3: WHAT’S THE HEALTH IMPACT?

- **Objective**: model the impact on diabetes and cardiovascular diseases
- **Outcomes**: Number of deaths and DALYs averted
- **Data sources**: Saudi Health Interview Survey, 2013
  - Relative risks from meta-analyses
  - Changes in sales from research 1
- **Statistical analysis**: Comparative risk assessment
THE ESTIMATED HEALTH IMPACT OF THE TAX

• Overall, our model estimates that per year:
  • The tax will prevent a total of 8,046 (95% UI 5,255–10,971) DALYs
  • 26% reduction
  • The tax would prevent a total of 287 deaths (95% UI 186–391)
  • 35% reduction
CONCLUSIONS

• SSBs did increase prices and decrease sales
• Saudi Arabia is considering changing the design of the tax (from flat to tiered)
• Fiscal policies are a promising tool (with caveats)
• Push towards unified policies (combining labeling and taxations..etc)
• Future studies should consider substitution and long-term effects
REFERENCES

• Imamura F, O'Connor L, Ye Z, Mursu J, Hayashino Y, Bhupathiraju SN, Forouhi NG. Consumption of sugar sweetened beverages, artificially sweetened beverages, and fruit juice and incidence of type 2 diabetes: systematic review, meta-analysis, and estimation of population attributable fraction. BMJ. 2015

• Alsukait, S Bleich, P Wilde, G Singh, S Folta Sugary drink excise tax policy process and implementation: Case study from Saudi Arabia. - Food Policy, 2020

• Alsukait, P Wilde, SN Bleich, G Singh, SC Folta Evaluating Saudi Arabia’s 50% carbonated drink excise tax: Changes in prices and volume sales - Economics & Human Biology, 2020
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