Asian Health Review™

Making Education Easy

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In this issue:

Abbreviations used in this issue
ALT = alanine aminotransferase
BMI = body mass index
GGT = gamma glutamyl transferase
RCT = randomised controlled trial

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Welcome to the eighteenth issue of Asian Health Research Review.

Since 2005, diabetes rates have increased by about 50 percent in all ethnic groups in New Zealand. In 2013, the highest rate of diabetes was in the Indian ethnic group (11%), followed by Pacific peoples (9.6%), Māori (6.1%) and European/Other (5.1%); Ministry of Health (2014). Diabetes rates start to increase about 10-15 years earlier in Indian and Pacific adults than in European/Other adults. Nearly half of all Indian and Pacific adults aged 70-74 years have diabetes (see New Zealand Health Strategy 2016: Future Direction;p 23). Diabetes rates have increased in all age and ethnic groups, with larger (relative) increases in younger adults (Ministry of Health, 2014). The increase in diabetes in South Asian groups in New Zealand is consistent with trends in obesity (Scragg, 2010).

All-cause mortality for the Indian ethnic group is about 40% higher than for the Chinese ethnic group (Jatrana et al 2014). This difference is partly explained by higher rates of diabetes and cardiovascular diseases in the Indian ethnic group. Scragg (2016) in *Asian Health in Aotearoa in 2011-2013: Trends since 2002-2003 and 2006-2007* reports that the prevalence of being on treatment for diabetes increased five- to six-fold in South Asian and Pacific people, three-fold in Maori and two-fold in Other Asian groups compared with European and Other groups. This suggests that preventive efforts are having no effect.

Lifestyle changes involving weight loss, improved diet and increased physical activity can prevent or delay the onset of type 2 diabetes and reduce diabetes complications. In the Ministry of Health (2014) report, only half of adults with type 2 diabetes had received advice about their weight, diet or exercise from their usual medical centre in the last year. There may be scope to improve the management of obesity in primary care.

This issue focuses on acculturation impacts; lifestyle changes in settlement societies; and lifestyle interventions to prevent or treat obesity in Asian and South Asian populations. Little is known about early intervention to prevent obesity in children and young people in Asian communities. Childhood obesity prevention programmes need to go hand-in-hand with adult interventions. Some Asian community based approaches to reduce exposure to obesogenic environments which are being trialled internationally are reviewed in this edition. Healthy Families NZ, which is a new initiative to prevent and reduce lifestyle risk factors such as obesity, is being implemented in ten communities across New Zealand. The evaluation findings will have important implications for South Asian and all Asian communities, along with the findings of the Healthy Start initiatives to improve maternal and child nutrition and physical activity in New Zealand.

We hope you enjoy this issue and look forward to receiving any feedback you may have.

Kind regards,

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Diabetes in the Asia Pacific region

Authors: Binns C and Low WY

Summary/Comment (AM): The prevalence of diabetes is increasing throughout the Asia Pacific region. Type 2 diabetes is increasing rapidly in South Asia. In China, the epidemic of diabetes and related non-communicable diseases will result in a huge burden on the health system. In this editorial, two studies related to maternal and child nutrition are of particular interest for this issue. The first is that a predominantly vegetarian diet, akin to a traditional Asian diet, appears to be one way of reducing diabetes. Satija et al. (2016) study plant-based dietary patterns and the incidence of type 2 diabetes in US men and women. Their findings suggest that plant-based diets, especially when rich in high-quality plant foods, are associated with a substantially lower risk of developing type 2 diabetes. This supports current recommendations to shift to diets rich in healthy plant foods, with a lower intake of less healthy plant and animal foods. Having a diet that emphasised plant foods and was low in animal foods was associated with a reduction of about 20% in the risk of diabetes. Consumption of a plant-based diet that emphasised specifically healthy plant foods was associated with a larger decrease (34%) in diabetes risk, while consumption of a plant-based diet high in less healthy plant foods was associated with a 16% increased diabetes risk.

