CLOSER conference

The importance of early years, childhood and adolescence: Evidence from longitudinal studies

British Library Conference Centre
Monday 30 November

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CLOSER website: www.closer.ac.uk
CLOSER Discovery: www.discovery.closer.ac.uk

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Enhancement Resources

Understanding early life: resources for research

Alison Park, Director CLOSER

MRC Medical Research Council

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

About CLOSER

- Aims to maximise the use, value and impact of the UK's longitudinal studies
- Consortium of longitudinal studies, the British Library and the UK Data Service
- ESRC and MRC funding

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The UK's Longitudinal Studies

TIMELINE

- Hertfordshire Cohort Study
- MRC National Survey of Health and Development
- 1958 National Child Development Study
- 1970 British Cohort Study
- Avon Longitudinal Study of Parents and Children
- Southampton Women's Survey
- Millennium Cohort Study
- Understanding Society: The UK Household longitudinal Study

1930 1940 1950 1960 1970 1980 1990 2000 2010

PHOTO: SIMON SPEED

PHOTO: EDUARD MARMET

NHS

PHOTO: NATIONAL MEDIA MUSEUM

PHOTO: BREWHOUSE YARD MUSEUM, NOTTINGHAM

PHOTO: LEONARD BENTLEY

PHOTO: NATIONAAL ARCHIEF

PHOTO: JAMES BOURNE

Key areas of work

- Demonstration projects on data harmonisation and data linkage
- Online resources – CLOSER Discovery
- Training and capacity building activities

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Data harmonisation

Height, weight and BMI
Rebecca Hardy, UCL

Socio-economic status and qualifications
Claire Crawford, Warwick & IFS

Strategies for analysing biological samples
Susan Ring, Bristol

Visual function
Jugnoo Rahi, UCL

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Data harmonisation

Childhood environment and adult wellbeing
Mai Stafford, UCL

Review of methods for determining pubertal status
Janis Baird and Hazel Inskip, Southampton

Exploiting CLOSER biomarker data
Meena Kumari, Essex

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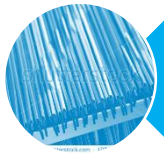
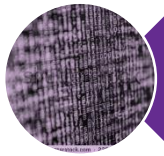
Data linkage



Linkage to administrative data
Lorraine Dearden, UCL

Linkage to geographic data
Chris Dibben, Edinburgh

Linkage to health data
Michaela Benzeval, Essex



Data linkage in cohorts/longitudinal studies
Andy Boyd, Bristol

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CLOSER Discovery

What is it?

- An online resource that helps you find and appraise study content
- Beta launch today

Why do we need it?

- To find out what has been asked on which study and decide whether it meets your needs

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CLOSER Discovery

What can I do with it?

- Search for topics, questions, variables
- Explore the context of a question or variable (where, when, how many?)
- Save your results
- Find out how to access data

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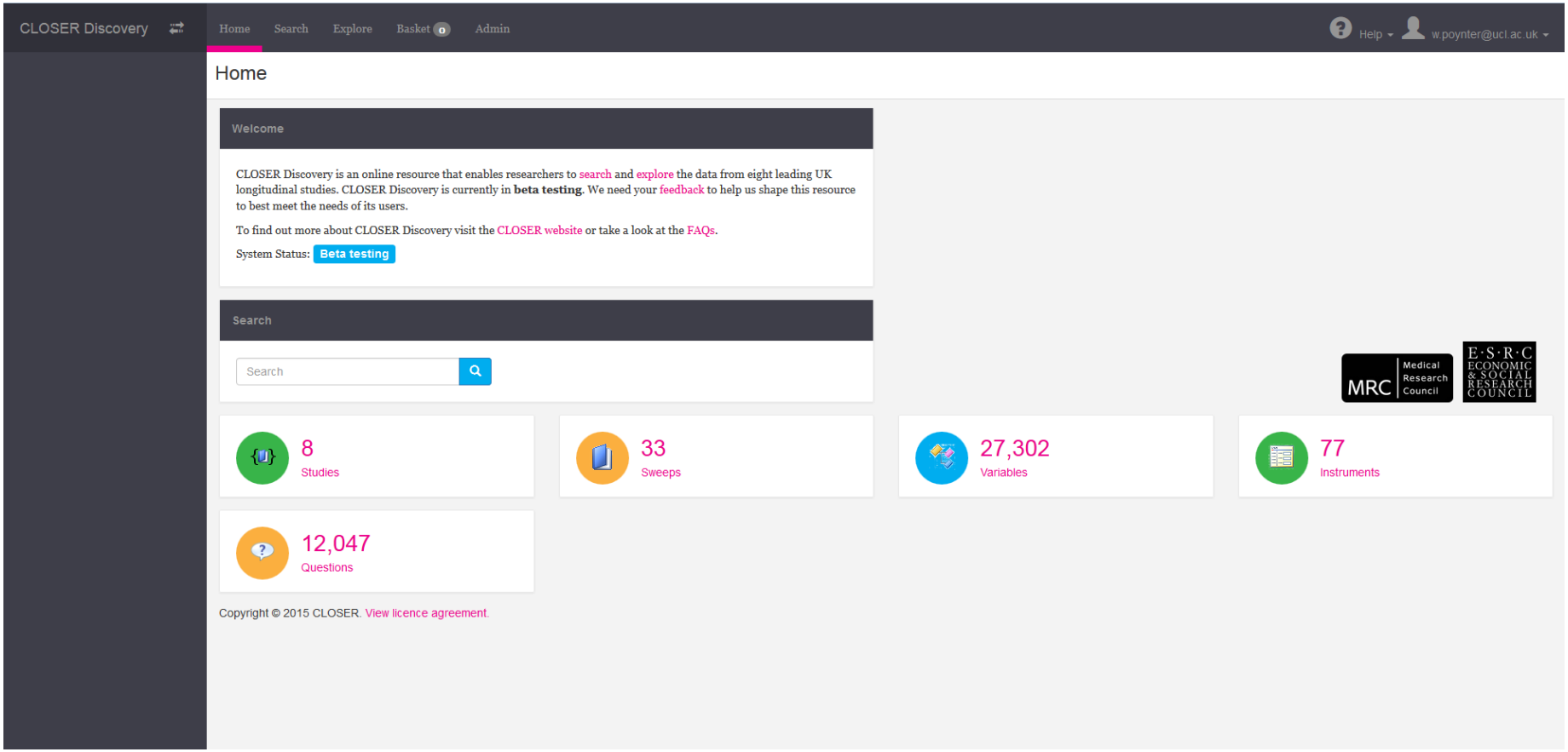

