Asian Health Review™

Making Education Easy

Issue 12 – 2015

In this issue:

Abbreviations used in this issue

BMI = body mass index
ECHO = echocardiography
HbA_{1c} = haemoglobin A_{1c}
HR = hazard ratio
LV = left ventricular
PODOSA = Prevention of Diabetes & Obesity in South Asians

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Welcome to the twelfth issue of Asian Health Research Review.

For this review we have focused on the theme of diabetes. The *Asian Health in Aotearoa in 2006-2007: Trends since 2002-2003 study* (Scragg, 2010) shows that the prevalence of being on treatment for diabetes increased four-fold in South Asian groups and two-fold in Other Asian groups over the four-year period. More confirmation that the rates of diabetes are increasing in South Asian populations is shown in the findings of the *Health needs assessment of Asian people living in the Auckland region* (Mehta, 2012). The study shows that around 11 to 12% of Auckland Indian people had diabetes, and this represented the second highest prevalence of diabetes, after Pacific people. Other Asian people had a similar or higher prevalence of diabetes as compared to Māori in Auckland DHB and Counties Manukau DHB, but a lower comparative prevalence in Waitemata DHB and across the Auckland region. While research has shown that maintaining a healthy weight and being physically active can prevent or delay the onset of type 2 diabetes in people at high risk of developing the disease, there are no New Zealand studies and few international studies that demonstrate the effect of lifestyle interventions in South Asian populations in Western societies. New Zealand researchers, clinicians and health promoters have much to learn from the experience of the PODOSA (Prevention of Diabetes and Obesity in South Asians) study conducted in the UK. PODOSA is one of the first community-based, randomised lifestyle intervention trials to focus on South Asian populations in Western nations. The results should provide valuable evidence for tackling the high levels of diabetes in New Zealand South Asian populations. The first few articles in our review address: the recruitment and retention of ethnic minority study participants; culturally adapting lifestyle interventions for South Asian groups; interventions for Indian and Pakistani adults; and effective health education messages to promote self-management behaviour change.

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

Kind regards,

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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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Northern Regional Alliance
He Hononga o te Raki

Waitemata District Health Board
Te Wai Awhina
Making a healthy difference to the community

Auckland District Health Board
Te Toka Tumai

Counties Manukau Health

The Asian Health Review has been commissioned by the Northern Regional Alliance (NRA), which manages the Asian, migrant and refugee health action plan on behalf of the Waitemata, Auckland and Counties Manukau District Health Boards.

Design and baseline characteristics of the PODOSA (Prevention of Diabetes & Obesity in South Asians) trial: a cluster, randomised lifestyle intervention in Indian and Pakistani adults with impaired glycaemia at high risk of developing type 2 diabetes

Authors: Douglas A et al.

Summary/Comment: (AM) The PODOSA trial involves 156 families in Scotland, comprising 171 South Asian people (mean age 52 years; 64% women) with impaired glycaemia and waist sizes ≥80 cm (women) and ≥90 cm (men), plus 124 family volunteers. Families were randomised to receive either an intensive intervention of 15 dietitian visits providing lifestyle advice, or a light (control) intervention of four visits, during a period of 3 years. The dietitian intervention was family-focused, was based in the home and was culturally adapted from the Finnish Diabetes Prevention Study for people of Indian and Pakistani origin. The primary outcome was weight change over 3 years, the main driver of prevention or delay of the onset of type 2 diabetes. The research dietitians were trained in venepuncture, measurement, delivery of information, behaviour change and in the promotion of physical activity. The contacts with the family were, in effect, the intervention, and in general, each family was seen by the same dietitian for the duration of the trial. The dietitian's toolkit contained culturally adapted and translated existing resources on diet and physical activity. Pedometers were used for motivation, self-monitoring and for dietitians to assess client's progress; along with food diaries and weight and waist measures.