The second study by Black et al. (2013), of maternal and child undernutrition and overweight in low-income and middle-income countries shows that optimum growth in the first 1000 days of life is essential for the prevention of overweight. Whereas attained weight at any age in early life is positively associated with adult body-mass index in low income and middle-income country cohorts, rapid weight gains in the first 1000 days are strongly associated with adult lean mass, whereas weight gains later in childhood lead mainly to adult fat mass. In particular, evidence suggests that infants whose growth faltered in early life, and who gained weight rapidly later in childhood, might be at particular risk of adult obesity and non-communicable diseases. Child overweight is also related to growing up in an obesogenic environment, in which population changes in physical activity and diet are the main drivers. Modifiable risk factors for childhood obesity are maternal gestational diabetes; high levels of television viewing; low levels of physical activity; parents' inactivity; and high consumption of dietary fat, carbohydrate, and sweetened drinks, yet few interventions have been rigorously tested.

Reference: Asia Pac J Public Health 2016;28(6):472-4
Abstract

Independent commentary by Dr Annette Mortensen and Dr Geeta Gala

Dr Annette Mortensen has worked to improve the health of newcomers to New Zealand from ethnically diverse backgrounds for the last 15 years. Since 2007 Annette has worked as the Asian, Refugee and Migrant Health Programme Manager for the Northern Regional Alliance on behalf of the Auckland region District Health Boards.

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Dr Geeta Gala is a Public Health Physician. She leads and advises on many of the cancer projects led by the Northern Cancer Network and is active in advocacy for improvement of Asian health in New Zealand.

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Type 2 diabetes in South Asians: similarities and differences with white Caucasian and other populations

Authors: Gujral UP et al.

Summary/Comment (GG): This paper reviews evidence in regard to biological and lifestyle (environmental) factors that place South Asians at an increased risk for type 2 diabetes when compared with Caucasians and other populations. Current evidence suggests that South Asians are more insulin resistant than Caucasians even at similar levels of BMI and total body fat; demonstrate early impairments of B-cell function as a consequence of intrauterine undernutrition; show greater tendencies towards visceral fat deposition, even as neonates; and have lower levels of circulating plasma adiponectin and higher level of plasma leptin which are associated with type 2 diabetes development. Further to the innate susceptibility, South Asians are experiencing lifestyle behaviour changes due to migration or globalisation, resulting in physical inactivity and shifting from traditional dietary habits to Westernised diets with greater amounts of carbohydrates, fats and lower amounts of dietary fibre. This highlights that preventive efforts are required at both an individual and population level, that are aggressive, culturally sensitive and start early in life.

Reference: Ann N Y Acad Sci. 2013;1281:51-63
Abstract

Associations between weight change and biomarkers of cardiometabolic risk in South Asians: secondary analyses of the PODOSA trial

Authors: Welsh P et al.

Summary: A secondary analysis of the Prevention of Diabetes and Obesity in South Asians (PODOSA) trial investigated the association of weight changes with cardiometabolic biomarkers in South Asians over a 3-year period. Data from 151 patients revealed an adjusted mean reduction of 1.44 kg (95% CI 0.18-2.71) in weight and 1.59 cm (95% CI 0.08-3.09) in waist circumference in the intervention arm as compared with the control arm from baseline to 3 years, but no significant difference between the study groups in change of mean value of any biomarker. Overall, significant reductions in triglycerides (-1.3%, $p = 0.048$), ALT (-2.5%, $p = 0.032$), GGT (-2.2%, $p = 0.040$), leptin (-6.5%, $p < 0.0001$), insulin (-3.7%, $p = 0.0005$), fasting glucose (-0.8%, $p = 0.0071$), 2-h glucose (-2.3%, $p = 0.0002$) and homeostasis model assessment of insulin resistance (HOMA-IR: -4.5%, $p = 0.0002$) were observed with every 1 kg of weight loss.

