THE IMPACT OF MODERN MEDICINE ON NUTRIENT STATUS

New research reveals how modern medicine is stripping women of vital vitamins and minerals and why we all need to worry about Vitamin D.
Modern life is exhausting. The constant pressure from work, family and social lives mean many of us feel like we’re bombarded from all sides, with little time to recuperate or relax. All too often we have to burn the candle at both ends just to keep pace with daily demands.

The toll on our mental and physical health can be significant and it’s important to remember we only get out what we put in; the human body is a finely-tuned machine that performs at its best when given the right fuel. We need a healthy diet and the right balance of nutrients, but poor eating habits can mean large nutrition gaps appearing, potentially jeopardising our wellbeing.

While all adults - both men and women – need to ensure a healthy diet, women in particular face some extra challenges. The UK National Diet and Nutrition Surveys (NDNS) has revealed a marked drop in women’s intake of most vitamins and minerals, with deficiencies being linked to a host of health issues, some potentially very serious. New research commissioned by Alive! - a unique supplement range packed with 26 fruits and vegetables, with products for all ages - underlines this worrying picture. Adults from across the UK were quizzed on their diets and only 20% said they eat the recommended five portions of fruit and vegetables a day – leaving a shocking eight out of 10 failing even the minimum dietary standards. Just over one third - 37% - said they only managed to eat five portions of fruit and veg on two or fewer days in a week. This fact alone will inevitably lead to nutrient deficiencies.

Little time for cooking with fresh ingredients has meant for many people a reliance on fast food, takeaways and ready meals. In addition, trends for popular exclusion or weight-loss diets, together with social media ‘influencers’ pushing potentially unhealthy eating regimes, plus a lack of solid nutritional education, has meant whole food groups can be missed out on. It’s perhaps no surprise that so many of us are failing to manage an adequate nutrient intake, with gaps and deficiencies in a host of crucial vitamins and minerals, as we outline in this report.

Many women face a further challenge in maintaining good nutrition because of use of the oral contraceptive – or the pill. While the pill has revolutionised contraception for millions of women since its inception in 1961, there are fears that it can have an adverse effect on nutrient levels. We look at the unequivocal evidence and science behind these reports, as well as investigate some of the potential side effects of pill use, particularly with regard to healthy nutritional status.

Lastly, we take a look at one of the most pressing issues in the fight to maintain good nutrition: inadequate levels of vitamin D. Often called the ‘sunshine vitamin’ because it’s synthesised in the body from sunlight, vitamin D plays an essential role in maintaining good health, particularly bones and muscles. However, researchers have found robust, new evidence linking the vitamin with far more than just bone health – it is thought that heart disease, cancer and type 2 diabetes, to name just a few, may be associated with poor vitamin D levels. It’s particularly worrying as figures show that nearly a third of adults have intakes so low as to risk deficiency.

INTRODUCTION

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Magnesium
As the fourth most abundant mineral in the body and with a role in more than 300 metabolic reactions, magnesium is key to women’s health. It is especially important to help prevent pre-menstrual syndrome, cardiovascular disease, type-2 diabetes and osteoporosis. 
Magnesium is widely available in green, leafy vegetables. However, statistics from the NDNS show that only around 27% of the population meets even the minimum advice of ‘5-a-day’ fruit and vegetables - a finding which suggests that many women are magnesium deficient.

Magnesium works with calcium to help build healthy bones. We reach peak bone density around the age of 18, but nutritional needs for magnesium (and calcium) must be met in childhood and adolescence if women are to achieve optimal bone mass. Indeed, a randomised-controlled study30 in younger girls found improved bone mineral content after supplementation with magnesium, suggesting that deficiencies may already be present in the early years.

Synthetic hormones in the Pill and hormone replacement treatment (HRT) increase the need for magnesium.31 This perhaps goes some way towards explaining why women taking HRT and calcium for bone protection tend to be more susceptible to developing blood clots as well as heart and circulatory problems, such as heart attack and stroke.30

But that’s not all. The ratio of calcium to magnesium required by the body is key and this will be adversely affected by taking synthetic hormones, increasing the need for additional magnesium.

Calcium
Calcium is the most abundant mineral in the body. 99% found in our bones and teeth. Oestrogen is needed for the absorption of calcium in the gut. So calcium levels are inextricably linked to women’s oestrogen levels. This explains the greater risk of bone thinning and cardiovascular problems after menopause, when oestrogen levels naturally decline. Dairy produce is a great source of calcium. However, with the rise in veganism, plus a general push-back against dairy due to greater awareness of allergies and intolerances, calcium intake in women is on the down turn and is likely to continue to fall. UK Government statistics show that between 1995 and 2015 around 10 million people ditched dairy from their diet.32

There also appears to be a strong link between long-term HRT use and low coronary artery calcium,33 which increases the longer a woman remains on HRT. With poor dietary calcium intakes, women are more likely to suffer from bone issues as well as cardiovascular problems, even if they are taking an additional synthetic oestrogen.

Selenium
The NDNS reports that selenium intakes are declining rapidly, particularly in older people including women. This is borne out by various studies suggesting selenium consumption is below optimum levels in Europe and the Middle East.34 Selenium is a key trace mineral – one found in tiny amounts - in soil, known for its antioxidant, anti-inflammatory and immune benefits. It is also a key component of the antioxidant enzyme, glutathione peroxidase, which works with vitamin E to prevent free radical damage to cell membranes.

Selenium plays an important role in hair health, which makes it especially important for women. Selenoproteins (proteins containing selenium) are responsible for the formation of hair; there are around 35 different ones. When hair is formed it undergoes a process – keratinisation - during which keratin, the main structural protein in hair, is formed and incorporated into hair cells. During this process hair receives selenium through selenoproteins in the blood supply.35 Research links severe selenoprotein deficiency to hair loss and other abnormalities.36

Low selenium (and zinc) levels have also been noticed in women taking the Pill of which there are around four million in the UK.30 This could result in widespread selenium deficiencies across the female population.

Folate
One of the main deficiencies to affect women highlighted in the NDNS report is that of folate, a water-soluble B vitamin - also known as B9 - that occurs naturally in a variety of foods. These include vegetables (especially dark green leafy varieties), fruit, nuts, beans, peas, seafood, eggs, dairy products, meat, poultry, and grains. Spinach, liver, asparagus, and Brussels sprouts are especially high in folate.

Although often used interchangeably with folate, the term folic acid refers to a form of folate used in fortified foods and most dietary supplements. The nutrient is needed for the synthesis of DNA, the genetic material in our cells and for proper cell division. It works with vitamin B12 to form healthy red blood cells. Indeed, a key hallmark of folate (and/or vitamin B12 deficiency) is a type of anaemia called megaloblastic anaemia.37

The other important benefit of folate/folic acid is to lower the risk of neural tube defects (NTDs) such as spina bifida in unborn babies which is why a deficiency is especially worrying in women of child-bearing age. Approximately 95 per cent of all NTDs occur with no prior warning or indication that the woman was at risk of having an NTD affected pregnancy37.

FORTIFICATION: Sorting facts from fiction
The UK government is engaged in on-going discussions around mandatory fortification of flour with folic acid. As with all mandatory fortification, however, many factors have to be considered, not least, in the case of folic acid, that it can mask vitamin B12 deficiency.37 This can potentially lead to pernicious anaemia, a type of megaloblastic anaemia, especially in older people.

