

# Irish Society for Disability and Oral Health



## Obesity and Disability



# Defining obesity

- BMI ( $\text{Kg}/\text{M}^2$ )  $> 30$  / ? reflective of adiposity or muscle?
- More accurate: waist circumference, WHR, skin-fold thickness, body fat % (DXA)
- In children, obesity =  $> 98^{\text{th}}$  BMI centile

# Measures of Obesity

- Ageing: WC- visceral fat increases with age
- peripheral muscle and SC fat < with age
- BMI + HC decrease > 60-65 yrs





# What makes us fat??

- Energy balance vs Endocrinology  
'Lipophilia' - why fat accumulates in certain parts of the body (Insulin is an excellent fattening substance)



- Glucose/Fructose-trigger hormonal response to store energy as fat

# What makes us fat??

- Fructose ('Empty calories') metabolism circumvents leptin signalling- so consume more.....

or

- Fructose metabolism induces insulin resistance
  - increased insulin levels, trapping fat in cells



# Causes of obesity

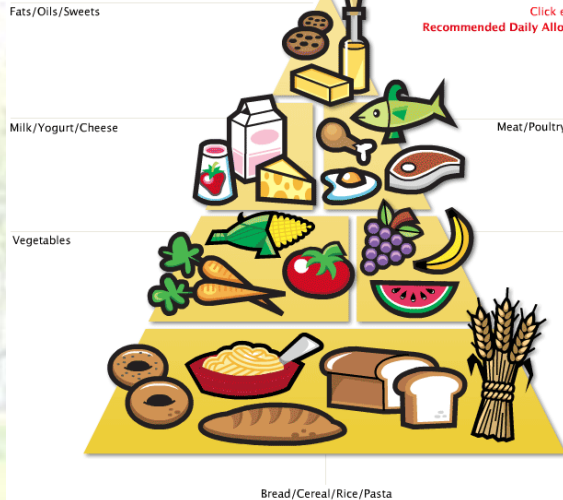
- UK 'Nutritional recession' driving people towards fatty foods and away from more expensive fruit/veg:
- Fruit and veg purchases 2.4% and 6.6% lower in 2011 cf 2008



# Eating patterns

## Food pyramid gets an expensive makeover

Click each block for Recommended Daily Allowance (RDA)



### SECOND OPINION

JACKY JONES



Government must ensure that healthy eating is affordable

**H**EALTH PROFESSIONALS in Ireland have been using the "food pyramid" as the basis for healthy eating advice for nearly 20 years. The pyramid is a visual aid which converts scientific knowledge into easily understood information about nutrition.

It divides food into major food groups represented as pyramid "shelves". Bread, cereal and potato are on the largest bottom shelf and foods from this group should contribute most to daily intake. The smallest shelf at the top of the pyramid contains those foods that must contribute least to daily intake, such as sugary drinks.

In 2006, *Obesity, the Policy Challenges: The Report of the National Task Force on Obesity* recommended that Ireland's healthy eating guidelines be reviewed and updated because they were too general to be of much use to anybody. The Food Safety Authority of Ireland (FSAI) was asked to carry out this work in 2007.

The new food pyramid and healthy eating guidelines, for adults and

children over five years, are now available from the HSE and the FSAI. There are important differences between the old and new versions of the pyramid.

The old guidelines were evaluated by modelling daily eating patterns for 11 hypothetical people of different ages and sexes, using food pyramid recommendations on serving sizes and number of servings needed per day.

Patterns were analysed for caloric and nutritional content and compared with healthy eating goals. Total fat, saturated fat, sugar, fibre, iron, calcium and vitamin D levels were calculated.

This evaluation showed that the old food pyramid actually promoted excessive calorie consumption. Almost all the eating patterns provided too much saturated fat and three-quarters excessive total fat. A majority of the patterns did not provide enough dietary fibre and 90 per cent did not provide enough vitamin D. The food patterns for children did not reach the goals for calcium.

