is it really good to be overweight in old age?

This article discusses whether research suggesting that being overweight or obese in old age is beneficial, and evaluates the evidence for whether this is really the case.

the importance of dietary pattern

Dr Xiaoyue Xu and Professor Julie Byles discuss a case study evaluating the dietary patterns of older Chinese people and how this can be used to measure dietary quality.
Welcome to issue 21 of Innov-age, focusing on the topic of obesity.

The prevalence of obesity and obesity-related conditions is increasing worldwide across all demographics of the population, and older people are no exception. Being overweight or obese has the potential to bring with it a whole host of other problems, including cardiovascular disease, type 2 diabetes and arthritis, among others.

In this issue, leading researchers and clinicians will discuss the prevalence of obesity in the elderly, including the causes, complications and potential methods to treat this in older adults in particular.

Leading this issue, Dr Annalijn Conklin discusses the intersections in both social and economic disadvantages which affect food consumption, particularly that of fruit and vegetables, in older adults.

Kate Bennett gives a physiotherapist’s perspective on the causes and potential consequences of being obese as an elderly person, and discusses what can be done to combat these problems.

Dr Xiaoyue Xu and Professor Julie Byles provide a fascinating insight into a recent study analysing the changing dietary patterns of older Chinese adults, and the importance of diet in good health, particularly in later life.

Dr Kirsty Bowman discusses the so-called ‘Obesity paradox’, and questions whether it is really better to be obese in old age and Professor Goya Wannamethee explores an often-ignored form of obesity, and discusses the health consequences of sarcopenia and sarcopenic obesity in the elderly.

Dr. Shilpa Amarya discusses her research on the prevalence of overweight and obesity among the elderly in developed and developing countries, and Dr Salvatore Giordano discusses whether a form of gastric bypass surgery, known as Laparoscopic Roux-en-Y Gastric Bypass, is a safe and effective procedure in older patients.

This issue’s Cochrane Corner is authored by Professor Tracey Howe, and discusses treatments and weight loss methods for the management of excess weight and obesity in the elderly.

This issue of Innov-age explores some of the biggest issues around obesity, which is widely known to be one of the world’s most foremost current health crises, and provides insight into the impact of obesity and related conditions such as diabetes in the elderly, as well as discussing how they can be treated or prevented in older people.

Jackie Oldham
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We are constantly reminded of the potential dangers and consequences of obesity. Even today driving into work there was a bulletin on the radio around how the condition is the second highest cause of cancer diagnoses, with advertising boards along the road also displaying the same serious message. But aside from this deadly message, being overweight or obese can have serious consequences for health, affecting our ability to function physically and move around.

The size of the issue

Over the years things have changed and many of the elderly patients seen day-to-day are overweight. The prevalence of obesity is growing progressively, even amongst older adults. In 2012, the number of obese Europeans aged 60+ was predicted to have grown to around 32 million people by 2015 (Mathus-Vliegen, 2015). This number will continue to grow as the ageing population increases, meaning the problems and consequences of the current obesity epidemic are likely to become more widespread.

Obesity is directly related to a number of other conditions including diabetes mellitus, increased blood pressure, coronary artery disease and congestive heart failure amongst others (Must et al., 1999; Pi-Sunyer, 1993). It can also affect bone density and physical fitness, including respiratory function and put extra strain on joints, causing pain and discomfort through osteoarthritis (Rossner, 2001). However, studies have shown that some of these conditions can improve with weight loss, even in the higher age ranges of the older population.

What contributes to obesity in the elderly?

There are many factors that contribute to the growing rates of obesity in the population but one of the biggest contributors is modern life. With the advancement of technology and the invention of the internet, lives can be pretty much run from the armchair. Some households even have the capability of speaking to a console and asking it to stop playing music. All this technology has been designed to make life easier for people and can be an absolute blessing to those who are struggling to manage their daily activities but wish to remain independent in their own homes. However it has the adverse effect of making people sedentary with people generally moving less because they no longer need to. Internet shopping, remote controls and supermarket deliveries encourage sedentary behaviour; this coupled with an increase in the availability of high fat, high sugar foods results in increasing waistlines as people’s activity levels drop and consumption of the wrong foods increases. Basically, people are consuming more calories than they are burning with worrying consequences. This is particularly apparent in the 50 – 65 age group, setting themselves up for problems in later life when ability to function naturally starts to wane (Newman, 2009).

Other causes of obesity include medical conditions such as hyperthyroidism, Cushing’s syndrome and depression (NIH, 2006).

Consequences of obesity

There are many health-related consequences of obesity; three of the most common are discussed below.

• Respiratory problems

Respiratory problems are classified as non-fatal health problems related to obesity. In obese people the lungs decrease in size. Couple this with an increased weight of the chest wall makes it difficult to lift and enable air entry into the lungs resulting in difficulties with breathing. These issues are further compounded by the reduced efficiency in gas exchange occurring in the lung due to the natural ageing process, and the outcome is a reduced efficiency in the respiratory process which can
result in a decrease in respiratory function. This in turn can lead to sleep apnoea syndrome (Donini et al., 2006).

Using endurance exercise alongside a dietary weight loss programme increases the maximal amount of oxygen a person can consume. This means that many of the symptoms above can be alleviated and functional ability is optimised or even increased. However it is important to seek the advice of a registered exercise professional or physiotherapist prior to starting an exercise programme – they will be able to provide guidance as to how to carry out the exercise intervention and monitor progress to enable people to build up activity levels safely.

**Arthritis and Osteoarthritis**

Arthritis is another non-fatal health disorder linked to obesity and the leading cause of disability in older adults. By 65 years of age the prevalence of osteoarthritis is 68% in women and 58% in men, and a high body mass index is a known risk factor for osteoarthritis in the knee joint (Villarel et al., 2005). Being overweight or obese increases the load placed on joints, in particular the knee and hip joint; this can result in a breakdown of the cartilage (the ‘shock-absorber’ found on the joint surface) which can result in pain and a decreased ability to carry out daily activities.

The main goal of managing arthritis is to try and maintain the range of movement and function of the joint and surrounding structures, including tendons, muscles and ligaments. Exercise is the key to achieving this but it is tricky to advocate exercise when many people believe that it will cause a flare up of symptoms and contribute to their pain. Stretching exercises can be particularly beneficial if done daily; exercises carried out in water and gentle walking can also be useful for symptom relief.