Clearly, while fortification might address some of the deficiencies appearing in women of childbearing age, it could also affect other health issues in the wider population.

The Committee on Toxicity (COT) is also in discussions about increasing upper safe levels of folate, from all sources, to 1 mg/day, although the risk evaluation is not yet complete.

Currently, the Department of Health recommends all women who could become pregnant should take 400 μg per day of folic acid, until the 12th week of pregnancy - advice endorsed by the Scientific Advisory Committee for Nutrition (SACN).38 SACN also notes, however, that mandatory fortification would require monitoring and specific recommendations for supplementation as well as restriction of other voluntary fortification of foods.

Vitamin B12
Metabolism of vitamin B12 and folate/folic acid are so closely related that a deficiency of one tends to indicate a deficiency of both and can lead to pernicious anaemia. Moreover, a deficiency in one of these two nutrients can mask deficiency of the other.

Vitamin B12 (cobalamin) and folate work together in the synthesis of DNA, red blood cells and the myelin sheath that surrounds nerve cells and speeds the conduction of messages along nerve cells.

Vitamin B12 is only found in animal produce so the increase in vegetarianism and veganism could be behind the growing B12 deficiency in women. While many follow a ‘flexitarian’ diet, this does not necessarily mean they have sufficient levels of this vitamin.

A protein - called intrinsic factor - produced in the lining of the stomach, is needed for absorption of both vitamin B12 and folate.39 Zinc, another nutrient frequently deficient in women, meanwhile, is needed to produce intrinsic factor - yet another example of how nutrients work together to exert their benefits.

While deficiency of folate is a risk for neural tube defects during pregnancy, deficiency of B12 is just as much a problem. Some of this can be explained by the use of the Pill, which appears to deplete B12 stores.39

Zinc
According to NDNS, 8% of women in the UK in the 19-64 age group have zinc intake even less than the lower reference nutrient intake which in itself is concerning. However, it’s all the more so because this trace mineral is found in every cell of the body and is needed for more than 300 different enzyme reactions. Zinc is also essential for healthy hormone production and fertility in both men and women.

Zinc is found mainly in wholefoods and seafood. This may in part explain why there are worrying deficiencies in younger women, the group that most need zinc for their hormonal health, fertility and healthy offspring. Young women are more likely to adopt faddy diets, avoid carbohydrates and be vegetarian or vegan.

Zinc deficiency also causes taste disorders,40 which can make it difficult to decide whether a lack of dietary intake is causing deficiency or impaired taste sensation, reducing a desire for food.

The Pill, even at a low dose, appears to have a negative effect on nutritional status, including zinc.40 This may be partly due to oestrogen causing a reduction in serum albumin, a protein found in blood that affects the concentration of zinc in the blood40 as well as low dietary intake. Clearly, zinc deficiency is not good news for the health of women at any age.
THE IMPACT OF MODERN MEDICINE ON NUTRIENT STATUS

Section 2: The Pill Conundrum: The Impact of Oral Contraceptives on Nutrient Status

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Introduction

Since the pill – the oral contraceptive for women – first became available in Britain in 1961, its use has spread rapidly and it has gained widespread acceptance. The number of women taking it rose from an estimated 50,000 in 1962 to one million in 1969, and by 2000 had rocketed to about 3.75 million. The pill is credited by many with kick-starting a revolution in sexual equality, with women able to choose an effective and reliable contraceptive for the first time.

The sexual health charity FPA says that use of the contraceptive pill declines with age, from two-thirds of women aged 20–24, to 11 per cent of women in their late 40s. Women over 35 who smoke should not take the combined pill, but there is no upper age limit for healthy non-smoking women with no medical issues. The FPA says: “In general, most women don’t use the pill consistently through their lifetime, tending to stop and start according to their life circumstances, relationships and child bearing needs.”

Combination formulations containing both oestrogens and progesterons are the most frequently used. These have a theoretical effectiveness of around 99.9% and an effectiveness of use of 97–98%. The most commonly used oestrogens are Ethinyl estradiol (EE) and mestranol, with the former the more popular. The combination of hormones is designed to prevent ovulation by suppressing levels of luteinising (LH) and follicle stimulating hormones (FSH). Although either hormone acting individually can deliver these effects, a combination appears to act synergistically to more effectively suppress ovulation than either component alone.

Since their introduction, manufacturers have sought to minimise side effects without impairing efficacy. The initial step was to reduce hormone levels, which has resulted in the low-dose formulations currently used today, where combinations of a progestin and EE at a dose of ≤35 mcg are commonplace, with doses as low as 20mcg capable of delivering efficacy without the side-effects of bloating and breast tenderness, usually associated with oestrogenic activity.

Exploring the link between the pill and nutrition

Many studies have been published over the years investigating the benefits and potential risks of using the pill. While the bulk of this research has investigated the physiological effects, some studies over the last 50 years have identified impacts upon the nutritional status of women taking the pill, with issues concerning certain vitamins and minerals. This aspect is particularly relevant to those women who may not have an adequate diet, which according to the latest NDNS data is most women. Furthermore, women whose lifestyle is unhealthy and those with problems absorbing or metabolising certain nutrients will also be at risk.

This report section investigates the effects that oral contraceptives might have upon nutrient status and in particular identifies potential issues with:

- Vitamins A, B1, B2, B6, B12, C, and E
- Folic acid
- Magnesium
- Zinc
- Selenium

The 45 Essential Nutrients Needed Daily

**Vitamins:**
A, D, E, K, C, B1, B2, B3, B5, B6, B12, Biotin, Folic Acid

**Minerals:**
Calcium, Chloride, Sodium, Molybdenum, Potassium, Iron, Magnesium, Manganese, Zinc, Selenium, Iodine, Vanadium, Cobalt, Silicon, Sulphur, Phosphorus, Chromium, Fluoride, Boron, Copper

**Essential Amino Acids** *(Proteins):*
Leucine, Isoleucine, Lysine, Methionine, Phenylalanine, Tryptophan, Valine, Histidine, Threonine

**Essential Fatty Acids:**
Linoleic acid, Alpha-linolenic acid

**Carbohydrates:**
Glucose

The World Health Organisation (WHO) anticipate that chronic health conditions will rise by 57% by the year 2020. Many such conditions stem from poor dietary intakes and our increasingly unhealthy and sedentary lifestyles.

One of the key issues around micronutrient deficiencies is that symptoms are not always obvious or are frequently over-looked. We know there is widespread iron deficiency among teenagers and women of childbearing age. This has implications for cognitive function, the immune system and energy levels, as well as potentially leading to other health conditions. As a critical nutrient during pregnancy iron or rather a deficiency of it also impacts on the health of future generations.

But it is not just physical health that can be affected. Mental health conditions such as anxiety and depression are also on the rise especially in younger women as shown, for example, by a worrying increase in cases of self-harm. While some of this may partly derive from social factors, such as an over-use of social media, research also suggests that nutrient deficiencies may play a role. In particular vitamin B12 deficiency is linked with depression in this age group.