The evaluation also found that people had difficulty interpreting advice given in the old food pyramid because the information was very specific for some foods, eg loz cheese, and ambiguous in others, eg a bowl of cereal. Another problem was the wide variation in the caloric content of servings within the different food groups, particularly in the bread, cereal and potato group.

The old food pyramid suggested servings of these foods were interchangeable, whereas a serving can contain 75-250 calories depending on whether it is porridge, white bread, or potatoes.

The new food pyramid and healthy eating guidelines are very comprehensive. Weekly menus for different age groups, sexes and activity levels are easy to calculate. In the bread, cereal and potato group, the "bowl" serving has changed to three dessertspoons of dry porridge oats or two dessertspoons of mashed potato. A "carton of yogurt" has changed to "a 125mls carton of yogurt" and "small amounts" of fat has changed to one teaspoon, eg mayonnaise.

The new pyramid has six shelves instead of five, with separate shelves for fats, oils and spreads, and foods high in sugars and salt, which were

lumped together in the old food pyramid. Maximum is now one serving from the top shelf, eg one cup cake with no icing, one chocolate biscuit, or two plain biscuits each day. Items such as hummus (50g), and peas and lentils (six dessertspoons), previously in the fruit and veg group, are now in the "protein" group from which you can have only two servings instead of five.

*The Scientific Recommendations for Healthy Eating Guidelines in Ireland*, published by the FSAI in 2011, concluded that the cost of food as a percentage of household income is a major barrier to healthy eating for many families. Food products high in fat, sugar and salt are up to 10 times cheaper than fruit and veg. Healthy foods, in the quantities recommended by the new pyramid, cost about €180 per week for a family of two adults and two children. Families with enough money will be able to develop weekly menus that ensure optimal nutrition with no obesity problems. People on social welfare and in low-paying jobs will find it extremely difficult, if not impossible, to follow the new guidelines. Reductions in social welfare payments, and new property and other taxes will exacerbate the problem. The Government must ensure that healthy eating is accessible and affordable for everyone. Advising those on low incomes to eat more beans and lentils, as recommended in the FSAI report, is the Irish equivalent of "let them eat cake".

Dr Jacky Jones is a former HSE regional manager of health promotion

**44** Advising those on low incomes to eat more beans and lentils, as recommended in the FSAI report, is the Irish equivalent of 'let them eat cake'

# Causes of Obesity

- Obesity in mothers-evidence of autism and ADHD in children (Edlow 2013)
- Antibiotics in first 6 months **↑** BMI up to 38 months(ALSPAC)

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### Overweight mothers 'give birth to fat babies', study finds

Childhood obesity appears to begin in a mother's womb, a new study has concluded using state of the art technology to monitor fat levels in unborn babies.



Image 1 of 2

The study found that being overweight or obese in pregnancy could result in potentially harmful changes to a baby's fat levels while still in the womb. Photo: REX FEATURES

8:00AM BST 26 Sep 2011

Researchers found some babies have similar build up of fat around their abdomen that adults aged in their 50s have.

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# Health-related effects of Obesity

- Co-morbidities in adolescents: chronic pulmonary disease, hypertension, diabetes, liver disease, osteoarthritis and hypothyroidism (Kelleher et al 2013)
- For every 10-unit increase in obesity RR:
  - endometrial Ca = 2.89
  - adenocarcinoma of the oropharynx = 2.38.
  - Breast Ca = 1.4
- ? Screening in disabled populations

# The Cost of Obesity in Ireland

- 2008-2010 NANS :
  - 37% adults overweight
  - 24% obese.
- 2009 - € 1.13 billion
- Duration of obesity ↑ and cumulative risk ↑  
adverse health affects → costs ↑
- Opportunity costs

# Dental effects?

- Do adults have less teeth because of an obesogenic diet

or

- Do adults have so few teeth that they eat the sort of foods that make them fat?

Affect of reduced salivary flow/caries (Cole et al 1995)





# Oral effects of Obesity:

- Obesity/SES linked, but not a risk factor
- Independent, positive associations between tooth loss and IHD, cancers.
- Obesity and periodontal disease (metabolic syndrome, high plasma fibrinogen, C-reactive protein)
- Choice of obesity measures important.

