Executive Summary #4

Sugar-related knowledge, attitudes, and practices among Omanis 14-60 years of age in the Sultanate of Oman

INTRODUCTION

Non-communicable diseases (NCDs) are responsible for 80% of all deaths in the Sultanate of Oman [1], and 36% of all deaths are from cardiovascular diseases (CVDs) [2]. Excess consumption of "free sugars" [1] can cause high cholesterol, triglycerides, blood pressure [3], which are the primary risk factors of CVDs. Excess free sugar consumption also contributes to the development of obesity and diabetes. Diabetes can be measured in various ways and is frequently measured using an individual's high fasting blood glucose. According to the Sultanate of Oman's 2017 STEPS survey, 27% of Omani adults have either impaired or high blood glucose levels[2].

Due to this public health issue in the Sultanate of Oman, there is a clear need for population-based interventions that help the population reduce its intake of free sugars. Prior to undertaking programs and policies, a thorough assessment of the knowledge, attitudes, and practices related to the consumption of specific foods is needed [4].

OBJECTIVES

To assess the knowledge, attitudes, and practices of Omani adolescents and adults related to sugar, the Nutrition Department of the Ministry of Health (MoH), Al-Jisr Foundation, and the World Health Organization (WHO) conducted the Sultanate of Oman's 2023 Nutrition-Related Knowledge, Attitudes, and Practices Survey [5]. In addition to sugar, the survey also examined knowledge, attitudes, and practices related to general dietary habits, salt, and fat.

METHODOLOGY

Survey design and target population

The 2023 Nutrition-Related Knowledge, Attitudes, and Practices Survey is a cross-sectional survey of the Omani population. It was designed to derive prevalences of various knowledge, attitudes, and practices indicators related to sugar among the Omani population aged between 14 and 60 years, inclusive. Stratified cluster sampling by governorate was used to randomly

[1] "Free sugars include monosaccharides and disaccharides added to foods and beverages by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates" [9].

[2] "Impaired" and "high" blood glucose levels are defined as blood glucose 6.1 to <7.0 mmol/L and blood glucose ≥ 7.0 mmol/l, respectively.

select survey subjects from selected health centres.

The study protocol aimed to achieve a total sample size of 1406 survey subjects (i.e., both adolescents and adults) for the sugar questionnaire, and 1362 adolescent and adult subjects were ultimately recruited yielding a response rate of 97%.

Data collection

Data related to sugar was collected using one questionnaire that administered to adolescents and adults. The first module of each questionnaire was used to collect information about basic sociodemographic characteristics, such as age, sex, marital status, education level, and training or experience in a health-related field. The second module of the questionnaire contained sugar-related KAP questions that were developed via a review of relevant literature [6–8] related to sugar consumption and trends. The knowledge component of the sugar questionnaire is based on a set of six main questions inquiring about the effects of sugar on health, sugar content of specific food items, and use of sugar substitutes. The attitudes component is based on a set of seven questions designed to assess how important it is for the subject to reduce consumption of sugar and processed foods. The practice component of the questionnaire includes a set of 14 main questions inquiring about discretionary sugar use, practice of reading food labels, attempts to decrease sugar intake, and the frequency of consumption of specific food items.

Data analysis

Based on the questions in each questionnaire component, indices of sugar knowledge, attitudes, and practices were created. These indices enabled the categorization of individuals' knowledge, attitudes, and practices related to sugar as low, moderate, and high scores. These categorizations a) ensure that respondent's knowledge, attitudes, and practices level is based on a set of comprehensive questions, and b) facilitate the interpretation of the survey's findings.

RESULTS

The survey collected data from 282 adolescents and 1080 adults. Among adolescents, a similar proportion of respondents were male (50.5%) and female (49.5%). In contrast, among adult respondents, 59% were male and 41% were female.

Knowledge

The composite index score for knowledge of sugar was high in both adolescents and adults (**Figure 1**). Among adolescents, 50% had high scores nationally, and 40% or more of respondents had high scores in nearly all governorates. In adults, nearly 60% had high knowledge scores, and less than 50% high scores were only found in adults with only a primary education and adults in Dhofar, Ash Sharqiyah North, and Al Wusta governorates. In adults, there is no association between knowledge scores

and chronic diseases, and high scores were found in those with or without chronic diseases. More than 95% of adults with hypertension, diabetes, or overweight or obesity had moderate or high knowledge of sugar. And among adults with heart disease, 87% had moderate or high sugar-related knowledge scores.

