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NHS Camden Clinical Commissioning Group

PUBLIC HEALTH INTELLIGENCE

Vitamin D deficiency in Camden

November 2015

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NHS Camden Clinical Commissioning Group

PURPOSE

This public health intelligence profile describes the recorded prevalence of vitamin D deficiency in Camden.

This profile is the result of a collaboration between local GPs and public health, using anonymised data to target areas of public health need.

This work will support and inform:

- Commissioners and Public Health teams
- Camden Clinical Commissioning Group;
- Camden local authority carers and older peoples leads;
- Camden midwives, health visitors and early years practitioners
- Individual general practices in Camden

CONTENTS

FURTHER INFORMATION AND FEEDBACK

This profile was created by Victoria Makepeace-Warne (Public Health Information Officer) with the help of Nicola Ellis (Public Health Strategist) and reviewed by Dalina Vekinis (Senior Public Health Information Analyst).

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We would also very much welcome your comments on these profiles and how they could better suit your individual or practice requirements, so please do contact us with your ideas.

Overview & key messages

1. **High estimated national prevalence of Vitamin D deficiency.** National prevalence estimates for vitamin D deficiency are limited. However, the rolling National Diet and Nutrition Survey programme (NDNS) measures vitamin D status. In the 2008/09- 2011/12 NDNS survey 24% of adult men (19-64 years) were vitamin D deficient and 22% of adult women. In children the prevalence of vitamin D deficiency increased with age from 7.5% in Children aged 1.5 to 3 years to 20% and 24% respectively for boys and girls aged 11-18 years.

2. **Lower recorded vitamin D deficiency in Camden.** This profile focuses on the registered population with vitamin D deficiency recorded in Camden's Public Health GP dataset. As of September 2012, there were approximately 8,200 people with a recorded vitamin D status classified as deficient, with an overall prevalence of recorded vitamin D deficiency in the Camden registered population of 3.4%. Recorded deficiency is significantly lower than national estimated prevalence; under diagnosis may be due to testing only being done on those who were symptomatic or at high risk as suggested in the NICE guidelines (PH56).

3. **Recorded vitamin D deficiency is significantly higher in those greater than 40 years of age.** Recorded vitamin D deficiency was significantly higher than the Camden average in those above the age of 40 and highest in the 80-84 age group (9.1%). However, people above the age of 40 are more likely to be in regular contact with their GPs, and therefore be referred for testing. As the body's ability to create vitamin D from sunlight decreases over the age of 65, there is a greater need to raise awareness of vitamin D and its importance among this age group.

4. **People of non-White ethnicity are significantly more likely to be diagnosed with vitamin D deficiency compared to white ethnic groups.** Having darker skin is a risk key risk factor for vitamin D deficiency and this is reflected in Camden's population, with a higher recorded prevalence of vitamin D deficiency among BME groups. The highest prevalence of vitamin D deficiency was in the Other Black group (10.3%) followed by Pakistani and British Pakistani group (9.6%) and Bangladeshi/ British Bangladeshis (9.6%). When adjusted for age, the Other Black group were 3.5 times more likely to be recorded vitamin D deficient than the Camden average. As such, there is greater need to raise awareness of vitamin D and its importance among non-White ethnic groups in Camden.

5. **Higher vitamin D deficiency recorded in deprived quintiles.** Regardless of age, individuals in the two most deprived quintiles are significantly more likely to be vitamin D deficient than the Camden average, with those in the most deprived quintile 49% more likely to be vitamin D deficient than the Camden average.

6. **Recorded vitamin D deficiency is significantly higher in those with a body mass index above a healthy weight.** The prevalence of recorded vitamin D deficiency in Camden was highest in obese (8.8%) and overweight people (5.6%) which were significantly above the Camden average (3.4%).

National recommendations

NICE Guidance

National guidance on vitamin D and vitamin D supplementation for at risk groups (PH56) was introduced in November 2014. There are 11 recommendations to the NICE guidance

- Increase access to vitamin D supplements
- Clarify existing guidance
- Develop national activities to increase awareness about vitamin D
- Ensure a consistent multiagency approach
- Increase local availability of vitamin D supplements for at risk groups
- Improve access to Healthy Start supplements
- Only test vitamin D status if someone has symptoms of deficiency or is at very high risk
- Ensure health professionals recommend vitamin D supplements
- Raise awareness among health, social care and other relevant practitioners of the importance of vitamin D
- Raise awareness of the importance of vitamin D supplements among the local population
- Monitor and evaluate the provision and uptake of vitamin D supplements

Current vitamin D deficiency prevention programmes in Camden

Healthy Start is a UK wide scheme aiming to improve the nutrition of pregnant women and families on benefits or low incomes. Healthy Start vitamins are available nationally for beneficiaries and are recommended for young children under four, pregnant women and breastfeeding mothers as a preventative measure to reduce the incidence of nutrition related problems including vitamin D deficiency. Vitamin drops for infants and children contain vitamin A, C and D The vitamin tablets for women contain vitamin C, vitamin D and folic acid.