Comment (GG): PODOSA was a randomised controlled trial in Scotland, which aimed to use family-clustered lifestyle intervention to reduce weight and increase physical activity in South Asians at high risk of type 2 diabetes. This study measured effect on cardiometabolic markers in both the randomised groups and also, estimated the change in biomarkers with change in weight when the study population was considered as a single cohort. There was no evidence that the intervention had any significant effect on biomarkers of cardiometabolic risk in South Asians. This possibly can be due to the modest level of weight loss (1.44 kg) and 1.59 cm change in waist circumference achieved in this study over a period of 3 years. However, when analysed as a single cohort, each 1 kg weight reduction was associated with statistically significant changes in triglycerides, ALT, GGT, leptin, insulin, fasting and 2 hour glucose. Therefore, it is evident from this study that the changes in weight have to be substantial for changes in biomarkers to be clinically significant. Future trials with intensive weight changes are needed to substantiate these findings, but the bottom line is weight loss!

Reference: Int J Obes (Lond). 2016;40(6):1005-11
Abstract

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Diet and physical activity interventions to prevent or treat obesity in South Asian children and adults: A systematic review and meta-analysis

Authors: Brown T et al.

Summary: This systematic review and meta-analysis assessed the effectiveness of diet and physical activity interventions to treat or prevent obesity in South Asians residing in or outside of South Asia and to describe the characteristics of effective interventions. Five electronic databases were reviewed for relevant abstracts published between January 2006 and January 2014 and twenty-nine studies were included in the analysis; 16 studies were conducted in South Asia, 10 in Europe and three in the USA. Physical activity interventions in South Asian men in Norway and South Asian school children in the UK were identified as effective and promising trials. An improvement in obesity outcomes in South Asian adults in the UK (adjusted for baseline differences) was observed in a home-based, family-orientated diet and physical activity intervention. Overall, there was no significant difference between intervention and control for BMI or waist circumference in adults or children. An improvement in adult BMI was observed from baseline to follow up in 20 intervention groups, with an average change in high quality studies (n = 7) ranging from 0.31 to -0.8 kg/m^2. Significant improvements in weight from two trials in adults were seen when adjusted for baseline differences (mean difference -1.82 kg; 95% CI -2.48 to -1.16) and in unadjusted data from three trials following sensitivity analysis (mean difference -1.20 kg; 95% CI -2.23 to -0.17).

Comment (AM): Childhood obesity is a major global concern but there is little evidence for effective childhood obesity prevention strategies. People of South Asian origin are a specific target group for obesity prevention as they are vulnerable to the cardiovascular health effects of obesity. Early intervention to preventing obesity in South Asian populations is a priority to reduce the prevalence of diabetes in adulthood. This systematic review identifies the types of interventions which are promising, but calls for further research to identify the specific components of diet and physical activity interventions to prevent or treat obesity in South Asians, which are effective. Among the recommendations are: more obesity interventions targeting South Asian populations, particularly those targeting pre-schoolers and their families. The studies need to report (1) how interventions are culturally adapted; (2) the types of behaviour change techniques and theories that are used to underpin interventions; (3) anthropomorphic outcomes by measures of socioeconomic status; and (4) implementation and running costs. The recommendations of this study highlight the need to develop new dietary and physical activity interventions for ethnic groups rather than culturally adapting existing mainstream programmes. International and New Zealand research is needed to identify the components of interventions for children and adults which are effective.

Scragg's (2016) New Zealand report of Asian health, reported that the nutritional patterns for both children and adults from the three Asian ethnic groups in the 2011-13 survey period showed a lower intake of fruit and vegetable, compared to European and Others. While data from the 2008/09 Adult National Nutrition Survey indicate that Asian people may have a healthier intake of macronutrients than European and Other. The lack of change since 2002-03 in the proportion of Asian adults eating ≥5 daily serves of fruit and vegetables is of concern, since evidence is emerging about the role of unhealthy diets in causing obesity and cardiovascular disease among Asian people. A positive change has been the increase from 2006-07 to 2011-13 in the proportion of Asian children eating breakfast at home, because New Zealand research has shown that this practice is associated with increased fruit and vegetable consumption and lower BMI levels (Scragg, 2016). For physical activity, children from the three main Asian groups had similar patterns of transport to school and hours of watching TV as European and Other children. Higher levels of physical activity are reported in Asian children in New Zealand compared to British and Australian studies (Eyre et al., 2013; Hardy et al., 2013). However, Asian adults in New Zealand are less likely to be physically active and more likely to be sedentary than European and Other adults. Of concern, the level of physical activity by Asian adults has changed little since the 2002-03 survey as the emerging evidence shows that physical activity and cardiorespiratory fitness are inversely associated with risk of developing the metabolic syndrome and diabetes (Das et al., 2012; Kuwahara et al., 2014; ó Hartaigh et al., 2011; Yu et al., 2013).

