

Increased BMI and reduced efficacy of oral emergency contraception - how many women might be affected?

Woodhall SC (PhD)^{1,2}, Lowndes CM (PhD)¹, Craig R (BA)³, Mindell JS (PhD)⁴, Anderson J⁵, Guthrie KA (FRCOG, FFSRH)⁵, Johnson AM (MD)², Nardone A (PhD)^{1,5}

¹ National Infection Service, Public Health England, 61 Colindale Avenue, London, NW9 5EQ, UK

² Research Department of Infection and Population Health, UCL, London, WC1E 6JB, UK

³ NatCen Social Research, 35 Northampton Square, London, EC1V 0AX, UK

⁴ Research Department of Epidemiology and Public Health, UCL, 1-19 Torrington Place, London WC1E 7HB, UK

⁵ Health and Wellbeing Directorate, Public Health England, Wellington House, 133 to 155 Waterloo Road, London, SE1 8UG, UK

Corresponding author:

Dr Sarah C Woodhall

Email: sarah.woodhall@phe.gov.uk

Tel: +44(0)208 3276815

Address: National Infection Service, Public Health England, 61 Colindale Avenue, London, NW9 5EQ
UK

Keywords: Emergency hormonal contraception; surveys; epidemiology

Word count: 393

Oral emergency contraception (EC) is available as levonorgestrel and ulipristal acetate. In England, EC is available through a variety of settings and can be obtained without a prescription. In 2014, evidence from clinical studies prompted a review of available evidence by the European Medicine Agency's Committee for Medicinal Products for Human Use to assess whether increased bodyweight reduces the efficacy of EC. The review concluded that available data were inconclusive.^{1,2} However, if future research were to substantiate a relationship of reduced EC efficacy in women with higher bodyweight, it would be important to understand the potential impact at a population level. We used data from the Health Survey for England (HSE) 2010³ to explore this.

HSE is an annually-conducted, nationally-representative probabilistic household survey of the general population resident in England. Details of HSE methodology are reported elsewhere.^{4,5} Demographic data are collected using face to face interviews and self-completed questionnaire booklets. Bodyweight is measured at a nurse visit. In 2010, the survey incorporated questions regarding sexual behaviour and contraceptive use, including EC use in the 12 months preceding the interview. We estimated EC use in 1,508 sexually-experienced (reporting at least one sexual partner over the lifetime to the date of the interview) 16 to 44 year-old women by bodyweight. Data were analysed in Stata 12.1 accounting for weighting, clustering and stratification of the data.

EC use in the last year was reported by 9% (95% CI 7%-11%) of all sexually-experienced 16-44 year-old women and was more frequently reported among younger women (Table 1). Among those who reported EC use in the last year, 33% (95% CI 25%-43%) had a bodyweight >75kg and 22% (95% CI 15%-31%) had a bodyweight >80kg (Figure 1).

Table 1: Percentage of women who reported oral emergency contraception use in the last year (sexually-experienced women aged 16-44 years)

	Used EC in last year (95% confidence interval)
Overall	9% (7%-11%)
By age group (years)	
16-24	20% (16%-26%)
25-34	8% (6%-11%)
35-44	3% (2%-5%)

Current guidance advises EC use regardless of bodyweight,¹ although available data remain inconclusive with regard to the relationship with EC efficacy.^{1,2} Our analysis demonstrates that EC could be less effective in a substantial proportion of current EC users if efficacy were found to be lower among those with higher bodyweight. If future provision of EC is reliant on some measure of bodyweight, this would have serious implications in the delivery of EC, especially in settings where the threshold for access to EC is low, such as pharmacies. Younger women would be particularly affected given the higher rates of EC use in this group. Research is urgently needed to determine the relationship between bodyweight and EC efficacy.

Figure 1: Bodyweight of EC users by age group (sexually-experienced women aged 16-44 years)

Competing interests

KAG has previously advised and given lectures for the manufacturers of ellaOne (HRA Pharma). The other authors declare no competing interests.

License for publication

I Sarah Woodhall, the Corresponding Author of this article contained within the original manuscript which includes without limitation any diagrams photographs, other illustrative material, video, film or any other material howsoever submitted by any of the contributor(s) at any time and related to this article) has the right to grant on behalf of all authors and does grant on behalf of all authors, a licence to the Faculty of Sexual & Reproductive Health as set out in the licence at: (<http://jfprhc.bmj.com/site/about/licence.pdf>)

References

1. European Medicines Agency. Levonorgestrel and ulipristal remain suitable emergency contraceptives for all women, regardless of bodyweight. 2014. Available at: http://www.ema.europa.eu/docs/en_GB/document_library/Referrals_document/Emergency_contraceptives_31/WC500176381.pdf Accessed: October 2015.
2. Faculty of Sexual & Reproductive Healthcare. Statement from the Clinical Effectiveness Unit on labelling of emergency contraception in Europe: Body weight, Body mass index (BMI) and efficacy. 2014. Available at: <http://www.fsrh.org/pdfs/CEUStatementEMAECreportJuly14.pdf> Accessed: October 2015.
3. NatCen Social Research and Royal Free and University College Medical School. Department of Epidemiology and Public Health, *Health Survey for England, 2010* [computer file]. 3rd Edition. Colchester, Essex: UK Data Archive [distributor], January 2015. SN: 6986, <http://dx.doi.org/10.5255/UKDA-SN-6986-3>
4. Mindell J, Biddulph JP, Hirani V, et al. Cohort profile: the health survey for England. *Int J Epidemiol* 2012;41(6):1585-93

5. Health & Social Care Information Centre. Health Survey for England 2012. Volume 2 Methods and documentation. 2013