To increase the uptake of Healthy start vitamins and in accordance with NICE guidelines, universal supplementation was introduced in Camden in January 2015. Healthy Start vitamins are available to all women planning a pregnancy, pregnant women and mothers with a new baby, as well as to children under the age of four in Camden. Between January and June 2015, a total of 1,703 vitamins have been distributed to families in Camden via children's centres and health centres.

A vitamin D social marketing campaign has also been introduced in Camden to promote the availability of Healthy Start vitamins and the importance of vitamin D.

Understanding the data: how to use these analyses

It is important to bear in mind the following when looking at this profile (or any other public health intelligence products):

– It is the variation that is important

In this profile, it is the variation between Camden GP practices that should be the main point of reflection rather than average achievement. It is the *unexplained variation* (defined as: *variation in the utilisation of health care services that cannot be explained by differences in patient populations or patient preferences*) as this can highlight areas for potential improvements. For example, it may highlight under- or over- use of some interventions and services, or it may identify the use of lower value or less effective activities.

The data alone cannot tell us whether or not there are good and valid reasons for the variation. It only highlights areas for further investigation and reflection. A perfectly valid outcome of investigations is that the variation is as expected. However, to improve the quality of care and population health outcomes in Camden, a better understanding of reasons behind the variation at a GP practice level with clear identification of areas for improvement is needed.

– Reaching 100% achievement

The graphs may show 100% on their y-axis (vertical) but there is no expectation that 100% will be (ever be) achieved for the vast majority of indicators. Some patients do not wish to have the intervention and for other patients interventions may be unsuitable. Again, it is about the variation between different GP practices, not an expectation of reaching 100% achievement.

It is possible to benchmark against the achievements in Camden with London deprived boroughs (i.e. with similar health needs), to give an indication of realistic level of achievement for specific indicators across the whole population and a Camden position.

– Populations not individuals

Epidemiology is about the health of the population, not the individual. In this profile this is either all of Camden's registered population aged 18+ or a GP practice population. It includes everyone registered on GP lists at the end of September 2012, whether they attend the practice regularly or not, or never at all.

– Beware of small numbers

Some of the graphs have small (but non-disclosive) numbers in them. They have been left in so that all GP practices can see what is happening in their practice (according to the data). In these cases, the wide 95% confidence intervals will signify the uncertainty around the percentages, but be careful when interpreting them.

Understanding the data: how to use these analyses

95% confidence intervals (95% CI)

- Percentages and standardised ratios are reported with 95% confidence intervals. These quantify imprecision in the estimate.
- The imprecision is influenced by the random occurrences that are inherent in life.
- By comparing the 95% CIs around estimates or a target, we can say whether statistically, there are differences or not in the estimates we are observing, identifying which areas to focus on.

Indirectly standardised prevalence ratios (IDSR)

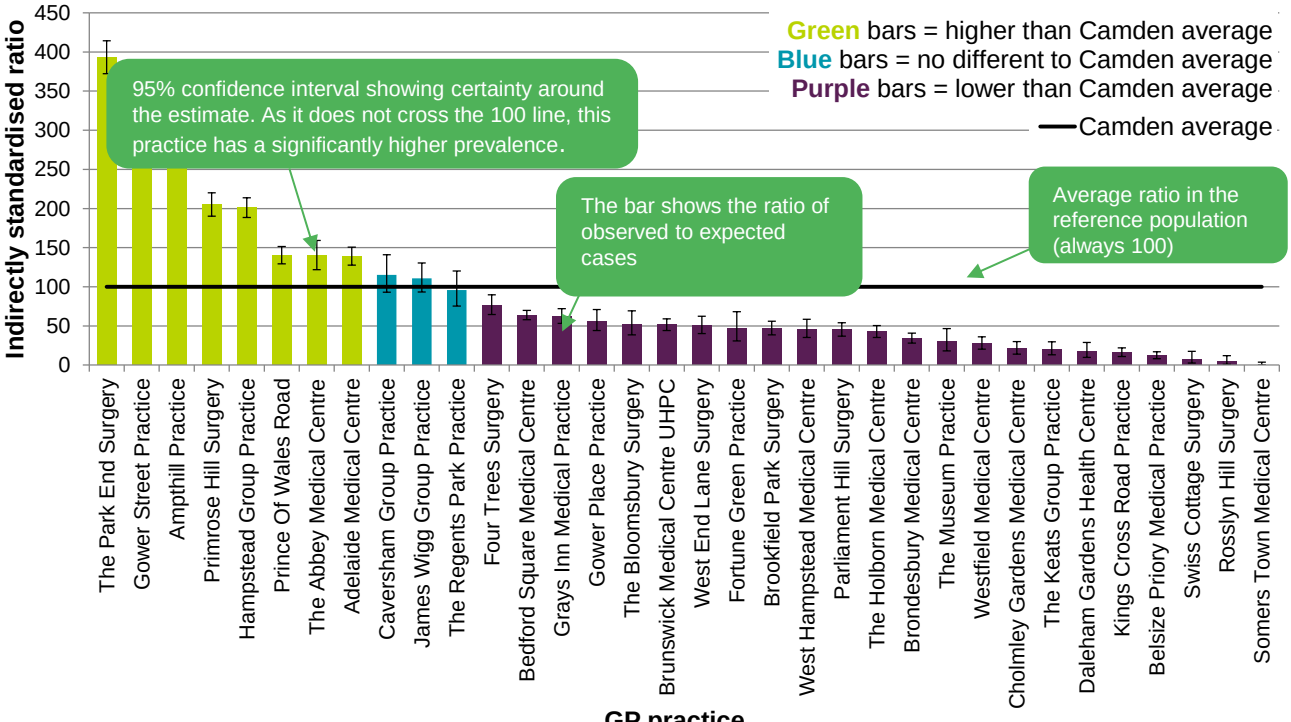
Why is it used?