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Search

pregnancy smoking

Sort by: Alphabetical

More

Item types: All
Query: pregnancy smoking

Results **1** to **6** of **6** (0.0610032 seconds)

N639

o Ma's smoking after mth 4 of pregnancy

Study: National Child Development Study / Sweep: Perinatal Mortality Survey / Dataset: Perinatal Mortality Study Dataset

N503

o Smoking during pregnancy

Study: National Child Development Study / Sweep: Perinatal Mortality Survey / Dataset: Perinatal Mortality Study Dataset

N502

o Smoking prior to pregnancy

Study: National Child Development Study / Sweep: Perinatal Mortality Survey / Dataset: Perinatal Mortality Study Dataset

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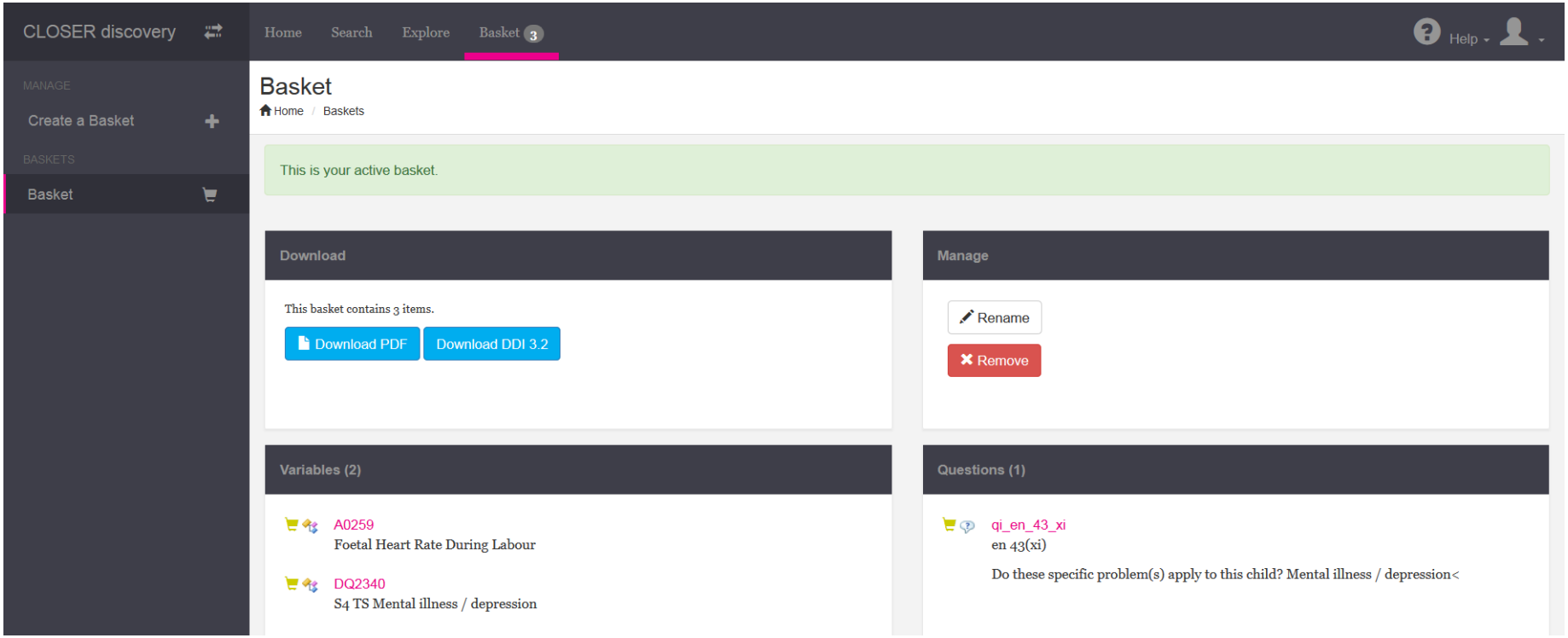
Name N537