# Obesity and Disability

- US National Health and Nutrition Examination Survey (NHANES):
  - 22.5% of children with disabilities are obese compared to
  - 16% of children without disabilities.
- 2010 survey of 12-18-year-olds:
  - ASD 67%
  - Down syndrome 86%
  - 19% CP
  - 83% SB
  - 40% ID



# Risk factors for obesity in disability

- Complex relationship with food
  - Down syndrome- difficulties chewing, swallowing
  - ASD- aversion to foods, colours, textures
  - Food as a way of getting compliance
  - Not wanting to battle on all fronts/  
behavioural challenges
  - Peer pressure



# Risk factors for obesity in disability

- Barriers to exercise:
  - Inability- cardiac and respiratory- tire easily
  - Muscular dystrophy, cerebral palsy, Spina Bifida- limited mobility
  - Need for modifications for access eg hoists at swimming pools



# Risk Factors for Obesity in Disability

- Medications: 75% of children with special healthcare needs take 1 prescription drug
- certain antipsychotics, antidepressants, anticonvulsants, neuroleptics and mood stabilizers, are associated with weight gain.
- (LDX used in ADHD may decrease binge eating – McElroy 2013)

# Risk Factors for Obesity in Disability

## Family factors:

- Time for therapy, hospital visits, time for ADL
- High calories foods/pre-packaged foods quicker to prepare/easier to cook
- increasing physical activity and reducing screen time may be harder for families



# Risk Factors for Obesity in Disability

Perceptions of families, teachers, doctors:

- activity will be too difficult, too dangerous, or too disappointing for a child with a physical, intellectual, or behavioural disability.
- “stereotypes – the idea that kids with disabilities are ‘too sick’ to engage in physical activity”
- 68% of 11-16 year olds with physical disabilities, felt that “their parents stop them from doing what they want to do because they worry too much.”

# Risk Factors for Obesity in Disability

## Social isolation:

- Children with special healthcare needs may have fewer friends and miss out on social engagement, activity
- Excluded from team sports because they will affect ability of team to win

# Prader Willi- most common genetic cause of life-threatening childhood obesity....

- Experience constant hunger/ chronic food seeking and binge eating.
- GORD/dental erosion-High pain threshold masks symptoms
- Hyposalivation- caries risk
- Intellectual/ behavioural disabilities - physical activities more challenging
- sleep disturbances that reduce day time energy levels





# Spina Bifida- and Obesity

- People with spina bifida, especially with hydrocephalus, are at high risk for obesity:
  - 50% of 6 years + are overweight
  - > 50% of adolescents/adults are obese.
- Contributing factors include:
  - Neurological impairments that lead to mobility problems.
  - Slower metabolic rate resulting from a higher proportion of fat cells.

# Autism Spectrum Disorders and Obesity

Children with autism are 40% more likely to be obese due to :

- foods refused more than twice as often as peers/food fads
- medications that lead to weight gain.
- motor impairments that may make it difficult to play sports
- Impaired social skills - make participation in structured activities with peers challenging.
- behaviour modification using sweets is a common strategy for therapists working with children with ASD



# ADHD and obesity in adults

- Study over 33 years of 178 boys with ADHD
- Men with ADHD had  $>$  BMI
- Risk of obesity no less if ADHD remitted in adulthood
- Reasons:
  - Deficient inhibitory control, impulsivity
  - Inattention, difficult to stick to regular eating



# Cerebral palsy and Obesity

Percentage of children with CP who are obese has more than doubled since 1994.