- These ratios are the number of people diagnosed with each condition, relative to the number of events expected if the practice had the same disease profile and age structure as Camden overall.
- By using the standardised ratios, any differences in disease prevalence because of differences in age structures are taken into account. This allows for direct comparisons to be made (robustly) between practices with different population age structures.

Interpreting the values

- The Camden average is always 100. If the IDSR is over 100, it means that the practice had a higher than expected prevalence of the condition compared to Camden (and this was not due to the practice having an older population, for example). If the IDSR is less than 100, it means the practice had a lower than expected prevalence.
- The size of the IDSR tells how different a practice is from Camden. For example, an IDSR of 150 for a practice show that prevalence is 50% higher than the Camden average. Conversely, an IDSR of 60 indicates that the practice was 40% lower than the Camden average.

Indirectly standardised ratio of those individuals with recorded Vitamin D deficiency by GP Practice, Camden's registered population, Sep 2012



Note: Matthewman, Plender Street and Queens Crescent practice have not been shown due to small numbers.
Source: Camden's GP PH Dataset, Sep 2012

Appendix
Understanding the data: GP dataset and definitions

Camden GP PH Dataset

- Much of the epidemiological analysis in this profile has been undertaken using an anonymised patient-level dataset from GP practices in Camden. Data for the GP Public Health dataset was extracted from most GP practices in September 2012 (see below for further details).
- The Camden GP Public Health dataset is based on an anonymised patient-level dataset from GP practices in Camden, in agreement with local GPs. The data extraction was led by Camden and Camden Public Health, with governance from the Camden multi-disciplinary Health Intelligence Advisory Group.
- The dataset includes key information on demographics (including language and ethnicity), behavioural and clinical risk factors, key conditions, details on the control and management of conditions, key medications, and interventions.
- This unique resource means that for the first time in Camden, it is possible to undertake in depth epidemiological analysis of primary care data for public health purposes, strengthening evidence based decision making within the borough at all levels.

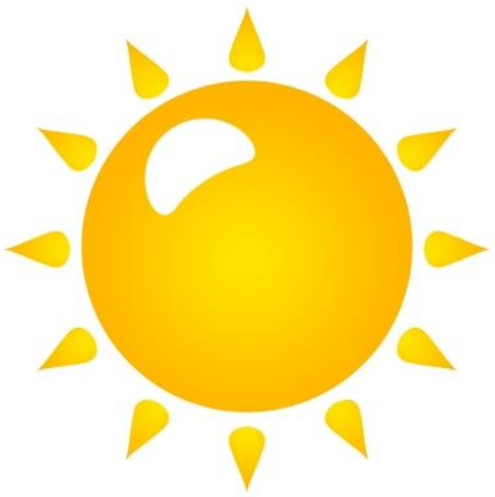
Disclosure control

- Practices with small numbers have been excluded from charts for disclosure control. Practices that have been excluded are noted on each chart.

Vitamin D Deficiency

This section explains vitamin D deficiency and looks at the estimated UK prevalence and current guidelines.

What is vitamin D and where does it come from?



- Vitamin D is a fat soluble vitamin.
- Vitamin D is essential for skeletal growth and bone health. Severe deficiency can result in rickets (among children) and osteomalacia (among children and adults).
- There is also evidence that vitamin D deficiency may be implicated in several forms of cancer, cardiovascular disease, autoimmune disease and diabetes.
- The main natural source of vitamin D is from the action of sunlight on skin. However, from October to the beginning of April in the UK there is no ultraviolet sunlight of the appropriate wavelength for skin synthesis of vitamin D.
- Dietary sources of vitamin D are limited.

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Who is at risk of vitamin D deficiency?