Label o Was mum at sch. after min.leaving age

Dataset Perinatal Mortality Study Dataset

Value	Label	Frequency
-1	Dont Know	11
1	Did not stay-25+	2
2	Did not stay-24-	4
3	Did stay-25 plus	826
4	Did stay-24under	316
5	Did not stay	3633
6	Did stay at sch.	28
7	25+min.age 14yrs	0
8	24-min.age 15yrs	0

Min	Max	Mean
1	6	4.59



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Today's launch

- A beta launch
- Please give us feedback!
- Partial content, largely early years focus
- Further content and functionality added 2016 and 2017
- Short demos over lunch (@ 12.50, 1.15 and 1.25)

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Key areas of work

- Demonstration projects on data harmonisation and data linkage
- Online resources – CLOSER Discovery
- Training and capacity building activities

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Training and capacity building

Workshops and seminars

- **Recent**: data harmonisation, data management
- **Forthcoming**: geographical variables, use of biological samples, participant engagement (Jan 29th)
- Regular methodology seminar series

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Training and capacity building

Online resources @ www.closer.ac.uk

- Content from seminars and events
- Undergraduate and postgraduate teaching resources

SEP
9
2015

WORKSHOP

Cross-cohort research: Opportunities, challenges and examples

The rationale behind this event was the belief in the value of cross-cohort comparisons – that is, the ability to compare findings from different cohort studies. Such comparisons allow the findings from one study to be tested and replicated, and more robust conclusions to be reached. Comparison of longitudinal studies that differ by birth cohort or country provide opportunities for understanding the influence of different contexts. Harmonisation of data facilitates pooling of data across multiple studies to increase statistical power and allows cross-cohort comparisons of results in different contexts.

Harmonising data in order to make valid comparisons between studies is challenging. The same can be true of harmonising data across different waves of the *same* study (for example, when measurement approaches and instruments change). There is no well-established standard procedure for the retrospective harmonisation of data. There are also different approaches to the analysis of cross-cohort data – from pooling in a single dataset, or a 2-step meta-analysis, to coordinated independent analyses of the different datasets.

Thank you

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Tea/coffee break and poster session

11:00-11:30

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Breakout sessions: Physical health 1

Auditorium

11:30-12:50

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MRC Lifecourse Epidemiology Unit

UNIVERSITY OF Southampton School of Medicine

Further evidence that infant growth influences proximal femoral geometry in adulthood: the Hertfordshire Cohort Study

AE Litwic, M Clynes, H Denison, KA Jameson, A Aihie Sayer, P Taylor, C Cooper, EM Dennison

MRC Lifecourse Epidemiology Unit, University of Southampton, UK

Overview

- Background
- Hertfordshire Cohort Study
- Methods
- Results
- Discussion

Background

- Hip fracture is the most significant complication of osteoporosis in terms of mortality, long-term disability and decreased quality of life.

- Personal impact of hip fracture
  - 50% do not live independently
  - 20% die within 12 months

- Socioeconomic cost
  - 75,000 hip fractures/year
  - 20% orthopaedic bed occupancy
  - Annual cost £2 bilion

Background

- Bone mineral density (BMD) is a well-recognised strong predictor of osteoporotic fracture.

- Proximal femur geometry (PFG) parameters have also been proposed to be predictive of mechanical strength and femoral neck fracture risk.

Early life determinants of osteoporotic fracture

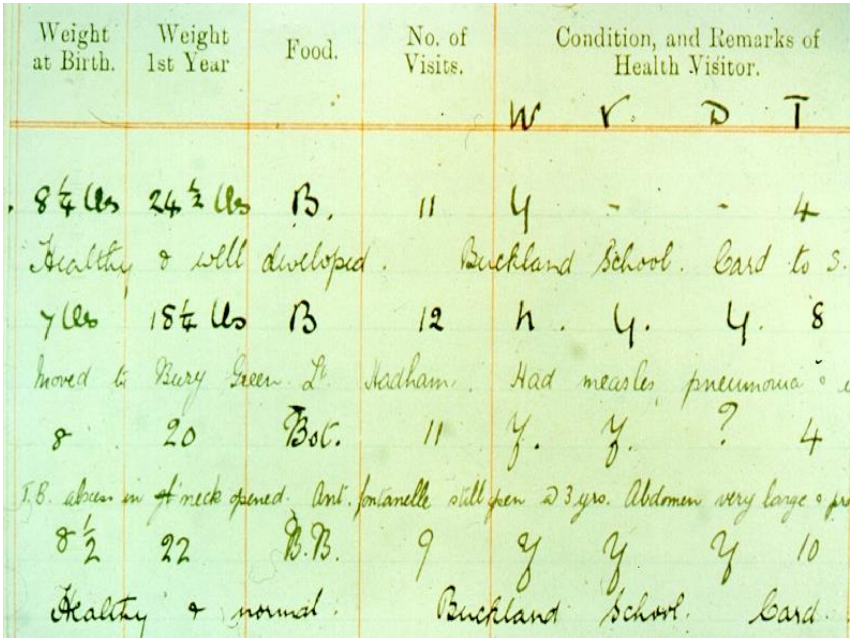
- There is accumulating evidence that fracture risk and adult bone mass might be partly dependent on growth during intrauterine and early life.