Vitamin D is also crucial. Despite advice from Public Health England regarding vitamin D supplementation, around one in five of us is still deficient, according to the British Nutrition Foundation. Recent research suggests poor vitamin D levels put girls at greater risk of developing osteoporosis in the future (see section 4 for further information on Vitamin D). Other poor dietary habits will also have a bearing, especially high intakes of fizzy drinks, which tend to rob the body of bone-loving phosphorus. A lack of physical exercise is another contributing factor.

With the body’s overwhelming need for quality nutrition and its requirement for 45 nutrients a day, the future health of our female generation is certainly not looking very fertile. On a more positive note, however, many with kick-starting a revolution in sexual equality, with women able to choose an effective and reliable contraceptive for the first time.

Let’s look at the impact of oral contraceptives on nutrient status and in particular identifies potential issues with:

- **Vitamins:** A, D, E, K, C, B1, B2, B3, B5, B6, B12, Biotin, Folic Acid
- **Minerals:** Calcium, Chloride, Sodium, Molybdenum, Potassium, Iron, Magnesium, Manganese, Zinc, Selenium, Iodine, Vanadium, Cobalt, Silicon, Sulphur, Phosphorus, Chromium, Fluoride, Boron, Copper
- **Essential Amino Acids** *(Proteins):*
Leucine, Isoleucine, Lysine, Methionine, Phenylalanine, Tryptophan, Valine, Histidine, Threonine
- **Essential Fatty Acids:** Linoleic acid, Alpha-linolenic acid
- **Carbohydrates:** Glucose

Because of the overwhelming need for quality nutrition and its requirement for 45 nutrients a day, the future health of our female generation is certainly not looking very fertile. On a more positive note, however, we can help address this significant problem with better diets, better health education and the use of minerals and vitamin supplementation to plug any nutrient gaps. See section 5 on how we can plug all nutrient gaps with the Alive! range of vitamin and mineral food supplements, from Nature’s Way.
Key findings nutrient by nutrient

**Vitamin A**
Higher levels in blood plasma of vitamin A are reported in women taking the pill than in those who are non-users, which may be accompanied by lowered liver concentrations. Researchers suggest that oestrogens increase the retinal binding protein production, a mechanism which transports vitamin A in the blood. This may result in vitamin A being removed from storage sites such as the liver. It has been shown that in women taking oral contraceptives, supplementation with up to 5000 IU/day does not significantly increase plasma vitamin A levels, but may support liver stores.42

**Vitamin B1**
Some studies have identified a link between taking the pill and a reduced activity of the thiamine-dependent enzyme erythrocyte-transketolase, resulting in possible thiamine deficiency. However, not all researchers agree.43 One study in women using an oral contraceptive containing 500mcg dl-norgestrel and 50mcg EE looked at the additional needs of thiamine, pyridoxal 5'-phosphate (PLP) and Pyridoxal 5'-phosphate (PMP).54 A large observational study found evidence that pill use reduced PLP levels, with researchers finding this problem in 75% of women who didn’t take supplements.53 There was also speculation that this link might be the cause of the heightened risk of venous thromboembolisms in those taking the pill. Other reports suggest that even those using more modern lower-dose pills may need supplementation to get an optimal vitamin B6 status.55

Some researchers suggest low vitamin B6 levels may contribute to side effects associated with oral contraceptives such as:
- Depression
- Lethargy
- Fatigue

It does appear that in the majority of pill users, plasma pyridoxal 5'-phosphate (PLP) concentrations are suboptimal which has health implications regarding their long-term use and subsequent pregnancy. These observations suggest that the use of oral contraceptives is associated with a requirement for vitamin B6, and that especially those seeking to become pregnant and subsequently breastfed should take steps to improve dietary intake of this vitamin.

**Folic acid**
Shortly after the introduction of the contraceptive pill, studies suggested that their use might negatively affect a woman’s folate status.56 One study found that folate levels decreased with longer pill use duration, but within three months of stopping pill use, levels of folate returned to baseline. Likely mechanisms that have been suggested include the possibility that pill use might cause a number of actions including folate not to be properly absorbed, an increase in the rate of urinary excretion of folates and the acceleration of folate metabolism.57

However, when the initial studies were performed and the hormonal content of the formulations was much higher, the validity of these observations and their extrapolation to be of relevance today needs to be investigated further. Here, a recent meta-analysis and systematic review answers this question and concluded: “Because of the reduction in blood folate concentrations associated with the use of oral contraceptives, it is critical for women of childbearing age to continue folate supplementation during oral contraceptive use”.58 In 2012, in recognition of this, an oral contraceptive fortified with folate was made available in some markets as a means of lowering the hazard of neural tube defects (NTDs) in women who might become pregnant during pill use or shortly after discontinuation.59 Evidence also suggests that pill use might enhance the rate of progression of cervical dysplasia to cervical cancer, and folic acid may be able to reverse or reduce the rate of progression of this dysplasia.60

**Vitamin B12**
A number of studies of women using the pill have identified mean serum vitamin B12 levels lower than in nonusers.61 Metabolism of folate and vitamin B12 metabolism is closely inter-related, however, the cause of low levels of either folate or vitamin B12 in pill users appears to be different, with little correlation between them.62 It has been reported that in women using the contraceptive pill, that whilst absorption and the urinary excretion of vitamin B12 were normal, the total binding capacity for the vitamin in the serum is significantly reduced and that the levels of a glycoprotein which protects vitamin B12 from stomach acid degradation (transcobalamin) was also reduced compared to non-pill users.

In a later study, it was found that pill use can negatively affect vitamin B12 status63, supporting the concept that supplementation might be considered, especially in those with an unhealthy lifestyle or inadequate diet. While stopping pill use results in restored levels of the vitamin,64 there is a suggestion that doctors should recommend appropriate dietary supplementation as a primary approach to counter potential deficiencies of key vitamins and minerals in OC users.65

**Vitamin C**
It is thought that oestrogen can increase vitamin C metabolism, and it’s been reported that the use of the contraceptive pill reduces levels of this vitamin in blood leucocytes and platelets.66 In a more recent study, it was reported that women taking low-dose pills experienced significantly elevated levels of markers of increased oxidative stress in their blood plasma. However, supplementation with vitamins C and E significantly reversed these changes.

**Magnesium**
Researchers know that oestrogens from pill use can lower levels of magnesium in the blood by increasing uptake by bones and soft tissues.67 The depletion of magnesium can subsequently alter the ratio of calcium/magnesium ratio which in turn can affect blood coagulation.68 This supports the view that magnesium supplementation might be considered with pill use, since it is possible that hypomagnesemia – a dangerously low magnesium levels – might be associated with thromboembolic side effects associated with oestrogens.69
Zinc
Lower levels of zinc were identified in the plasma of pill users 50 years ago in comparison to those not using them.18 Because oestrogen can trigger a reduction in serum albumin, this may cause a decrease in the concentration of zinc transported in the blood.19 The majority of studies support the view that even low dose oral contraceptives negatively affect the nutritional status of this important mineral. Moreover, a recent systematic review concluded “a decrease in the serum concentrations of zinc, selenium, phosphorus and magnesium even when lower dose formulations are taken into account.”

In the UK, the most recent National Diet and Nutrition Survey published in January 2019 indicates that little has changed in terms of improvement in the nutritional status of females of a child bearing age, with foetal intake during the 5th month of pregnancy, using the pill on vitamin B6, folate, vitamin B12, zinc, selenium and magnesium even when lower dose contraceptives are taken into account.

