Effect of body mass on future long-term care use

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UK and Obesity Epidemic

- Obesity in the UK is on the rise: No. 1 in Western Europe (in 2017 67% men and 61% women w/ BMI≥25)

- Highest P(Obese) at 45-54, P(Overweight|Obese) at 65-74

BMI category by age in England

Figure 1: Prevalence of Obesity Among Adults 16+
Source: Health Survey for England 1993-2012 (3-year average)

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Pathways of impact of obesity
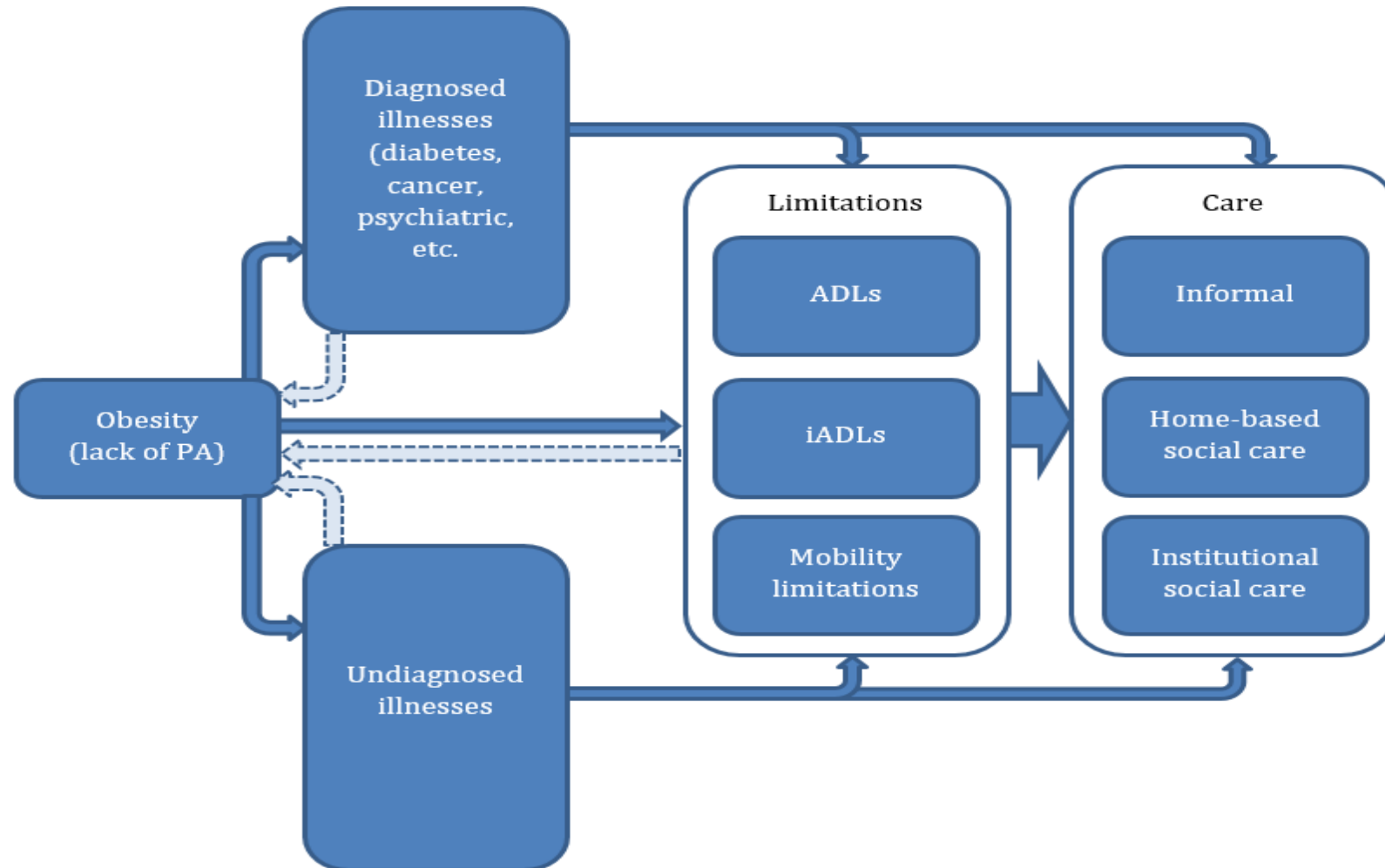
BMI and long term care: literature

- Few studies take BMI explicitly into account as a determinant of care use
- All evidence comes from the US studies and it is mixed
  - Both obese and under-weight adults are at greater relative risk of nursing home admissions and use of personal care assistance (Zizza et al. 2002)
  - Midlife obesity compared with normal BMI predicts nursing home admission in later life (Elkins et al. 2006)
  - No evidence on the effect of obesity on either paid or unpaid care (Resnik et al. 2005)
- Cox proportional hazard models, logit

Research Questions

- What is the direct effect of obesity on the use of various modes of care in the future?