The PODOSA trial's key achievements include: establishing the infrastructure for the trial; recruiting, training and forging a multi-ethnic team to implement the trial; and the involvement and support from within the wider South Asian community, particularly in the recruitment phase. It was encouraging that 95% of eligible recruits consented to participate in the 3-year trial (171/196). In New Zealand, GPs and diabetes specialists with South Asian patients with type 2 diabetes may find referral to dietitians who are culturally and linguistically matched to the patient and their family may result in good outcomes for the patient and their family.

Reference: BMJ Open 2013;3(2):pii:e002226
Abstract

Recruiting South Asians to a lifestyle intervention trial: experiences and lessons from PODOSA (Prevention of Diabetes & Obesity in South Asians)

Author: Douglas A et al.

Summary/Comment: (AM) New Zealand researchers undertaking trials of lifestyle interventions for South Asian and other ethnic minority groups can learn many lessons from the UK PODOSA study. PODOSA is a family oriented, home-based, cluster randomised, lifestyle-intervention trial for South Asians (of Indian or Pakistani origin) who are 35 years or over living in Scotland at high risk of developing type 2 diabetes. The study researchers screened 1319 recruits for trial eligibility out of a target of 1800. The study benefited from a multi-pronged approach, which included a randomised controlled trial and a qualitative study to understand the factors that may help promote the retention of participants once enrolled. A good knowledge of diverse South Asian communities; researchers who have in depth knowledge of the languages, religions, customs and lifestyles of the study participants; influential community contacts who are bilingual; and partnerships with South Asian organisations were the most successful recruitment strategies. This is one of the few published studies available on recruiting ethnic minorities into health-related, community-based randomised trials. The trial achieved high response rates among South Asian populations in Scotland. Face-to-face community based recruitment approaches worked best (yielding 1728 [82%] referrals to the screening stage), but were more resource intensive than other methods such as recruitment through health practitioners (55 potential participants) and contact by letter (5.2%), even when high quality translated material is provided. Employing researchers who are ethnically and linguistically matched to the population under study establishes trust and participation is more likely.

The key innovations in the PODOSA study to achieving healthy lifestyle changes were to change the prevention intervention in Indian and Pakistani families, from clinic to home-based settings, and to focus on the family and not just the individual. The critical success factors during the recruitment phase of this study included employing three South Asian bilingual dietitians. This was particularly important for the recruitment of older people who spoke or read little English. Partnerships with local South Asian organisations and individuals, and referrals by word of mouth from existing participants, contributed to two-thirds of total referrals and provided a low-cost source of recruitment. The researchers state that their greatest lesson was that the costs of direct community recruitment in partnership with local organisations needed to be included as a cost in the research application. One reason for under-representing ethnic minority populations in research trials is the additional cost of arranging interpreters, translators and adapting questionnaires and recruitment approaches. This is an important finding for New Zealand researchers undertaking studies that include non-English speaking participants and for ensuring the inclusion of the culturally diverse communities in our population.

Reference: Trials. 2011;12:220 doi: 10.1186/1745-6215-12-220
Abstract

Culturally adapting the prevention of diabetes and obesity in South Asians (PODOSA) trial

Authors: Wallia S et al.

Summary/Comment: (AM) While New Zealand health promoters have a good understanding of the general principles of providing culturally appropriate lifestyle interventions, we have little evidence about which approaches work best. The PODOSA study details how to achieve effective cultural adaptations to lifestyle modifications to prevent diabetes for South Asian populations. This detail is important more generally for healthy lifestyle interventions in ethnically diverse populations in New Zealand. The article highlights the important adaptations that led to high participation rates in South Asian communities in this trial and to their ongoing engagement over 3 years. These were: employing registered dietitians who were bilingual and were aware of the relevant food and physical activity practices of South Asians; staff training on principles for achieving the cross-cultural validity of self-report data; and developing an adapted dietitians' toolkit with translated health promotion resources in English, Urdu, Hindi and Gurmukhi (written Punjabi). The authors draw attention to the need to pay attention to conceptual and cultural factors in epidemiological and clinical studies where self-report is used to gather data. This is of relevance to the inclusion of Asian and other ethnically diverse groups in the New Zealand Health Survey amongst other national self-report studies, in particular for non-English speakers. When data collection instruments designed for English speakers are literally translated without testing the translations on community members, measurement errors can result due to: poor translation; inappropriate and insensitive content; and the failure of researchers to make themselves familiar with cultural norms and beliefs of those they are interviewing. As Hunt and Bhopal (2003) say, modifying data collection materials and methods requires participatory research with members of the linguistic communities concerned.