Reasons:

- Started out with feeding problems, rely on high calorie, nutrient dense foods
- children who were ill or undernourished *in utero* may have metabolisms reliant on any available calories,
- Difficult to chew and swallow fruits and vegetables

# Risk for obesity in Down syndrome:

- Hypothyroidism
- Increased leptin
- Poor mastication, or chewing
- sensory deficits that make balance and coordination more difficult
- Poor impulse control /oppositional or noncompliance
- increased risk for developing Type 2 diabetes (tendency to obesity and large abdominal fat stores)
- Depression and eating disorders



# Adults with Down syndrome and obesity

NEWS FEATURE

## The mayor the merrier

Borrisokane's mayor says Down syndrome is no bar to his success, which he credits to hard work, support from family and friends and a fierce pride in the town he calls home, writes Jason Kennedy



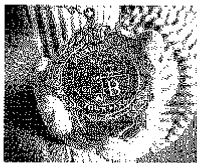
When Darragh McKenna is not helping out in his family's pub in Borrisokane, Co Tipperary, the duties of his other job come into play. Following a period of intense campaigning almost three years ago, the Special Olympics athlete was granted the honour of becoming the first person with Down syndrome in Ireland to become a mayor.

The honorary position was granted to Mr McKenna (31) in 2010 after he raised more money for the development of the town's park than any of the other four candidates vying to be Borrisokane's first mayor. A total of 645,000 was raised for the project, of which more than 672,000 was raised by Mr McKenna.

Although the position of mayor of Borrisokane is not a political title and not involved with local county councils, Mr McKenna is a well-known and liked character around the small town. During his campaign, he organised several successful enterprise visits to businesses and around the north Tipperary towns.

"My absolute favourite part was the Cheltenham night we organised. There was a great turnout and it was a great night," Mr McKenna says.

"The campaign itself was tough at times, but we got through it in the end. I was confident throughout the campaign, but I knew



It doesn't matter if you have a disability, because you can do anything once you actually put your mind to it

it was going to be hard. I had great support from friends and family throughout the campaign though and that helped. It helped big time.

"When it was announced that he had won, I was just thrilled. It was amazing."

The park area is now complete and includes a duck pond and children's playground. Mr McKenna even had the luxury of opening it himself.

"It was great to see the park finished and it was amazing to get to open it. It's a great facility for local children."

Mr McKenna was adamant that Down syndrome would not and did not affect his campaign or his current work on any level.

"It doesn't really stop me from doing any thing and I love doing what I do. It doesn't matter if you have a disability, because you can do anything once you actually put your mind to it," he said.

After more than three years in the post now, Mr McKenna says he couldn't possibly choose a highlight, but that he adores his job and meeting people from around the town, which has a population of about 1,140 people. Since his inauguration, he has opened many of the town's shops and has hosted a wide variety of events in local pubs.

"It's lovely to see so many local setting up businesses and it's great to see them doing well."

Darragh McKenna played a key part in the development of a children's playground, which he also had the honour of opening. Photograph: Fergal Shanahan

Mr McKenna says the fact that he became mayor and received such a level of support from locals shows that disabilities shouldn't hold anyone back from achieving their goals.

Prior to his mayoralship, Mr McKenna was no stranger to competitive activities. He has a collection of gold, silver and bronze medals from taking part in the local Special Olympics at his Ovensod, having competed in the 65m walk, shot put and swimming.

He said competing in the Special Olympics was a great honour for him.

"I have every bit of it. I've made a lot of friends through the games. There's a great spirit and great atmosphere there," he said.

"I have around six or seven gold medals and they mean a lot to me," he said.

Although Mr McKenna has no mayoral obligations coming up soon and it's quietening down, he says it's something he really enjoys doing and never wants to give it up.

"I have no plans to ever step down as mayor. No. I'll stay in the job for as long as I can. I absolutely love it and I absolutely love Borrisokane."



# Obesity - itself a disability ?

- Obesity and co-morbidities:
  - obstructive sleep apnoea
  - GORD/Diabetes/Cancers
  - Ca colon (Ireland- burden of Colon Ca- target obese in proposed national colorectal Ca screening)
- Barriers to care?



# Common risk- Joined up working

- New York's Mayor Bloomberg-banned 16oz sugary drinks in public outlets .....
- Calling them "arbitrary and capricious," Supreme Court judge invalidated regulations that would have banned New York City food service establishments from serving sugary drinks in sizes bigger than 16 ounces.



