

Antibiotics Risk of Obesity in Children: Major Threats in Health-care System

Chidambaram Ramasamy^{1*}, Subramani Parusuraman²

¹Department of Prosthodontics, Faculty of Dentistry, ²Unit of Pharmacology, Faculty of Pharmacy, AIMST University, Bedong, Kedah Darul Aman, MALAYSIA.

Mobile: 016-4724370

E-mail: dr.ramasamyc@gmail.com

DOI: 10.5530/jyp.2017.9.88

One of the health related topics, which is consistently receiving attention in recent years, is antibiotic misuse. Interestingly, there is a high-profile report claiming that antibiotic consumption could trigger obesity risk in children. The exhaustive study was undertaken by Schwartz and his team considering 163,820 children between the ages of 3 and 18, wherein they examined body mass index and antibiotic use in the earlier years of life. An association between an average weight gain of approximately 1.4kg at the age of 15 years and antibiotic consumption in the early age has been found.¹ The striking feature of the study was that antibiotic use at any age in children contributes to weight gain during the later age. The medical literature has much to say in this context, whereas the biomedical literature is scarce in portraying the association between antibiotics and obesity, although antibiotics account for the majority of the medications prescribed to children. This incited us to present this note.

Unhealthy eating habits and lack of exercise are the main reasons for getting obese. Should, therefore, health care professionals consider the antibiotic-obesity link as a medical issue? Given the answer 'Yes' would leave us with a false impression on the present paper. Everyday our health problems are facing threats from new links. In the best interests of public health, it is the duty of health care professionals to welcome new insight with open minds. One such is the deadly link between antibiotics and obesity in children. The latest study linking frequent antibiotic use and obesity suggests that the frequent use of antibiotics can change the intestinal micro flora and alter the metabolism and calorie intake, which will ultimately cause weight gain.¹ Furthermore, early development of obesity increases the risk of adult obesity which is associated with the emergence of anti-microbial resistance (AMR) and very severe clinical problems.

In the light of above evidence, it is clear that many issues relating to AMR are complex and inter-related. Overuse of antibiotics is already a problem as about half of the world's obese children (approx. 48%) live in Asia.² Moreover, the decreased awareness of grievous link between obesity and antibiotic could contribute to global crisis. The worldwide cases of obesity have already crossed 600 million³ and it is also expected that 2030 would see a great increase in Chronic Kidney Disease (CKD) patients from Asia and Africa.⁴ In the context of Malaysian experience, it is sad to know that we have been Labelled as the fattest nation in Asia. In Malaysia, a recent National Health and Morbidity (NHM) survey indicates that 17.7% of Malaysia nsareobese and a further 30% are overweight.⁵ The data from Nutrition Society of Malaysia (NSM) revealed that almost 30% of children, aged between 6 and 17 years, were either overweight or obese. Additionally, >7% of Malaysian children under the age of 5 years are overweight, which is a matter of concern.⁵ With the

indiscriminate usage of antibiotics in children we are further promoting AMR and endangering our next generation.

Childhood obesity has been linked to numerous medical conditions. Obesity is also increase the risk of development of diabetes, hypertension and cardiac disease and may involve in the development of CKD.³ The detrimental health consequences of obesity -increased risk of metabolic and cardiovascular disease, musculoskeletal problems as well as psychosocial issues may manifest already in childhood and become more prevalent with increasing age. Until new, many of the above mentioned health conditions are mostly found in adults; now they are extremely prevalent in obese children. Despite the well documented consequences of obesity in literature, awareness among the general population is lacking.

In health care perception, preventing unwanted complications in the children infectious stimulate them to prescribe antibiotics. Meanwhile, the United Kingdom researchers predicts that, the global death due to AMR reaches 10 million in 2050.⁶ As responsible health care professionals, are we misleading our patients? Honestly, the devoted parents also sometimes take advantage of over counter sales and neglect to bring it to the notice of doctors.⁷ Let's stop the blame game and it is time to follow strictly the standard guidelines laid down by our pioneers as an article of faith. Additionally, all the suggested instructions are revised periodically and the information has been made available for all readers who are interested.