**Cardiovascular disease**

Cardiovascular disease (or CVD) is known as a life-threatening illness related to obesity (WHO, 2005) and is a leading cause of mortality in the USA with 84% of older persons dying from this disease (Hanna & Wenger, 2005). Obesity is a major risk factor and is also related to other major risk factors for CVD. This is thought to be because obesity impacts on many metabolic pathways in the body. Modifying diet is the main way in which these risk factors can be reduced to ensure good health and a longer life span.

**Other factors**

Alongside the consequences for health, obesity impacts on the health service in other ways. There are issues around transportation in ambulances and some of the older hospitals in the UK have undergone major renovations to accommodate a heavier patient group. There are also logistical issues with getting less mobile people into and out of their houses when they need to attend hospitals and clinics, and specialist equipment is often required. There has also been an increase in the amount of bariatric equipment needed as patient weight increases; the equipment is more robust and larger to ensure safety of the person using it – this naturally costs more to supply leading to an increase in NHS spending.

**In Summary**

Obesity in the elderly is a growing epidemic which can have serious impact on a person’s health and wellbeing, with modern lifestyles being a contributory factor. Diet and exercise are simple ways to lose weight and reverse some of the effects that obesity has on the body but this should always be undertaken under the guidance of an appropriate healthcare professional. If obesity can be reversed, associated risk factors can be reduced, meaning that people live longer, healthier lives.

**Learning points**

- The prevalence of obesity is growing across all age groups, including the elderly, where it can cause further problems compounding naturally reduced ability to function.
- An increase in sedentary lifestyles coupled with increasing fat and sugar content of food are the main drivers behind the increase in obesity in the elderly.
- Obesity can cause many further health consequences; however, diet and exercise can be effective ways to reduce or even reverse the effects of obesity providing its undertaken with the appropriate guidance and support of trained healthcare professionals.

References:

Prevalence of Overweight and Obesity among elderly in Developed and Developing countries

Shilpa Amarya is a Senior Researcher at the University of Delhi. She has experience in conceptualizing and developing public health research studies, designing and implementing the campaign, questionnaires for social science research, coordinating and managing projects, and collecting and analyzing quantitative and qualitative data.

Dr. Amarya works as a Nutrition Educator with the Shaw Academy. She has conceptualized and developed various e-learning nutrition courses which are running successfully on Shaw Academy. She has also delivered guest lectures on “Basic Issues of Geriatrics Care” in the National Institute of Social Defense, Ministry of Social Justice & Empowerment, Gov. of India.

Today, as standards of living continue to rise, weight gain is posing a growing threat to the health of inhabitants from countries all over the world. Obesity is a chronic disease, prevalent in both developed and developing countries, and it is affecting all age groups. It is now so common that it is replacing the more traditional public health concerns, such as infectious diseases and malnutrition, as the most common and significant contributors of ill health. Globally, there are approximately 2.3 billion elderly people overweight, and more than 700 million elderly people are obese (World Health Organisation (WHO), 2000).

Obesity among elderly – Developed Countries

The population in developed countries have proportionally greater number of older adults living to older ages, and the prevalence of obesity is rising progressively, even among this age group (WHO, 2000). Obesity rates among the elderly belonging to the United States, ranges from 42.5% in women to 38.1% in men (age 60–79 years). The prevalence differs for the elderly belonging to the age group 80 years and above i.e. 19.5% for females and 9.6% for males (Fakhouri et al, 2012; Rhoades, 2005; Villareal et al, 2005). Comparatively, the prevalence of obesity in Europe is slightly lower but it is still a significant health issue. Obesity among elderly in the United Kingdom is 22% among women and 12% among men aged 75 years or older (Donini et al 2012; Mathus-Vliegen et al, 2012; Arterburn et al, 2004). These statistics bode ill as the proportion of world’s elderly population is growing rapidly.

In Australia, the percentage of weight gain has been so high that instead of losing weight with increase in life, men and women aged 60–70 weigh more on average than they did when they were 20 years younger (Figure 1). Australian studies show that the prevalence of obesity among elderly has increased in the age group 60-69 years at about 24% for males and 30% for females, whereas it is less common among the elderly belonging to age group 80 years and above (Wong et al, 2016; Cameron et al, 2003). Studies show that the percentage of Australian elderly reporting increased abdominal fat is markedly increasing over the years. Based on waist circumference, more than 30% of elderly males and 44% of elderly females in Australia are currently at a substantially increased risk of non-communicable disease (NCDs) (Cameron et al, 2003; Olds et al, 2010; Bennett et al, 2004).

Studies from the Netherlands show that obesity was present in 18% of men and 20% of women belonging to the age group 60 years and above (Blokstra et al, 2011). Also, the increase in waist circumference ranged from 40% among males to 56% among females (Putrik et al, 2015; Blokstra et al, 2011).

In France, studies show that the prevalence of obesity among elderly was relatively stable during early years (1980 – 1991), 6.4% to 6.5% in males and 6.3% to 7.0% among females (Maillard et al, 1999), but studies from recent years (Diouf et al, 2010; Charles et al, 2008) have highlighted a sharp increase in obese elderly, 19.5 % for both males and females; this prevalence rate decreased gradually after 70 years of age i.e. from 19.5 % to 13.2% (Tanaka & Kokubo, 2005). The Scottish Health Survey shows that in 10 years (2003 to 2013), the prevalence of obesity has increased as the BMI continues to rise in people 60-70 years of age, especially among females. In this same period, there was an increased curve shown for the waist circumference (5 to 10 cm) in both the sexes between 50-70 years of age. This inappropriate increase in waist circumference and a slight increase in BMI in Scottish Health Survey may indicate a
substantial gain in visceral fat mass and loss of lean tissue that predisposes to ill health in the obese elderly (Castle et al, 2008; Parkes et al, 2012).

Figure 3 Worldwide Prevalence of Obesity among elderly women and men with BMI ≥ 30 kg/m².

In Spain, 35% of subjects aged 65 years or older suffered from obesity (30.6% of males and 38.3% of females) and 61.6% had an increased waist circumference (50.9% of males and 69.7% of females) (Parkes et al, 2012).

