The Scientific Newsletter

N° 51 • December 2010

« OBESITY COSTS »

Editorial

The health consequences of obesity among children and adults are well recognized, ranging from early cardiovascular disease, gallbladder disease, diabetes and even adverse mental health consequences. As the developed world becomes increasingly obese (for example, data from the 2007-2008 National Health and Nutrition Examination Survey in the United States suggest that 18.1% of children 2-19 years old are obese while another 16.1% are overweight), the economic consequences of this epidemic are already being appreciated.

The accompanying articles in this issue illustrates the gravity of the problem, especially in the context of growing concern about accelerating health care costs as a percentage of gross domestic products. While effective interventions remain wanting, these studies suggest that successful efforts to improve dietary balance and eliminate other risk factors for obesity and overweight will save much more in health care costs than the cost of the intervention.

Indeed, a recent article published in Health Affairs suggested that a $2 billion annual investment in childhood obesity prevention would be cost-effective if it could produce even a modest reduction in the number of children who were obese. These articles should redouble our efforts to identify opportunities for prevention of obesity in childhood, in pregnancy (especially because of multigenerational effects) and in adulthood.

Leonardo Trasande
Mount Sinai School of Medicine, USA

Fighting obesity with fruit and vegetables

No one should doubt the impact of obesity on public health. According to the WHO, there are now some 400 million obese adults globally, while the prevalence of obese children aged 6-11 years has more than doubled since the 1960's. At a population level, increased consumption of energy dense foods and reduced physical activity are exposing more and more people to the risk of a range of chronic disease.

From an IFAVA viewpoint the issue of obesity is one of crucial importance. Addressing obesity requires a mix of long term strategies to manage weight, with one of the key ingredients being the consumption of more fruits and vegetables. Campaigns undertaken by IFAVA members throughout the world are designed to provide practical assistance to help address this issue, by actively promoting the consumption of fruits and vegetables as part of a balanced diet. In combination with other strategies this consumption based approach can play a significant role in reducing the overall burden of obesity and chronic disease.

Chris Rowley
IFAVA Co-Chair

Editorial Board

© Philippe Dufour / Interfel

IFAVA Contact info

HEAD OFFICE
International Fruit And Vegetable Alliance
c/o Canadian Produce Marketing Association
162 Cleopatra
Ottawa, Canada, K2G 5X2

IFAVA

CHAIRMAN:
C. Rowley, Australia
E-mail : chairman@ifava.org

VICE CHAIRMAN:
P. Dudley, New Zealand
E-mail: vicechairman@ifava.org

Economic implications of obesity among people with atherothrombotic disease

— Zanfina Ademi and Christopher M Reid —

Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia

Obesity is a major public health problem and as such has been linked to higher medical costs[1]. In 2005, the World Health Organization estimated that almost 400 million people were obese and this number was projected to double over the next 10 years[2]. For example, in Australia the cost of obesity in 2005 was AUD $3.7 billion, of which one third were direct costs to the government[1]. However, there is a lack of information between studies to show how and why excess costs were accrued in obese populations[3]. The present study aimed to explore the impact of obesity on the cost of disease management in people with or at high risk of atherothrombotic disease and to explore the causes (excess costs) of any difference between obese, overweight and normal weight[4].

Cost of Obesity among subjects with or at high risk of atherothrombosis

This study was conducted as part of a nationwide prospective Australian Reduction of Atherothrombosis for Continued Health (REACH) Registry. The health-care costs of obesity were estimated for 2,819 subjects who were enrolled through primary care general practice in 2004 and who were aged ≥ 45 and had established coronary artery disease, stroke and peripheral artery disease, or ≥ 3 risk factors (hypertension, hypercholesterolemia, smoking, and diabetes). Data was collected on an internationally standardized case report form. Body mass index (BMI) was calculated as weight in kilograms divided by height in meters squared kg/m^2. Subjects were considered to be normal weight if their BMI ranged from 18.5 to < 25.0 kg/m^2, overweight from 25.0 to < 30.0 kg/m^2 and obese if ≥ 30.0 kg/m^2. The medical histories within 12 months and baseline measure for comorbidities were measured as a part of the registry. Reasons for hospitalization and ambulatory care service over one year of follow-up were collected as part of the standardised case report form. The baseline medication usage was collected as part of general practitioners case notes and by a participant interview undertaken by a trained nurse. We assigned a unit cost for each health-care item used, based on the Australian Government reimbursed data for 2006-2007. We applied linear mixed models to estimate the association between direct medical costs and BMI categories.