In summary
Research from as far back as the 1970s clearly demonstrated that oral contraceptives are linked with depletions of a number of vitamins, minerals and other nutrients. A variety of reports have also identified these effects might possibly contribute to several common side effects. More recent data suggests a negative impact of taking the pill on vitamin B6, folate, vitamin B12, zinc, selenium and magnesium even when lower dose contraceptives are taken into account.

Selenium
One study assessed the influence of both zinc and selenium in pill users and observed that in significant reduction in serum zinc levels, there was a negative, but not statistically significant, alteration in selenium levels.20

In a study of women taking oral contraceptives, injectables or intramuscular intra-uterine devices, blood serum levels of zinc, magnesium, selenium, and phosphorus were all significantly lower than in controls.21

Calcium
A 12-month investigation examined the effect that various doses of calcium supplementation had on bone mineral density in 15 to 30-year-old women using the pill when compared to non-orale-contraceptive users. It reported that a calcium intake of 1000 - 1300 mg per day from products of a dairy origin provided pill users greater protection from total spine and hip BMD loss than in those consuming less than 800 mg per day.22

Pill use may exert different effects on BMD and total body bone mineral content, which might depend also on numerous factors, including physical activity and calcium intake. Studies suggest that those taking the pill over a longer period of time and participating in high levels of physical activity are at highest risk.

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SECTION 3 REFERENCES

THE IMPACT OF MODERN MEDICINE ON NUTRIENT STATUS

SECTION 3 ORAL CONTRACEPTIVES AND HOW NUTRITIONAL SUPPLEMENTATION IS ESSENTIAL FOR ADDRESSING THE PROBLEM OF PILL SIDE EFFECTS

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Introduction – pill usage

There’s no doubt that modern contraceptive methods have dramatically changed relationships, family planning and individual freedoms. Combined oral contraceptives (COCs), delivering an oestrogen and a progestin, are among the most common contraceptive methods used worldwide by around 9% of married women or those in a relationship aged 15 to 49 years. The most recent UK Office for National Statistics (ONS) survey identified 75% of females aged 16–49 years and males aged 16–69 years were using some form of contraception, with the contraceptive pill accounting for nearly 60 years – and the continual evolution of oral contraceptives (COCs), delivering an oestrogen and a progestin, are among the most common contraceptive methods used worldwide by around 9% of married women or those in a relationship aged 15 to 49 years. The most recent UK Office for National Statistics (ONS) survey identified 75% of females aged 16–49 years and males aged 16–69 years were using some form of contraception, with the contraceptive pill accounting for nearly 60 years – and the continual evolution of oral contraceptives (COCs), delivering an oestrogen and a progestin, are among the most common contraceptive methods used worldwide by around 9% of married women or those in a relationship aged 15 to 49 years. The most recent UK Office for National Statistics (ONS) survey identified 75% of females aged 16–49 years

Side effects of oral contraceptives

Despite the wide-spread use and history of the pill over nearly 60 years – and the continual evolution of oral contraceptives – there are still side effects to consider. A meta-analysis of studies from 19 countries identified COC discontinuation rate is very high, reaching 44% in the first year. The main reasons for near 47% (of discontinuations) are due to side effects or health concerns. Possibly as a result of these issues, adherence of pill usage in Western countries is limited, with a 50% rate of discontinuation at six months, with side effects most commonly cited as the reason for discontinuation. Other reasons given is a reported problem and although some studies have shown that oral contraceptives do not have an effect on this issue, including a recent review by Cochrane, it is often reported as a side effect.

One study of nearly 40,000 premenopausal Korean women examined the potential link between pill use, micronutrient deficiency and obesity. It identified an association of pill use with a 12% increased risk of obesity, and in those using this method of contraception for over six months throughout their lifetime there was a 15% increased likelihood of obesity compared with those using for less than six months. Those with less than recommended intakes of vitamins A, B1, B3, B6, C, folate, calcium, potassium and phosphorus appeared particularly susceptible to obesity. The authors concluded that as these micronutrients appear to exert an effect in obesity as well as many other metabolic pathways, efforts should be made to increase micronutrient intake in females taking the pill.

Supplementing oral contraceptive use

Two clinical trials have investigated the effects of daily systemic multivitamin complex and vitamin B6 supplementation on COC side effects. Both studies found side effects reduced in severity in treated individuals compared with those taking a placebo, although significant statistical differences were not reported in either study. Another study of 332 women assessed the effect of multivitamin supplementation on the continuation rate of oral contraceptive use and their observed side effects within the first few cycles. Compared with the multivitamin group, the six-cycle discontinuation rate was significantly higher in the placebo group. Nausea, mood changes, weight gain and breast tenderness were also significantly less common in the multivitamin group in all cycles, and spotting/regular
bleeding and dizziness were significantly less common in most of the second, third and sixth cycle follow-up. It concluded multivitamin supplements could significantly reduce the side effects of COCs in the initial cycles and improve continuation rates.

Another piece of research looked at self-reported intakes of dietary vitamins B6, B12 and folate in a selected cohort from the National Health and Nutrition Examination Survey 2009-2010 and this data was used to examine depression in women who took the pill.

Oral contraceptive users were reported to be more depressed than counterparts not using the pill. When intakes exceeded RDA’s for vitamin B12, folate, and vitamin B6 by 75%, 13% and 7% respectively, pill users were found to be less depressed.

Folate metabolism and genotype

An enzyme called 5,10-methylenetetrahydrofolate reductase (MTHFR) is critical in folate metabolism. It converts 5,10-methylenetetrahydrofolate to 5-methyltetrahydrofolate, the primary form of folate in the circulation.

A mutation – called MTHFR 677T - in the MTHFR gene limits the activity of this enzyme, especially in states of folate deficiency. It is not surprising that the MTHFR 677T mutation is associated with a higher risk of neural tube defects (NTDs). As a result of the recognised relationship between NTDs and suboptimal folate status, many nations have adopted mandatory fortification of the vitamin in food products. This has resulted in increased levels of serum folate and reduced rates of NTDs at the population level. There are still some subgroups, particularly fertile young females, who are at risk of low folate status, many of whom are of childbearing age with red blood cell concentrations of folate below the threshold for elevated risk of neural tube defects (748nmol/L) was 91%.

Folate acid thought to be essential in this process. As a result, the UK Department of Health recommended in 1992, that females intending to become pregnant should increase their intake of folate by an additional 400 mcg daily from preconception until 12 weeks of gestation.

The nutritional landscape in the UK

A recent study investigated this effect found that pill use did influence copper, iron and zinc homeostasis, but that supplementation with zinc beneficially affected copper utilisation in oral contraceptive users and had a positive effect on oxidative stress.

The pill and lipidemic effects

Oral contraceptives have been shown to directly affect metabolism of lipids and carbohydrates with impaired glucose tolerance and insulin secretion, accompanied by elevated levels of total cholesterol and serum triglycerides. However, because of the differences in the pill formulations used in these studies, their findings remain unclear as does the potential association between pill use and cardiovascular disease risks.

