

Alcohol consumption in early adolescence and medical care

Alcohol, the product of cereal or fruit fermentation, has been used for thousands of years by different civilizations, such as the Egyptians, the Chinese, the Greco-Romans, and Pre-Columbian cultures, among others, either for rituals or social recreation. The Greek civilization hosted the Dionysian mystery cults in which participants sought to get close to their god through the use of intoxicants. In Roman mythology, Dionysus was known as Bacchus, and his name continues to be present in bacchanals, in association with debauchery or lack of inhibition, typical of acute alcohol intoxication. (Picture 1)

In the Middle Ages, alcoholic beverages were known as “spirits” and were widely used with healing purposes.¹ During the 18th century, alcohol consumption increased among the population, favored by the laws promoting the use of cereals to make distilled beverages, in addition to the growing industrial development of civilizations.

In the 19th century, the attitude changed and was accompanied by campaigns promoting moderate alcohol use. Thus, alcohol manufacture, sale, import, and export were even prohibited in some countries. The “Prohibition” brought into

the fore alcohol illegal trade and smuggling in response to market demand, which eventually resulted in the Prohibition annulment. In Argentina, a special prohibition is made in the hours before and after an election.

At present, in our society, alcohol is the psychoactive substance most commonly used by adolescents.² Several studies agree that between 49% and 76% of 10- to 14-year-old adolescents have drunk alcohol,³⁻⁵ and at this age group adolescents are most vulnerable for alcohol use initiation. This occurs across Argentina and is replicated in other Latin American countries. The World Health Organization (WHO) recommends abstinence from alcohol consumption in youth under 18 years of age because the later alcohol use starts, the lower the risk for future dependence. Consistent with present laws in place in Argentina that prohibit the sale of alcohol to minors under 18 years of age, it is evident that we are in the face of a complex public health problem. In addition, the current alcohol drinking modality among adolescents follows a risky and abusive pattern, especially over the weekends, in the night hours, and while out with their peers, which is amply

FIGURE 1: “The Triumph of Bacchus” by Velazquez, 1629 painting, at the Museo del Prado, Madrid. It represents Bacchus as the god who offers wine to men, temporarily releasing them from their problems, in allusion to the intoxicating effect of alcohol



tolerated by their family and environment.^{5,6} Such heavy episodic drinking –HED– (it refers to drinking large alcohol amounts over a few hours) is typical of adolescents and youth who go out on the weekends and aims at acute alcohol intoxication, preferably with high alcohol content distilled beverages, such as vodka, gin or tequila,⁵ sometimes mixed with medication, known as the “jarra loca” (“the crazy jar”).⁷ This drinking modality results in acute alcohol intoxication, and youth in such state bring about a higher rate of traffic accidents, more violent episodes, either within the family environment or on the streets, unintended pregnancies, and sexually transmitted infections. It is also necessary to consider the effect of illegal substances or medications, which are commonly used together with alcohol.

In the context of HED, adolescents drink high alcohol content beverages and rapidly reach high blood alcohol concentrations, which are reflected in a fast altered level of consciousness. Alcoholic coma is a frequent reason for admission to emergency room services among youth who have not developed alcohol tolerance, i.e., occasional or episodic alcohol users. This situation is an example of a frenetic, uncontrolled consumption, which is observed day to day in our society.

Alcohol and drug use prevention should be approached and understood from the overall concept of Health Education.⁸ It is fundamental to create risk awareness programs focused on discussing the risks of episodic, abusive alcohol drinking. Borrás Santiesteban pointed out a lack of documentation that would enable establishing alcohol use among adolescents, and the absence of coordination between the health sector and schools, emphasizing the need to develop adolescent-centered primary care. Another aspect that stands out from the same author’s article is that the most common channel for access to information on alcohol use prevention was TV, leaving health care staff out of the picture. This demonstrates that mass media play a very important role in the distribution of

information regarding sensitive health issues, including addictions, and should be coordinated with health care providers specialized in this field. ■

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Genetic and epigenetic, the case of hypercholesterolemia

To size up how important the human genome description is, the researchers who described it illustrated the relevance of genes in the development of conditions that create a large burden on public health. The authors reported on ApoE genetic variations and their role in the development of hypercholesterolemia and cardiovascular disease. This is an important issue, which calls upon us to reflect on how knowledge has evolved in the past decades.