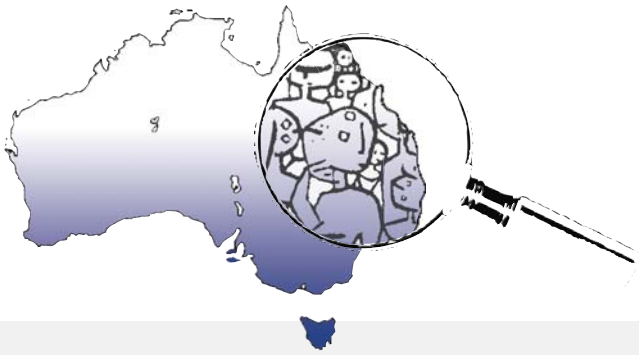
Excess cost of obesity

Among the 2,819 subjects pharmaceutical costs per person increased with increasing BMI category. When adjusting for comorbidities the results showed that adjusted annual pharmaceutical costs of overweight and obese subjects were higher ($87 (p=0.004) and $144 (p<0.001), respectively). This was due to subjects in higher BMI categories receiving more pharmaceuticals than normal weight participants. The same relationship was not observed across BMI categories in annual ambulatory care costs and annual hospital costs.

Implications

There are several potential explanations for the greater use of pharmaceuticals among subjects with higher BMI. A previous study suggested that obese people are more likely to be treated medically rather than surgically[5]. In addition, obese people might be in need of more drugs due to a greater complication of disease. However, even if they were receiving more drugs their risk factors remained still higher. The other possible explanation is that participants with greater body weights were prescribed more drugs due to an appearance suggestive of being at higher risk.

The implications of our findings are in terms of opportunity costs, given limited health-care resources governments struggle whom to subsidize first and for which illness. For example, if we consider the current rates of cardiovascular disease in Australia, for people aged over 65 years, almost 30% of them were obese. If we assume that calculated costs derived from this study are applicable to the general Australian population aged over 65 years and with or at high risk of atherothrombosis, then the excess cost to the government due to obesity is $37 million. We are questioning whether the additional pharmaceutical cost used provides an additional benefit, or whether this funding should be allocated elsewhere.



REFERENCES

1. Access Economics 2006. "The economic costs of obesity." Report to Diabetes Australia. Available through: http://www.accesseconomics.com.au/publicationsreports/reports.php Accessed: 02/02/2009.
2. World Health Organization. Obesity and Owerweight, 2006. Available through: htpp://www.who.int/dietphysicalactivity/publications/facts/obesity/en/print.html Accessed September 2010. .
3. Withrow D, Alter DA. The economic burden of obesity worldwide: a systematic review of the direct costs of obesity. obesity reviews.9999(9999).
4. Ademi Z, Walls HL, Peeters A, Liew D, Hollingsworth B, Stevenson C, et al. Economic implications of obesity among people with athero thrombotic disease. Int J Obes (Lond). 2010;34(8):1284-92.
5. Hauck K, Hollingsworth B. Do obese patients stay longer in hospital? Estimating the Health care costs of obesity. Centre for Health Economics Research Paper; 2008. Available through: http://www.buseco.monash.edu.au/centres/che/pubs/rp028.pdf.

Obesity in pregnancy: outcomes and economics*

— Ingrid Rowlands[a], Nick Graves[b], Susan de Jersey[c], H. David McIntyre[d], Leonie Callaway[e] —

a. School of Medicine, University of Queensland, Brisbane Australia
b. Institute of Health and Biomedical Innovation (IHBI), Queensland University of Technology, Brisbane, Australia
c. Department of Nutrition and Dietetics, Royal Brisbane and Women's Hospital, Brisbane, Australia
d. Mater Clinical School, School of Medicine, University of Queensland, Brisbane, Australia
e. Royal Brisbane Clinical School, School of Medicine, University of Queensland, Brisbane, Australia (Corresponding author)

The prevalence of obesity is increasing worldwide and this trend also affects women of reproductive age. Maternal obesity is now the commonest risk factor for maternal mortality in developed countries[1] and is also associated with a wide spectrum of adverse pregnancy outcomes. In the longer term, obesity and excessive weight gain during pregnancy are also associated with increased risks of cardiovascular and metabolic disease[2] for the mother and with increased risks of obesity in the offspring[3].

The health implications for mothers and babies resulting from obesity in pregnancy have important economic implications. Increased cost to health care providers, who manage obesity in pregnancy and its consequences, are expected. Interventions that reduce the problem will be costly themselves, but may pay dividends from reduced future economic costs, and may increase health benefits for mothers and their infants.