The New Zealand, *Healthy Babies Healthy Futures* (HBHF) programme promotes maternal and child nutrition and physical activity with the aim of improving the health of pregnant mothers, babies and toddlers. Some programmes are targeted to Asian and South Asian mothers, parents and grandparents of children under 4 years of age. The interventions include: health promotion text messages to pregnant women matched to the stages of pregnancy or the age of the baby (The messages are about baby's development, nutrition, breastfeeding, keeping mum healthy, and physical activity); cooking demonstrations to promote healthier food options and cooking methods; nutrition workshops to encourage affordable healthy family meals; and physical activity sessions for women and their babies. Publication of the outcomes of the evaluation of the HBHF programmes will add to the new and emerging literature on lifestyle interventions to promote physical activity and healthy weight in pre-school children.

Reference: Int J Environ Res Public Health 2015;12(1):566-94
Abstract

A review on changes in food habits among immigrant women and implications for health

Authors: Popovic-Lipovac A and Strasser B

Summary: A range of factors impact dietary change among immigrant women and these were explored in the current study, along with the consequences for health and suggestions for an improved intervention. Factors leading to high fat and sugar diets, low consumption of fruits/vegetables, greater portions, consumption of convenience food and inactivity include busier lifestyle, a higher level of stress, lack of social relations, children's preferences, taste, food insecurity and a lack of traditional foods. Such unfavourable dietary changes may result in chronic diseases including hypertension, cardiovascular diseases and type 2 diabetes. This review revealed that while cases in Europe show only minor negative or even positive impact of dietary change among immigrant women, in the USA and Canada the negative impacts were greater and increased with time spent in the foreign country.

Comment (AM): New Zealand studies (Mehta, 2012; Scragg, 2010; Scragg 2016) show the abatement of the healthy migrant effect within 5 years of arrival, as acculturation occurs. Comparisons between the Health Needs Assessment (HNA) of Asian People living in the Auckland region (Mehta, 2012) with the HNA of Asian health in Counties Manukau DHB (Gala, 2008) and Waitemata DHB (Zhou, 2009) indicate that acculturation is occurring. Cardiovascular disease mortality rates are rising among Indians, and the burden of diabetes is increasing in Other Asian communities and to a lesser extent, among Chinese people in Auckland (Mehta, 2012). Popovic-Lipovac and Strasser (2015) review the evidence for how immigration and acculturation affect food habits. One of the most important aspects of acculturation is dietary acculturation and in the West this is linked to worse dietary choices. This review recommends that health promoters analyse traditional food culture in immigrant groups and focus in particular on low-income females due to their double discrimination and their influence on the health of all family members.

Reference: J Immigr Minor Health 2015;17(2):582-90
Abstract

Improving management of type 2 diabetes in South Asian patients: a systematic review of intervention studies

Authors: Bhurji N et al.

Summary/Comment (GG): This systematic review involving 23 studies (15 RCTs; seven from Western countries [n = 2532] and 16 from South Asia [n = 1081]) assessed the effect of interventions on glycaemic control of diabetes in South Asian patients living in India versus those living in Western countries. Interventions in South Asians living in Europe included translated diabetes education, which was culturally specific and the use of bilingual community-based peers and/or health professionals; whereas interventions in India included yoga, meditation or exercise, community-based peers and/or health professionals and cooking classes. Four of the five RCTs in India (n = 390) demonstrated a significant reduction in HbA1c in the intervention group compared to only one (n = 113) of four RCTs (n = 2161) in Europe. Lipids, blood pressure and knowledge improved in both groups – India and Europe. It is evident that studies in India that included yoga or exercise intervention were more successful in reducing HbA1c in diabetic patients. This paper highlights that novel interventions like yoga and Bollywood dance are needed to engage South Asians living in Western countries, to improve their lifestyle behaviours.