Morbidity and mortality from cardiovascular disease (CVD) across Europe between 1990 and 1992 was greatly dissimilar among countries. Mortality among 45-74-year-old men was 655/100 000 inhabitants per year in Scotland, whereas it was 142/100 000 inhabitants per year in France, i.e., 4.5 times higher. The mortality rate among Scottish women in the same age group was 7.5 times higher than among their French counterparts.¹

Subsequent studies showed that in Europe, based on a continuous gene pool, the rate of CVD varied over time due to environmental changes, which demonstrates the role of diet. Variations in the European diet, from North to South, started to account for numerous findings. Studies on the composition of adipose tissue indicated an increase in monounsaturated fatty acid intake in Southern countries, together with a reduction in saturated fat consumption. Therefore, the role of fats was studied, especially saturated fats, in addition to their relationship with CVD and the benefits of omega-3 and omega-6 fatty acids.^{2,3}

Apolipoprotein E (apoE) is one of the major components of very low-density lipoprotein (VLDL). ApoE plays an important role in lipoprotein metabolism and exists as three common isoforms: E2, E3, E4, coded by three alleles: apoE2, apoE3, apoE4, which are located on chromosome 19. The three isoforms have different functional properties: the apoE4 allele is associated with an increase in cholesterol and LDL-cholesterol levels, whereas the apoE2 allele is associated to the opposite.⁴

In Northern Europe, the United States and Canada (Caucasian populations), the prevalence of apoE4 is 13%-17%. In China, it is low (5%-7%), whereas in Africa it reaches 20%-30%. From the North of Europe (Finland) to the South (Greece), prevalence decreases from 18% to 8%.

The association between carriers of the apoE4 allele and high cholesterol levels is significant in the populations with a saturated fat- and cholesterol-rich diet. And it is weaker in the populations with a healthier lipid profile diet (e.g., the Mediterranean diet). This means that an atherogenic diet is necessary for the association to become evident.¹

Decades ago, thanks to the Argentine Infarction Prevention Program (*Programa de prevención del infarto en la Argentina*, PROPIA), it was possible to carry out a wide dissemination of the risks of hypercholesterolemia and the nutritional measures necessary to fight it. Marcelo Tavella, M.D., and his group implemented several interventions and issued publications, making them the pioneers in our country who warned on adult hypercholesterolemia and extended its prevention to the pediatric population. Apolipoproteins (specifically apoB) were studied in adult at-risk populations; in more recent years, Virginia Bañares, M.D., studied the prevalence of apoE4 carriers.⁵

In 2005, using a sample with a high prevalence of students with hypercholesterolemia, and then in 2009 through a successful experience with interventions, the Río Cuarto Group (Córdoba), led by Alberto Lubetkin, M.D., and J. A. Robledo, Biochemist, published an intervention implemented in students in *Archivos Argentinos de Pediatría*, and findings were very interesting.^{6,7}

Both Tavella and Robledo demonstrated that efforts paid off.

In 2015, the SAP's Committee on Nutrition published a consensus on the management of dyslipemias in pediatrics. It was an excellent study that introduced screening at 6 years old.⁸

However, in order to reduce the population risk, it is necessary for national and provincial top health authorities to implement continuous policies and showed their commitment. The third National Survey on Risk Factors (*Encuesta Nacional de Factores de Riesgo*, ENFR, conducted by the National Ministry of Health) showed that following the increase observed in the first and second surveys, the prevalence of hypercholesterolemia had reached a plateau.⁹

Based on the evidence, physical activity and a healthy diet help to reduce and prevent high cholesterol levels, regardless of the genetic

burden, highlighting once again the relevance of epigenetic factors. In this regard, the National Ministry of Health, via the Division of Health Promotion and Control of Noncommunicable Diseases, proposed a series of actions towards habit modifications, e.g., the Healthy Argentina Plan, the Cardiovascular Disease Prevention guideline, and the "Trans-fat-free Argentina 2014" campaign, which changed the Argentine Food Code and limited the amount of fat allowed in industrial food. Also on the part of the Ministry, via the REDES (Health Care Integrated Networks) program, the distribution of statins among primary care providers was implemented through the REMEDIAR program, aimed at subjects with specific indications. We should all stand up for the continuation of these policies, assess their impact, make the corresponding corrections, and fight against non-communicable chronic diseases. As described by the consensus of the European Atherosclerosis Society, familial hypercholesterolemia is scarcely diagnosed and treated.¹⁰

Once again Robledo et al. address the issue by opening a window to genetic aspects in this issue of *Archivos Argentinos de Pediatría* "Relationship between genetic and environmental factors and hypercholesterolemia in children" (page 419). Their results show the weight of the genetic burden estimated through positive family history in school children, that are stronger than other risk factors in this study. This type of reports are very important, because opens the way to further researches.

Nutrition, as applied to public health, should start considering how to use the information obtained from research in nutrition and genomics. A better understanding of genetic variations, risk factors, and sensitivity to therapeutic diets will probably have an impact, firstly on clinical nutrition, and secondly, on public health nutrition.