Prevalence of obesity – Developing countries

Over the past years, obesity among elderly was considered as a problem only in high-income countries, but the trend is changing now; excess weight, as well as obesity, is dramatically increasing in low-income and middle-income countries as well, particularly in urban settings (WHO, 2000). WHO estimates, there is a decline in malnourished population across the world, whereas the over nourished population has increased to 1.2 billion. WHO (2000) report that more than 1 billion elderly people are overweight and 300 million are obese. The problem of obesity is increasing in the developing world with more than 115 million people suffering from obesity related problems. The obesity rate has increased 3-fold or more since 1980 in the Middle East, the Pacific Islands and India (Ellulu et al, 2014; Popkin et al, 2012). However, the prevalence of obesity is not as high in all developing countries, like China and some African nations. WHO (2011) report, the prevalence of overweight and obese elderly in China was 19.0% and 2.9% respectively. But, the prevalence has increased over the past years; in the latest study, the prevalence of overweight and obesity among elderly was 21.0% and 7.4% (Gao et al, 2011; Ranasinghe et al, 2013). WHO (2011) estimates, among all Gulf regions, Kuwait ranked number one with the highest prevalence of overweight and obesity (78.8%) among elderly (60 years and above) (Ng et al, 2011). Studies from Sri Lanka show a prevalence rate of 25.2% for overweight and 9.2% for obesity. The prevalence of central obesity ranged between 3.3% and 18.0% and that obesity has become a leading risk factor for diabetes mellitus and cardiovascular diseases in the urban areas of Africa (Oladope et al, 2010; WHO, 2000). As per a study done in India (Delhi) on urban elderly, nearly 14% of men and more than 50% of women belonging to what may be higher income group (HIQ) were overweight (BMI>25) and obese (BMI > 30) (Gopalan, 1998).

The situation can get worse during a decade if the present trend continues and overweight could emerge as the single most important public health problem in adults. Overweight or obesity may not be a specific disease but it is certainly considered as a major contributory factor leading to various degenerative diseases in later life. Prevention and control of this problem must, therefore, claim priority attention.

Learning points:
- The prevalence of obesity is increasing worldwide, in both developed and developing countries.
- However the prevalence in developing countries, such as China, is not as high as in developed countries, such as the United States.
- In urban areas of developing countries in particular, the prevalence of overweight and obesity among the elderly shows a trend of rapid increase, which contributes to degenerative diseases in later life.

References:

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Ph.D. Public Health and Nutrition (Geriatric Nutrition), Lady Irwin College University of Delhi
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Sarcopenia (loss of muscle mass) and sarcopenic obesity in older adults: an increasing health problem in an ageing population

Goya Wannamethee is Professor of Epidemiology and Director of the British Regional Heart Study; a large prospective study of cardiovascular disease based at UCL. Goya’s main research interest is in cardiovascular epidemiology investigating the causes, pathways and prevention of cardiovascular disease and related disability, with particular focus on the role of modifiable risk factors.

Obesity in the elderly

Obesity is a major public health problem with increasing prevalence worldwide. It is well recognised as a risk factor for cardiovascular morbidity and mortality in adult populations. Obesity increases with age and is associated with significant morbidities that effect quality of life and life expectancy. Body mass index (BMI) is the most commonly used measure of obesity, defined as BMI > 30 kg/m²; overweight is defined as BMI of 25-29.9 kg/m². However, there is a lot of controversy surrounding the effects of overweight and obesity in older people, with many studies showing that being overweight, as defined by BMI, does not appear to be as harmful in the elderly compared to middle aged populations and may even be associated with lower, rather than higher, mortality. Moreover, a large body of evidence indicates that overweigt and obesity are associated with increased survival in patients with CVD an unexpected finding commonly termed the ‘obesity paradox’. Part of the explanation may be that BMI is a poor marker of body fat and does not distinguish between fat and lean body mass which has been associated with increased mortality. Ageing is associated with an increase in visceral fat and a progressive loss of muscle mass (sarcopenia) which have opposing effects on mortality. Thus, BMI is not a good indicator of obesity in older adults. To fully understand the effect of obesity on mortality in the elderly it is important to take muscle mass and function into account.

Sarcopenia

Sarcopenia, the loss of skeletal muscle mass and function with age is now recognised as a major clinical problem in ageing populations and is estimated to affect 30% of people over the age of 60 and more than 50% of those over the age of 80 (Beaudart et al, 2014). Sarcopenia has been associated with metabolic impairment and cardiovascular disease (CVD) risk (Atkins et al, 2014 & Wannamethee et al, 2015). There is increasing recognition that sarcopenia leads to serious adverse outcomes such as frailty, falls, disability and increased mortality. In particular, sarcopenia is associated with a 3-4 fold increase in risk of physical disability and predicts loss of independence for daily life activities in the elderly (Beaudart et al, 2014).

What is sarcopenic obesity?

Sarcopenia often coexists with obesity. Sarcopenic obesity is a new category of obesity in older adults characterised as a combination of sarcopenia; the loss of muscle mass and function, and obesity; excess fat mass (Zamboni et al, 2008). The interplay between sarcopenia and rising trends in obesity in an ageing population is emerging as an important public health concern in the elderly. Obesity and sarcopenia share many common pathways including inflammation, insulin resistance and physical inactivity and each are associated with metabolic disorders, morbidity, disability and mortality (Zamboni et al, 2008). While there is a need for consensus on a definition for sarcopenic obesity, it is widely recognised that the combination of obesity with sarcopenia presents an even greater risk for the elderly than either obesity or sarcopenia alone. Older adults with sarcopenic obesity have higher risks of mobility disability, cardiometabolic diseases, and mortality than those with sarcopenia or obesity alone (Atkins et al, 2014 & Wannamethee et al, 2015).
Diagnosis and definition of sarcopenia

Thus, targeting not just obesity but sarcopenia may represent a means of preventing frailty and dependency. Despite these observations, sarcopenia is rarely subject to a systematic screening process as a part of geriatric care. Although a great amount of interest and research on sarcopenia has evolved over the last few decades, translation of sarcopenia research into clinical practice has been slow. Owing to the consequences of sarcopenia a Report of the International Sarcopenia Initiative calls for active screening of older adults along with exercise programs and a good protein intake to help manage the condition (Cruz-Jentoft et al, 2014). In 2010, the European Working Group on Sarcopenia in Older People published consensus guidelines on the definition and diagnosis of sarcopenia (Cruz-Jentoft et al, 2010). In the European guidelines, sarcopenia is diagnosed firstly on the presence of impaired physical performance, characterised by slow gait speed, and then either by low muscle strength assessed by handheld dynamometry or low muscle mass measured, for example, by dual energy X-ray absorptiometry (DXA) or bioimpedance analysis. This comprehensive approach is well suited to research and specialist clinical settings but is not feasible for wide population screening in primary care and where muscle mass measurement is not commonly available in routine clinical practice.

