

Analysis of TV, advertising and other behavioral determinants of overweight and obesity in childhood

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Abstract

Worldwide obesity has reached the proportion of an epidemic. A well-established fact is that nowadays many low- and middle-income countries are facing a “double burden” of disease, dealing with under-nutrition on one side, and on the other experiencing a rapid rise in non-communicable disease risk factors such as obesity and overweight, particularly in urban settings. Behavioral components are strongly influencing obesity spread and development, especially when considering TV and advertising. There is, therefore, the need of multi-cultural and cross-cultural research, in order to gain a full understanding of the association between obesity and different risk factors, in different scenarios, providing the best evidence to decision makers, grounding prevention on evidence-based strategies rather than focusing on single factors without the recognition of their mutual influence.

Key words: behavioral research; epidemic; obesity; overweight; Mexico

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Resumen

La obesidad en todo el mundo tiene una prevalencia similar a la de una epidemia. Los países de bajos y medianos ingresos se enfrentan hoy a una “doble carga” de enfermedad: por un lado la desnutrición y, por otro, un rápido aumento de enfermedades como la obesidad y el sobrepeso, especialmente en el ambiente urbano. Los componentes comportamentales tienen fuerte influencia sobre la propagación y el desarrollo de la obesidad, especialmente los relacionados con la televisión y la publicidad. Se tiene, por lo tanto, la necesidad de realizar investigaciones multiculturales e interculturales, con el fin de obtener una plena comprensión de la relación entre la obesidad y los diferentes factores de riesgo en varios escenarios. Ello proveería mejor evidencia para los órganos de decisión, que podrían generar estrategias de prevención basadas en enfoques ambientales, en lugar de centrarse en factores individuales, sin el reconocimiento de su influencia mutua.

Palabras clave: investigación conductual; epidemia; obesidad; sobrepeso; México

Worldwide obesity has more than doubled since 1980.¹ In 2010, it was estimated that 43 million children under the age of 5 were overweight.² Recent data indicate that almost 35 million overweight children are living in developing countries and 8 million in developed ones.² Children in low- and middle-income coun-

tries are more vulnerable to inadequate pre-natal, infant and young child nutrition, and due to socio-economic reasons, more exposed to high-fat, high-sugar, high-salt, energy-dense, micronutrient-poor foods.³ Dietary patterns associated with low levels of physical activity result in increases in childhood obesity,⁴ although no

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consensus has yet been reached on the association between energy balance and obesity.⁵

When considering diseases attributable to obesity and overweight, the analysis carried out in the World Health Report 2002 showed that 58% of diabetes, 21% of ischaemic heart disease, and 8-42% of certain cancers globally were attributable to a BMI above 21 kg/m².⁶

In this epidemic scenario, research on obesity and overweight determinants has been conducted worldwide,⁷⁻¹³ although conclusions on risk factors and needed actions do not appear homogeneous^{5,14-17} as exemplified by a Cochrane systematic review that included 22 randomized clinical trials that failed to show that diet and exercise, separately evaluated were effective in preventing weight gain in children,¹⁸ and the complex interplay of factors must not be overlooked when planning an intervention, especially when targeting children and adolescents.

Discussion

Genetic, culture, social environment forging behavioral determinants

The specific definition of behavioral aspects related to excessive or inadequate energy intake is a task that has been broadly undertaken, with diverse outcomes. On a daily basis it is not possible to quantify energy intake and expenditure at an individual level with sufficient accuracy to infer which aspects of these two processes are responsible for the rise in the prevalence of childhood obesity.¹⁹ Food choices are modulated from different interactive agents.²⁰ Biology and physiology (hunger, thirst, satiety, eating initiation and termination), economics (like availability, budget), social environments, cultural traditions, decision psychology and marketing, they all contribute to shape dietary choices.²⁰ On the other side, energy expenditure results from the combination of resting energy expenditure, thermogenesis and physical activity.²¹

Biological predisposition is a fundamental subject when speaking about overweight and obesity in children. It has been indicated from recent reports that at least 32 genes contribute to common forms of obesity.²²⁻²⁴ Parent obesity is an important factor in predicting adult obesity of offspring,²⁵ in particular with children of obese parents who themselves were fat in childhood.²⁶ Birth weight is another aspect that was proven as having a positive association with obesity.²⁷ On the other hand, duration of breastfeeding was found inversely associated with the risk of overweight.²⁸

Genetic plays a role also in food choices.²⁹ Inner taste preferences are early developed in children. Hu-

mans are born with innate predilection for sugar and fat^{30,31} and preferences learned before or just after birth may persist for many years.³²

Cultural influences act on the wider context of individual food preferences.^{19,33,34} Cultural identity and food habits have long supported and reinforced one another.³⁵ This relationship concerns availability of certain foods, eating habits of parents³⁶ and culinary tradition.^{37,38}

Social environment and its facets play a relevant role in energy imbalance, considering that much behavior is influenced by social norms.³⁹ For example parents' influences, divided into parenting style and practice,^{40,41} seem to interact with diet and children weight.⁴² Recent research indicates that restrictive behaviors are associated with children's binge eating and poorer self-regulation of energy intake.⁴³

Built environment has been recognized as a factor responsible of the increased prevalence of obesity. Globalization and modernization have favored major changes in the built environment, defined as all the new urban areas that changed people's lifestyles, imposing a working context with fewer opportunities to practice physical activity in everyday life, and increased opportunities to access high energy density foods, promoting a positive energy balance to entire cities.⁴⁴

Eating patterns have moreover been considered when assessing best options in children's eating behavior. Particular attention has been directed towards snacking and its linkage to daily energy intake. The few prospective studies that have been undertaken have found a null association between snack food and obesity.^{45,46} Some researchers have suggested that snacking, coupled with snack advertising, might be the reason of the obesity epidemic,⁴⁷⁻⁴⁹ while other authors instead have targeted everyday consumption of meals and snacks from the child's perspective,⁵⁰ concluding that it is more important to focus on the dietary environment at home when planning health promotion interventions.