It is recognized that both vitamins C and E have positive effects on the profiles of lipids and the impact of the use of COCs on blood serum lipids in women has been investigated in one study. It evaluated changes in serum lipids over a four-week period in women taking COCs with and without vitamin therapy and compared them to a control group. Statistically significantly higher increases in the levels of LDL cholesterol and triglycerides and LDL were reported in COC users than non-users, but not in HDL and total cholesterol. In the group using COCs and receiving vitamins C and E, the HDL/LDL ratio increased as did the HDL level, whilst triglycerides and LDL decreased significantly in comparison to those women in other groups, indicating that vitamin C and E supplementation helps restore a normal lipid profile in those using this form of contraception.

Folic acid, neural tube defects and small-for-gestational age babies

The benefit of folic acid supplementation in preventing NTDs, including anencephaly, encephalocele and spina bifida, is now accepted. Within the first month of conception, the neural tube closes and if this closure is incomplete, this leads to NTDs, with folic acid thought to be essential in this process. As a result, the UK Department of Health recommended in 1992, that females intending to become pregnant should increase their intake of folate by an additional 400 mcg daily from preconception until 12 weeks of gestation to in order to limit the first occurrences of NTDs, which account for 95% of all cases. This recommendation was to be accomplished through foods either naturally rich in folate or fortified with the vitamin and/or taking a supplement delivering 400mcg folic acid, with the latter emphasised as the most important.

A study performed in London between 1999 and 2012 examined the extent to which 466,660 females who had attended antenatal screening for NTDs and Down’s syndrome supplemented their diet with folic acid. The proportion of those women taking the vitamin in supplement form before pregnancy reduced to 31% in 2011–2012 from 35% in 1999–2001. Of women aged below 20, only 6% used supplements containing folic acid prior to pregnancy, in comparison to 40% of those aged 35–49. Before pregnancy, 35% of women of Caucasian origin used folic acid supplements, compared to 25% of Oriental 25% origin, 20% of South Asians and 17% of Afro-Caribbean females. Of those females who had previously experienced an NTD pregnancy, before their current pregnancy, only 51% reported taking folic acid supplements.

A 2015 meta-analysis and systematic review of UK data assessed the link between new-born babies being small for gestational age and folic acid supplementation during pregnancy. It identified that of the pregnancies where folic acid supplementation was recorded, it was initiated before conception in 25.5% of cases. It concluded that supplementation significantly reduces the risk of small-for-gestational age at birth, but only if commenced before conception.

This finding is of particular clinical relevance since growth restriction has been identified to be associated with both poor long and short-term outcomes, since there are no other established prophylactic treatment options available for this condition.
summary

In light of the potential effect of pill use on folate status, together with the relevance of this vitamin in NTDs, this issue is one of importance especially in UK where currently fortification of food with this vitamin does not occur as it does in at least 81 other countries. There are significant numbers of women of childbearing age with an inadequate intake of folic acid in the UK, along with considerable variation in attitudes to use of supplements containing the vitamin before conception.

Furthermore, given the high rate of unplanned pregnancies while women are taking oral contraceptives, as well as the likelihood that any pregnancy which might occur within three months of discontinuing the drug could do so in a state of a less than optimal folate status, it would appear that folic acid supplementation is the minimal intervention that might be considered for those taking the pill. This is especially true in countries which do not implement fortification of foods, such as the UK.

There are still around 1,000 pregnancies with a diagnosis of NTD occurring in the UK, and around 80% of these end in termination.116

It is probably that an improved level of compliance with folic acid supplementation with pill usage would have a positive impact on this unsatisfactory situation.

Finally, it is highly likely that many women who use the contraceptive pill throughout their reproductive years may then go on to potentially be exposed to ongoing levels of the same hormone should they have Hormone Replacement Therapy (HRT) as they enter the perimenopause and menopause. It follows that without adequate supplementation, these women are likely to have been, and continue to be, exposed to possibly decades of a less than optimal status of one or more of the nutrients discussed above, with unknown potential health consequences.

Women who take the pill may not always have an optimal diet, may pursue unhealthy lifestyles or may suffer from malabsorption problems, further jeopardising their nutritional status and health. Health professionals who prescribe an oral contraceptive should consider advising their patients to take appropriate nutritional supplements as a first-line strategy to prevent potential nutrient deficiencies caused by pill use.

SECTION 4: VITAMIN D – WHY THE UK NEEDS TO WORRY MORE ABOUT THE SUNSHINE VITAMIN

Dr David Edwards MB BS MSc(Dist)

Introduction

Most people have heard of vitamin D – indeed, many know it as the ‘sunshine vitamin’. This description gives a cheery, perhaps happy image of the nutrient – produced in the body from exposure to sunlight – which is certainly a good message but perhaps paints only a tiny part of the full picture. Cheery it may be, but the consequences for failing to get enough in our bodies can be catastrophic. Vitamin D is not only an essential nutrient for good health, but increasingly researchers are finding just how important it really is, with studies linking inadequate levels with a heightened risk of a slew of serious or even potentially deadly illnesses and complications. These include117:

- Heart disease
- Some cancers
- Asthma
- Rickets in children
- Osteomalacia (bone pain) in adults
- Type 2 diabetes
- Multiple sclerosis
- Rheumatoid arthritis
- Depression

In this section we’ll also take a look at the figures behind vitamin D use, as well as the public’s perception of what the problem is, with some significant – and potentially worrying - gaps in knowledge.

Vitamin D: where it comes from, how it works and why it’s important

Vitamin D is essential for healthy bones, muscles and teeth and plays an important role in many other mechanisms and processes in the body. The nutrient helps with the absorption and utilisation of calcium and phosphorus, and blood calcium levels, as well as helping maintain proper immune function.

The main source is sunshine rather than from food – even in a healthy diet it’s hard to get the recommended amounts of the vitamin. Normally vitamin D is synthesised from direct sunlight – ultraviolet B (UVB) rays - on the skin, especially from spring (late March / early April) to around the end of summer at the end of September. People with darker skin, such as those of African, African-Caribbean or south Asian origin need to spend longer in the sun to produce enough vitamin D, and those who routinely avoid the sun completely – or cover up most of their skin – will be at a heightened risk of extremely poor vitamin D levels. In addition, vitamin D breaks down in the body, meaning stores can run low in the winter and early spring.

A small number of foods are also sources of vitamin D, including red meat, oily fish such as sardines, mackerel and salmon, eggs (in the yolk), liver and foods fortified with the vitamin, including many spreads and some breakfast cereals. Cow’s milk isn’t fortified with vitamin D in the UK, unlike some other countries.
Changes in vitamin D recommendations

The Scientific Advisory Committee on Nutrition (SACN), the committee of independent experts that advises the government on matters relating to diet, nutrition and health, reviewed the scientific literature covering vitamin D and supplementation. In 2016 Public Health England changed the recommendations, saying that all adults and children over the age of one year old should consider taking a 10 microgram vitamin D supplement, especially during autumn and winter when there is limited sunlight. In addition, the DoH says all babies from birth to one year old, all children aged one to four and people who aren’t exposed much to the sun should take daily supplements to make sure they get enough vitamin D.126

UK national dietary status – latest facts

We know as a nation we simply aren’t getting enough vitamin D. The bad news is that not only has this been the case for a long time, the situation appears to be getting even worse. The UK National Diet and Nutrition Survey Rolling Programme (NDNS-RP) is a continuous, cross-sectional survey designed to collect detailed information on the food consumption, nutrient intake and nutritional status of the general population aged 1.5 years and over. The Health Survey for England Information Service conducted detailed analysis of the latest survey findings, which reveal that among a number of concerns, poor levels of vitamin D intake are a particular worry. Headline figures only recently published include:124

- Vitamin D intake has decreased by 22% over the last 20 years.
- There is a downward trend over the last nine years in vitamin D intake for children aged 11 plus and adults aged up to 65.
- Average (mean) intakes of vitamin D were below the reference nutrient intakes (RNI) in all age and sex groups.
- In the latest NDNS-RP, during January to March, 19% of children aged four to 10, 37% of children aged 11 to 18 and 29% of adults had vitamin D levels below the threshold indicating a risk of deficiency.