How can we detect Sarcopenia in Primary care?

Identifying and targeting the determinants of sarcopenia is a necessary first step to limit its impact on health. The feasibility and acceptability of alternative approaches to detecting sarcopenia in primary care is not yet established. Screening to identify those at high risk of sarcopenia for intervention would ideally require simple tests that do not require time consuming, complex or highly specialised methodologies. Identifying older people with evidence of low physical performance who will benefit from intervention may be a more practical approach in primary care as making a diagnosis is more difficult. Gait speed represents a valid and robust instrument which is associated with negative health events. Self-reported walking speed is a good measure of walking speed and could serve as a useful marker of physical performance. Simple questions based on weight loss and self-reported walking speed may help detect adults with sarcopenia or identify older adults with early evidence of sarcopenia who would benefit from intervention.

Physical activity and diet Intervention

Physical exercise and nutrition are two lifestyle factors that play a major role in the development of sarcopenia, obesity and sarcopenic obesity (Goisear et al, 2015). Physical activity, in particular resistance training activity, has been shown to improve muscle function. How best to target and tailor exercise for maximum effect remains unclear. Diets rich in protein and antioxidant nutrients have been shown to influence sarcopenia. To help healthy older adults over the age of 65 maintain muscle mass and function, the European Society for Clinical Nutrition and Metabolism Expert Group recommends average daily intake of 1 g to 1.2 g protein per kilogram of body weight per day, and for those with sarcopenic obesity, 1.2 g to 1.5 g protein per kilogram of body weight per day (Deutz et al, 2014). It is likely that combining nutritional and physical activity intervention is the most promising strategy to combat sarcopenia and sarcopenic obesity.

Learning points

- Efforts to promote healthy ageing (improve functional ability, reduce CVD and mortality risk) should focus on both preventing obesity and maintaining muscle mass.
- There is a need to develop simple efficient screening methods that are useful in primary care to detect sarcopenia (muscle loss) and identify individuals at high risk well before the decline in muscle mass and function reaches a critical threshold.
- Self-reported walking speed is a good indicator of physical performance.
- Physical exercise and good nutrition could help older adults regain and sustain muscle strength and function.

References:


Device that helps obese diabetics lose weight ‘should be rolled out across NHS’

**Plastic sleeve surgery helping patients with type 2 diabetes lose more than two stone on average is less risky and invasive than gastric bypass surgery, study shows**

A new device that assists obese patients with diabetes to lose weight has been found to be effective and far less invasive than traditional bariatric surgeries such as gastric bypass.

This may be of particular benefit in the elderly, who often suffer multimorbidity and complications as a result of any kind of surgery, thus reducing the risk of post-operative complications and restrictions that may result in additional adverse effects on their health and quality of life.

To find out more, visit... https://www.theguardian.com/society/2017/sep/13/device-that-helps-obese-diabetics-lose-weight-should-be-rolled-out-across-nhs-endobarrier

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**Combination of strength and aerobic training found best for obese elderly**

**For obese people over 64 years of age, the combination of both training types is better for improving physical functioning than either form of exercise alone**

Each type of exercise and a combination of the two produced up to 9% reduction in body weight over six months. The combination provided the best mix of protection against muscle and bone loss with improved aerobic capacity. Chief author Dr. Dennis Villareal of the Baylor College of Medicine and the DeBakey VA Medical Center in Houston states aerobic exercise and weight training, also known as resistance training “have additive effects in improving physical function”.

To learn more, visit... https://www.reuters.com/article/us-health-elderly-obesity-exercise/combination-of-strength-aerobic-training-found-best-for-obese-elderly-idUSKCN18D2QS

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**Old age is not for taking it easy**

**Elderly must exercise to keep health costs down say experts**

Writing in the British Medical Journal, doctors and ageing charities called for a shift in the ‘prevailing attitude’ which views exercise as an activity only for the young. They called on elderly people to ‘understand their role’ in reducing demand for social care by staying physically fit.

For more information, visit... http://www.telegraph.co.uk/science/2017/10/17/old-age-not-taking-easy-elderly-must-exercise-keep-health-costs/
Obesity surgery ‘halves risk of death’ compared with lifestyle changes

**Latest study lends support to experts who say more operations should be carried out in UK**

Obese patients undergoing stomach-shrinking surgery have half the risk of death in the years that follow compared with those tackling their weight through diet and behaviour alone, new research suggests.

Experts say obesity surgery is cost-effective, leads to substantial weight loss and can help tackle type 2 diabetes. But surgeons say not enough of the stomach-shrinking surgeries are carried out in the UK, with figures currently lagging behind other European countries, including France and Belgium – despite the latter having a smaller population.

To read the full article, visit...


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**Upcoming Events...**

**International Congress on Obesity (ICO)**
**24th – 25th May 2018**
The ICO 2018: 20th International Conference on Obesity aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of obesity. It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of obesity.

[https://www.waset.org/conference/2018/05/london/ICO](https://www.waset.org/conference/2018/05/london/ICO)

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**Health Plus Care**
**27th – 28th June 2018**
Europe’s largest integrated health and social care event. Taking place at ExCel London, Health Plus Care is the definitive event for health and care sector professionals, building relationships between commissioners, providers and suppliers.