# Attitudes of healthcare professionals....

- 56% medical students biased on weight (all thought they were 'neutral')
- 39% biased against obese people (17% anti-thin)
- US doctor- No treatment if overweight – refused because patient was 200 lbs/staff injured by helping overweight patients



# Education of health care workers

- Lifestyle choices/modifiable behaviours responsible for:

- Premature deaths

- Years lived with disability (DALYS)

Precursor to promoting behaviour change- need for practitioners to support change (Butler et al 2013)

Behaviours co-concur therefore tackle in a joined- up way.

# **‘Making every contact count’**

- Behaviour change competency framework (De Normanville et al 2001):
- Butler et al 2013- included patient outcomes, failed to show effect:
  - Motivational interviewing
  - Behaviour change counselling

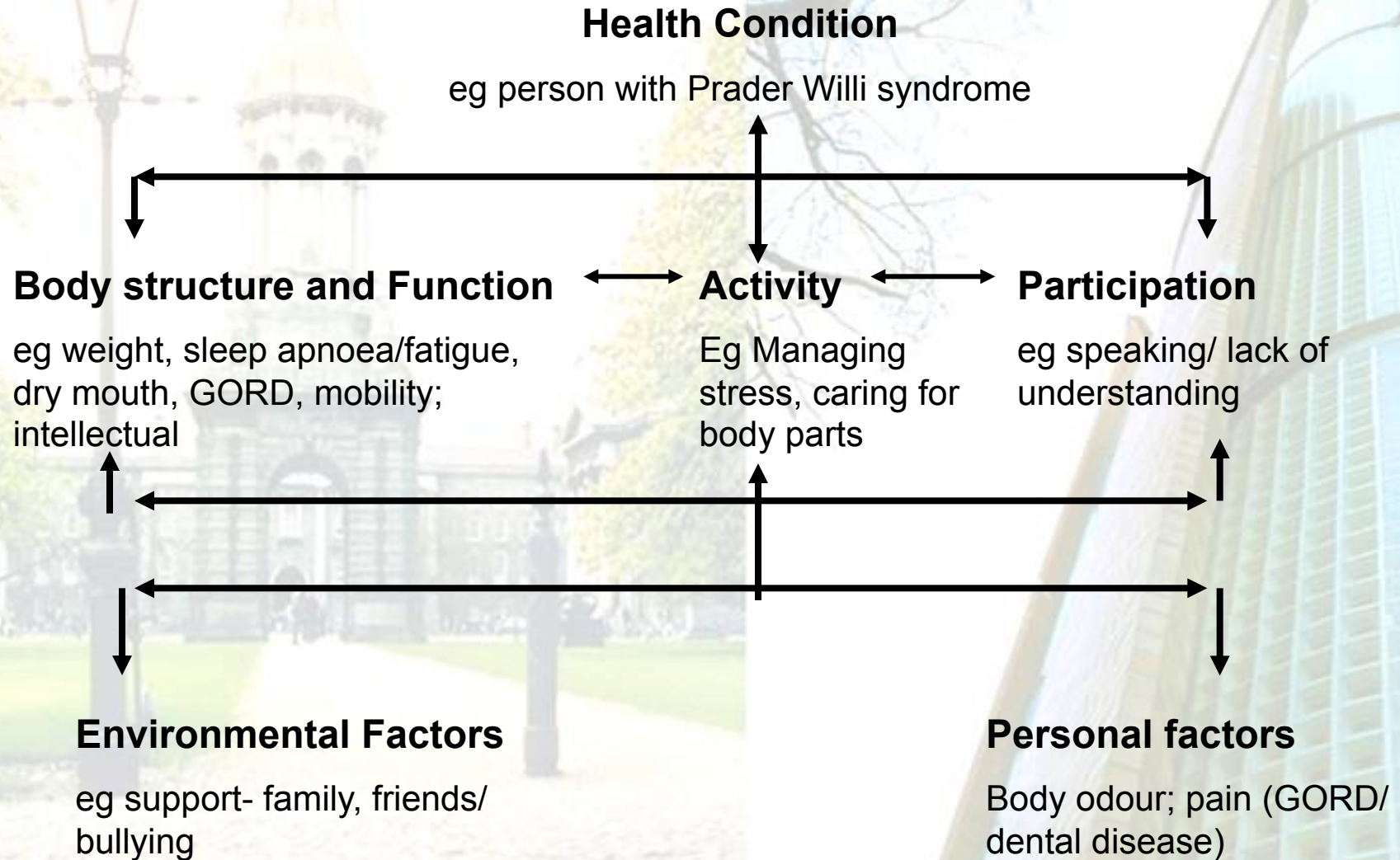
# Doctors know best....or do they?