Key health issues linked with vitamin D

While vitamin D’s key role in preserving bone and muscle health is well understood, researchers across the world have also found many other important potential links with keeping us healthy and helping ward off serious illness.127

- Cancers – Japanese researchers think vitamin D may help protect against cancer, particularly liver cancer.128 Another study, this time in the US, suggested that a daily vitamin D dose could reduce cancer risk by half.129
- Cardiovascular disease – studies show a link between a higher incidence of cardiovascular disease in people with low vitamin D levels, though research is ongoing to establish firmer evidence.130
- Asthma – vitamin D is thought to be useful in curtailing asthma due to its immunomodulatory effects and a number of studies have supported the theory.131
- Multiple sclerosis – researchers have linked MS with low levels of vitamin D, noting that rates of the condition are higher in high-latitude countries which have fewer sunny days, including northern Europe.132
- Type 2 diabetes – vitamin D is thought by researchers to help improve the body’s sensitivity to insulin and that raising the levels of the nutrient help keep blood glucose levels under control.133
- Rheumatoid arthritis – a study at the University of Birmingham found that immune cells in blood from inflamed joints in people with the inflammatory condition responded positively to vitamin D.134
- Injuries – researchers at the Royal National Orthopaedic Hospital and the University of Wolverhampton urged ballet dancers to take vitamin D supplements during winter after finding that the nutrient could reduce injury and improve muscle function.135
- Depression – a lack of vitamin D is linked with increased symptoms of depression, according to researchers who tested levels of the nutrient among 225 patients with psychotic disorders.136
- Autism – an Australian study has linked the condition with vitamin D deficiency during pregnancy.137
- Colds and flu – researchers in the UK think that vitamin D supplements could prevent more than three million people getting colds or flu thanks to its crucial role in the immune system.138

Summary

Vitamin D is essential for healthy bones, muscles and teeth, and as is becoming ever more apparent, helping protect against a number of serious health issues. While research is ongoing and some links between disease and a lack of vitamin D have yet to be firmly established, there’s no doubt that the nutrient plays a hugely important part in a number of vital protective mechanisms. Healthy levels of vitamin D are key to day-to-day health, however this is also problematic because so many people in the UK appear to have low levels of vitamin D – it’s thought that more than 50% of adults have insufficient levels of vitamin D and that 16% have severe deficiency during winter and spring.139 The worry is that this shortfall will leave many of these people more vulnerable to health problems, particularly as they age, some of which may be very serious. Both the poor level of vitamin D status and the importance of the nutrient in good health mean it would be prudent for many people to take a daily vitamin D supplement, particularly during the winter months when sunshine levels are low. It’s a simple and easy change that may well bring substantial benefits.

New research findings in vitamin D intakes

The concerns over adequate vitamin D intakes revealed in the NDNS-RP are echoed in fascinating new research commissioned by Alveol. A total of 1,056 people from across the UK aged 16 plus – 469 males and 595 females – were questioned about their dietary habits and knowledge of vitamin D nutrition. The survey revealed that only a quarter (23%) of people take a multivitamin, and nearly half (44%) of people aged 45 plus and more than 60% of the over 60s don’t take any vitamin or mineral supplements at all. Less than half (47%) of respondents knew that vitamin D was good for the skin and 28% of the over 60s did not know what vitamin D was good for. Only 14% of people recognised that vegetarians and vegans can be Vitamin D deficient and more than one-third (34%) of the over 60s did not know of any groups that could be vitamin D deficient. Over one-third (34%) of people could not identify any symptoms of vitamin D deficiency, rising to over 44% in the over 60s.

There were some substantial gaps in understanding and knowledge in the workings of vitamin D. Half (50%) of respondents didn’t know that some over the counter and prescribed medicines can reduce levels of vitamin D in the body. This figure rose to 71% in the over 60s. Other gaps in understanding included:

- 58% did not know that smoking can reduce levels of vitamin D in the body.
- Less than half (45%) believed that drinking alcohol affects vitamin D levels.
- Only 27% of respondents knew that a healthy diet alone does not provide optimum levels of vitamin D, with nearly half (47%) of respondents believing it was possible, despite this being almost impossible in practice.

Everyone is different so require varying amounts of vitamin D. Some 59% of respondents said they spend less than two hours outside on an average day, and more per day outside. Nearly half (46%) said that they apply sun screen every/most days during the summer, or never applied sun screen during the summer. Only 27% of respondents knew that a healthy diet alone does not provide optimum levels of vitamin D, with nearly half (47%) of respondents believing it was possible, despite this being almost impossible in practice.

Some 59% of respondents said they spend less than two hours outside on an average day, and 37% of people say that they spend three hours or more per day outside. Nearly half (46%) said that they apply sunscreen every/most days during the summer, though 71% of the over 60s said they rarely or never applied sunscreen during the summer.

There are other gaps in how people think about the amount of time spent in the sun. Most people (60%) say they apply sunscreen mainly during the summer months when sunshine levels are low.
SECTION 5: ALIVE! BESPOKE NUTRIENT AND FORMAT CHOICES TO SUIT VARYING POPULATION NEEDS

Our long working hours, hectic lifestyles, dietary preferences and individual circumstances can mean our diets and nutrient intake are not always top priority. Most experts agree that a balanced diet is the best source of essential vitamins and minerals, but this isn’t always the practical option for many people. In order to increase nutrient levels safely, supplementation can play a useful role. Research published in *Nutrition Journal* examining worldwide studies found that multivitamin and mineral supplements (MVMs) “may help prevent a number of health problems”.

The Alive! range of vitamin and mineral food supplements, from Nature’s Way in the UK, has been specifically formulated to ‘plug nutrient gaps’ and help bring the nation’s health back on track. Plus, they all contain a unique blend of 26 fruits and vegetables for a great daily top-up.

Available in tablets and Soft Jells, with a vast product range including formulations for the whole family and bespoke products to cater for women, men and the healthy growth of children, the Alive! portfolio provides specific formulations to suit all nutrient requirements at every life stage. And they are suitable for vegetarians.

So, what’s the best Alive! product for you? We all have different needs and requirements, and the diverse product range from Alive! means there is more than just a one-size-fits-all approach.

### KEY NUTRIENTS FOR MEN:

- **Alive! Men’s Energy Soft Jells** include vitamins to support normal energy, normal fertility and reproduction and the maintenance of normal vision.
- **Alive! Men’s Energy Multivitamin** – tablets include vitamins to support the normal function of the immune system, muscle function, vision and fertility.
- **Alive! Men’s 50+ Multivitamin tablets** include vitamins to also assist in normal cognitive function, cartilage function and normal function of the heart.
- **NEW Alive! Ultra Men’s Energy Wholefood Plus** provides a blend to help ease protein digestion and a blend for added energy and antioxidant protection.

