Editorial Commentary

UK children's body mass index report cards: public benefit or poor policy?

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The current child obesity pandemic emerged during the 1980's (1) and has remained a persistent public health issue that has shown resistance to a myriad of child obesity prevention programs. In 1975 the global prevalence of child obesity was less than one percent, rising to approximately 6.5% in 2016 (2) indicating child obesity is an international public health issue. Obesity during childhood lays down the foundations for metabolic disease increasing the risk for future chronic disease, and more proximally for children, psychosocial issues (3). Focusing on the prevention of adiposity during childhood is prudent as children who are obese are five times more likely to be obese in adulthood than those who were not obese during childhood (4). Foremost in the prevention of child obesity is the early recognition and identification of adiposity. Body mass index (BMI) is a simple measure of adiposity that correlates well with more accurate measures of body fatness (5) and calculating and plotting children's BMI annual is the most pragmatic strategy to assess and monitor children's adiposity.

Primary care providers (e.g., physicians, nurses), are well positioned to measure and monitor a child's BMI, however few do (6,7), which is a strategically missed opportunity for child obesity prevention. Time, lack of confidence and inadequate training are some of the reasons primary care providers report for not measuring and monitoring children's BMI (8). There is a clear need to improve the educational training of physicians, not only so they can identify children at risk of overweight/obesity and have an active role in the early management of adiposity, but to also address negative weight bias, which may impair the delivery of quality health care to overweight/obese children (9).

The intent of measuring a child's BMI is to raise awareness of a child's weigh status, and to provide the first step towards intervention for children who are overweight. So, if primary care providers are not monitoring children's BMI, who else should undertake this task? The responsibility of maintaining and improving the health of everyone lies with all sectors of the community, but governments play a substantial role in promoting and protecting the health of their populations. There are different mechanisms for governments to promote population health, and in respect to child obesity, the implementation of BMI report cards has garnered policy makers attention in several jurisdictions. The first government sanctioned BMI report cards on school children were in the United States (Arkansas) in 2003, which was accompanied by state policy changes to the schools' food and physical activity environments (10). Initial evaluations of the Arkansas strategy suggested a number of positive outcomes including an apparent plateau of obesity rates, increased parental awareness of their child's BMI status and, parents showing the report card to the child's physician (11).

The purported preliminary successes of the Arkansas experience were perceived as good news in child obesity prevention, however further research indicated there were also undesirable outcomes [e.g., (12)]. For a child, one of the most proximal consequence of obesity is stigmatization, and there are concerns that BMI screening may further contribute to stigmatization (13). Notwithstanding such

concerns, the Arkansas experience was an influencing factor in the British government's decision to implement England's National Child Measurement Programme (NCMP) in 2006. The NCMP measures the BMI of all children in reception (age 4–5 years) and the final year of primary school (i.e., year 6, age 10–11 years) in England annually and provides parents with a BMI report card.

The NCMP data show the prevalence of obesity in 2006/7 was 9.9% and 17.5% for children in reception and year 6, respectively, and in 2017/18 the prevalence of obesity was 9.5% and 20.1% for reception and year 6 children, respectively. The doubling of the prevalence between reception and year 6 warrants concern and raises questions about the effectiveness of obesity prevention programs in primary schools. Similarly, the data show the gap in obesity prevalence between children from less and most deprived increased 1.5% for reception and 5.9% for year 6 between 2006/7 and 2017/18 (14). In essence, these data suggest that the since inception of the NCMP over a decade ago the BMI report cards have had little effect on improving child obesity rates in England.

This raises the question on the utility of individual child BMI report cards. Should governments be investing in screening children's BMI? BMI screening measures individual children to identify and inform those who are overweight/obese with the aim to be 'treated'. The screening process informs the child, their parents, and in the UK, an aggregated prevalence of students BMI status for the school. The consequence of the screening process is that the responsibility for children who are overweight/obese becomes a personal, rather than a state, responsibility for the parents and for the school to address.