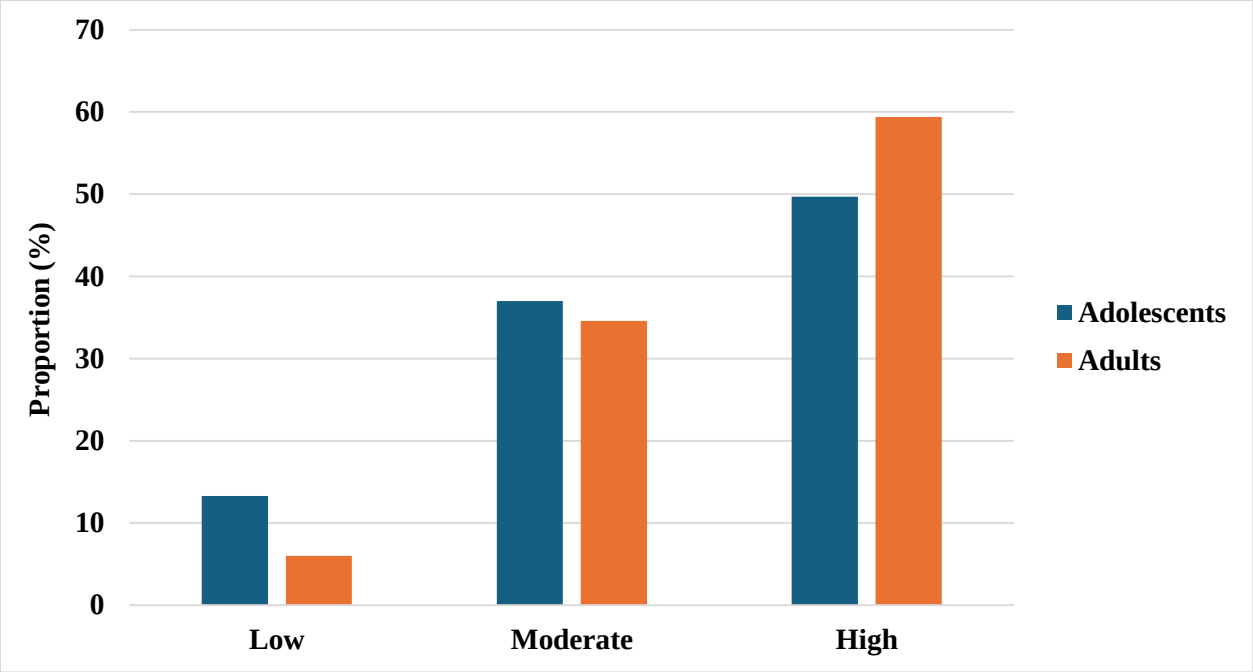

Figure 1. Sugar-related knowledge scores in Omani adolescents and adults

Most adolescents (89%) and adults (93%) reported that excess consumption of sugar was bad for their health (**Figure 2**). Moreover, high proportions of adolescents reported that diabetes (88%), weight gain (67%), and obesity (64%) were exacerbated by consumption of high-sugar foods. Fewer adolescents identified cardiovascular diseases (35%) as consequences of diet high in sugar. Similarly, the vast majority (93%) of adults reported that consumption of too much sugar is bad for one's health, and a majority of adults (79 to 90%) correctly identified that weight gain, obesity, and diabetes as health consequences of eating foods high in sugar. Fewer adults identified cardiovascular diseases (39%) as consequences of diet high in sugar. When asked about the added sugar content of foods, most adolescents and adults correctly estimated the level (i.e., high, medium, low/no sugar) in foods. High-sugar foods for which adolescents identified as having low or medium amounts of sugar included regular chewing gum (61%), canned fruit and jam (49%), jelly / crème caramel / custard (49%), and biscuits / cakes/ donuts (74%). Adults less correctly identified the amount of added sugar in regular chewing gum (54%), biscuits / cakes / and donuts (51%).