- *Crossing the Quality Chasm* (IOM 2001)- Shared Decision Making
- 1000 out-pt visits (3,500 decisions), 10% met min standards for informed decision-making
- Objections: Interferes with Dr-Pt relationship, 'rationing', ? Evidence; too time-consuming
- Shared decision-making: Needs time, training, tools, commitment





# ICF and Obesity



The background is a vertical split image. The left side shows a historic stone building with a prominent dome, likely a government or institutional building, set in a park-like area with a cobblestone path and a black lamppost. The right side shows a modern glass skyscraper, possibly the Freedom Tower, reaching towards a clear blue sky. The text "Thank you for listening!" is centered across the middle of the image.

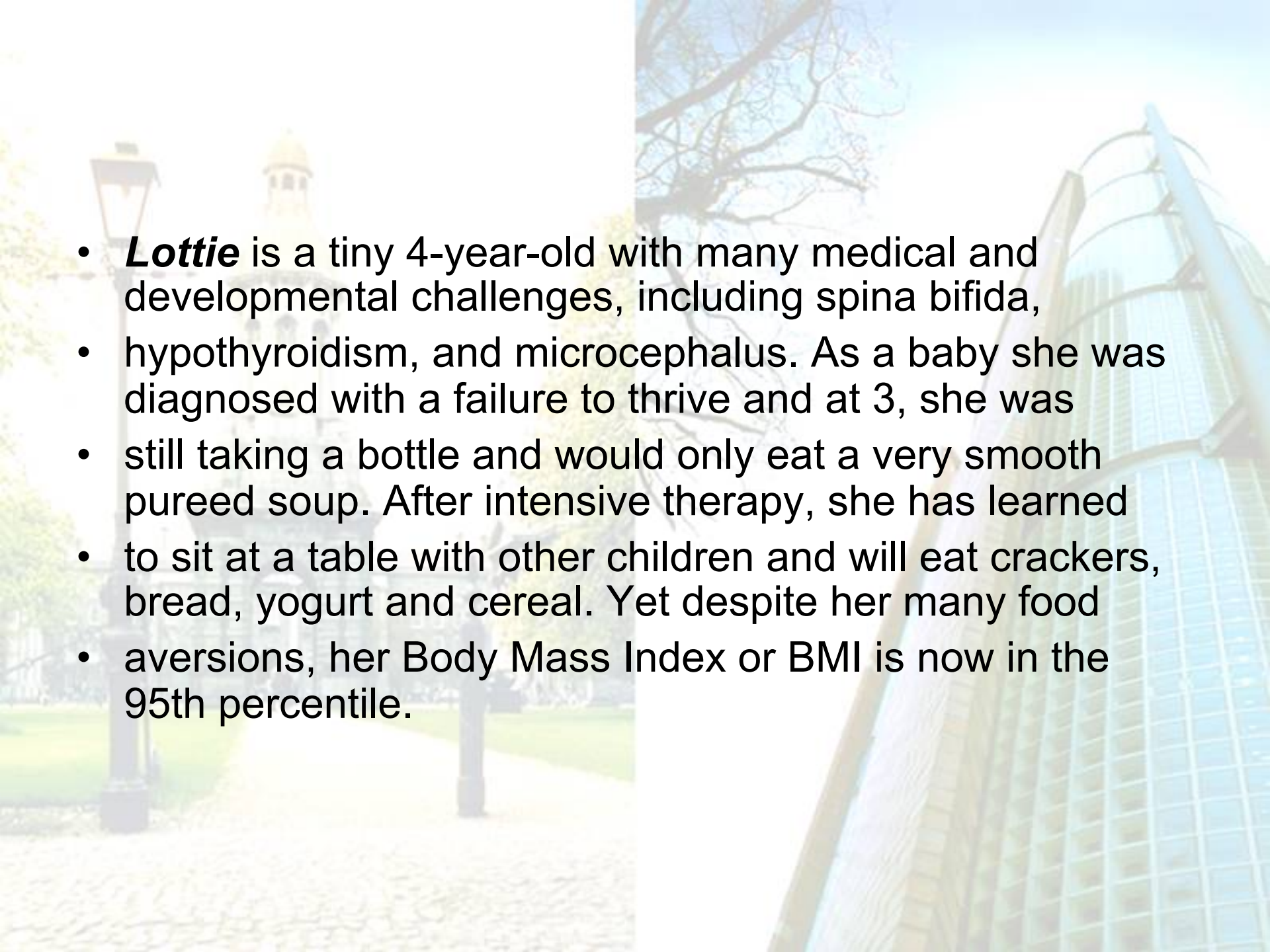
**Thank you for listening!**

# Obesity Paradox?

- CDC, NIH and University of Ottawa study 2.9m people
- ‘People classified as overweight, which are those with a BMI greater than or equal to 25 and less than 30, had a 6% lower chance of dying than those with a BMI greater than or equal to 18.5 and less than 25, considered the normal range.’

JADA 2013



- 
- **Lottie** is a tiny 4-year-old with many medical and developmental challenges, including spina bifida,
  - hypothyroidism, and microcephalus. As a baby she was diagnosed with a failure to thrive and at 3, she was
  - still taking a bottle and would only eat a very smooth pureed soup. After intensive therapy, she has learned
  - to sit at a table with other children and will eat crackers, bread, yogurt and cereal. Yet despite her many food
  - aversions, her Body Mass Index or BMI is now in the 95th percentile.

# Make a table:

- .
- • 44% of children with attention deficit disorder (ADD) were either overweight or obese.
- In 2010, researchers measured the BMI of
- 461 adolescents aged 12-18 with physical,
- intellectual or behavioral disabilities.