- It has been suggested that poor growth during early life is associated with altered femoral geometry as assessed by DXA in older age.

The Hertfordshire Cohort Study

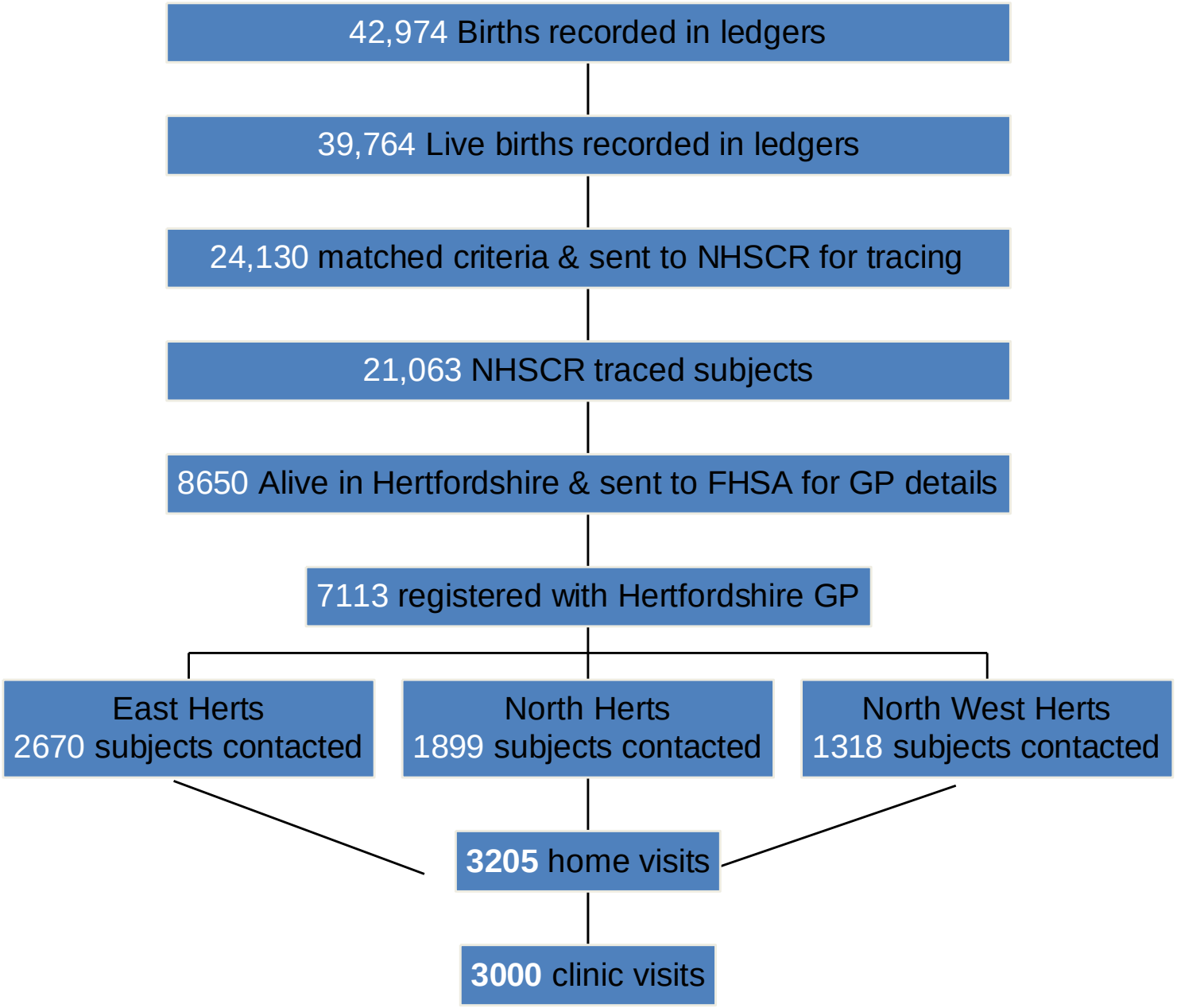
The Hertfordshire Records

- Birth weight
- Illnesses/development during infancy and early childhood
- Weight at 1 year
- Method of infant feeding



Weight at Birth.	Weight 1st Year	Food.	No. of Visits.	Condition, and Remarks of Health Visitor. W	R	D	T
8¼ lbs	24½ lbs	B.	11	4	-	-	4
Healthy & well developed. Buckland School. Card to S.							
7 lbs	18¼ lbs	B	12	h.	4.	4.	8
moved to Bury Green Lt. Hadham. Had measles, pneumonia							
8	20	Bot.	11	Y.	Y.	?	4
T.B. above in of neck opened. Ant. fontanelle still open 2 3 yrs. Abdomen very large & pr							
8½	22	B.B.	9	Y	Y	Y	10
Healthy & normal. Buckland School. Card.							