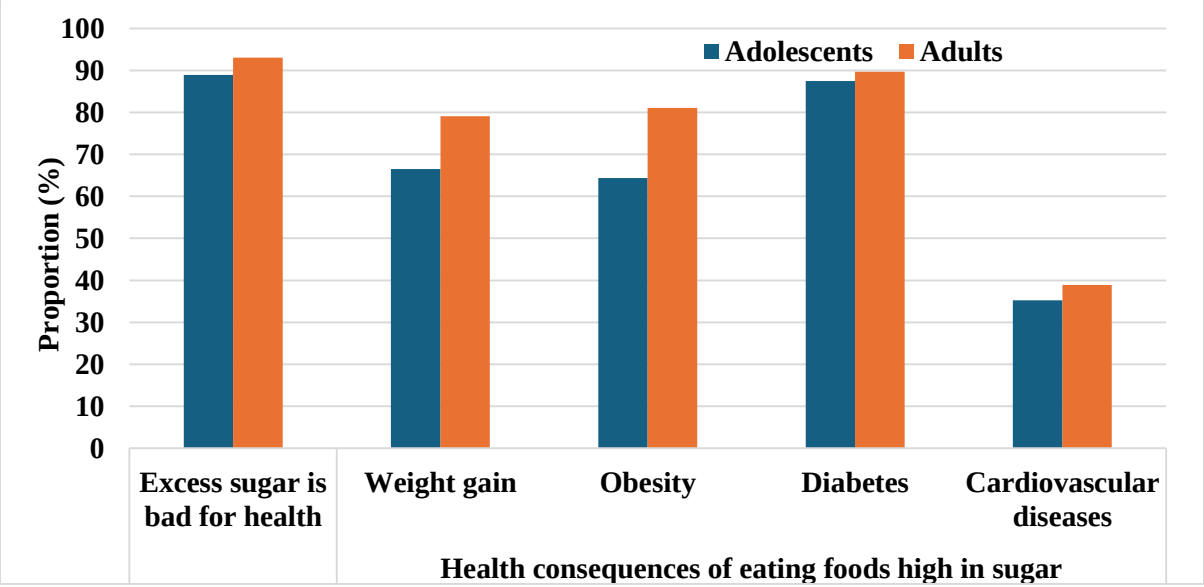

Figure 2. Sugar-related knowledge of Omani adolescents and adults

Attitudes

Based on the composite attitudes index score, relatively small proportions of adolescents (14%) and adults (29%) had high sugar attitudes scores (**Figure 3**). In adolescents, the proportion of adolescents with high attitudes was greater in those that tried to lose weight in the past (21%) compared to those that did not try and lose weight (11%). In adults, the proportion of adults with moderate or high attitude scores increased from 69% to 94% in adults 19-29 and 50-60 years of age, respectively. Married adults had better attitudes (85% moderate or high) than unmarried adults (72% moderate or high), and adults who had tried to lose weight (87% moderate or high) also had better attitudes than those who did not (76% moderate or high). In adults, there are significant associations between attitudes scores and some chronic diseases. Specifically, the proportion of adults with moderate or high attitude scores were higher among those with diabetes (94% diabetics; 80% non-diabetics), heart disease (94% with heart disease; 81% without heart disease), and overweight/obesity (89% overweight or obese; 80% normal weight).