### KEY NUTRIENTS FOR CHILDREN:

When it comes to children, the Alive! range of multivitamins and minerals works to support the normal function of the immune system, maintenance of normal bones and teeth, normal growth, as well as supporting normal cognitive function. The range offers a choice of deliciously fruity Soft Jells or chewable tablets, available in natural orange and berry flavours.

### KEY NUTRIENTS FOR THE WHOLE FAMILY:

- **Alive! Immune Support** to support immune function
- **Alive! Vitamin D3 Soft Jells** to support normal bones and teeth as well as immunity
- **Alive! Calcium Soft Jells** to support normal bones and teeth

These Alive! pectin-based Soft Jells have been specially designed to meet the needs of the whole family, and can be taken by both adults and children aged 3 years plus. As with all our Soft Jells, they are made with only natural fruit flavours and are suitable for vegetarians.

Every product within the Alive! range of supplements contains all the essential nutrients and additional botanical ingredients required by people’s bodies, and provides higher levels of certain vitamins and minerals where needed. All products are carefully targeted with adjusted nutrient levels as appropriate and are suitable for vegetarians.

### KEY NUTRIENTS FOR WOMEN:

- **Alive! Women’s Energy Soft Jells** provide vitamins C, B6, B12 & Biotin for normal energy release.
- **Alive! Women’s Energy Multivitamin tablets** are high in Vitamins B6, B12 & Vitamin C with Copper to support normal immunity and energy release.
- **Alive! Women’s 50+ Soft Jells** provide Vitamin A, C, B6, B12 & Vitamin D for the maintenance of normal bones at a time when ageing and mobility becomes a more conscious concern.
- **Alive! Women’s 50+ Multivitamin tablets** contain a specially balanced formula to support the nutritional needs of women over 50 years of age.
- **NEW Alive! Ultra Women’s Energy Wholefood Plus** includes a green botanical blend for additional nutrients, plus extracts for hormone balance.

### SECTION 4 REFERENCES

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INTRODUCING ALIVE! TABLETS, SOFT JELLS AND NEW ALIVE! ULTRA WHOLEFOOD PLUS RANGES

WOMEN

NEW Alive! Ultra Women’s Energy Wholefood Plus
• 26 vitamins, minerals and nutrients at appropriate levels for women
• A unique dried blend of 26 whole fruits and vegetables
• Daily greens blend of 14 botanicals.
• A digestive enzyme blend including bromelain to help ease protein digestion
• A beauty blend for women including grapeseed extract, a powerful antioxidant
• A Cranberry extract and flax lignans for hormone balance, plus bioflavonoids for antioxidant protection
• Suitable for vegetarians

NEW Alive! Ultra Women’s 50+ Wholefood Plus
• 25 vitamins and minerals with adjusted levels to meet the needs of women over 50.
• A unique dried blend of 26 whole fruits and vegetables
• Daily greens blend of 14 botanicals.
• A cranberry concentrated extract for urinary tract health
• Additional flax lignans with phytoestrogens for hormonal balance
• Suitable for vegetarians

Alive! Women’s Energy Soft Jells
• Specially balanced for women
• With Vitamins C, B6, B12 & Biotin for normal energy release
• With Vitamin D for normal bones
• A unique dried blend of 26 fruits and vegetables
• Delicious orange and berry natural fruit flavours: made with only natura fruit flavours
• Pectin based jells which ‘melt-in-the-mouth’
• Does not contain gluten, soya, dairy, yeast, artificial flavours, colours or preservatives
• Suitable for vegetarians

Alive! Women’s 50+ Soft Jells
• With Vitamins C, B6, B12 & Biotin for normal energy release, plus Vitamin D for the maintenance of normal bones
• Delicious Orange & Berry flavours: made with only natural fruit flavours
• A unique dried blend of 26 fruits and vegetables Pectin based jells that ‘melt-in-the-mouth’
• Does not contain Gluten, Soya, Dairy, Yeast, Artificial Flavours, Colours, or Preservatives
• Suitable for vegetarians

MEN

NEW Alive! Ultra Men’s Energy Wholefood Plus
• 26 vitamins, minerals and nutrients at dosage levels to meet men’s needs.
• A unique dried blend of 26 whole fruits and vegetables
• Daily greens blend of 14 botanicals.
• A digestive enzyme blend including bromelain to help ease protein digestion.
• CoQ10 for added energy and resveratrol for antioxidant protection
• Citrus bioflavonoids for additional antioxidant protection
• Suitable for vegetarians

NEW Alive! Ultra Men’s 50+ Wholefood Plus
• 25 vitamins and minerals with adjusted levels to meet the needs of men over 50 years
• A unique dried blend of 26 whole fruits and vegetables
• A digestive enzyme blend including bromelain to help ease protein digestion
• CoQ10 and resveratrol for antioxidant protection
• Saw palmetto to support prostate health and citrus bioflavonoids for additional antioxidant protection
• Suitable for vegetarians

Alive! Men’s Energy Soft Jells
• Vitamins C, B5, B6 B12 & Thiamin support normal energy
• Zinc & Selenium help support normal fertility and reproduction
• Vitamins A & B2 help in the maintenance of normal vision
• Delicious Orange & Berry flavours: made with only natural fruit flavours
• A unique dried blend of 26 fruits and vegetables
• Does not contain Gluten, Soya, Dairy, Yeast, Artificial Flavours, Colours, or Preservatives
• Suitable for vegetarians

Alive! Women’s Energy Multivitamin tablets
• Specially balanced for women
• High in Vitamins B6, B12 & Vitamin C with Copper to support normal Immunity and energy release.
• A unique dried blend of 26 fruits and vegetables plus Korean Ginseng
• Does not contain gluten, soya, dairy, yeast, artificial flavourings or colours
• Suitable for vegetarians

Alive! Women’s 50+ Multivitamin tablets
• Specially balanced for women over fifty
• Contains Vitamin D3 for normal bones and teeth
• With Vitamins B1, B2 & B3 for normal energy release
• Vitamin B6 to help regulate hormonal activity
• With CoQ10, Flax Lignan and Korean Ginseng
• Also contains a unique dried blend of 26 Fruits & Vegetables
• Does not contain gluten, soya, dairy, yeast, artificial flavourings or colours
• Suitable for vegetarians

Alive! Men’s Energy Multivitamin tablets
• Specially balanced for men
• High in Vitamins B6, B12 & Vitamin C with Copper to support normal Immunity and energy release.
• A unique dried blend of 26 fruits and vegetables
• Does not contain gluten, soya, dairy, yeast, artificial flavourings or colours
• Suitable for vegetarians

Alive! Men’s 50+ Multivitamin tablets
• Specially balanced for men over fifty
• Contains Vitamin D3 for normal bones and teeth
• With Vitamins B1, B2 & B3 for normal energy release
• Vitamin B6 to help regulate hormonal activity
• With CoQ10, Flax Lignan and Korean Ginseng
• Also contains a unique dried blend of 26 Fruits & Vegetables
• Does not contain gluten, soya, dairy, yeast, artificial flavourings or colours
• Suitable for vegetarians
Alive! Men’s 50+ Soft Jells
- Vitamins C, B5, B6, B12 & Thiamin support normal energy
- Iodine helps support normal cognitive function
- Vitamin C helps support normal cartilage function
- Vitamin B1 helps support normal function of the heart
- Delicious cherry and grape flavours: made with only natural fruit flavours
- Also contains a unique dried blend of 26 fruits and vegetables
- Does not contain gluten, soya, dairy, yeast, artificial flavourings, colours, or preservatives
- Suitable for vegetarians