Reference: BMJ Open 2016;6(4):e008986
Abstract

Ethnicity-specific obesity cut-points in the development of type 2 diabetes - a prospective study including three ethnic groups in the United Kingdom

Authors: Tillin T et al.

Summary: It is well known that conventional definitions of obesity may underestimate metabolic risk in non-Europeans. In this population-based cohort from London, researchers prospectively identified equivalent ethnicity-specific obesity cut-points for the estimation of diabetes risk in British South Asians (n = 842), African-Caribbeans (n = 335) and Europeans (n = 1356) aged 40-69 years at baseline (1988-1991). At a median follow-up of 19 years, diabetes incidence rates (per 1000 person years) were 20.8 (95% CI 18.4-23.6) and 12.0 (95% CI 8.3-17.2) in South Asian men and women, 16.5 (95% CI 12.7-21.4) and 17.5 (95% CI 13.0-23.7) in African-Caribbean men and women, and 7.4 (95% CI 6.3-8.7) and 7.2 (95% CI 5.3-9.8) in European men and women, respectively. The findings revealed that British South Asians and African-Caribbeans had equivalent diabetes incidence rates at substantially lower obesity levels than the conventional European cut-points. For incidence rates equivalent to those at a BMI of 30 kg/m² in European men and women, age- and sex-adjusted cut-points were: South Asians 25.2 (95% CI 23.4-26.6) kg/m²; African-Caribbeans, 27.2 (25.2, 28.6) kg/m². Waist circumference cut-points of 84.0 (95% CI 74.0-90.0) cm in South Asian women and 81.2 (95% CI 71.4- 87.4) cm in African-Caribbean women were equivalent to a value of 88 cm in European women. For South Asian and African-Caribbean men, waist circumference cut-points of 90.4 (95% CI 85.0-94.5) and 90.6 (95% CI 85.0-94.5) cm, respectively, were equivalent to a value of 102 cm in European men.

Comment (AM): In Scragg's (2016) New Zealand study of Asian health, for obesity, Asian children had a similar prevalence of overweight and obesity as European and Other children, with no change in mean BMI level or prevalence of overweight and obesity between the 2006-07 and 2011-13 survey periods. These findings are reassuring, although obesity remains a potentially unrecognised issue in Asian children, as they have higher body fat levels than European children, despite similar BMIs (Duncan et al., 2009; Sluyter et al., 2011). The findings for South Asian, Chinese and Other Asian adults are also reassuring, with mean BMI levels being lower than those in all other ethnic groups, while BMI levels in Asian adults have stabilised with no increase in obesity prevalence between the 2006-07 and 2011-13 survey periods. However, for children, the lower mean BMI levels in Asian adults may not be associated with lowered risk of cardiovascular diseases and diabetes, as the risk of these diseases is associated with lower cut-points for BMI and waist circumference in adult Asians compared to Europeans as shown by Tillin et al's (2015) study.

In terms of diabetes incidence, it is well documented that there is a need to lower conventional cut-points (30 kg/m² in Europeans) to 25.2 kg/m² in South Asians. For central obesity there is a strong association between increasing waist circumference and diabetes incidence. Tillin et al. (2014), though caution against labelling individuals obese at the lower BMI threshold, as yet nothing is known about the effectiveness of interventions if BMI thresholds to define obesity were lowered. Tillin et al's (2014) study points to the need to introduce health promotion programmes, such as increased physical activity for the prevention of metabolic risk for South Asian groups. Encouragingly, there is evidence that targeted lifestyle intervention among people with impaired glucose tolerance is effective in preventing or delaying the onset of diabetes among South Asians.