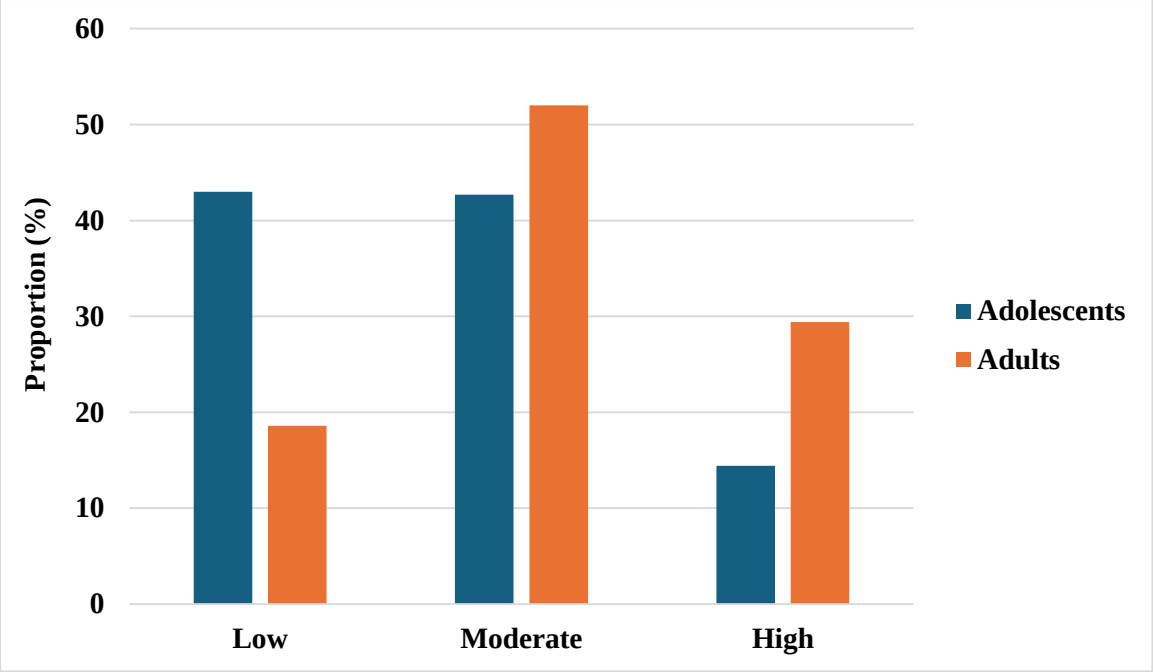

Figure 3. Sugar-related attitudes scores in Omani adolescents and adults

When adolescents and adults were asked about factors that could motivate them to reduce sugar intake, a change one's health status was the most frequently cited (48% in adolescents, 65% in adults; **Figure *4***). Other factors, such as increased knowledge about diabetes, advice from a doctor or family/friend, or maintaining a healthy weight were reported by a small (<20%) of respondents. When asked about barriers to reducing sugar consumption, "no barriers" (adolescents 41%; adults 54%) and "liking the taste of sugar" (adolescents 44%; adults 29%) were the two most commonly cited responses.

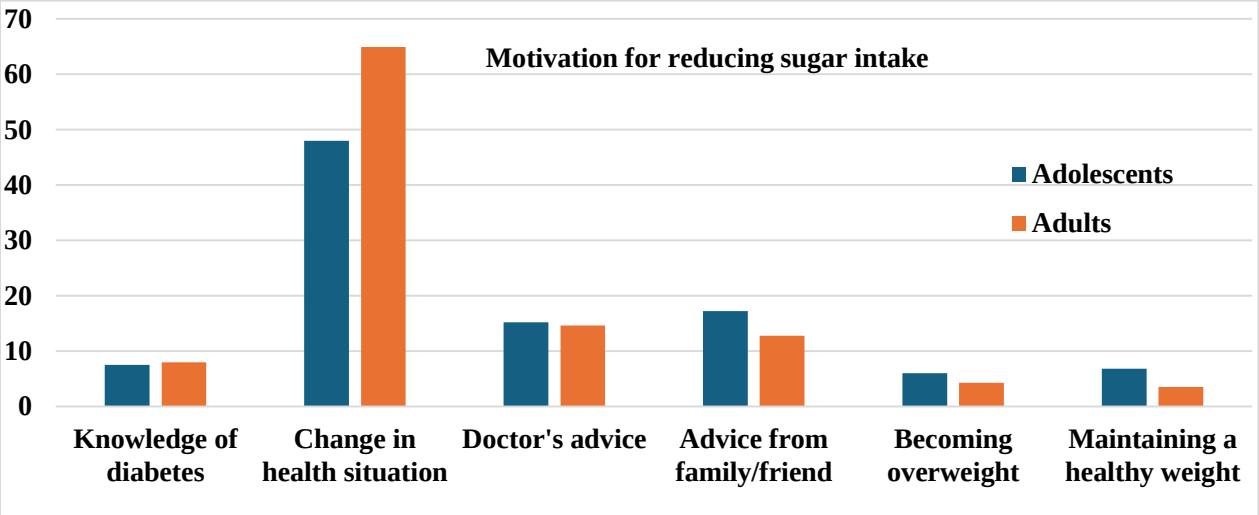

Figure 4. Sugar-related attitudes of adolescents and adults

Practices

Among adolescents, the composite index score for sugar practices was poor; approximately 73% of all adolescent respondents low scores (**Figure 5**). Among adults, the composite index score for sugar practices was also very poor, with 40% of adults having low scores. Nationally, less than 10% of adults had a high sugar practices score. In adults, there are significant associations between practice scores and diabetes, with moderate or high practice scores found in 75% of diabetes compared to 59% of non-diabetics.

