Public Health Nutrition: 14(9), 1511–1514 doi:10.1017/S136898001100190X

Editorials

Vitamin D, dietary patterns, and food acquisition

In this issue of *Public Health Nutrition* is a much anticipated review of the recent literature on vitamin D by Professor Robert Scragg[1]. The November 2010 report by the Institute of Medicine (IoM)[2] sparked much controversy over the adequacy of the newly released recommendations for vitamin D intake. In April we published a series of letters critical of the IoM report, followed by a rebuttal in May from the chair of the committee that authored the report. The review by Professor Scragg offers another, balanced perspective on current knowledge of vitamin D's potential effects on chronic diseases and mortality.

Other articles in this issue fall primarily into two broad categories: dietary patterns and food acquisition. The use of principal components or factor analysis to empirically characterize dietary patterns was considered esoteric 15 years ago. But its use has increased exponentially over the past decade, as evidenced by the articles in the current issue, which describe dietary patterns among pregnant women in Crete[3], adults in Lebanon[4], low-income adults in Brazil[5] and Hispanic women in the USA[6]. These articles, international in scope, demonstrate how recognizable and ubiquitous a 'Western' dietary pattern is. Principal components analyses characterize only one dimension of a dietary pattern – common combinations of frequently consumed foods. Other dimensions of dietary patterns should not be neglected, and they are acknowledged in this issue as well: number of meals and snacks among Luo, Kamba and Maasai adults in Kenya[7]; meals consumed and skipped among children in Norway[8]; and the context of dietary intake – whether consumed with family or in front of a television[9,10].

A second broad category of articles in this issue covers food acquisition. Researchers and practitioners are becoming increasingly aware of the need for valid measures of the food environment, and valid estimates of its association with food procurement and dietary intake. This issue presents several examples of how food environment can be conceptualized – in terms of the number and density of certain types of stores, in terms of various measures of accessibility to food venues, as an immigrant enclave, recognizing the contribution of home gardens and farmers' markets[11–15]. Food cost also strongly influences food acquisition decisions, and two articles[16,17] address this under a new topic heading in our journal, on Health Economy. Patterns of food purchasing are also addressed in two other articles[18,19]. Given the importance of considering the interaction between individuals and their environment, rather than simply describing the environment itself, we believe that decision making on food purchases will emerge as another dominant area of research in years to come.

Together, the articles provide a unique snapshot of dietary patterns and food environments across an international spectrum. They also serve to inform readers of current approaches on conceptualizing and quantifying dietary patterns and food environment measures in these evolving fields of study.

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Public Health Nutrition: 14(9), 1512–1514 doi:10.1017/S1368980011001819

Vitamin D in the prevention of disease – what evidence do we still need?

During recent decades interest in the health effects of vitamin D has increased enormously, as described in the review included in this issue of *Public Health Nutrition*[1]. The demand for a change in dietary recommendations for vitamin D has received much attention, and resulted in new recommendations in the USA[2].

The new era of vitamin D research started in the 1960s when the metabolism and metabolites of vitamin D were revealed, including the most important metabolite, 25-hydroxyvitamin D (25OHD), produced in the liver and the active one, 1,25-dihydroxyvitamin D ($1,25\text{-}(OH)_2D$, calcitriol), synthesised in the kidneys. Both are found in the circulation. Furthermore, the vitamin D receptor (VDR) was found and its role as a transcriptional factor, when activated by calcitriol, was discovered and described. During the years to follow, researchers showed that the vitamin D receptor was present in almost all cells of the human body and that many of the cell types studied also had the machinery, i.e. 1-hydroxylase, to produce calcitriol. Recently it has been shown that e.g. osteoblasts are able to produce calcitriol locally. Over the years it has been shown that, on the cellular level, calcitriol is involved in the regulation of many physiological events. Thus, the active form of vitamin D is important or crucial for e.g. intestinal calcium absorption, immunomodulation and insulin production[3].

Although there seems to be strong evidence of a role for calcitriol in many physiological events, there are very few, if any, studies showing a connection between serum calcitriol concentrations and health outcomes on an individual or population level, with the exception of renal disease. However, serum 25-OHD concentrations are associated with a number of health outcomes. This is fascinating and could, at least in some instances, be explained by the fact that 25-OHD serves as a substrate for locally produced calcitriol – if the 25-OHD concentration is low and there is not enough substrate for the production of calcitriol.

The Institute of Medicine (IoM) published its revised dietary recommendations for vitamin D and calcium at the end of 2010[2]. This is the first time that IoM recommendations have been based on systematic review of scientific evidence alone, and in this case they were largely based on two commissioned systematic reviews[4,5]. The new recommendations have been criticised for many reasons, e.g. not making the procedure transparent, not allowing the referees to comment on the final recommendations, and not taking all health outcomes into account. This criticism was also brought forward in the eight invited Letters to the Editor in the April issue of this journal, such as that by Boucher[6]. The first of the commissioned reviews focused on bone health, and the second on many other health outcomes including bone health; both were based mainly on randomised controlled trials (RCT) but included also observational, cohort and case–control studies. RCT are considered to be the gold standard for proving an