Reference: Health Promot Int. 2014;29(4):768-79
Abstract

"And now for the good news…" the impact of negative and positive messages in self-management education for people with Type 2 diabetes: A qualitative study in an ethnically diverse population

Authors: Eborall HC et al.

Summary: These researchers sought to explore the impact of Diabetes Education and Self Management for Ongoing and Newly Diagnosed (DESMOND) Foundation education. In particular, they explored interviewees' narratives regarding recall of good and bad news messages and behaviour changes. In a purposive sample of 19 individuals who had attended education sessions as part of a randomised controlled trial at two UK sites with ethnically diverse populations, in-depth, semi-structured interviews were conducted. An evaluation of levels of recall from the education sessions revealed that such recall was variable and sometimes very limited, but that interviewees had all assimilated some relevant learning. Key themes emerged relating to the way in which interviewees had been influenced by and recalled messages that were negative (bad news) and positive (good news), including biomedical explanations. While both types of messages have an important role with regard to motivation to change behaviour, an interesting observation was that no interviewees recalled receiving bad news messages when diagnosed.

Comment: (AM) This study conducted in South Asian and other ethnically diverse populations in the UK, showed that giving bad news as well as good news during health education sessions was an important motivator for healthy behaviour change. Interestingly, the bad news information, which meant learning about the biomedical effects of diabetes, helped people assimilate the good news messages, for example, by helping participants understand the ways in which lifestyle changes and medication can help with blood glucose control and therefore help to delay or prevent complications. As well, there is a good argument for the timely referral of newly diagnosed patients to structured education delivered by trained educators skilled in combining positive and negative messages. This may need to involve the provision of ongoing education as participant's struggled to recall information one to two months after receiving health education sessions.

Reference: Chronic Illn. 2015;Mar 30 [Epub ahead of print]
Abstract

Prevention of diabetic nephropathy by tight target control in an Asian population with type 2 diabetes mellitus: A 4-year prospective analysis

Authors: Tu ST et al.

Summary: This longitudinal cohort study involving 1290 Chinese patients with type 2 diabetes and normoalbuminuria investigated the impact of tightly controlling multiple factors recommended by the American Diabetes Association (ADA) on the development and prevention of diabetic nephropathy during a 4.5-year period. All patients received intensified treatment to meet the following ADA recommended goals: HbA_{1c} <7%; systolic blood pressure <130 mm Hg; diastolic blood pressure <80 mm Hg; low-density lipoprotein cholesterol <100 mg/dL; triglycerides <150 mg/dL; and high-density lipoprotein cholesterol >40 mg/dL (men) or >50 mg/dL (women). New-onset microalbuminuria developed in 211 patients (16.4%) during the study period, but the risk of this occurring was reduced by achievement of ADA goals, including HbA_{1c} level <7% (HR 0.729; 95% CI 0.553-0.906; p = 0.03), systolic blood pressure <130 mm Hg (HR 0.645; 95% CI 0.491-0.848; p = 0.002), high-density lipoprotein cholesterol level >50 mg/dL (women) and >40 mg/dL (men; HR 0.715; 95% CI 0.537-0.951; p = 0.02).