It would be desirable for pediatricians to become committed and show the results of interventions or studies that would allow us to know the genetic burden in our population,

spread the word on the importance of approaching this issue from as early as childhood, the window of opportunity for prevention in our life cycle. ■

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Considerations on infant mortality and its neonatal component

Approximately 3 million newborn infants die worldwide in their first month of life. One million of these deaths occur within the first 24 hours of birth.¹

Neonatal mortality (NM) is defined as a death occurring in the first 28 days of life, whereas postneonatal mortality is that occurring between the end of the neonatal period and one year of life. A series of factors influence and determine mortality rate: biological, demographic, socioeconomic, cultural, environmental, geographic, and health care-related factors. The extent of their influence varies depending on the age of infants younger than one year old.²

Causes related to perinatal conditions predominate in NM, such as maternal health care, access to antenatal care visits, care provided during labor, and infant care during the first days of life.

NM during the first week of life, especially in the first three days, is mostly related to prematurity, low birth weight, neonatal asphyxia, respiratory distress, and birth defects (including heart disease and nervous system malformations), whereas, after the first week, half of the deaths are caused by neonatal sepsis.^{3,4}

Approximately 61% of neonatal deaths occurred in 2014 in Argentina, as per the classification of reducible deaths conducted in 2011, account for deaths that could be prevented if efforts were made to improve the quality of mother and child care and to adjust health policies in accordance with needs.⁵ Such efforts include improving timely maternal care visits, advancing the number and quality of antenatal care visits, regionalizing perinatal care according to the level of care provided at the maternity centers with the adequate human and technological resources, warranting any mother or child gets the necessary referral timely and in due form, and ensuring the operation of the national network for the surgical correction of birth defects.

Besides, and at an international level, the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015 include that of ensuring healthy lives and promoting well-being for all children. One of the objectives of SDG 3 aspires to end preventable deaths in newborn infants and children younger than 5 years of age by 2030 (Sustainable Development Goal 3).⁶

Although the infant mortality rate (IMR) in Argentina has decreased from 16.6‰ in 2000 to 10.8‰ in 2014, the course of the reduction in NMR has been slower and is at 7.4‰, and accounts for more than two-thirds of IM composition.⁷ Besides, it has been observed that although IMR and NMR have also decreased in every Argentine jurisdiction, major inequalities have been recorded, which indicate a trend over time associated with a greater incidence of unmet basic needs.⁸

Moreover, in relation to adolescent pregnancies, 15.6% of deliveries occurred in Argentina in 2013 corresponded to mothers younger than 20 years of age; and the rate is above the national mean in 17 jurisdictions. Adolescent pregnancy is an indicator of inequality across jurisdictions: it accounts for 8.8% of deliveries in Buenos Aires City (CABA), whereas it accounts for 24.4% of all deliveries in Formosa and Chaco. The percentage of live NBIs born to adolescent mothers younger than 15 years old describes situations that may be related to child abuse and/or gender-based violence, in addition to poor access to formal education and to sexual and reproductive health programs.⁹

In the CABA, the NMR has not decreased as expected over the past few years; the latest available statistical data indicate a strong association between poverty and infant mortality across the different CABA districts. It is worth noting that CABA records a component of births and deaths of children born to mothers who reside outside CABA, especially those living in Greater Buenos Aires population centers. To date, no study has been done to investigate this problem and any association in this regard remains unknown. It is necessary to become aware of where newborn infants are born and die in Argentina and determine any association with maternal age and place of residence.

In this issue, Meritano et al. assess the relationship among the place of maternal residence, the use of a health system subsector, and neonatal mortality rate in CABA in the 2011-2012 period. This was a population study based on reliable records. Authors analyzed data on birth rate and mortality rate according to the subsector of health used by the mother, which included the public, private and social security subsectors, and also provided very interesting data on the

magnitude of this problem among mothers who live outside CABA but give birth in the CABA and for whom NMR is higher.

The article describes the importance of having reliable records and proposes a discussion on multi-sector efforts and the goals aimed at improving population access to health care and overcoming inequalities and social determinants of health.

Analyzing how to reduce neonatal mortality is a complex issue. And even more important, it is necessary to conduct a strict and urgent analysis on the quality of life and living conditions of infants surviving diseases in the neonatal period.

To conclude, I would like to quote a great Argentine physician and health expert, Ramón Carrillo, M.D.: *"The right to health is among the most overlooked rights; however, it is the most transcendental right because it is related to an individual's dignity, community life, and national and international economy. It would not be too adventurous to say that a population's health is an essential condition for its social security and peace"*.

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