

UCC Library and UCC researchers have made this item openly available. Please [let us know](#) how this has helped you. Thanks!

Title	Vitamin D and health during pregnancy
Author(s)	Ní Cheallacháin, Karen
Publication date	2017
Original citation	Ní Cheallacháin, K. 2017. Vitamin D and health during pregnancy. PhD Thesis, University College Cork.
Type of publication	Doctoral thesis
Rights	© 2017, Karen Ní Cheallacháin. http://creativecommons.org/licenses/by-nc-nd/3.0/ 
Embargo information	Restricted to everyone for one year
Embargo lift date	2018-10-12T08:39:31Z
Item downloaded from	http://hdl.handle.net/10468/4864

Downloaded on 2019-04-22T06:11:50Z



UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

This thesis presents findings from the ‘Determination of the nutritional requirement for vitamin D during pregnancy and the early neonatal period’ (DMAT) trial. The primary aim was to conduct a seasonally-balanced, double-blind, randomised controlled trial to provide experimental evidence to address the question of whether nutritional requirements for vitamin D during pregnancy differ from non-pregnant adults, and to supply data of sufficient quality to inform such dietary reference values (DRVs) for vitamin D in pregnancy, if required. Using the dose-response relation of total vitamin D intake and achieved serum 25-hydroxyvitamin D (s25(OH)D), an intake of 30 µg/d was considered sufficient to maintain s25(OH)D concentrations >50 nmol/L in 97.5% of women during pregnancy and prevent neonatal vitamin D deficiency. Special consideration was given to the potential ethnic disparity in vitamin D requirements and the challenges of conducting health research in vulnerable populations. As the impact of vitamin D on perinatal health may guide pregnancy-specific thresholds for s25(OH)D, this thesis includes a systematic review of the association between vitamin D and gestational hypertensive disorders. Inclusion of intervention, observational and dietary studies on vitamin D and all hypertensive disorders of pregnancy is a novel aspect of this review, providing a unique contribution to an intensely researched area for which a definitive conclusion is still lacking. Given the clinical importance of preventing pregnancy-induced hypertension and the biological plausibility that detecting increased arterial stiffness in early gestation could help predict such disorders, this thesis presents the largest prospective study to date to describe reference ranges for several central haemodynamic parameters in normotensive pregnancies, including augmentation index and pulse wave velocity. This thesis addresses the knowledge gap needed to establish pregnancy-specific DRVs for vitamin D among white women, highlights ethnic considerations for nutrition research and provides a comprehensive evaluation of vitamin D and hypertension in pregnancy.