- The findings were startling:
- • 67.1% of the teens with autism spectrum disorder were either overweight or obese.
- • 86.2% of the teens with Down syndrome were either overweight or obese.
- • 18.8% of the teens with cerebral palsy were either overweight or obese.
- • 83.1% of the teens with spina bifida were either overweight or obese.
- • 39.6% of the teens with intellectual disability were either overweight or obese. [www.abilitypath.org](http://www.abilitypath.org)

# Social and health impacts of obesity in children with disabilities

- Obesity can make movement more difficult and curtail a child's ability to participate in leisure activities
- ranging from playground games to amusement park rides.
- • Obesity adds an added stigma for children who may be already stigmatized because of their disability.
- • Obesity makes it more difficult for caretakers to help their children with daily tasks like bathing and toileting.
- • Obesity puts children, adolescents, and adults at a higher risk of secondary health problems like type 2 diabetes, asthma, cardiovascular disease, orthopedic problems, sleep apnea, breast, colon, and endometrial cancers, stroke, osteoarthritis, and gynecological problems.
- • Obesity incurs additional health care costs.



# Risk factors for obesity in disability (5)

- Genetic factors:  
Prader-Willi  
syndrome, Bardet-  
Biedl syndrome,  
Cohen syndrome,  
Borjeson syndrome,  
Carpenter syndrome,  
and MOMO  
syndrome.

-

# Exercise and Down syndrome

- “Sam, a 19-year-old with Down syndrome, struggles to stay fit and healthy, despite an active schedule that includes yoga, bowling, swimming, and drama.
- At 5’ 6”, he weighs about 190 pounds and while he likes to stay active, Sam has health challenges that make this difficult – his poor vision makes him worry about his balance, and his flat feet make running difficult. “

# Improving *outcomes* for oral/general health?