[http://www.healthpluscare.co.uk/](http://www.healthpluscare.co.uk/)

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**European Union Falls Festival**
**2nd and 3rd July 2018**
Manchester, UK: New solutions to old problems: ensuring sustainability of falls prevention interventions. The 4th EU Falls Festival will take place at the University of Manchester on Monday 2nd and Tuesday 3rd July 2018. The 2-day event brings together academics, researchers, health care practitioners, clinicians, industry representatives and key stakeholders from across the globe to celebrate best practice research and innovation in the multidisciplinary study and implementation of falls prevention in older populations. For full details of the speakers, programme and details of how to ‘showcase your work’ at this year’s event visit our website: [www.eufallsfest.eu](http://www.eufallsfest.eu)

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**British Society of Gerontology 47th Annual Conference**
**4th July 2018 - 6th July 2018**
The theme for the conference is Ageing in an Unequal World: Shaping Environments for the 21st Century. Reflecting contemporary concerns from researchers, scholars, practitioners and older people around the world about the injustices associated with ageing in an unequal world, the conference asks the question: how best to influence and shape environments of ageing for the coming century?

Dietary pattern – what is it and why does it matter?

Dr Xiaoyue Xu is a nutrition epidemiologist with a PhD in Gender, Health and Ageing at the University of Newcastle, and is now working at the University of Technology in Sydney, Australia. Xiaoyue’s main research interest is to understand dietary effects on health outcomes among an older population. Her research passion is to promote healthy behaviour for older people as a means to improve health outcomes and positively impact their lives.

Professor Julie Byles is Global Innovation Chair in Responsive Transitions in Health and Ageing, and Director of the Priority Research Centre for Generational Health and Ageing, at the University of Newcastle, Australia. As a clinical epidemiologist, Julie’s interests are in risk determination, health assessment, healthcare evaluation, and measurement of health outcomes. Her research focus is on how people can age well, with an eye to understanding the factors that influence and promote healthy ageing.

Food and nutrition are fundamental for healthy ageing. Not only is food a great source of delight and pleasure, but macro and micro-nutrients can provide fuel and substrate to keep ageing bodies strong and healthy. Unfortunately, malnutrition is common among older populations, and can be due to nutrient deficiencies (under-nutrition) as well as excesses or imbalances in a person’s intake (over-nutrition) (World Health Organisation, 2016). Moreover, these states can occur simultaneously in the same person, with overweight and obese people also having a lack of lean muscle (sarcopenia) and specific nutrient deficiencies.

Under-nutrition is common among older people, particularly those with chronic conditions and those living in hospitals and residential care (Hickson, 2006). At the same time, there is also an epidemic of over-nutrition among older people, increasing the risk of Non-Communicable Diseases (NCDs) such as cardiovascular diseases and type 2 diabetes (Forouzanfar et al., 2016). For example, in China, among people aged 60 years or over, in 2015 the prevalence of overweight/obesity was 37.5% of men and 42.4% of women. Additionally, 67% of women and 36% of men had central obesity (waist circumference $\geq 80$cm for women; $\geq 90$cm for men) (Xu et al., 2015).

Traditional nutritional research on the association between dietary factors and NCDs tends to focus on individual nutrients. The associations between macronutrients (carbohydrate, protein, and fat) and NCDs have been well documented (Nielsen and Joensson, 2007; Santesso et al., 2012). For instance, excess carbohydrate intake can influence the development of type 2 diabetes through the effect on blood glucose and insulin concentration (Mann J., 2007). However, in recent years, rather than considering single nutrients or specific foods in isolation, it has...
been deemed appropriate to look at overall dietary patterns which take account of all foods that are consumed and the balance between them.

**What is dietary pattern and how can it be used?**

Dietary pattern is used to describe the overall diet; the foods, food groups, and nutrients included; their combination and variety; and the frequency and quantity with which they are habitually consumed (Cespedes and Hu, 2015). Hypothesis-oriented and exploratory approaches are two common methodologies used in nutritional epidemiological studies to study dietary patterns at a population level (Van Dam, 2005).

The hypothesis-oriented approach uses predetermined indices to measure whether people adhere to dietary recommendations (Wirt and Collins, 2009; Xu et al., 2015a). Common indices include the Healthy Eating Index, the Healthy Diet Indicator, the Health Food Index, the Recommended Food Score, the Diet Quality Index, and the Diet Quality Score (Wirt and Collins, 2009). These also include adherence to specific diet types, such as the Mediterranean Diet Score, which reflects high consumption of fruit and vegetables, grains, nuts, and healthy fats such as olive oil (Trichopoulou et al., 2003). This hypothesis-oriented approach can capture the effects of the overall diet, and can be used to test the validity of dietary recommendations (Van Dam, 2005).

Exploratory approaches use data reduction techniques, such as principal component analysis, to identify dietary patterns based on the correlation matrix of the foods consumed by members of the population (Van Dam, 2005). This approach enables examination of associations between the whole of what is eaten (regardless to whether it complies with any defined pattern) and health status. It can also increase insight into the need for public health initiatives to drive dietary changes in a population (Van Dam, 2005).

**Case study: evaluation of dietary patterns for the older Chinese population**

Longitudinal data from the China Health and Nutrition Survey was used to assess overall dietary intake and the association between dietary patterns and NCDs among Chinese people aged 60 years or over.

**Hypothesis-oriented approach**

The Chinese Food Pagoda Scores (CFPS) were calculated to evaluate whether older Chinese people adhere to Chinese Dietary Guidelines (Xu et al., 2015c), and the Chinese Diet Balance Index (DBI) was to evaluate diet quality among the older Chinese population (Xu et al., 2015a). The key findings were:

- Older Chinese people rarely meet Chinese Dietary Guidelines; people generally consumed less than recommended intake for vegetables, fruits, eggs, fish and shrimps, nuts and soybean; and more than recommended intake for grains, potatoes and beans, cooking oil and salt.

- Older Chinese people have unbalanced diet intake, with over consumption of cereals, salt and oil, and under consumption of vegetables, fruit and dairy.

- People who did not meet the dietary guidelines and achieve a balanced diet had higher risk of NCDs.

These studies emphasise the need to promote healthy eating and adherence to the dietary guidelines as an important strategy in the prevention of NCDs in the large and growing population of older people in China and have implications for other populations.

**Exploratory approach**

A factor with principal component analysis approach was used to identify dietary patterns, and the associations between dietary patterns and obesity, anaemia and hypertension. The analysis showed:

continued on next page
• Two distinct dietary patterns were observed among the older Chinese population: a traditional dietary pattern (heavily loaded with rice, pork and vegetables) and a modern dietary pattern (heavily loaded with fast and processed food).