- NICE estimates that approximately 1 in 5 adults, and around 1 in 6 children, may have low vitamin D status – an estimated 10 million people across England and 47,000 people in Camden.

- Several factors potentially affect vitamin D status. These include genetic factors, adiposity and factors affecting the skin synthesis of vitamin D such as skin pigmentation, age, season, latitude, melanin concentration, clothing and use of sunscreens.

- **Specific at risk groups where the Department of Health recommends supplementation:**
  - Children aged under 5
  - Pregnant or breastfeeding women
  - People aged over 65
  - People who have low or no exposure to the sun for example, those who cover up their skin for cultural reasons, who are housebound or confined indoors for long periods
  - People with darker skin, for example, people of African, African-Caribbean or South Asian family origin

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What is vitamin D deficiency?

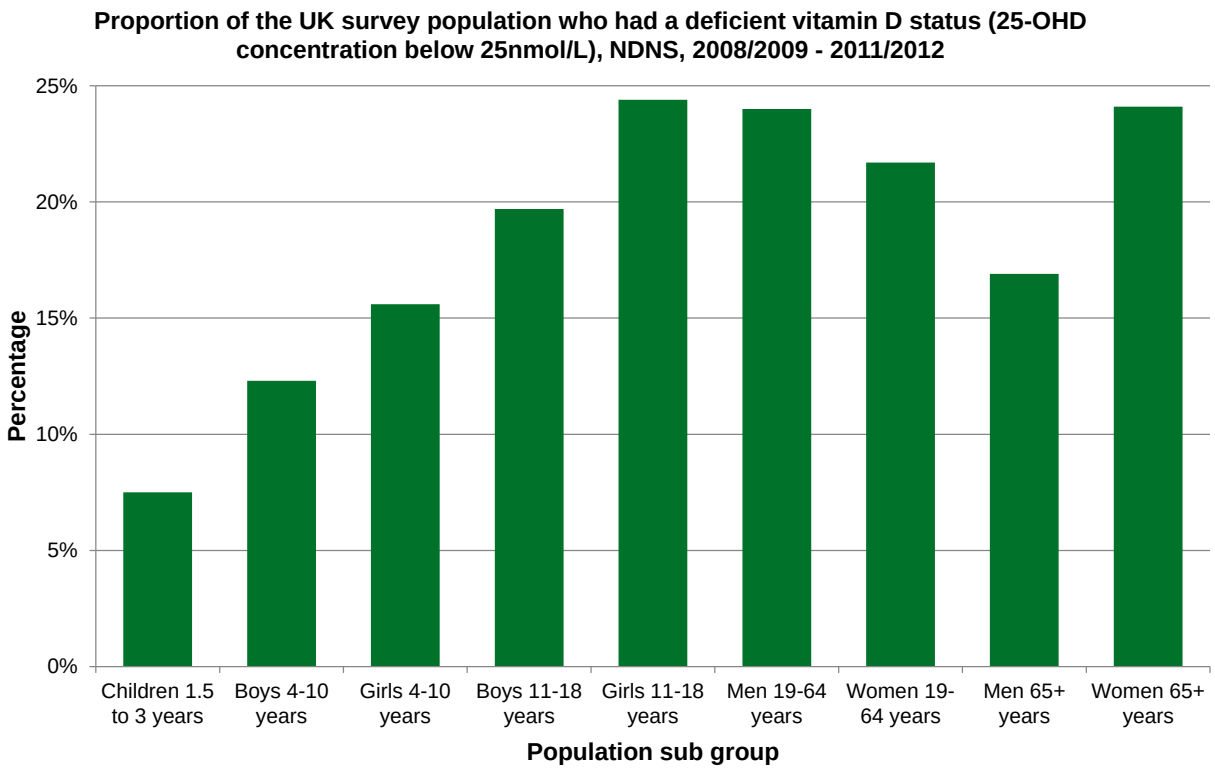
- Blood 25-hydroxy vitamin D (25-OH Vit D) levels are considered the most reliable measure to assess vitamin D status.

- There is currently no standard definition of an optimal level of vitamin D. The Scientific Advisory Committee on Nutrition (SACN) is currently reviewing the dietary reference values for vitamin D intake in the UK population.

- A vitamin D status (25-OH Vit D) below 25 nmol/L is commonly used to indicate deficiency.

- NICE (2014) recommends that Health professionals should not routinely test people's vitamin D status unless:
  - they have symptoms of deficiency
  - they are considered to be at particularly high risk of deficiency (for example, they have very low exposure to sunlight)
  - there is a clinical reason to do so (for example, they have osteomalacia or have had a fall)

UK estimates of vitamin D deficiency



Source: National Diet and Nutrition Survey, 2008/2009 - 2011/2012

- The rolling National Diet and Nutrition Survey programme (NDNS) measures vitamin D status.
- In the 2008/09- 2011/12 NDNS survey 24% of adult men (19-64 years) and 22% of adult women were vitamin D deficient.
- In children the prevalence of vitamin D deficiency increased with age from 7.5% in children aged 1.5 to 3 years to 20% and 24% respectively for boys and girls aged 11-18 years.