Overweight/obese children know they are overweight/obese because their peers remind them (15), however their parents may be less aware if their child's weight status is in and unhealthy range. The rightward shift in the distribution of children's BMI over the last four decades has contributed to the visual normalisation of excess weight (16). Research shows that approximately half of parents underestimate their children's overweight/obese status, and that one in seven parents underestimated their child's normal weight status (17). The reasons for parent's misperceptions of their child's weight status are complex. Parental adiposity is a risk factor for a child's adiposity (18) and many adults who are overweight/obesity do not identify they are overweight, which potentially influences the under-detection of their child's overweight/obese status (16). Additionally, adiposity is a risk factor for chronic disease, but these diseases are not apparent during childhood, so parents' may not perceive their child who is overweight/obese to have a health issue that requires intervention.

Health professionals and policy makers viewpoints on the implementation of BMI report cards have been divergent (13). However, parents are the targeted recipients of the report card so their views and opinions on the utility of BMI report cards are highly relevant. Most of the research to date on parents' perceptions of report cards has been based on small sample sizes using focus groups or surveys. While these are traditional research methods, these methods may be subject to social desirability and participant bias and inhibit more free dialogue between parents. In a recent article in *BMC Public Health*, Kovacs *et al.* (19) used parenting discussion threads on two popular UK parenting web sites to examine parents' opinions on receiving the NCMP BMI report cards. This approach was novel and potentially provided a more representative and broader perspective of parents' perceptions of the BMI report cards.

Kovacs *et al.* isolated 31 relevant discussion threads posted between 2010 and 2017, of which two thirds were critical of the NCMP (19). The authors found parents had contrasting views and claims, but when parents challenged other parents it was usually in a supportive way. Three major themes were identified including sources of legitimate feedback, intrusion versus intervention, and weight obsession versus weight discussion. Each theme comprised critical discussions which were countered with a contrasting viewpoint. In free societies divergent opinions are commonplace, and while everyone is entitled to an opinion it is important to ensure opinions are based on facts. For example, parents' claims on the legitimacy of the feedback such as BMI is not an accurate measure of adiposity, overweight/obesity is not a health issue, or the measures were inaccurate, shows there is confusion surrounding health and size/weight/fatness, potentially fuelled by false and unscientifically supported discourse in popular media.

The NCMP report card does attempt to provide parents with information on BMI, it's measurement, and a BMI calculator through a link to a government website (14). In contrast to adults where BMI status has defined cut-points based on raw units (i.e., $\geq$25 kg/m^2 for overweight $\geq$30 kg/m^2 for obese), children's BMI status varies by age and sex and can be calculated using raw units (where the cut-point for overweight/obesity differ by sex and age, in months), percentages, z-scores or centiles. The NCMP uses centiles, which the website explains, but the language used requires

a relative high level of literacy (i.e., 10th grade according to Flesch-Kincaid Grade Score). Scientific language may be challenging for many parents, especially among the most deprived where the prevalence of child obesity in England is highest (14). Moreover, given many primary care providers are unfamiliar with child BMI charts, it seems an unreasonable expectation to expect parents to understand BMI measures in children.

As a system, report cards are used to indicate 'fail' or 'pass', with a 'fail' usually causing much distress and concern. When parents receive a BMI report card that states their child is overweight the most natural and immediate reaction is that they are being blamed, as found by Kovacs *et al.* For these parents, distrust in state interference in personal lives becomes omnipresent causing rise to question the purpose, intent, and value of nanny state policies. Kovacs *et al.* found that other parents countered these opinions saying the information is about the child's wellbeing, and the data are of national importance and needed for planning services (19). These counter discussions may be well-intended but, a limitation the authors note, was the lack of sociodemographic information of parents contributing to the discussions. The NCMP shows there is a significant and widening socioeconomic gap in the distribution of obesity (14) so potentially, parents of a 'pass' (i.e., normal BMI status) report card are more likely to be from less deprived backgrounds, and more supportive of a systemic reporting system.

The NCMP also attempts to support parents whose children have been identified as overweight/obese by including in the report card a telephone number of the local health service, a leaflet on healthy eating and physical activity, and a link to the UK government obesity prevention web site *Change4Life* (www.nhs.uk/change4life). The letter also tells parents that 'you and your child can make simple changes to be more active and eat more healthily.' Each of these strategies re-enforces parental responsibility to address ('treat') their child's adiposity, not the state. If the solution to child obesity is 'simple changes' to activity and diet why has the prevalence continued to increase, and especially among children from areas of highest deprivation?