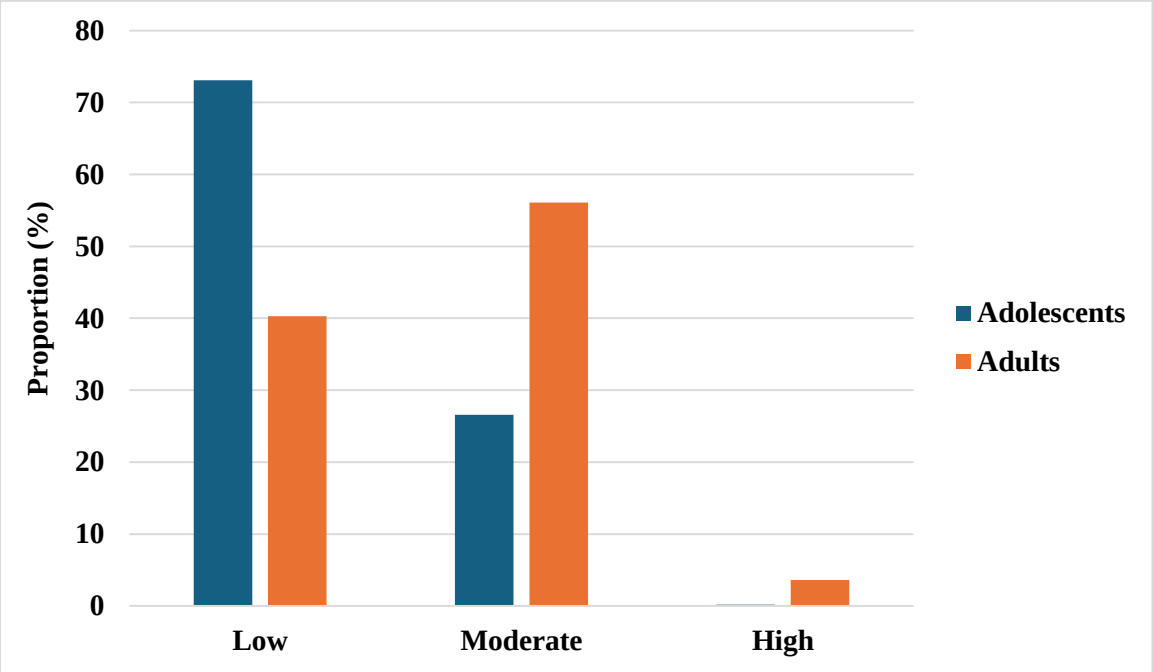

Figure 5. Sugar-related practices scores in Omani adolescents and adults

Among adolescents, about 43% and 37% reported "sometimes" or "often/always" adding sugar to food or drinks, respectively. Nearly 68% of adolescents reported rarely/never checking the sugar content of foods, and 50% reported rarely/never buying foods labelled as "low sugar" or "no added sugar" (**Figure 6**). On average, adolescents reported adding approximately 1.5 spoons of sugar to drinks, with higher average number of spoons of sugar (2.2) reported in Dhofar.

Among adults, a small proportion of adults reported adding sugar "sometimes" or "often/always" to drinks (22%) and foods (18%). In contrast to adolescents, nearly 50% of adults reported "often/always" or "sometimes" checking the sugar content of foods when shopping. A similar proportion of adults (54%) reported "often/always" or "sometimes" buying foods labelled as "low sugar" or "no added sugar" (**Figure 6**). On average, adults reported adding approximately one spoon of sugar to drinks, with higher average number of spoons of sugar (1.7) reported in Dhofar.