Hertfordshire Cohort Study Population



HCS

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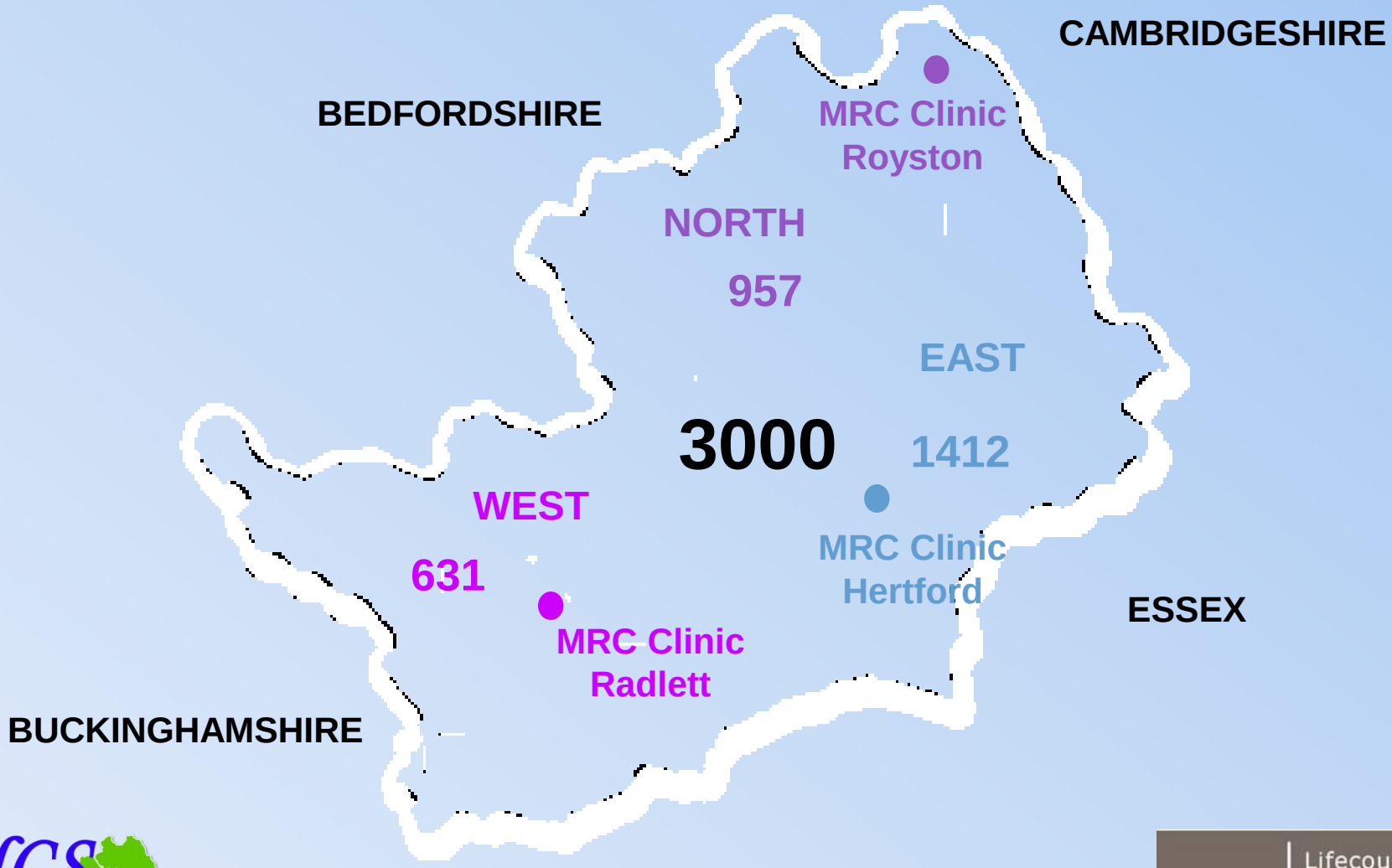
Hertfordshire Cohort Study