• Over the recent decade, older Chinese people’s diet has shifted to a modern dietary pattern (Xu et al., 2016a).

• Evidence for the benefits of a traditional dietary pattern for the prevention of obesity, hypertension, and central obesity, and the benefit of a modern dietary pattern for prevention of underweight and anaemia (Xu et al., 2015; Xu et al., 2015b; Xu et al., 2016a; Xu et al., 2016b).

Summary
These studies provide strong evidence for the importance of diet for health in older age. They also underscore the large and increasing need to focus on the diets of older people, even those who might be expected to have established healthy eating patterns. There were large changes in the diets of the people in the study, with trends away from the healthier traditional pattern. Large regional variations reflecting the economic and social diversity of China and its population was also observed. Notably, neither the traditional nor the modern diet was ideal, with neither completely reflecting the recommended dietary guidelines, and both having increased risks and benefits for different health outcomes.

Conclusion
Dietary pattern approach is likely to provide most insight into the overall diet intake and the relationship between diet and disease risk. The methodology to study dietary patterns is still developing to formulate new hypotheses on the link between diet and diseases, and to provide practical information for public health intervention.

Learning points
• Under and over-nutrition are both common in older adults, and both can lead to a variety of adverse health outcomes
• Dietary pattern can be used to measure the quality and healthfulness of diets in older people
• A study in elderly Chinese people found that there is a shift occurring from the traditional diet to the modern, obesogenic diet high in saturated fat; however neither of these diets completely reflect the recommended dietary guidelines

References
Gastric Bypass may be a risky and ineffective procedure in elderly patients

Salvatore Giordano is a Consultant at Turku University Hospital and Adjunct Professor of Surgery at the University of Turku in Finland. He has previously worked as fellow for NHS at Broomfield Hospital in Chelmsford and as postdoctoral fellow at MD Anderson Cancer Centre in Houston. He holds a PhD in Bariatric Surgery and he has published over 50 articles in international peer-reviewed journals.

Life expectancy has been continuously increasing regardless of gender and ethnic background (Arias, 2010). On the other hand, obesity remarkably decreases life expectancy and quality of life, and bariatric/metabolic surgery is the most effective treatment for morbid obesity (Flegal et al., 2013).

To date, the effect of age on weight loss outcomes has been analysed in only a few studies, most of them with insufficient numbers undergoing the same bariatric operation, and long-term follow-up results are often missing. According to some studies, elderly patients may lose less weight, gain fewer benefits, and may be at a greater risk for mortality after bariatric/metabolic surgery compared to younger patients (Scozzari et al., 2012; Giordano & Victorzon, 2014). Furthermore, elderly patients might experience an increased risk of complications after Laparoscopic Roux-en-Y gastric bypass (LRYGB) (Giordano & Victorzon, 2015). A meta-analysis was therefore performed of comparative studies on this issue in patients aged 60 years or older.

A systematic literature search was undertaken using Medline, Cochrane Library, Embase, Scopus, and Google Scholar for studies on outcomes of LRYGB in elderly versus younger patients. Primary outcomes were mortality and overall complications. Secondary outcomes were length of hospital stay, excess weight loss percentage (EWL%), effect on diabetes, hypertension, hyperlipidaemia and obstructive sleep apnoea (OSA). Heterogeneity across the studies was evaluated by the I² test, and a random effects model was used. Results were expressed as mean difference (MD), relative risk (RR), and show confidence interval (CI).

Seven studies involving 3,128 patients were retrieved and included in the study. A significantly increased risk of mortality and overall complications was observed among patients older than 60 years compared with younger ones (RR, 6.12; 95% CI, 1.08–34.83; p=0.04; and RR, 1.51; 95% CI, 1.07–2.11; p=0.02). Particularly, elderly patients experienced 1% increased risk of mortality and 3% increased risk of overall complications.

Length of stay, diabetes and OSA remission rates were similar among the groups. EWL% was significantly greater among younger patients (MD, −3.44; 95% CI, −5.20, −1.68; p<0.001), as were hypertension (RR, 0.57; 95% CI, 0.42–0.76; p<0.001), and hyperlipidaemia (RR, 0.61; 95% CI, 0.45–0.83; p=0.002) remission rates.

The pooled results demonstrated an overall low mortality, but are more significant in the elderly group. Additionally, overall complications occurred more often for patients older than 60 years. Similarly, weight loss outcomes and chronic disease remissions favoured younger patients. This pooled analysis is the first one pointing out the higher overall risk and less satisfactory results of LRYGB in patients older than 60 years. In particular, elderly patients experienced a 1% increased risk of mortality and 3% increased risk of overall complications compared with younger patients after LRYGB.

It was concluded that LRYGB in patients older than 60 years may be a risky bariatric surgery operation due to higher complications and mortality, and may not be as effective as in patients younger than 60 years (Giordano & Victorzon, 2018). Thus, older patients should be carefully counselled before this procedure for individual risk-benefit assessment.

Learning points
• For obese patients over 60 years there was an increased risk of mortality and overall complications observed years compared with younger ones
• LRYGB in patients older than 60 years may be a risky bariatric surgery operation due to higher complications.
• LRYGB may not be as effective in patients younger than 60 years.

References:
Healthy eating is critical for healthy ageing because eating a nutrient-dense and varied diet helps prevent chronic conditions, and manage them when they occur. Consuming fruits and vegetables is an essential part of a healthy diet, but many populations around the globe have low intakes. Many deaths could be avoided each year if intakes were higher. Getting adequate variety and quantity of fruits and vegetables is important for older adults’ health, as research shows both variety and quantity matter for chronic disease outcomes. Eating a greater variety of fruits and vegetables is especially valuable for older adults who require nutritionally dense diets with lower energy intakes.

Consumption of fruits and vegetables is strongly influenced by many different economic factors, particularly for women. Healthier diets overall, and higher fruit and vegetable intakes, are more common among older adults with higher education, income, wealth, and social class. Previous research showed a reduced variety of fruits and vegetables (and less so quantity) in British older adults who reported greater financial hardships. Furthermore, women with greatest difficulty paying bills had lower fruit variety while men had lower vegetable variety (Conklin et al., 2014a). More work is needed to understand the cumulative effects of financial hardships on older adults’ diets, especially since other longitudinal research suggests cumulative financial hardship can lead to poor health outcomes including long-term weight gain (Conklin et al., 2014b).