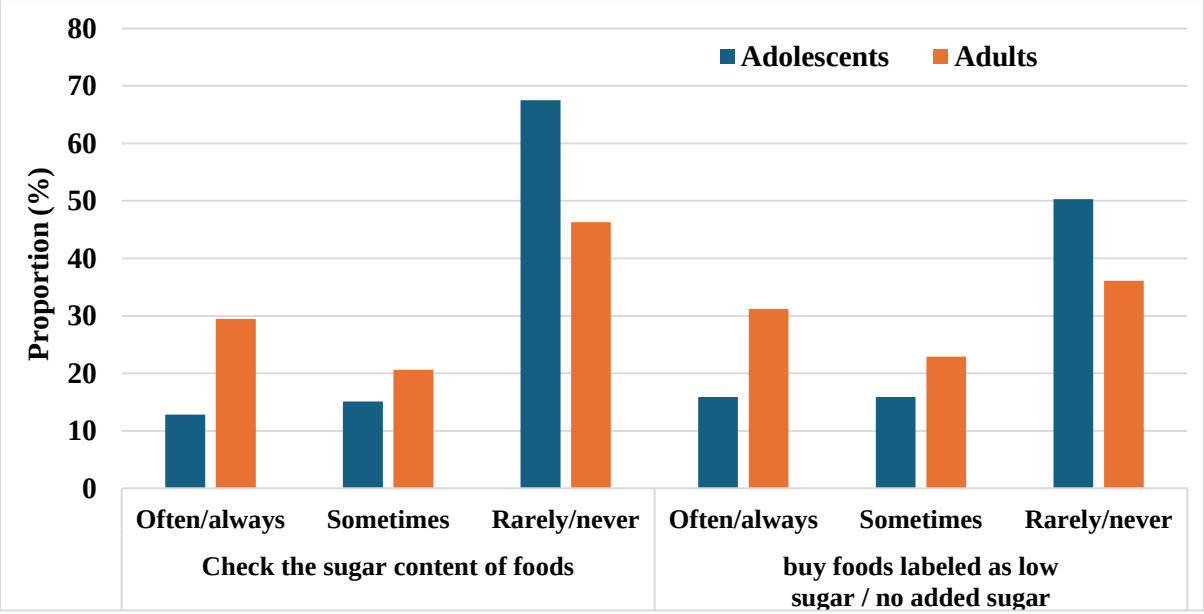

Figure 6. Sugar-related practices of adolescents and adults

Among adolescents, 55.3% reported trying to limit their sugar intake and 43.8% reported that they were not trying to reduce their intake. In contrast, A large proportion of adults (84.3%) reported trying to limit their sugar intake, with only 14.8% reporting that they were not trying to limit their sugar intake. Among those trying to reduce their sugar intake, the primary reasons for this practice were "health reasons", "trying to lose weight", and "taste". Among those not trying to reduce their sugar intake, the key reasons were "habit", "only using a little sugar", and "using natural sugar" (**Figure *7***).

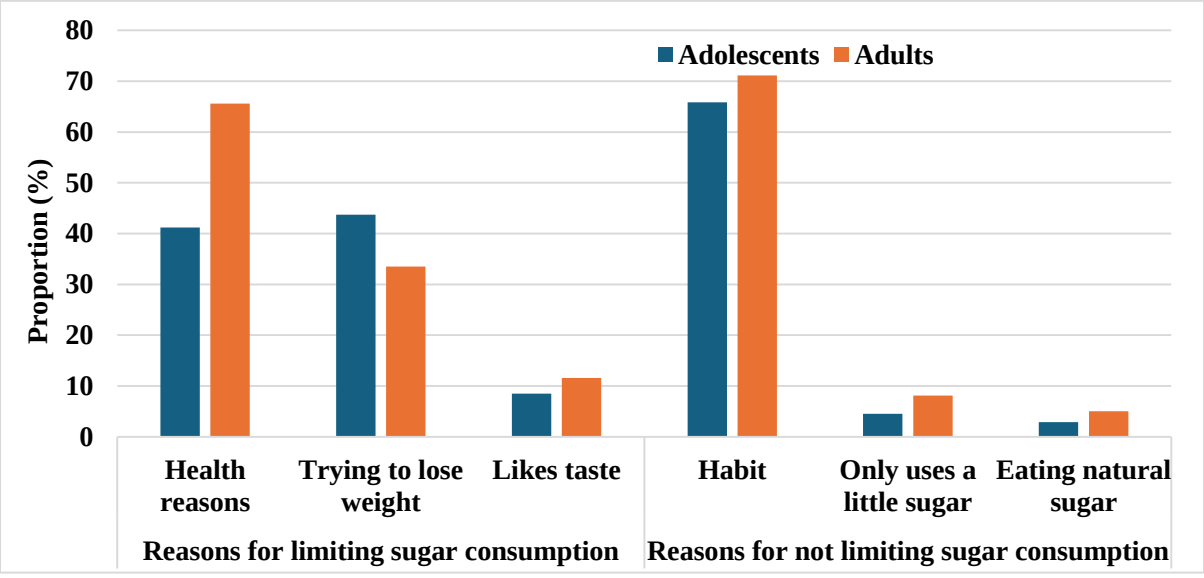

Figure 7. Main reasons for reducing or not reducing sugar consumption among adolescents and adults

CONCLUSION AND RECOMMENDATIONS

These findings indicate a situation that a sizeable share of the Omani population has high knowledge of dietary sugar and its harmful effects but is unwilling to change their consumption patterns and continues to consume large amounts of sugar. Worryingly, a change one's health status was the main factor that would motivate an adolescent or adult to reduce their sugar intake. This belief surely prevents Omani adolescents and adults from reducing their sugar consumption.