It is clear that obese women require more health-care resources during pregnancy and women of normal body weight. However, definitive data demonstrating the efficacy of interventions to treat obesity during pregnancy are lacking. Decision-makers working in this area of health services need to understand whether obesity and its effects on pregnancy can be reduced, and if so, at what cost. Further, we need to quantify potential cost savings and health benefits which may accrue in the future from a reduced prevalence of obesity. These data, if made available and analyzed appropriately, would show whether interventions to reduce obesity are cost-effective given the many other competing demand for health care resources.

Begin the prevention before pregnancy

Most of the available economic data only describes the increased costs associated with outcomes arising from obesity in pregnancy. Further information is required to understand whether interventions designed to reduce the problem are effective and how much they cost to implement.

One way of preventing obesity in pregnancy might be to prevent obesity in young women to ensure they enter pregnancy at a healthy weight.

Yet another approach may be to target overweight and obesity through preconception counseling and care[4]. There are a number of barriers to this, including low pregnancy planning rates[5] and poor compliance with even relatively simple peri-conceptual health recommendations such as folic acid supplementation[6]. The complex lifestyle changes required for weight loss prior to pregnancy are likely to be very difficult to achieve in many obese women. However, a high-quality preconception care program may have a large impact on a range of health conditions (such as reduced smoking and alcohol intake) rather than solely those associated with obesity.

Other potential interventions include the weighing of women during pregnancy in order to assist in limiting weight gain; the provision of extra care following a careful clinical assessment in early pregnancy; and the administration of interconception care to help reduce risk of subsequent complications.

In terms of resources, the costs of reducing the impact of maternal obesity are likely to be positive, yet these may be partially or completely offset by downstream cost savings. The clinical consequences of obesity for mothers and infants are real and will drive health costs upward; so reducing obesity should reduce health-care costs.

Just as cost can be saved from reducing obesity, it is expected that health would improve for both mother and infant. There may be reductions in maternal and neonatal mortality risk, and improvements to quality of life for both groups, resulting in fewer obesity-related morbidities.

Summary

Obesity has substantial implications for maternal, fetal and neonatal health and is a major problem in the delivery of obstetric and neonatal care. The high-risk nature of pregnancies among women who are obese means that they warrant increased care by health care providers. Consequently, managing and treating obese women in pregnancy has a large impact on obstetric resources and service delivery, and the financial costs incurred are likely to be large. Because of the multitude of short and long-term implications of maternal obesity, and potentially large economic impact, it is important that efforts are made to address this problem. However, there is a paucity of evidence to inform recommendations in this area with an urgent need for good quality research. Research that aims to reduce the impact of maternal obesity may contribute towards reducing the financial costs incurred, and improve maternal and infant health. Measuring the effectiveness of interventions may be difficult but it's important for improving decision-making and service delivery.

Practice Points

- Maternal obesity is a major risk factor for adverse maternal and infant outcomes.
- Maternal obesity has a large impact on obstetric resources and service delivery.
- The cost effectiveness of interventions to reduce maternal obesity needs to be established.
- The longer-term cost savings in health benefits resulting from reducing maternal obesity need to be adequately measured and quantified.

Research directions

- Public health interventions to educate women about the risks associated with obesity in pregnancy.
- Explore health-care professional knowledge regarding preconception care for obese women.
- Lifestyle interventions to reduce obesity in pregnancy.

*The following is an edited version of the article which first appeared in Seminars in Fetal & Neonatal Medicine 15 (2010) 94–99

REFERENCES

1- Confidential Enquiry into Maternal and Child Health (CEMACH). Why mothers die. The sixth report into maternal deaths in the United Kingdom. London: RCOG Press; 2004.
2- Callaway LK, et al. Med J Aust 2006;184:56–9.
3- Lawlor DA, et al. Am J Epidemiol; 2006.
4- Johnson K, et al. MMWR Recomm Rep 2006;55:1–23.
5- Rosenfeld JA, Everett KD. J Fam Pract 1996;43:161–6.
6- Knudsen VK, et al. Public Health Nutr 2004;7:843–50.