HCS

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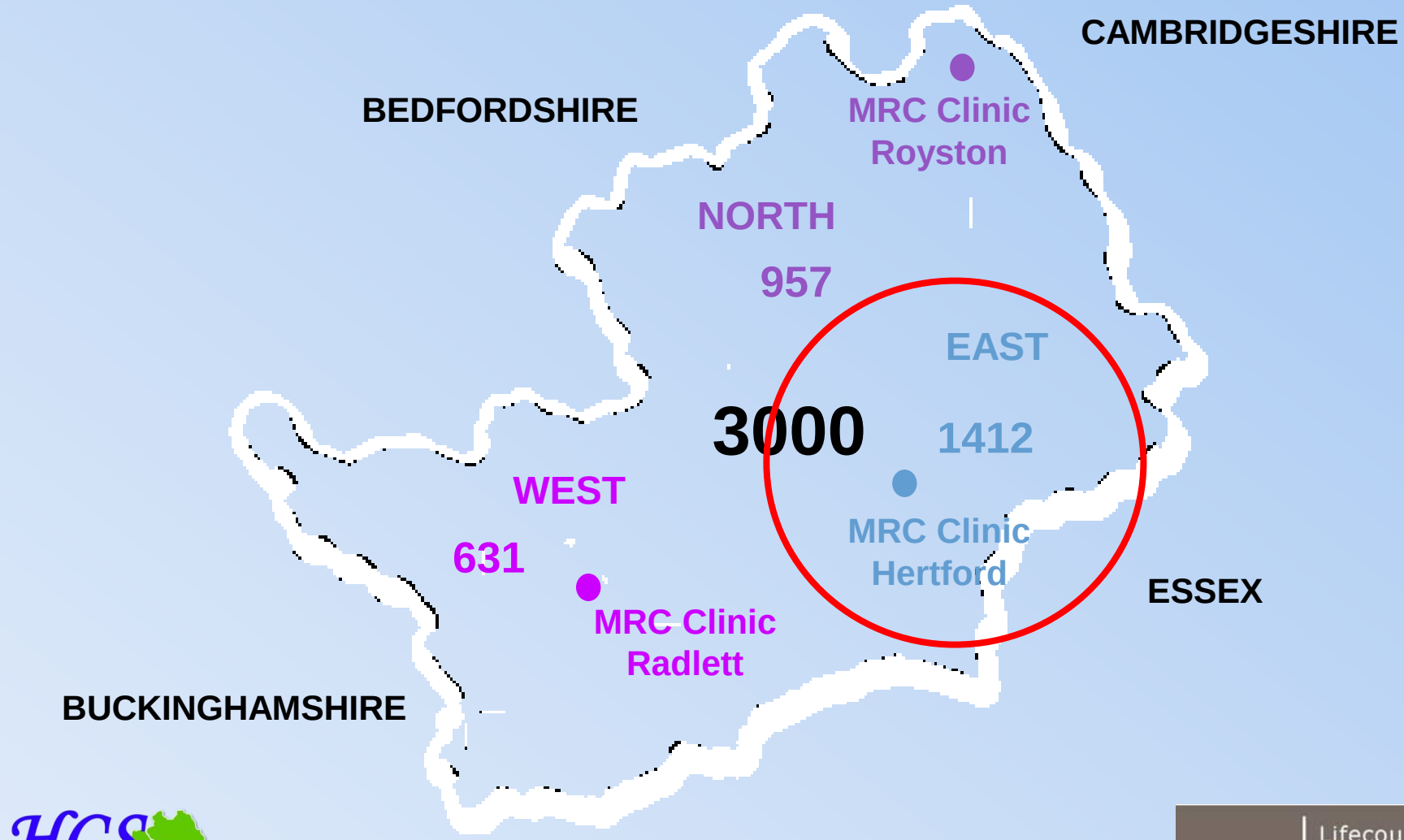
Hertfordshire Cohort Study



HCS

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Methods

- Hertfordshire Cohort Study participants
- n = 488 men; 431 women
- Age range 59 – 71 years

Methods

- Health questionnaire information collected
- DXA scan
- Hip axis length and other proximal femur geometry parameters were extracted from scans using standard Hologic software.

Study Participants

Characteristic	Men (n= 488)	Women (n=431)	*p*
Age (yrs)	64.8(2.5)	66.3(2.6)	<0.001
BMI (kg/m^2)[1]	26.6(1.1)	26.8(1.2)	0.497
Dietary calcium intake (mg/day)[1]	1214(1.3)	1087(1.3)	<0.001
Activity score	64.1(14.8)	61.3(14.7)	0.004
Birth weight(kg)	3.5(0.6)	3.4(0.5)	<0.001
Weight at 1year(kg)	10.2(1.1)	9.7(1.0)	<0.001

[1]Geometric mean and SD

P values contrast men and women

Study Participants

Characteristic	Men (n= 488)	Women (n=431)	*p*
	N (%)	**N (%)**	
Smoker status			<0.001
Current	71(14.5)	41(9.5)	
Ex-smoker	252(51.6)	121(28.1)	
Never	165(33.8)	268(62.3)	
	Median (IQR)	**Median (IQR)**	
Alcohol consumption (units/week)	9.5(2.5-21.6)	1.5(0.0-6.0)	<0.001

P values contrast men and women

Femoral geometry assessed by DXA

	Men (n= 488)	Women (n=431)	*p*
BMD total hip (g/cm^2)	1.04(0.13)	0.9(0.13)	<0.001
Hip axis length (cm)	121.2 (6.3)	105.1 (6.7)	<0.001
Narrow neck			
CSMI (cm^4)	4.4(1.0)	2.6(0.7)	<0.001
width (cm)	3.8(0.2)	3.3(0.3)	<0.001
ED (cm)	3.4(0.2)	3.0(0.3)	<0.001
ACT (cm)	0.19(0.03)	0.17(0.03)	<0.001
CMP	0.4(0.0)	0.4(0.0)	<0.001
Section modulus (cm^3)	2.1(0.4)	1.4(0.3)	<0.001
Buckling ratio	11.1(2.3)	11.5(3.0)	0.016

[p] p-value for the difference between men and women

Key: CSMI, cross sectional moment of inertia; ED, endocortical diameter; ACT, average cortical thickness; CMP, centre of mass position

Association between proximal femur DXA variables and birth weight, weight at 1-year and conditional growth[a]