Alive! Men’s Energy Multivitamin tablets
- With Vitamins B2 & B12 to support normal energy
- Vitamin C & Zinc for normal function of the immune system
- Magnesium to support normal muscle function
- Zinc to help support normal fertility and reproduction
- Also contains a unique dried blend of 26 fruits and vegetables
- Does not contain gluten, soya, dairy, yeast, artificial flavourings or colours
- Suitable for vegetarians

Alive! Men’s 50+ Multivitamin tablets
- Vitamins B2 & B12 support normal energy
- Vitamin C & Zinc for normal function of the immune system
- Iodine assists in normal cognitive function
- Vitamin B1 contributes to normal function of the heart
- Also contains a unique dried blend of 26 fruits and vegetables
- Does not contain gluten, soya, dairy, yeast, artificial flavourings or colours
- Suitable for vegetarians

CHILDREN

Alive! Children’s Soft Jell Multivitamins
- Vitamin C supports the normal function of the immune system
- Vitamin D for the maintenance of normal bones and teeth and to help support immunity
- Iodine contributes to normal growth of children
- Zinc contributes to normal cognitive function
- Delicious Orange & Berry flavour: made with only natural fruit flavours
- Also contains a unique dried blend of 26 fruits and vegetables
- Does not contain gluten, soya, dairy, yeast, artificial flavourings, colours, or preservatives
- Suitable for vegetarians

Alive! Children’s Chewable Multivitamin
- Vitamin C & Zinc for normal function of the immune system
- Vitamin D for maintenance of normal bones and teeth and to help support immunity
- Iron assists in the cognitive development of children
- Iodine contributes to normal growth of children
- Great tasting natural berry flavour
- Does not contain gluten, soya, dairy, yeast, artificial flavourings or colours
- Suitable for vegetarians

FAMILY

Alive! Immune Support
- Enhanced levels of Vitamin D3 to support normal functioning of the immune system
- Vitamin D3, Calcium and phosphorus support normal bones and teeth and the normal growth and development of bones in children
- Contains a unique dried blend of 26 fruits and vegetables
- Delicious cherry natural fruit flavour: made with only natural fruit flavours
- Does not contain gluten, soya, dairy, yeast, artificial flavourings, colours, or preservatives
- Suitable for vegetarians

Alive! Vitamin D3 Soft Jells
- A special formulation of Vitamin D3, Calcium and phosphorus to support normal bones and teeth
- Vitamin D3, Calcium and phosphorus support normal bones and teeth and the normal growth and development of bones in children
- Enhanced levels of vitamin D3 to support normal functioning of the immune system
- Contains a unique dried blend of 26 fruits and vegetables
- Delicious cherry natural fruit flavour: made with only natural fruit flavours
- Does not contain gluten, soya, dairy, yeast, artificial flavourings, colours, or preservatives
- Suitable for vegetarians

Alive! Calcium Soft Jells with Vitamin D
- Calcium, Vitamin D and Phosphorus for maintenance of normal bones, teeth and for normal growth and development of bone in children
- Contains a unique dried blend of 26 fruits and vegetables
- Delicious strawberry natural fruit flavour: made with only natural fruit flavours
- Does not contain gluten, soya, dairy, yeast, artificial flavourings, colours, or preservatives
- Suitable for vegetarians
**ADULTS AND CHILDREN OVER 12 YEARS**

**Alive! Vitamin B Complex Soft Jells**
- A special formulation of B-Vitamins and Vitamin C to support normal energy release
- Vitamins B2, B3, B5, B6 and B12 support normal energy
- Vitamin C to help reduce tiredness and fatigue
- Contains a unique dried blend of 26 fruits and vegetables

**BOTANICAL BLENDS INCLUDED IN THE ALIVE! ULTRA WHOLEFOOD PLUS RANGE:**

**Alive! Orchard Fruits™ & Alive! Garden Veggies™**
26 whole fruit and vegetable blend: Blueberry, Orange, Carrot, Pomegranate, Plum, Strawberry, Apple, Beetroot, Cherry, Pear, Tomato, Cauliflower, Raspberry, Acai, Asparagus, Banana, Broccoli, Brussels sprout, Cabbage, Cranberry, Cucumber, Grape, Pea, Pineapple, Pumpkin, Spinach

**Daily Greens Blend**
Spirulina, Kelp, Alfalfa, Barley Grass, Blessed Thistle, Blue-Green Algae, Chlorella, Coriander, Dandelion, Lemon Balm, Lemon Grass, Nettle Leaf, Plantain, Wheat Grass

**Digestive Enzyme Blend**
Betaine HCl, Bromelain, Papain, Alpha galactosidase, Cellulase, Amylase, Protease, Invertase, Lactase, Lipase, Peptidase

**Beauty Blend**
Horsetail, Grape Seed Extract, Methylsulfonylmethane (MSM)

**Men’s Blend**
Hawthorn Berry, Resveratrol, CoQ10

**GENERAL ALIVE! AVAILABILITY:**

**Alive! Tablets, Alive! Soft Jells**
Available at Holland and Barrett, Boots, Superdrug, independent health food stores and online at www.natures-way.com RRP: Tablets £8.99 Soft Jells £14.99

**Alive! Ultra Wholefood Plus Range**
Available at Holland and Barrett and online at www.natures-way.com RRP: £24.99

**Alive! Immune Support Soft Jells and Calcium Soft Jells**
Available at Tesco, Holland and Barrett, Boots, Superdrug, independent health food stores and online at www.natures-way.com RRP £14.99
There’s no getting away from the fact that as a nation, we have some very serious nutrition gaps – potentially leading to some extremely serious health issues. Lifestyle, convenience choices and the demands of modern life mean millions of people in the UK have diets that are all too often inadequate, with the very real risk of nutrient deficiencies. As we’ve seen, official figures show shortfalls in many key vitamins and minerals - some severe – with additional complications for many women who take the contraceptive pill and who may find it negatively affects their nutritional status. Low levels of vitamin D are another worry, particularly with the number of major health issues now being liked with the nutrient. Better diets and healthier lifestyles are the ultimate goals to give us the best possible outcomes for mind and body. But both are extremely hard to achieve on a consistent basis, even by the most dedicated among us. But that’s where supplements can play a crucial role in supporting our nutrient levels – particularly during the times in our lives where we struggle to get intakes naturally.

We’re all only human, and a key part of being human is not getting it right all the time – and that includes making mistakes in what we eat and how we live our lives. But it doesn’t have to be a catastrophe – we can address many of the shortfalls with vitamin and mineral supplements, such as those from the extensive Alive! range.

There’s no room for complacency. Without the correct fuel our bodies will no longer function with the efficiency and effectiveness we demand. Even worse, if we fail to plug the nutrient gap, we risk pushing our bodies to the very brink of breakdown – or beyond.