Recent economic findings on childhood obesity

— Christina M. Wenig[1,2], Silke B. Wolfenstetter[2], Jürgen John[2] —

1. Ludwig-Maximilians-Universität München, Institute of Health Economics and Health Care Management and Munich Center of Health Sciences, Munich, Germany

2. Helmholtz Zentrum München, German Research Center for Environmental Health, Institute of Health Economics and Health Care Management, Munich, Germany

Economic aspects of childhood obesity epidemic

The rising prevalence of childhood obesity is not only a health but also an economic phenomenon[1]. There are economic causes of the obesity epidemic, such as a changing residential environment leading to reduced physical activity and changes in food prices resulting in an increased caloric intake. Obesity has serious economic consequences, such as worse educational outcomes and increasing health care expenditure. Based on a PubMed search in September 2010, we have conducted a survey of recent economic research aiming at, first, estimating the impact of childhood obesity on healthcare expenditure and, second, evaluating the cost-effectiveness of interventions to prevent or manage childhood obesity[2].

Impact of childhood obesity on healthcare expenditure

Evidence of the impact of childhood obesity on healthcare costs of children is ambiguous. Some recent studies do not find increasing costs with increasing BMI, whereas in some other studies this effect was visible, though partly only in higher age groups or girls.

Nevertheless childhood obesity is a risk factor for obesity in adulthood and associated comorbidities. Therefore it is of utmost importance to identify appropriate interventions to manage and pre-vent childhood obesity.

Economic Evaluation of Interventions to Manage and Prevent Childhood Obesity

Contrary to the large literature on the effectiveness of obesity intervention in children[3], only a small number of studies have been published assessing the cost-effectiveness of interventions to prevent or manage obesity in children. Most of the preventive interventions have been school-based and can be characterized by the delivery of nutritional education, promotion of decreased television viewing and sedentary behavior, changes in the food provided by school canteens, and physical activity programs. These results show with some degree of certainty that, in order to reach acceptable cost-effectiveness values, the focus cannot exclusively be on physical activity, but must include nutrition as an intervention target.

In the literature published since 2008 we could identify economic evaluations of four preventive and five management interventions addressing already obese children. The major contribution to this research has been made by the ACE-Obesity (Assessing Cost-Effectiveness in Obesity) Project[4] which is characterized by the use of a common methodology: two of the prevention studies are cost-utility analyses modeling the costs per DALY (Disability Adjusted Life Years) gained over a lifetime. The results extremely vary from 3.7 AUD$ per DALY saved for a program to reduce television advertising of energy-dense, nutrient-poor food to children to 0.76 million AUD$ per DALY saved for a walking school bus program. Compared to this the cost-effectiveness of the ACE-Obesity-LEAP (Live Eat and Play) Trial, which aims to improve physical activity and nutrition in already obese children through training of general practitioners, was estimated to be AUD$ 4,670 per DALY saved as compared to 'no intervention'.

Further cost-effectiveness analyses calculate the costs per unit of (differing measures of) weight reduction or physical activity increase over a short or medium time-horizon for prevention and intervention programs targeting nutrition and physical activity.

Conclusion

The new research findings confirm the already existing evidence that childhood obesity management programs as well as prevention programs may be successful in combining health gains with cost savings. However, it is not possible to rank the interventions according to their cost-effectiveness as the health gain measures and evaluation methods differ substantially. Therefore, currently the most efficient strategy to intervene into the obesity epidemic cannot be determined[5].

Perhaps the most important message from economic evaluations of child obesity prevention is the large variation in the cost-effectiveness figures amongst studies using the same measurement scale for health gains. This finding underscores the need for analyzing not only the effectiveness, but also the efficiency of those interventions, in order to ensure the most economical use of the scarce resources available for improving the population health. In addition, more attention should be paid to the economic implications of interventions into childhood obesity, as there can be little doubt that cost-effectiveness increasingly will be a major consideration in reimbursement decisions. However, there are some difficult methodological challenges and problems that must be addressed in future research[6].

© Philippe Dufour / Interfel

Acknowledgements:

This research was supported by the Munich Center of Health Sciences and the Federal Ministry of Education and Research within the Competence Network of Obesity Research [Project: MEMORI: Multidisciplinary Early Modification of Obesity Risk (Grant: 01GI0826)].

REFERENCES

1. Finkelstein EA, et al. Annu Rev Public Health 2005; 26:239-57
2. John J, et al. Curr Opin Clin Nutr Metab Care 2010, 13(3): 305-13
3. Flodmark CE, et al. Am J Public Health 2008; 98(3): 411-5
4. Carter R et al. BMC Public Health 2009; 9: 419
5. Cawley J. Arch Pediatr Adolesc Med 2007; 161(6): 611-4
6. John J. Economic perspectives on pediatric obesity: impact in health care ex-penditures and cost-effectiveness of preventive interventions. In: Koletzko B et al. (eds). Drivers of Innovation in Pediatric Nutrition. Nerstlé Nutr Inst Work-shop Ser Pediatr Programm 2010; 66: 111-24