It is also important to consider different types of social relationships as they too are strong determinants of food consumption. Marital status, living arrangement and frequency of social contact with friends or family are each associated with eating behaviours in older adults (Conklin et al., 2014c). Specifically, individuals who are married report higher fruit and vegetable intake than persons who are not married, and those who have lost a partner appear to have poorer nutrition than those without experiences of bereavement. The unhealthy changes to fruit and vegetable intake that accompany divorce, separation and becoming widowed are more common among British men than women, featuring a reduced variety rather than quantity (Vinther et al., 2016). New and existing programmes to promote healthy eating among older adults need to recognise these social determinants of diet, and consider prioritising people who live alone, in particular men who have recently left relationships or who have been widowed.

What happens to diet when we consider multiple forms of economic and social disadvantage? The synergy of effects on diet from the interactions between different social and economic determinants is not well studied. When exploring the absence of two social ties (e.g., non-married, living alone) among older adults it was found that those non-married and also living alone or having infrequent contact with friends were most at risk of eating fewer different fruits and vegetables, particularly older men (Conklin et al., 2014c). Other research showed there was substantially lower variety of fruit and vegetables consumed for all combinations of low economic resources and lack of social ties than for either factor alone, with men faring worse in the majority of combinations (Conklin et al., 2015).

Policies and programmes need to use a more nuanced view of joint social determinants of diet, and more public health research is needed to investigate these intersecting disadvantages from a gender perspective. Efforts to improve healthy eating among older adults would offer most benefit to older men with low economic resources and poor social ties.

Learning points

• Adequate fruit and vegetable consumption is essential for good health, including in the elderly, who are more likely to suffer from chronic disease
• There are intersecting factors which affect the quantity and variety of fruit and vegetables consumed, including economic and social factors
• Economic and social factors affect individuals differentially depending on gender, and this must be taken into account when developing policy to improve nutrition in older age groups

References:
Is it really better to be obese in old age?

Dr Kirsty Bowman is a postgraduate research associate within the Epidemiology and Public Health group at the University of Exeter Medical School.

Introduction

Many people believe that being plumper is better in older people, to help survive challenging events like fractures or surgery. A 2013 paper reported that being obese at ages ≥65 made little difference to death rates. This result was picked up in the media, with reports claiming that the obesity epidemic was being hyped up. There was also academic discussion about whether there is a misunderstanding of the biology of obesity. Experiments in primates, however, indicate that higher calorie intake greatly accelerates ageing, and being calorie restricted resulted in much better physical and cognitive function. So, are humans different, or were the studies in humans flawed?

Health outcomes associated with obesity

For younger and middle aged adults, it is well established that obese individuals have an increased mortality risk. A 2013 paper reported that for adults aged ≥65, those within the BMI defined obese-1 range (30.0-34.9 kg/m²) had a similar mortality risk to those within the BMI normal range (Flegal et al., 2013). This similar mortality risk for the obese range has been termed the “obesity paradox”, but some have argued this is a fallacy. All the studies are observational, rather than controlled trials, so findings could be driven by distorting factors. For example:

- Smoking is associated with increased mortality risk and lower body weight, so including smokers can distort risk estimates (Chiolero et al., 2008).
- Weight loss, often due to chronic and even undiagnosed diseases, before the study BMI measure was taken (Fontana and Hu, 2014).
- Comparison to a normal BMI group: the lower range of the conventional BMI group includes older people with serious disease, more akin to underweight groups (Fontana and Hu, 2014).
- BMI is not accurate in older people, due to loss of muscle mass and redistribution of fat to the abdomen, thus distorting estimates (Zamboni et al., 2005).

Current thinking

Working in the Melzer group at the University of Exeter, and with collaborators in the USA, >955,000 health records from primary care patients (UK Clinical Practice Research Datalink) aged ≥60 years were analysed (Bowman et al., 2017a). Overall, ignoring all the potential distorting factors, there was a reduced mortality risk for the obese-1 range compared to the normal BMI. However, when excluding the distorting factors listed above, obese older people had an increased mortality. So, dealing with the distorting factors gives a clearer estimate for the relatively healthy older group, and showed that being obese is a risk factor, not an advantage. Similar results were obtained for an overweight group.

Data from >130,000 volunteers aged 60-69 years from the UK Biobank (a large cohort from the general population) (Bowman et al., 2017b) was also analysed. BMI, waist and hip circumference were measured during 2006-2010 and the association between BMI and combinations of BMI and waist-to-hip ratio (a central adiposity measure) and mortality analysed. Those within the normal BMI range but with an elevated waist-to-hip ratio had increased mortality risk. Those within the overweight and obese-1 range had increased mortality risk compared to those with normal BMI and lower waist-to-hip ratio.

Conclusions

- Surveys and follow-up studies in humans suggest that being obese in old age might be good for health. However, these studies often suffer from distorting factors (perceived biases and confounding), which produce misleading results. The claimed obesity paradox in older people seems to be one of these misleading results.
- In terms of advising relatively healthy, non-smoking older people, it’s clear that having an elevated waist-to-hip ratio and/or overall obesity is associated with an increased mortality risk.
- For smokers, giving up smoking is the most important advice to improve survival chances. For people with serious illness, more work is needed to prove whether being plumper really is helpful, or whether higher weight is associated with less severe disease.

References:
Exercise and diet for overweight or obese people
Excessive weight is associated with many chronic diseases. The risk of becoming overweight and obese depends on lifestyle factors such as food intake, including dietary supplements, and physical activity levels. Thus exercise and diet are commonly recommended treatments for weight loss and weight maintenance. However, there is a lack of consensus as to the best nutritional management of obesity.

Exercise
A Cochrane review of 43 studies involving almost 3500 people who were overweight or obese found that exercise reduced body weight and cardiovascular disease risk factors such as blood pressure and blood glucose levels. More weight was lost as the intensity of exercise increased. Weight loss was also larger when exercise was combined with diet. Importantly exercise was found to improve health even if no weight was lost. No data were identified on adverse events, quality of life, morbidity, costs or mortality.