Physical activity has been assumed as decreasing, replaced by more sedentary behaviors.⁵¹ Although this is commonly accepted, a recent study has shown how the stereotype of a young generation who never indulge in sport or exercise is belied by the evidence.⁵² Many parents perceive their children to be active.⁵³ In contrast, the bulk of evidence from studies that have directly measured physical activity has illustrated that very few children meet the recommended levels.

Once again results are not homogeneous. In Goldfield's study, higher levels of physical activity were associated with lower risk of obesity among white girls but not among black girls, questioning that public health need to take into account that black girls are less sensitive to the effects of physical activity.⁵⁴ Same

conclusions were found from Campbell's systematic review, that pointed out that the limited data at hand are not sufficient to draw conclusions and that an urgent need remains for a range of well-designed studies in the area.¹⁷

An important effect has been accounted also for computer and videogames use.⁵⁵ Sedentary behaviors are considered as highly related to obesity,⁵⁶ although there is no evidence to suggest that sedentary behavior displaces physical activity levels.⁵⁷ Long hours of use appear more frequently linked to high BMI children.⁵⁸

The impact of TV and advertising

A special focus is given in the present paper to TV and advertising. Within the environmental context, the impact of TV viewing and advertising on children's eating behavior and health seems to have a potential association with their overweight or obesity problems.⁵⁹ Television is suspected to be linked to a reduction in physical activity whilst advertising seems to promote an overconsumption of food high in fat and sugar.^{59,60} Most of the studies focusing on this subject have been conducted in the Anglo-Saxon context,⁶¹⁻⁶³ showing a correlation between time spent watching television and nutritional status of the subjects involved. Dietz and Gortmaker demonstrated in 1985 a significant, positive association between hours of television viewed and obesity in children and adolescents,⁶⁴ and since then these results were confirmed in several studies.^{55,61,65-67} Two main aspects have been considered by researchers about the TV effects on children's obesity: reduced energy expenditure linked to screen time⁶⁸ and augmented energy intake driven by advertising and snacking in front of the TV.¹⁹ The first issue seems to be related to long hours of TV watching, influencing positive energy balance through displacement of physical activity.⁶⁹ It has been suggested that youth may decrease their physical activity when sedentary behaviors are increased.^{36,58,64} The second issue is related to the exposure to food advertisement and the increased intake of energy dense foods, while watching TV,⁷⁰ thesis supported from Jackson's results.⁶⁶

Controlled studies on children's choices have consistently shown that children exposed to advertising choose advertised food products at significantly higher rates than those not exposed.⁷¹ In 2007, Halford published a study establishing a significant association between advertisement exposure and increased food intake in children.⁷² Yet this effect is not supported from the results of an international research (article in press) we made in San Luis Potosi (MX). Our study, although located in an experimental setting, tried to verify the

maximum effect of a specific advertising, promoting the snack eaten by the children, in order to establish the effect of a TV commercial on children subjected to different doses of the spot. Children appeared not to be influenced by them, even when the interactions were evaluated after adjusting for several potential confounding factors, like parents' BMI, brand awareness score, physical activity performed or number of hours of TV viewing.

Conclusion

What's next?

Childhood obesity appears to be forged by several interacting factors, and only a part of them can be attributed to behavioral aspects. Kamath and colleagues performed a metaanalysis examining the extent to which preventive interventions could affect physical activity and dietary behavior as outcomes.⁷³ Their findings highlighted that these interventions caused small changes on physical activity and dietary behavior as outcomes and no significant effect on BMI compared with controls. These researchers concluded that attempting to reduce unhealthy behaviors (i.e. decreasing sedentary behaviors and dietary fat) seems to be more effective than promoting positive behaviors (i.e. increasing physical activity and consumption of fruits and vegetables). Another metaanalysis considering school-based interventions revealed that these programs are effective in reducing childhood obesity, especially the longer ones.⁷⁴ Present efforts therefore are mostly aimed at the environmental context of the child, limiting energy intake, focusing mostly on banning policies or fiscal measures.⁷⁵

In a broader context, our suggestions advocate for the need of multi-cultural and cross-cultural research, in order to gain a full understanding of the association between obesity and different risk factors, in different scenarios, providing therefore best evidence to decision makers, grounding prevention on evidence-based strategies⁷⁶ rather than focusing on single factors without the recognition of their mutual influence. Research on obesity has presently been related to an Anglo-Saxon context, mostly when considering experimental trials. Given the strong cultural component of the disease, it's fundamental to develop country-specific trials, in order to get more targeted insights. Effective interventions to improve health and nutritional status need to be culturally appropriate and implemented at the individual, family, and community level.⁷⁷

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