In other hand, the new investigations pave the way to a potential strategy restricting the use of antibiotics. It sends a clear warning to parents that overuse is detrimental to the child health and puts them at a risk of cardiovascular disease, musculoskeletal problems as well as psychosocial issues. A healthy and active lifestyle that includes appropriate dietary habits and physical activity should be promoted to children. As children are dependents and parents/ care-givers should be educated to prevent the early childhood obesity. The fundamental principle of antibiotic prophylaxis is to select the appropriate antibiotic, determine the dosage, route of administration and prescribe them for therequired duration. Before curing a health problem promptly, let's think twice prior to prescribing/ dispensing antibiotics and aim to protect the children from development of AMR.

In the context of immune compromised patients, special caution needs to be addressed to determine the best outcome of procedure and to provide the required dose adjustments and thereby preventing the complications. Immune compromised patients represent a special division for health care professionals as they are more prone to bacteremia, which may rapidly lead to septicemia. The list of medically compromised candidates include but is not limited to organ transplant, infective

endocarditis, hydrocephalic shunts, and/or have implanted medical aids (catheter, prosthesis).^{7,8} The service of antibiotics is better received when contemplated as adjunct rather than a definitive treatment. Antibiotics are one of the greatest inventions of 20th century. Let's use them as handy drugs rather than like candy. Honestly, the issue of AMR is neither not new in our community. However, little is known about the impact of antibiotics on the intestinal microbiota of children. We believe this communication would serve as a cautionary note to the health care professionals in the global battle of antibiotic misuse.

REFERENCES

1. Schwartz BS, Pollak J, Bailey-Davis L, Hirsch AG, Cosgrove SE, Nau C, *et al.* Antibiotic use and childhood body mass index trajectory. *Int J Obes (Lond)*. 2016;40(4):615-21.
2. Quinten Plummer. Asia accounts for half of overweight and obese children in world: childhood obesity causes and prevention 1 February 2016, Tech Times. Available from: <http://www.techtimes.com/articles/129442/20160201/asia-accounts-for-half-of-overweight-and-obese-children-in-world-childhood-obesity-causes-and-prevention.htm>
3. Kovesdy CP, Furth SL, Zoccali C. World Kidney Day Steering Committee. Obesity and kidney disease: hidden consequences of the epidemic. *Kidney Int*. 2017;91(2):260-2.
4. Chidambaram R. Optimal antibiotic dosage for chronic kidney disease patient: a pharmacological manual for oral clinicians. *Recent Pat Antiinfect Drug Discov*. 2015;10(2):113-23.
5. Surach G. The sun press reader. Obesity main cause of chronic kidney disease. [Internet]. Malaysia 2017 [updated Feb 27]. Available from: <https://www.press-reader.com/malaysia/the-sunmalaysia/20170227/281595240308440>
6. O'Neill J. Review on antimicrobial resistance antimicrobial resistance: tackling a crisis for the health and wealth of nations. London: review on antimicrobial resistance. Available from: https://amrreview.org/sites/default/files/AMR%20Review%20Paper%20%20Tackling%20a%20crisis%20for%20the%20health%20and%20wealth%20of%20nations_1.pdf Last accessed on December 2014.
7. Ramu C. Indications of antibiotic prophylaxis in dental practice. *Asian Pac J Trop Biomed*. 2012; 2(9):749-54.
8. Chidambaram R. The relationship between dental procedures and shunt infections in hydrocephalic patients. *J Clin Pediatr Dent*. 2017 E pub (Ahead of Print)

Article History: Submission Date : 20-08-2017 ; Acceptance Date : 13-09-2017.

Cite this article: Ramasamy C, Parasuraman S. Antibiotics Risk of Obesity in Children: Major Threats in Healthcare System. *J Young Pharm*. 2017;9(4):451-2.