Diet
Chitosan is a widely available dietary supplement that claims to aid weight loss and blood cholesterol levels. A Cochrane review including 15 studies involving over 1200 people found that chitosan preparations may have a small effect on body weight, cholesterol levels and blood pressure but that this effect is likely to be minimal as the evidence was generally of low quality.

Green tea has a long history of many uses. A Cochrane review of 18 studies involving almost 2000 people found that there was no difference in weight loss or weight maintenance between groups who had taken a green tea preparation and those who did not. Most adverse effects, such as nausea, constipation, abdominal discomfort and increased blood pressure, were judged to be mild to moderate and to be unrelated to the green tea or control intervention.

A Cochrane review of 6 studies involving 200 people found that overweight or obese people on low glycaemic index or glycaemic load diets lost slightly more weight on average (one kilogramme) than those on comparison diets.

Behaviour changes
When diet or physical activity interventions, or both, are based on the transtheoretical model of changing from an unhealthy behaviour to a healthy one it involves 5 stages of change. A review including three studies involving almost 3000 people found for this model that there was low quality evidence on weight loss, dietary habits, physical activity and behaviour changes. However, other positive effects were noted, such as changes in physical activity and dietary habits that included increased exercise duration and frequency, reduced fat intake and increased fruit and vegetable consumption.

Education of healthcare professionals and changes in healthcare delivery
According to a Cochrane review there is little evidence for a clinically important effect on weight loss, or on body mass index for brief educational interventions provided to healthcare professionals or changes in who delivers the health care, how and where it is delivered. The review included 12 studies (8 in adults and 4 in children) of 139 family practices that provided care to almost 90,000 people.

Bibliography:
What is your current position and what was your career path that took you there?

I am currently an Assistant Professor at the University of British Columbia, and a Scientist at the Centre for Health Evaluation and Outcome Sciences at St. Paul’s Hospital, both in Vancouver, Canada.

What challenges do you face in your current position and which has been the greatest one?

I face the challenge of fulfilling a number of different roles and duties as an early career investigator, namely obtaining large enough grants to support graduate students, publishing my results from prior work in high-impact journals, and also successfully supervising and graduating excellent trainees. My greatest challenge is finding the time to do my own data analysis and continue the work I started at Cambridge.

In your opinion, what are the top three issues affecting the care of older people?

I think one of the top issues affecting the care of older people is the complexity of delivering care for chronic health conditions because there are often multiple morbidities occurring simultaneously. This is a great challenge to the healthcare system which is poorly designed for care integration and multidisciplinary team working. Another top issue is the problem of polypharmacy and the need for proper de-prescribing practices which is an important patient safety issue. This is especially true for dietary management of type 2 diabetes which might require less medication use but there is no evidence or guidelines on how to do this. I think we need also to consider the broader environmental changes that affect the care of older people. Broader social forces like austerity policies that limit the social safety network for society’s most vulnerable, including older adults. Reductions to pensions and other financial supports are a real threat to the health and wellbeing of older people.

What changes in elderly care do you anticipate in the next few years?

I expect there will be greater use of telehealth in elderly care in the next few years. There is likely to be more telecommunications between patients and providers, particularly for patients living in rural and remote areas where there is limited access to specialist care such as for diabetes and heart disease. There may also be more use of mobile devices to support self-care among older patients which will require health and technological literacy.

If you hadn’t become a researcher what might you have done?

If I hadn’t become a researcher, then I think I might have followed a career path in public policy or advocacy as I would want to feel I’m contributing to social change; I’ve been told I would make a good diplomat, but I’m not sure that’s what I would have become instead of a researcher.

What experience has influenced your career the most?

I think my career was most influenced by my experience as a policy analyst at RAND Europe, Cambridge where I worked before my doctoral studies. There, I gained the knowledge and insight of conducting policy-relevant research coupled with strong skills in project management, and these laid the foundation for successfully completing my own original dissertation work at the University of Cambridge that in turn launched my academic career.

What advice would you give to someone contemplating following in your footsteps?

My advice for someone contemplating following my footsteps is that there is no set path and to find your own way—it can be direct, it can be winding, it can loop-back on itself. The important thing to remember is you need to have a vision for what you see yourself doing (your life’s purpose) and then find and create your own opportunities for professional growth and development. A key part of finding opportunities for the next career step is planning ahead and being persistent with your search.

Where do you go for advice and information?

It depends on the advice or information I need, but I generally like to consult with as many people as possible to get a variety of views on a matter I need help with. When it’s relevant, I will also try to do my own research using trusted resources online. Typically, I ask advice from my immediate colleagues who are peers and seniors; and for big decisions, I always get advice from my former PhD and postdoc supervisors. My faculty also has a mentorship program for young investigators and so I have sought support from my mentor in a different faculty who can help me navigate the academic tenure-track process.

Who would you most like to work with?

I would most like to work with leaders in my field such as Sir Michael Marmot, as well as Harvard Professors, Lisa Berkman and SV Subramanian.

What do you enjoy doing when you are not working?

I most enjoy training my diverse martial arts which I’ve been doing since the age of eight, with a few intermissions. Since 2000, I train in Jeet Kune Do, Filipino kali and Madjapahit silat systems.

What do you do in a typical working day?

I don’t think I really have a typical working day, and I work in two different locations during the week so that adds even more variety. Most of my days are filled with prioritising and responding to student and faculty emails, managing ongoing projects, drafting manuscripts of completed projects, scoping and planning new research grants, and attending one or two meetings, either in person or by phone.

If you were stranded on a desert island what would be your one luxury?

I would want to bring my prescription sunglasses as my one luxury.
In our next quarterly issue of Innov-age we will be looking at frailty.

NHS England define frailty as a loss of resilience, meaning that people living with frailty do not bounce back quickly after a physical or mental illness, an accident, or other stressful event. Frailty becomes more common with increasing age, and the overall prevalence in people aged over 60 is 14%, with a tendency to be more common in women. Frailty greatly increases the risk of hospitalisation, care home admission, and disability, as well as increasing the risk of mortality by up to four times compared to non-frail older people; it is the most commonly reported health condition leading to death among the elderly.

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