Recorded Vitamin D deficiency in Camden

This section looks at the recorded prevalence of vitamin D deficiency in Camden by age, gender, GP practice, ward, locality, ethnicity and deprivation.

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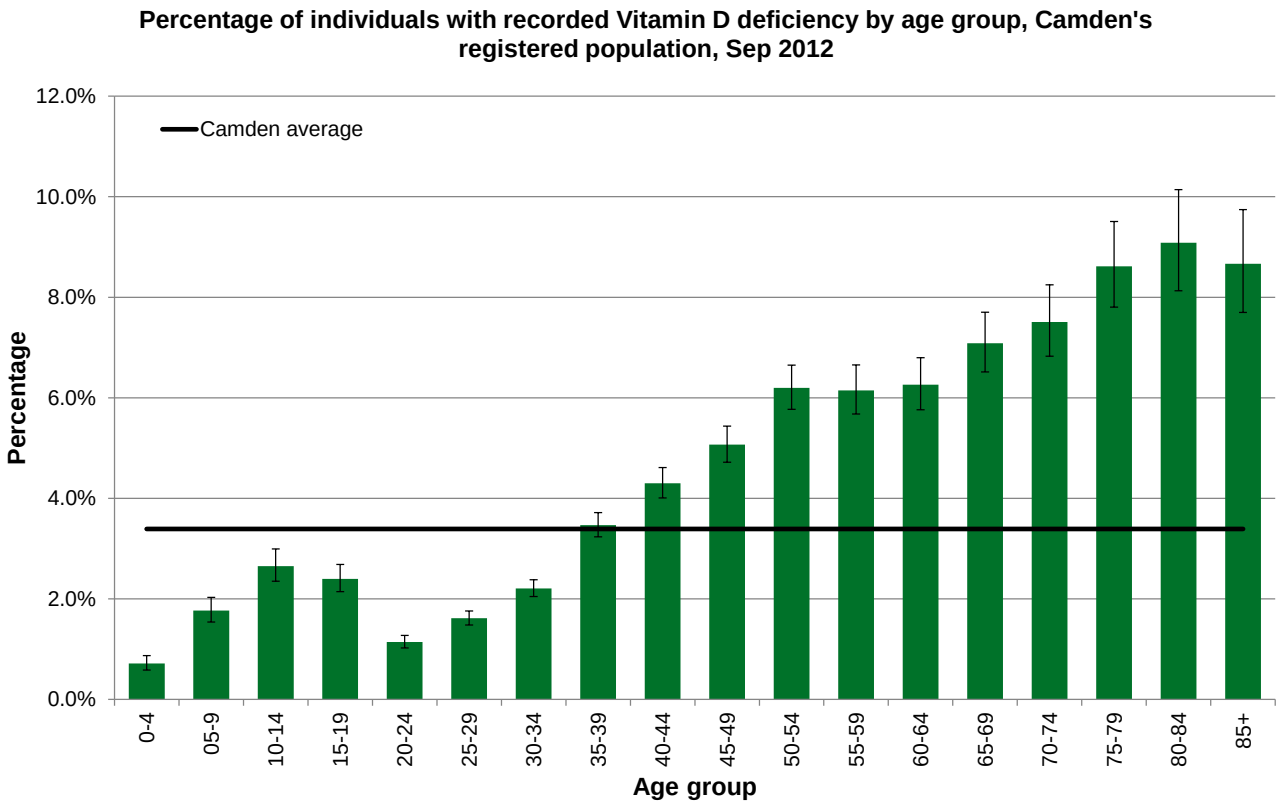
Recorded Vitamin D deficiency by age group



Source: Camden's GP PH Dataset, Sep 2012

- In Camden 3.4% of the registered population were recorded as having a deficient vitamin D status.
- Recorded prevalence of deficiency was lowest in the 0-4 age group (0.7%) and highest in the 80-84 age group (9.1%).
- Given the estimated national prevalence of deficiency the percentage of people with vitamin D deficiency is expected to be considerably higher.
- Under diagnosis may be due to testing only being done on those who were symptomatic.

