Proceedings of the Nutrition Society (2017), **76 (OCE1)**, E25 doi:10.1017/S0029665117000258

Winter Meeting, 6–7 December 2016, Diet, Nutrition and Mental Health and Wellbeing

Vitamin D supplementation usage and its predictors in UK South Asian adults (*n* 8024) aged 40–69 years: preliminary analysis of data from the UK Biobank

A.L. Darling, D.J. Blackbourn, K.R. Ahmadi and S.A. Lanham-New
School of Biosciences and Medicine, Faculty of Health and Medical Sciences, University of Surrey, Guildford

The UK adult recommended nutrient intake (RNI) for vitamin D is currently set at 10 micrograms/d.[1] It is difficult to achieve this recommendation from the diet alone, unless oily fish is consumed in significant amounts daily. However, no research to date has assessed the vitamin D supplement usage in UK South Asians (SA), who are at particular increased risk of deficiency. Due to the link between osteoporosis and vitamin D deficiency most previous attention has been paid to promoting women's supplement use, but as vitamin D is associated with many chronic health diseases it is important to understand supplement use in men.

The present study assesses the prevalence of vitamin D supplement use, and its predictors, in the UK Biobank cohort. The UK Biobank (http://www.ukbiobank.ac.uk/) is a large ongoing UK-wide cohort[2] with data on >500,000 individuals, aged 40–69 years old, recruited from 2006–2010. The current analysis uses data from *n* 8024 SA (*n* 3730 women, *n* 4924 men) of which *n* 236 were Bangladeshi (B), *n* 5951 were Indian (I) and *n* 1837 Pakistani (P). Mean (+/−SD) for age was 54+/−9 years in men and 53 +/−8 years in women; with a Body Mass Index (BMI) of 27 (4) kg/m^2 in men and 28 (5) kg/m^2 in women. For the purpose of this analysis it was assumed that all multivitamin and mineral supplements contain vitamin D.

Chi-square analyses showed that 2·1 % of men and 7·1 % of women consumed a single vitamin D supplement ($P < 0{\cdot}001$) and 15·2 % of men and 21·7 % of women used a multivitamin and mineral supplement ($P < 0{\cdot}001$). In addition, 5·4 % of B, 4·3 % of I and 4·6 % of P subjects reported taking a vitamin D supplement ($P = 0{\cdot}62$), and 11·8 % of B, 19·7 % of I and 14·2 % of P subjects reported taking a multivitamin and mineral supplement ($P < 0{\cdot}001$). Median (Interquartile Range) for vitamin D intakes were 4·0 (3·0), 1·0 (2·0) and 1·5 (2·0) micrograms per day for B, I and P respectively. A logistic regression model (Table) showed that gender was the strongest predictor of non-use of a vitamin D supplement, with a 3·4 times higher odds in men. Age was also a significant predictor, with those of younger age groups (≤49 years, 50–59 years) having only 66 % of the odds of supplement non-use than those aged 60–69 years. However, the model only explained 5·6 % of supplement usage, suggesting other factors are also important.

	B	SE	P	OR*	Lower 95 % CI	Upper 95 % CI
Vitamin D intake[a]	0·06	0·06	0·30	1·06	0·95	1·18
Gender[b]	1·22	0·29	<0·001	3·39	1·92	5·99
Ethnicity[c]	−0·76	0·32	0·02	0·47	0·25	0·88
Body Mass Index[d]	−0·02	0·03	0·55	0·98	0·93	1·04
Age group[e]	−0·42	0·16	0·01	0·66	0·48	0·90

Intercept: B = 3·98, SE = 1·05, P < 0·001. *OR = odds of being a non-supplement user (supplement user OR = 1)
[a]micrograms per day, [b]reference category = female; [c]reference category = Pakistani, [d]kg/m2 [e]reference category = ≥ 60 years

This work shows that 2–7 % of SA UK Biobank participants take a single vitamin D supplement, with 12–20 % taking a multivitamin and mineral supplement. SA women were more likely to use both types of supplements than SA men, and those of I ethnicity were more likely to use multivitamin (but not single vitamin D) supplements than those of P and B ethnicity. With low dietary vitamin D intakes, even in the B group who traditionally consume oily fish regularly in their diet, UK SA populations who were not taking a supplement containing vitamin D are likely to be vulnerable to deficiency if low dietary intake is not offset by sunlight exposure. This work is novel as it suggests that older SA (60–69 years), particularly males, may need to be targeted for interventions to improve vitamin D status. This is the first analysis to date assessing vitamin D supplement usage in a large SA cohort. Further work is now on-going to assess the relationship between vitamin D status (25-hydroxyvitamin D), diet, lifestyle, immune function and genetics in the UK Biobank SA.

This research has been conducted using the UK Biobank Resource.

1. Scientific Advisory Committee on Nutrition (SACN) 2016 Vitamin D and Health [report] Available from: https://www.gov.uk/government/groups/scientific-advisory-committee-on-nutrition [Accessed 05/09/16].
2. Sudlow C, Gallacher J, Allen N *et al.* 2015 *Plos Medicine* **12**, DOI:10·1371/journal.pmed.1001779.