Variables	Birth weight			Weight at 1 year			Conditional growth		
	β	95%CI	p-value	β	95%CI	p-value	β	95%CI	p-value
Hip axis length (mm)	2.81	1.58, 4.05	<0.001	3.81	2.06,7.02	<0.001	0.95	0.30, 1.61	0.004
Narrow neck									
cross sectional moment of inertia (cm^4)	0.24	0.11, 0.36	<0.001	0.15	0.09, 0.21	<0.001	0.12	0.06, 0.19	<0.001
width (cm)	0.11	0.06, 0.17	<0.001	0.07	0.05, 0.10	<0.001	0.06	0.03, 0.09	<0.001
endocortical diameter (cm)	0.11	0.05, 0.17	<0.001	0.08	0.05, 0.10	<0.001	0.06	0.03, 0.10	<0.001
average cortical thickness (cm)	0.00	-0.01, 0.01	0.901	0.00	-0.00, 0.00	0.823	0.00	-0.00, 0.00	0.764
profile centre distance (cm)	0.05	0.01, 0.09	0.008	0.04	0.02, 0.05	<0.001	0.03	0.01, 0.05	0.002
centre of mass position	0.00	-0.01, 0.01	0.955	0.00	-0.00, 0.00	0.842	0.00	-0.00, 0.00	0.805
section modulus (cm^3)	0.08	0.03, 0.13	0.004	0.05	0.02, 0.07	<0.001	0.04	0.01, 0.07	0.007
buckling ratio	0.35	-0.18, 0.88	0.195	0.33	0.07, 0.59	0.014	0.31	0.03, 0.58	0.030

[a] adjustment for age, BMI, social class, physical activity, cigarette and alcohol consumption, and dietary calcium intake, and years since menopause and HRT use in women

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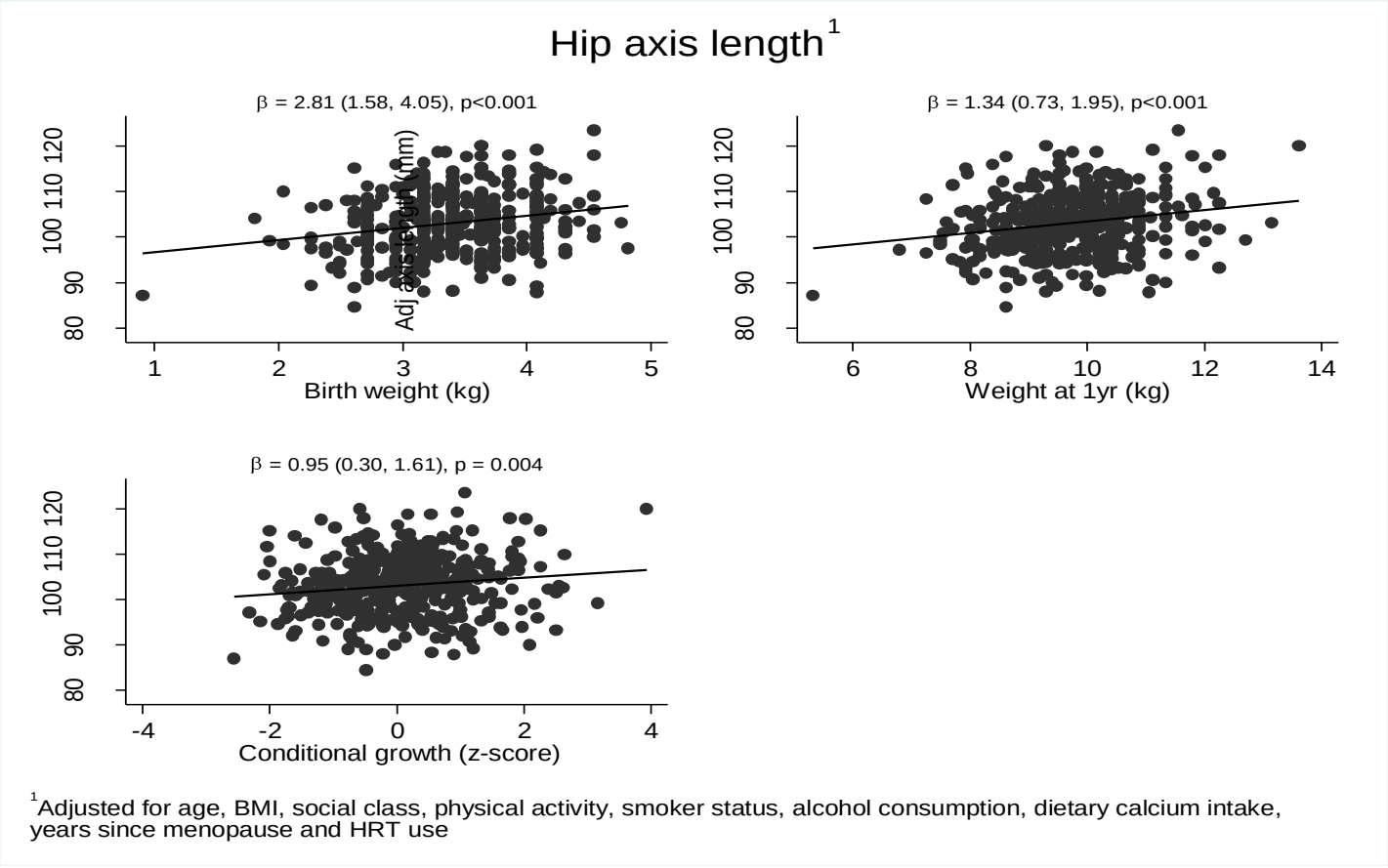
Association between Hip axis length and birth weight, weight at 1-year and conditional growth[1]