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

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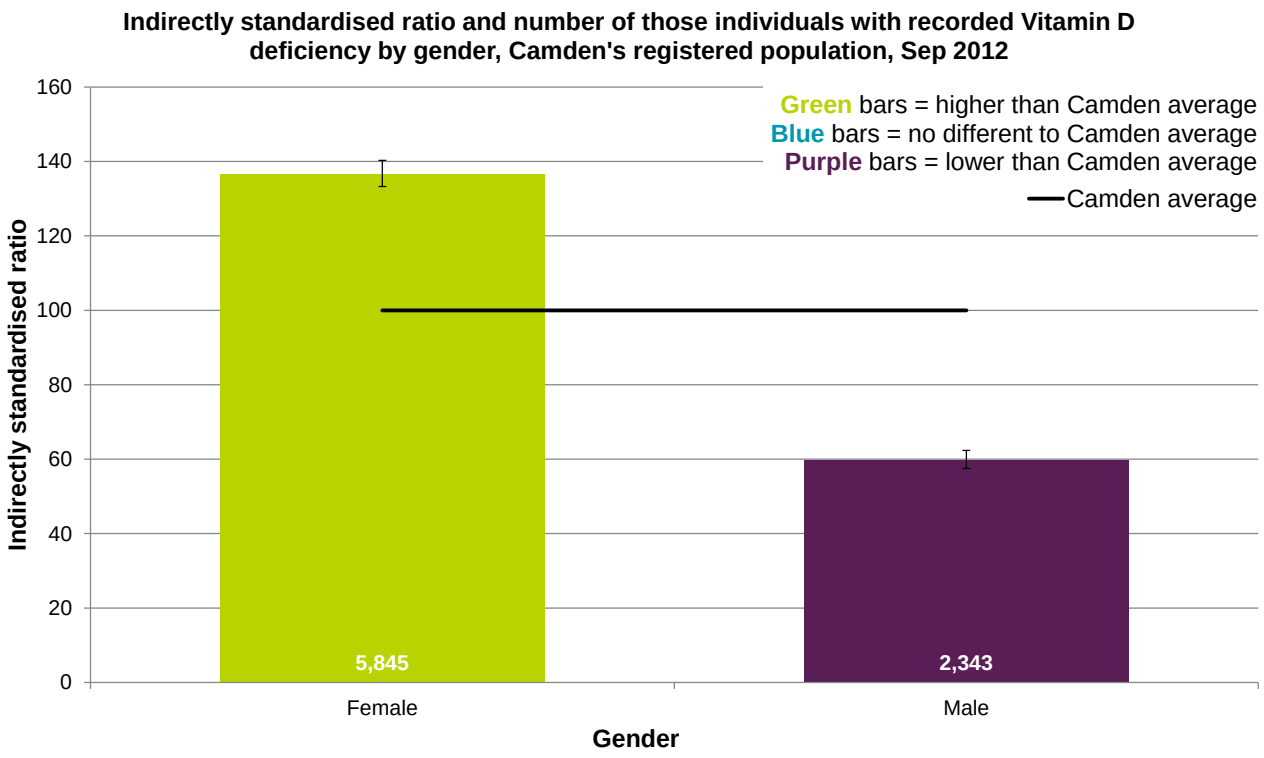
Recorded Vitamin D deficiency by gender



Source: Camden's GP PH Dataset, 2012

- Overall, there is a higher recorded prevalence of vitamin D deficiency in women (4.6%) compared to men (2.1%) in Camden (data not shown).
- When adjusted for age, women are 37% more likely to have a recorded vitamin D deficiency than the Camden average.

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

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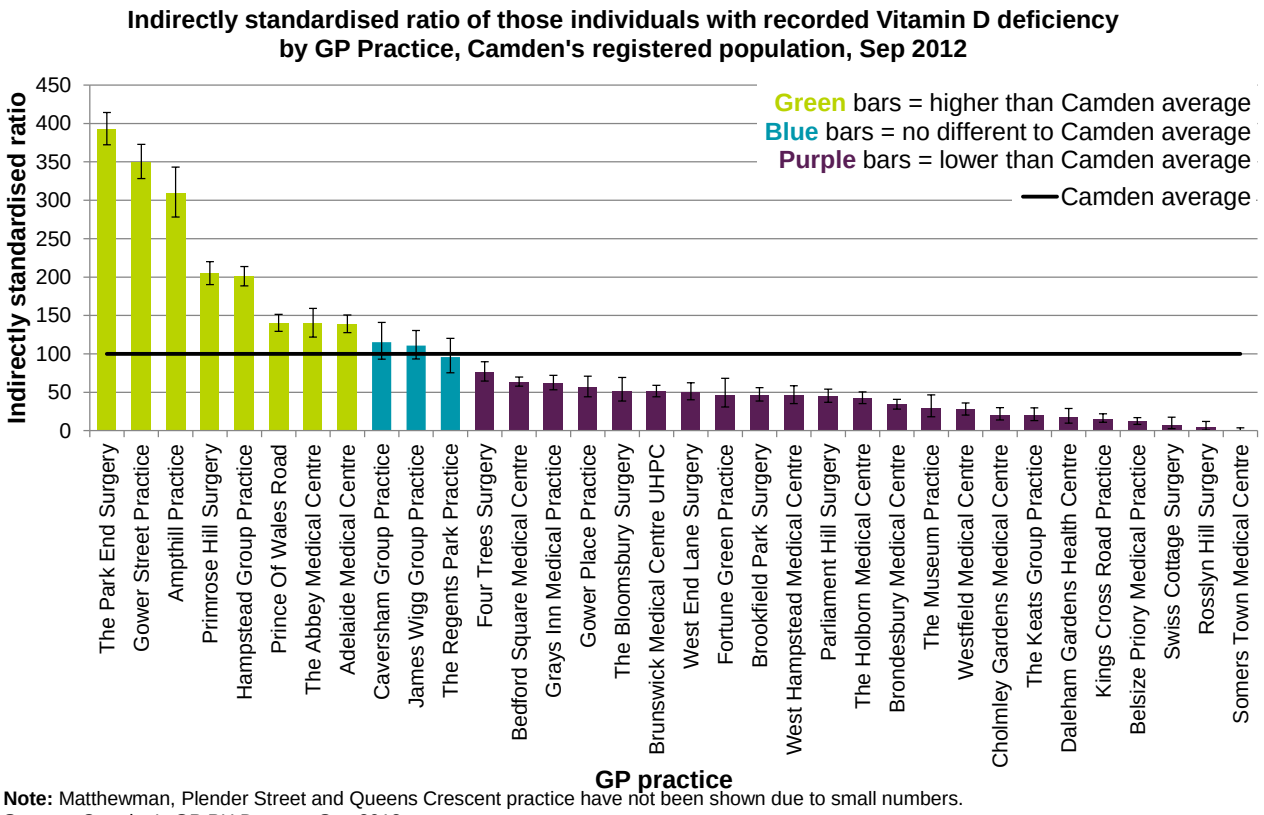
Recorded Vitamin D deficiency by GP practice