Telling parents to simply change eating and activity behaviour is a Sisyphian challenge that has remained unconquered for decades. Individuals are part of the solution, but the child obesity pandemic coincided with significant changes to the food and physical environment, which led to changes in human behaviour, not the reverse. The control of food production and distribution by transnational corporations has changed eating patterns and food environments to promote over-consumption of highly processed food, and property developers have had a significant role in altered the urban landscape to support inactivity (20). Diet is the key driver of obesity (21) and the food environment in areas of deprivation in the UK are saturated with highly processed, energy-dense foods of low nutritional value that are cheap and readily available and provide few opportunities to purchase healthier foods (22). Individuals, and especially those at social disadvantage, have little power to influence change in their food and urban landscapes, but governments can through regulation, legislation, and policy. Calls for up-stream actions to address the obesogenic environment have been repeated for years, yet governments continue to place the onus of responsibility on individuals, and in the case of children, schools are the primary setting for child obesity prevention programs.

Schools certainly have a responsibility to provide a healthy food and physical activity environment for their students, however the research consistently shows the impact of school-based obesity interventions are equivocal, and that school-based interventions alone will not prevent child obesity (23). The NCMP provides each school with the aggregated prevalence of overweight/obesity of their students and how the school compares with national estimates. While this is may be another well intended strategy, there is a risk this information may be used adversely, for example, ranking schools according to rates of obesity and creating negative labels for certain schools. The school is also provided with a list of government web-sites resources to encourage students healthy eating and physical activity, but the increase in prevalence between reception and year 6 students does raise questions on the relevancy and use of these resources.

The measurement of children's BMI in the school setting, albeit by school nurses, was another area of concern raised by parents in Kovacs *et al.* study (19). Regardless of NCMP assurances of confidentiality of measurements and other parent's concurring data was confidential, parents' concerns often stemmed from their own trepidation of being weighed and that the actual weighing at school may cause distress or lead their child engaging in unhealthy eating behaviours. These parental concerns do have good foundations when considering obesity has recently been reclassified as a 'disease', which suggests the measurement of BMI is the responsibility of health professionals in health

settings, not in schools.

The alternative to screening is surveillance, which involves the systematic collection, analysis, and interpretation of data from a representative sample, not all children. In terms of obesity, child health surveillance systems include the collect behavioural (and often environmental) indicators associated with the development of adiposity. The data are used to identify population groups at greatest risk of overweight/obesity (e.g., low socioeconomic groups, cultural groups) to receive targeted interventions. Individual children, parents and schools are not provided with the child's BMI status and the onus to intervene lies with the government to develop appropriate policy responses to protect the health of populations.

Child obesity is a public health issue and does require monitoring, but is BMI screening the best practice to address the issue, or population surveillance? To date there is no evidence of the cost effectiveness of the NCMP and it is not clear how individual child BMI measurements alone inform the objectives of the NCMP (14). If the intent of the NCMP is to inform local planning and delivery of services for children, are these services for treatment, rather than prevention? The program does allow analysis of trends in growth patterns and obesity, but that only. It is not clear whether the program has increased public and professional understanding of weight issues in children, or created greater community angst. Finally, it is not clear if the program has truly been a vehicle for engaging with children and families about healthy lifestyles and weight issues. The data suggest this is not the case.

In summary, the study by Kovacs *et al.* (19) provides a novel insight into parents' perceptions and of the NCMP, and given approximately 95% of eligible children participate under an opt-out consent process, this does suggest there is a degree of acceptance of the program at a population level. However, there are several reasons why investing health funds on BMI report cards for parents appear to be poor policy decision. Foremost, BMI is the outcome, not the causal factor of adiposity and not providing parents with information on their child's underlying risk factors has shown the report cards have little impact on behaviour change. The prevalence of obesity has not decreased, the prevalence has increased significantly between reception and year 6, suggesting school-based programs are not effective, and the prevalence gap between rich and poor has increased (14). Over a decade ago the UK government commissioned the Foresight Report—a much heralded document that showed not only how complex the aetiology of obesity is, but it also provided clear up-stream directions for government action (24). It would appear that this report, along with a plethora of similar international reports (25) that have identified sensible strategies to address child obesity has been archived on the policy bookshelf.