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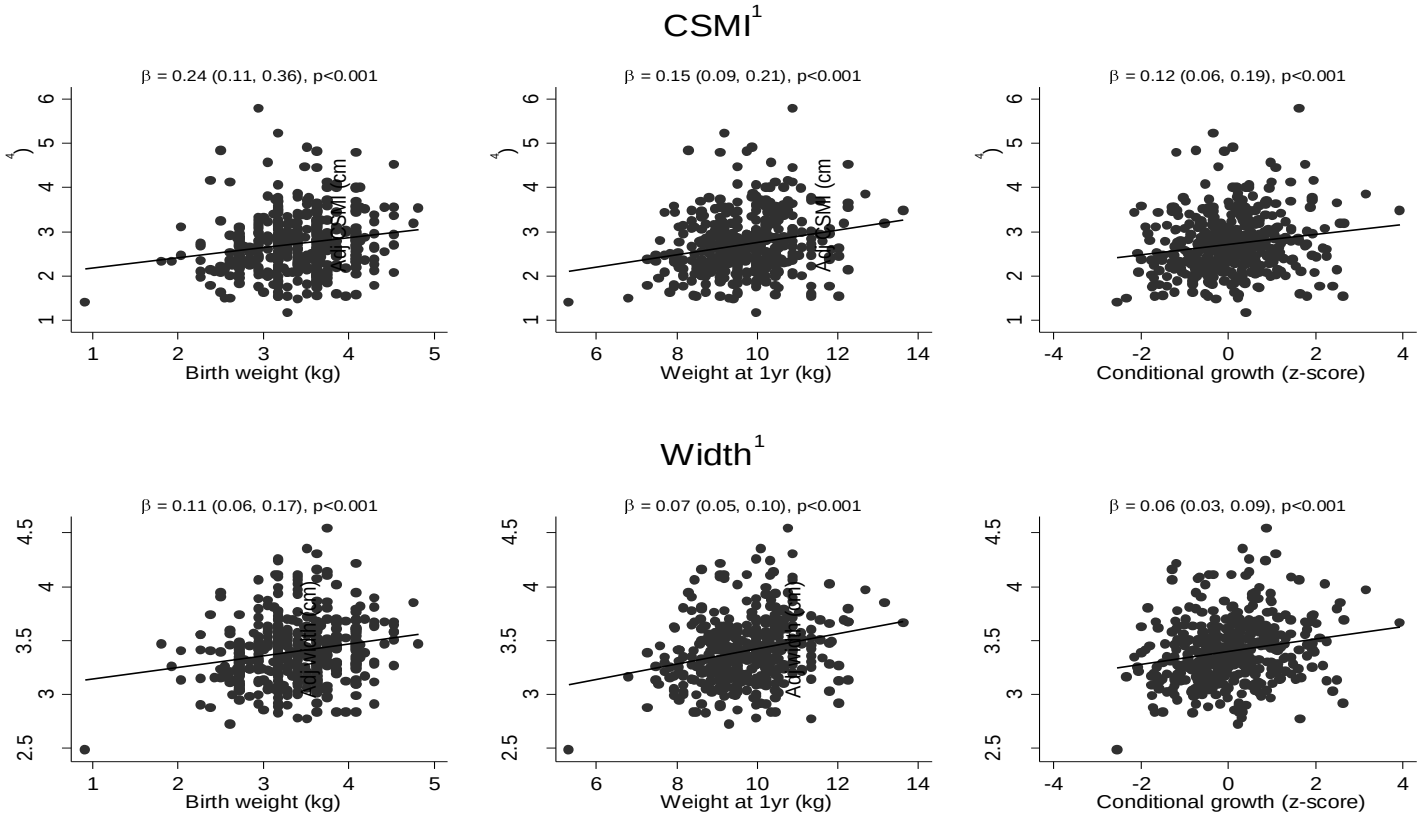

[1]Adjusted for age, BMI, social class, physical activity, smoker status, alcohol consumption, dietary calcium intake, years since menopause and HRT use

Discussion

- The sample investigated is generally representative of the UK population
- DXA images were used for assessment of proximal femoral geometry
- Detailed information on gestational age at birth not available

Conclusions

- We demonstrated further evidence that early growth is an important predictor of proximal femoral geometry in late adulthood.

- These observations suggest a possible mechanism for the previous observation that early growth is a risk factor for hip fracture in late adulthood.

Acknowledgements

Co-authors

Elaine Dennison, Cyrus Cooper,
Karen Jameson, Mark Edawrds,
Aihie Sayer, Pat Taylor
and Hayley Dennison

Study Participants

MRC Lifecourse Epidemiology Unit

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Lunch

CLOSER search platform demonstrations and poster session

12:50-14:00

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