Comment: (GG) This study from Taiwan reviewed the effect of tight control of diabetes and the development and prevention of diabetic nephropathy in Chinese patients over a 4.5-year period. The study patients went through individualised nutrition plans, 150 minutes of aerobic physical activity per week and intensified treatment to achieve the ADA goals of HbA_{1c}, blood pressure, cholesterol and triglyceride. As expected, the study found a significant association between closely controlled ADA goals and the development of new-onset microalbuminuria. The systolic blood pressure was identified as the strongest risk predictor of microalbuminuria and its reduction, the most preventive factor. The study population was older with mean age 62.9 years and there was no comparison group. It is a no brainer that intensive treatment adherence should reduce complications, but the study highlights importance of a multifactorial intervention!

Reference: Arch Intern Med. 2010;170(2):155-61
Abstract

Lower cardiorespiratory fitness contributes to increased insulin resistance and fasting glycaemia in middle-aged South Asian compared with European men living in the UK

Authors: Ghouri N et al.

Summary: This UK study examined whether increased insulin resistance and fasting glycaemia observed in 100 South Asian men versus 100 age- and BMI-matched European men (13 South Asian and one European were excluded from analysis with potential undiagnosed diabetes), was a result of lower physical activity levels and cardiorespiratory fitness (maximal oxygen uptake; VO_{2max}). HOMA (Homeostasis Model Assessment) estimated insulin resistance levels (HOMAIR) were 67% ($p < 0.001$) higher, and fasting glucose levels 3% ($p < 0.018$) higher in South Asian men than European men. The ethnic difference in HOMAIR was explained (all $p < 0.001$) by lower VO_{2max} (68%; 95% CI 45-91%) and physical activity levels (29%; 95% CI 11-46%), and higher total adiposity (52%; 95% CI 30-80%). Together these variables explained 83% (95% CI; 50-119%; $p < 0.001$) of the ethnic difference in HOMAIR. Ethnic differences in fasting glucose levels were explained ($p < 0.05$) by lower VO_{2max} (61%; 95% CI 9-111%) and greater total adiposity (39%; 95% CI 9-76%); with a combined effect of 63% (95% CI; 8-115%; $p < 0.05$).

Comment: (GG) This UK study explores the reasons for increased insulin resistance in South Asians. Adiposity, cardiorespiratory fitness and physical activity are known risk factors for increased insulin resistance. A comparison of these risk factors between the middle-aged South Asians and Europeans without diabetes, showed that the lower VO_{2max} (cardiorespiratory fitness), lower physical activity and greater adiposity together explained 83% of the ethnic difference in insulin resistance, which was 67% higher in South Asians than Europeans. Lower cardiorespiratory fitness was a key factor of increased insulin resistance, even after adjusting for lower physical activity among South Asians. The BMI recommendations for South Asians were lowered from 30 to 25 kg/m^2, in recognition of the greater total adiposity in this population. Now, we require ethnic specific recommendations for higher levels of physical activity!

Reference: Diabetologia 2013;56(10):2238-49
Abstract

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Sitting time and waist circumference are associated with glycemia in U.K. South Asians: Data from 1,228 adults screened for the PODOSA trial

Authors: Gill JM et al.

Summary: In a study of 1228 Indian or Pakistani adults living in Scotland (mean age 49.8 years) screened for the PODOSA trial, researchers assessed the contribution of waist circumference (mean 99.2 cm), physical activity, and sedentary behaviour on glycaemia. Impaired fasting glycaemia or impaired glucose tolerance was found in 191 participants and 97 had possible type II diabetes. Multivariate regression analysis indicated that fasting glucose concentration was independently associated with age (0.012 mmol/L/year; 95% CI 0.006-0.017) and waist circumference (0.018 mmol/L/cm; 95% CI 0.012-0.024). 2-hour glucose concentration was also associated with age (0.032 mmol/L/year; 95% CI 0.016-0.049), waist circumference (0.057 mmol/L/cm; 95% CI 0.040-0.074), and sitting time (0.097 mmol/L/h/day; 95% CI 0.036-0.158). There was a borderline association between vigorous activity time and 2-hour glucose concentration (-0.819 mmol/L/h/day; 95% CI -1.672-0.034).