Note: Matthewman, Plender Street and Queens Crescent practice have not been shown due to small numbers.
Source: Camden's GP PH Dataset, Sep 2012

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

- There was significant variation by practice in the recorded prevalence of vitamin D deficiency, even after accounting for age.
- Eight practices were significantly above the Camden average whilst 23 practices were significantly below the average.
- The Park End Surgery had nearly four times the risk of recorded deficiency than the Camden average whilst the Somers Town Medical Centre had the lowest.
- This variation could reflect different patterns of testing across GP practices

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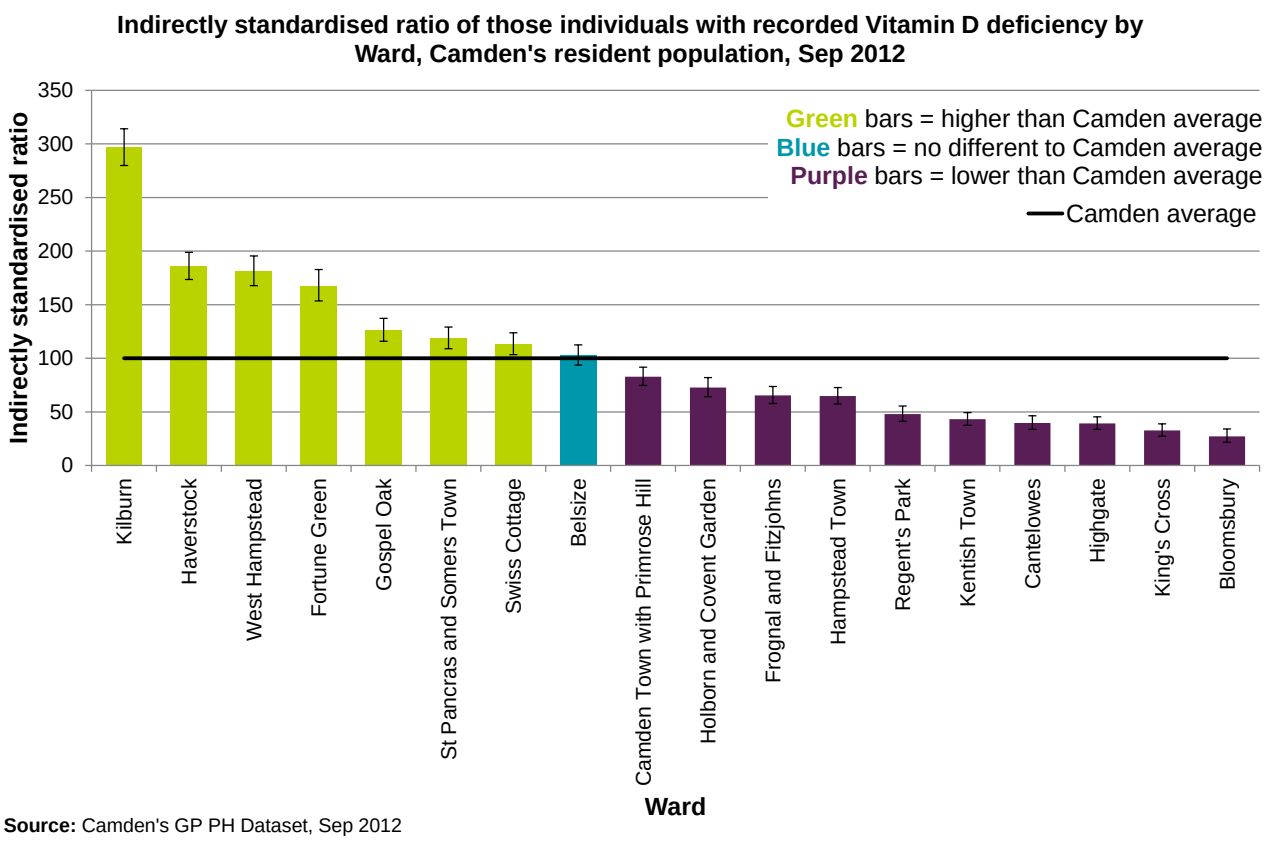
Recorded Vitamin D deficiency by ward of residence