- Does this impact remain after controlling for traditional care risk factors?

Preview of findings

- Obese people are 25% more likely to use some form of care in 2-years time (independently of health conditions, pre-diabetes, and (some) undiagnosed conditions)

- This burden mostly falls onto informal carers

- ~50% of the obesity effect due to health conditions and functional limitations

Data

- English Longitudinal Study of Ageing 2002-2011
- 65+ sample: overall (N=12323) and those not using care initially (N=8770), men vs. women
- BMI from Nurse data, controls (w 0/1, 2, 4)
- Care status data (w 2, 3, 5)
- 12323 obs

Methodology

- Multinomial Logit relating current wave obesity status to the care use in 2-years time

- Outcomes: extensive dimension of future care use (informal care, privately purchased care, formal care including both social care/home care and nursing/care home)

- Variable of interest:
  - BMI based measures of obesity underweight, normal weight, overweight, and obese)

- Controls: demographic and socio-economic characteristics, specific health conditions (HBP, diabetes, cancer, lung disease, heart disease, stroke, psychic problems, arthritis), ADLs, iADLs, mobility limitations.

Nonparametric evidence

Ever receving care (by type) and BMI

Legend: Any Care, Informal Care, Care Home, Social Care, Private Care
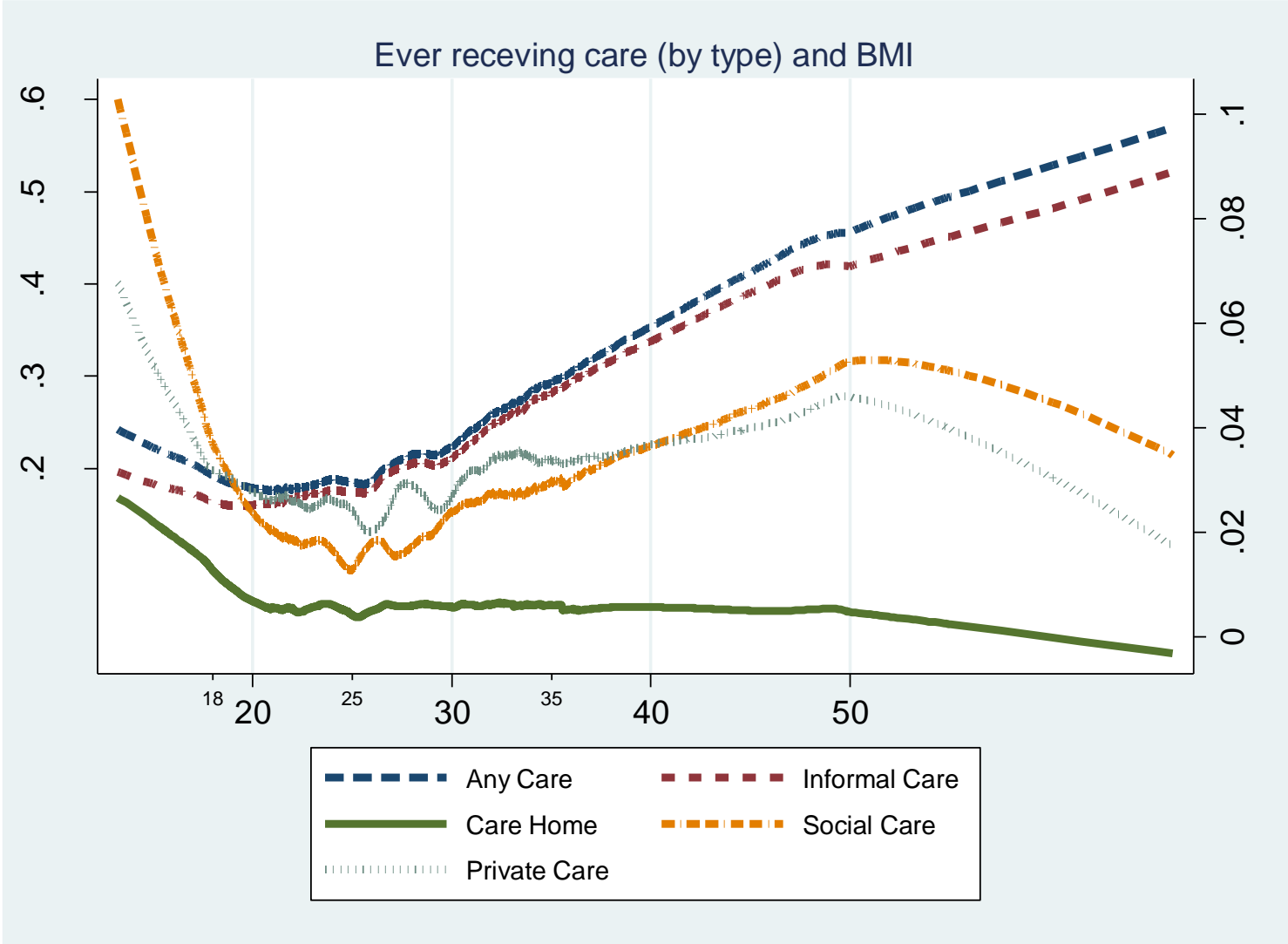
Results