Comment: (GG) This Scottish study is part of the PODOSA trial, and investigated the contributions of waist circumference, physical activity and sedentary behaviour in South Asians on glycaemia. As known from other studies, waist circumference was significantly associated with both impaired fasting glycaemia and impaired glucose tolerance. However, the novel finding from this study was that increasing sitting time was significantly correlated with impaired glucose concentration, independent of the waist circumference and physical activity. This study highlights the important relationship between increased sitting time and diabetes in the South Asian population and has implications when developing lifestyle interventions to prevent diabetes in this population!

Reference: Diabetes Care 2011;34(5):1214-8
Abstract

Hyperglycemia has a greater impact on left ventricle function in South Asians than in Europeans

Authors: Park CM et al.

Summary: This study in 542 Europeans and 457 South Asians (aged 58-86 years) assessed the influence of diabetes and hyperglycaemia on left ventricular (LV) dysfunction. Across a range of HbA_{1c} levels, diabetes and hyperglycaemia had a larger negative effect on LV function in South Asians than Europeans (N-terminal-probrain natriuretic peptide β 0.09 vs -0.04; p for HbA_{1c}/ethnicity interaction 0.02), diastolic function (E/e' 0.69 vs 0.09; p for interaction 0.005), and systolic function (s' -0.11 vs 0.14; p for interaction 0.2). Ethnic differences were only partially compensated by multivariate adjustment for hypertension, microvascular disease, LV mass, coronary disease and dyslipidaemia. Poorer LV function in diabetic South Asians was not due to poorer glycaemic control or longer diabetes duration.

Comment: (GG) This UK study reviews the impact of hyperglycaemia and diabetes on LV function. South Asians are at several-fold higher risk of diabetes and cardiovascular disease when compared to Europeans. This study found that hyperglycaemia and diabetes had adverse effects on global N-terminal-probrain natriuretic peptide, diastolic and systolic ventricular function (measured by ECHO) in South Asians, but not in Europeans. Does this reflect the increased risk of cardiovascular disease in this population or exposure to longer duration of hyperglycaemia – pre-diabetes? The research does imply that South Asians are more sensitive to the effects of hyperglycaemia and require more aggressive management of their cardiovascular disease risk factors.

Reference: Diabetes Care 2014;37(4):1124-31
Abstract

Concerns and perceptions about necessity in relation to insulin therapy in an ethnically diverse UK population with Type 2 diabetes: a qualitative study focusing mainly on people of South Asian origin

Authors: Patel N et al.

Summary: This qualitative study using semi-structured interviews in an ethnically diverse population of people with type II diabetes examined attitudes towards insulin therapy. These attitudes were mapped into four main typologies, which fitted an attitudinal scale based on the Necessity-Concerns Framework found in the medication adherence literature. These four attitudes were accepting, sceptical, ambivalent and indifferent. Insulin acceptance required balancing concerns (e.g., needle size) versus the perceived necessity of insulin. South Asian and white participants had similar concerns. These concerns were sometimes greater in South Asians because of negative views and experiences of other insulin users.

Comment: (GG) This qualitative study from UK explored attitudes of diabetic patients in relation to insulin therapy. Although, there is evidence that good glycaemic control can help reduce or prevent the development of complications, it is known that there is resistance to starting insulin therapy, more so in South Asians – the psychological insulin resistance. The research utilised the Necessity-Concerns Framework and categorised people into four attitudes based on high or low concerns and with perceptions of high or low necessity. The research highlights that South Asians were particularly influenced by negative views and experience of other insulin users. Healthcare providers can use this framework early in their course to identify factors that can contribute to acceptance of insulin. A limitation of the research is that there was no comparison with Europeans or any other ethnic groups.

Reference: Diabet Med. 2015;32(5):635-44
Abstract