Reference: Diabet Med. 2015;32(2):226-34
Abstract

Randomized trial assessing the safety and efficacy of sitagliptin in Chinese patients with type 2 diabetes mellitus inadequately controlled on sulfonylurea alone or combined with metformin

Authors: Ba J et al.

Summary: This Chinese multicentre, randomised, double-blind, placebo-controlled study assessed the effect of the addition of sitagliptin 100 mg/day to existing regimens of a sulphonylurea, with or without metformin, on HbA1c (primary endpoint), fasting plasma glucose (FPG) and 2-hour post-meal glucose (PMG) levels in 498 patients with type 2 diabetes mellitus (sitagliptin n = 249; placebo n = 249). After 24 weeks, HbA1c was -0.61% lower with sitagliptin versus placebo, while FPG was -16.8 mg/dL lower, and 2-hour PMG was -32.9 mg/dL lower than placebo (all p < 0.001). Sitagliptin was generally well tolerated, with no difference between groups in adverse events and drug-related adverse events incidence. Sitagliptin recipients had a higher incidence of symptomatic hypoglycaemia (10.1%) than placebo recipients (5.2%; p = 0.042).

Comment (GG): This is a multicentre randomised double-blind study conducted in China which assessed the safety and efficacy of the addition of sitagliptin 100 mg (dipeptidyl peptidase-4 inhibitor) once daily versus placebo in diabetic patients who had inadequate glycaemic control with sulphonylurea, with or without metformin. The primary endpoint was change from the baseline in HbA1c after 24 weeks of add-on treatment and the secondary endpoints included changes in fasting and 2-hour post-meal glucose. Sitagliptin was well tolerated and significantly improved glycaemic control in the Chinese patients who previously had inadequate control with sulphonylurea, with or without metformin. Newer treatments will be needed to achieve the glycaemic treatment goal HbA1c ≤7% as recommended by the International Diabetes Federation and the American Diabetic association, which is 53 mmol/mol NZ conversion. Unfortunately, sitagliptin is not subsidised in New Zealand!

Reference: J Diabetes 2016;Aug 8 [Epub ahead of print]
Abstract

Acculturation and dietary change among Chinese immigrant women in the United States

Authors: Tseng M et al.

Summary: This single city, US study examined acculturation and diet changes in 312 Chinese immigrant women recruited between Oct 2005 and Apr 2008 receiving follow up interviews and dietary recalls until Apr 2010. There was a small (~1%/year; p < 0.0001) increase in acculturation score (General Ethnicity Questionnaire - American version) with increasing length of residence that was associated with an increase in the diet energy density, percent of energy from fat and sugar intake, and lower dietary moderation scores (Diet Quality Index-International) associated with intake of five factors (total fat, saturated fat, cholesterol, sodium, and empty calorie foods) associated with chronic disease.

Comment (AM): This study, which focuses on dietary change among Chinese immigrant women in the US, explores factors besides acculturation which affect immigrant health and the acculturation trajectory. The research challenges the common assumption that acculturation and accordingly diet, change with length of residence in the US. Although the findings support this, the acculturation changes in this sample are relatively small. Residence in an ethnic enclave may limit exposure to mainstream culture and preserve traditional dietary behaviours. The authors suggest a cautious approach to using length of residence as a proxy for level of acculturation, which may explain why in this sample, length of US residence was a poorer predictor of change in dietary behavior than was acculturation score. The study indicates that acculturative and dietary changes may be greater among migrants who arrive as children or young adults, or who do not reside in ethnic enclaves, but longitudinal studies are needed to confirm this. The evidence for the impact of acculturation on lifestyle behaviours is inconsistent (Scragg, 2016). Acculturation may have both positive and negative effects on people migrating to a new country. Scragg's (2016) New Zealand report on Asian health shows that there was no change between the 2006-07 and 2011-13 survey periods in the prevalence of overweight and obesity in children within each Asian group, and for all Asians.

Reference: J Immigr Minor Health 2015;17(2):400-7
Abstract