MLOGIT: RRR	W/o controls			
Underweight	1.78*			
	(0.42)			
Overweight	0.93			
	(0.06)			
Obese	**1.75****			
	(0.12)			

Results

MLOGIT: RRR	W/o controls	+HB		
Underweight	1.78*	1.57+		
	(0.42)	(0.37)		
Overweight	0.93	0.96		
	(0.06)	(0.06)		
Obese	**1.75****	**1.65****		
	(0.12)	(0.11)		

Results

MLOGIT: RRR	W/o controls	+HB	+HB, SE&FL	
Underweight	1.78*	1.57+	1.32	
	(0.42)	(0.37)	(0.35)	
Overweight	0.93	0.96	0.98	
	(0.06)	(0.06)	(0.06)	
Obese	**1.75****	**1.65****	**1.28****	
	(0.12)	(0.11)	(0.09)	

Results

MLOGIT: RRR	W/o controls	+HB	+HB, SE&FL	+HB, SE&FL, LT HCs
Underweight	1.78*	1.57+	1.32	1.36
	(0.42)	(0.37)	(0.35)	(0.36)
Overweight	0.93	0.96	0.98	0.96
	(0.06)	(0.06)	(0.06)	(0.06)
Obese	**1.75****	**1.65****	**1.28****	**1.25****
	(0.12)	(0.11)	(0.09)	(0.09)

Results
Extended Care Status

MLOGIT: RRR	IC	IC+PC	FC
Underweight	1.28	1.53	1.73
	(0.36)	(0.83)	(1.02)
Overweight	0.96	0.99	1.02
	(0.07)	(0.15)	(0.20)
Obese	**1.26****	**1.27**	**1.16**
	(0.10)	(0.21)	(0.26)

Results
Extended Care Status With no care at baseline

MLOGIT: RRR	IC	IC+PC	FC
Underweight	1.42	1.16	1.90
	(0.53)	(1.09)	(2.13)
Overweight	0.92	1.20	0.68
	(0.09)	(0.27)	(0.25)
Obese	**1.30***	**1.32**	**0.80**
	(0.13)	(0.34)	(0.35)

Robustness Check

MLOGIT: RRR	Main (1)	+AO (2)	+pre-diabetes (3)	+SRH (4)	+SRH +CESD (5)	+concurrent ADL/iADL/FLs
Obese	1.25**	1.34**	1.70**	1.24**	1.24**	1.15
	(0.09)	(0.09)	(0.30)	(0.09)	(0.09)	(0.11)

Summary

- Population ageing with growing obesity prevalence may create additional challenges for maintaining well-being of the elderly in terms of access to care

- Findings:
  - Obesity increases future use of care over and above the effect via diagnosed health conditions
  - Once existing health conditions are controlled for, there is no effect of obesity on formal care, but the effect on informal care persists
  - Future (i)ADLs and mobility limitations weaken statistical significance and reduce the magnitude of the obesity effect

- Annual value of **additional informal care linked to past obesity** ~£4 billion a year (Scarborough et al. estimate direct cost of both overweight and obesity to the NHS at £5.1 billion per year, PHE ring-fenced budget £3.4 billion)

- Halting further increases in obesity would have saved a projected ~£200 million per year in care costs

Policy recommendations

Incorporate considerations of the obesity dynamics among elderly:

- Budgeting process for long term care

- Evaluations of Public Health interventions targeting obesity

Future research – ASCRU stream

- Differential effect of different [classes of obesity](#)

- Qualitative research into the effects of increasing obesity among elderly on social care providers and workforce

- Exploring other risk factors:

  - Diabetes

  - Alcohol consumption

  - Physical activity

Obesity classes and future LTC use
(Gousia, Nizalova, Malisauskaite and Forder)

- Obesity at the level of BMI between 25 and 45 represents a risk for future use of informal care.

- (Super) obesity at the level of BMI at 45 and greater represents a significant risk for all types of care use, including social care and nursing home/residential care

Thank you