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Footnote

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References

1. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. World Health Organ Tech Rep Ser 2000;894:i-xii,1-253.
2. NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. Lancet 2017;390:2627-42.
3. Must A, Strauss RS. Risks and consequences of childhood

and adolescent obesity. Int J Obes Relat Metab Disord 1999;23 Suppl 2:S2-11.
4. Simmonds M, Llewellyn A, Owen CG, et al. Predicting adult obesity from childhood obesity: a systematic review and meta-analysis. Obes Rev 2016;17:95-107.
5. Pietrobelli A, Faith MS, Allison DB, et al. Body mass index as a measure of adiposity among children and adolescents: a validation study. J Pediatr 1998;132:204-10.
6. Vine M, Hargreaves MB, Briefel RR, et al. Expanding the role of primary care in the prevention and treatment of childhood obesity: a review of clinic- and community-based recommendations and interventions. J Obes 2013;2013:172035.
7. Redsell SA, Atkinson PJ, Nathan D, et al. Preventing childhood obesity during infancy in UK primary care: a mixed-methods study of HCPs' knowledge, beliefs and practice. BMC Fam Pract 2011;12:54.
8. van Gerwen M, Franc C, Rosman S, et al. Primary care physicians' knowledge, attitudes, beliefs and practices regarding childhood obesity: a systematic review. Obes Rev 2009;10:227-36.
9. Dietz WH, Baur LA, Hall K, et al. Management of obesity: improvement of health-care training and systems for prevention and care. Lancet 2015;385:2521-33.
10. Raczynski JM, Thompson JW, Phillips MM, et al. Arkansas Act 1220 of 2003 to reduce childhood obesity: its implementation and impact on child and adolescent body mass index. J Public Health Policy 2009;30 Suppl 1:S124-40.
11. Centers for Disease Control and Prevention (CDC). Overweight among students in grades K-12--Arkansas, 2003-04 and 2004-05 school years. MMWR Morb Mortal Wkly Rep 2006;55:5-8.
12. Ikeda JP, Crawford PB, Woodward-Lopez G. BMI screening in schools: helpful or harmful. Health Educ Res 2006;21:761-9.
13. Thompson HR, Madsen KA. The report card on BMI report cards. Curr Obes Rep 2017;6:163-7.
14. NHS Digital. National Child Measurement Programme. United Kingdom 2019. [Accessed 15/02/2019]. Available online: https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme
15. Harrison S, Rowlinson M, Hill AJ. "No fat friend of mine": young children's responses to overweight and disability. Body Image 2016;18:65-73.
16. Robinson E. Overweight but unseen: a review of the underestimation of weight status and a visual normalization theory. Obes Rev 2017;18:1200-9.
17. Lundahl A, Kidwell KM, Nelson TD. Parental underestimates of child weight: a meta-analysis. Pediatrics 2014;133:e689-703.
18. Durmuş B, Arends LR, Ay L, et al. Parental anthropometrics, early growth and the risk of overweight in pre-school children: the Generation R Study. Pediatr Obes 2013;8:339-50.
19. Kovacs BE, Gillison FB, Barnett JC. Is children's weight a public health or a private family issue? A qualitative analysis of online discussion about National Child Measurement Programme feedback in England. BMC Public Health 2018;18:1295.
20. Swinburn B, Egger G, Raza F. Dissecting obesogenic environments: the development and application of a framework for identifying and prioritizing environmental interventions for obesity. Prev Med 1999;29:563-70.
21. Swinburn B, Kraak V, Rutter H, et al. Strengthening of accountability systems to create healthy food environments and reduce global obesity. Lancet 2015;385:2534-45.
22. Burgoine T, Sarkar C, Webster CJ, et al. Examining the interaction of fast-food outlet exposure and income on diet and obesity: evidence from 51,361 UK Biobank participants. Int J Behav Nutr Phys Act 2018;15:93.
23. Amini M, Djazayery A, Majdzadeh R, et al. Effect of school-based interventions to control childhood obesity: a review of reviews. Int J Prev Med 2015;6.
24. Butland B, Jebb S, Kopelman P, et al. Foresight. Tackling obesities: future choices. Project report. London: Government Office for Science, 2007:155.
25. Swinburn BA, Sacks G, Hall KD, et al. The global obesity pandemic: shaped by global drivers and local environments. Lancet 2011;378:804-14.

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