Based on the findings, it is clear that a multisectoral approach is needed to reduce the consumption for sugar in the Sultanate of Oman. The continuation of the existing public health programs and the implementation of additional policies is needed to enable adolescents and adults to identify and access alternatives to foods high in free sugars. Key policies and strategies include:

1. Tax sugar-sweetened beverages
2. Reformulate composition of processed foods to reduce sugar content
3. Conduct campaigns to improve dietary behaviors and increase physical activity
4. Enhance and expand sports facilities
5. Raise awareness of NCDs during screening
6. Effectively share nutrition information during screening and treatment
7. Conduct consumption surveys to assess behavioural change

ACKNOWLEDGEMENTS

This Executive Summary has been produced as part of the *2023 Survey of nutrition-related knowledge, attitudes, and practices in the Sultanate of Oman*. This survey was undertaken by the Nutrition Department of the Ministry of Health with support from the World Health Organization and the Al Jisr Foundation. Special thanks are given to the adolescents and adults that participated in this survey, and the field staff that collected the data from all governorates in the Sultanate of Oman. This Executive Summary was prepared by Dr. Salima Almamary, Dr. Halima Alghannami, Mr. Saleh Al Shammakhi, Mrs. Ibtisam Al Ghammari, Dr Nicolai Petry, and Dr. James P Wirth.

RECOMMENDED CITATION

Nutrition Department of the Ministry of Health – Sultanate of Oman, Al Jisr Foundation, GroundWork. Executive Summary #4 – Sugar-related knowledge, attitudes and practices among Omanis 14-60 year of age in Sultanate of Oman. Muscat, Sultanate of Oman; 2024.

REFERENCES

1. WHO. Noncommunicable diseases progress monitor 2022. Geneva, Switzerland; 2022. Available: https://iris.who.int/bitstream/handle/10665/353048/9789240047761-eng.pdf?sequence=1
2. Ministry of Health - Oman, United Nations Development Programme, Gulf Health Council, World Health Organization, Secretariat of the UN Inter-Agency Task Force on NCDs. The case for investment in prevention and control of non-communicable diseases in Oman. Muscat, Oman; 2023.
3. Te Morenga LA, Howatson AJ, Jones RM, Mann J. Dietary sugars and cardiometabolic risk: systematic review and meta-analyses of randomized controlled trials of the effects on blood pressure and lipids. Am J Clin Nutr. 2014;100: 65–79. doi:10.3945/ajcn.113.081521
4. USDA - Dietary Guidelines Advisory Committee. Scientific report of the 2015 Dietary Guidelines Advisory Committee: advisory report to the Secretary of Health and Human Services and the Secretary of Agriculture. Washington, D.C.; 2015. Available: https://health.gov/sites/default/files/2019-09/Scientific-Report-of-the-2015-Dietary-Guidelines-Advisory-Committee.pdf
5. Ministry of Health - Oman, Al Jisr Foundation, GroundWork. Ministry of Heath, Al Jisr Foundation and GroundWork. Survey of Nutrition-Related Knowledge, Attitudes and Practices in Oman 2023. Muscat, Oman; 2024.
6. Quadri FA, Hendriyani H, Pramono A, Jafer M. Knowledge, attitudes and practices of sweet food and beverage consumption and its association with dental caries among schoolchildren in Jazan, Saudi Arabia. EMHJ-Eastern Mediterranean Health Journal. 2015;21: 403–411.
7. Pielak M, Czarniecka-Skubina E, Trafiałek J, Głuchowski A. Contemporary trends and habits in the consumption of sugar and sweeteners—A questionnaire survey among poles. Int J Environ Res Public Health. 2019;16: 1164.
8. Joo N, Kim S-K, Yoon J. High school students' sugar intake behaviors and consumption of sugary processed food based on the level of sugar-related nutrition knowledge in Seoul area. Korean Journal of Community Nutrition. 2017;22: 1–12.
9. WHO. Guideline: Sugars intake for adults and children. Geneva, Switzerland; 2015. Available: Guideline: Sugars intake for adults and children