Source: Camden's GP PH Dataset, Sep 2012

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

- The prevalence of vitamin D deficiency ranged from 10.2% in Kilburn to 0.8% in Bloomsbury (Data not shown).
- After accounting for age, seven wards were significantly above the Camden average whilst ten wards were significantly below the average.

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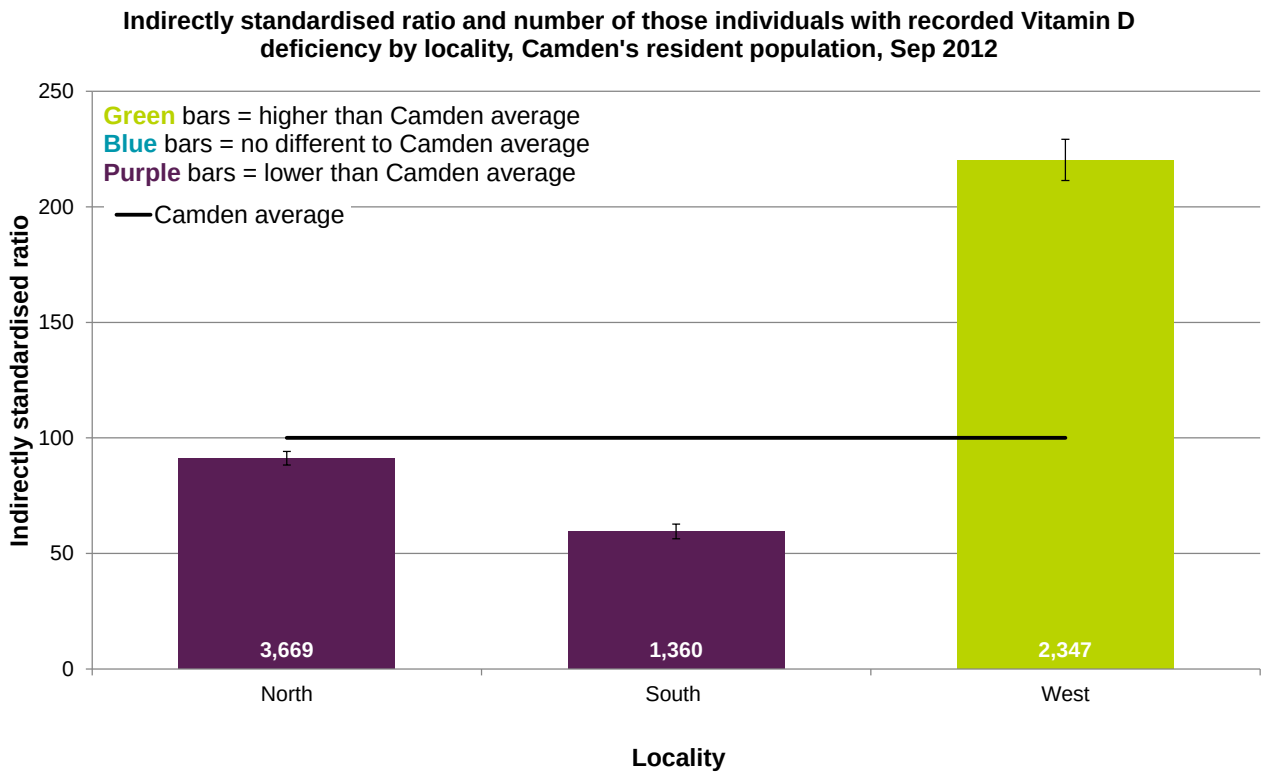
Recorded Vitamin D deficiency by Locality



Source: Camden's GP PH Dataset, 2012

- When adjusted for age, residents in the West locality had over twice the recorded prevalence of vitamin D deficiency compared to the Camden average whilst the North and South localities are significantly lower.

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

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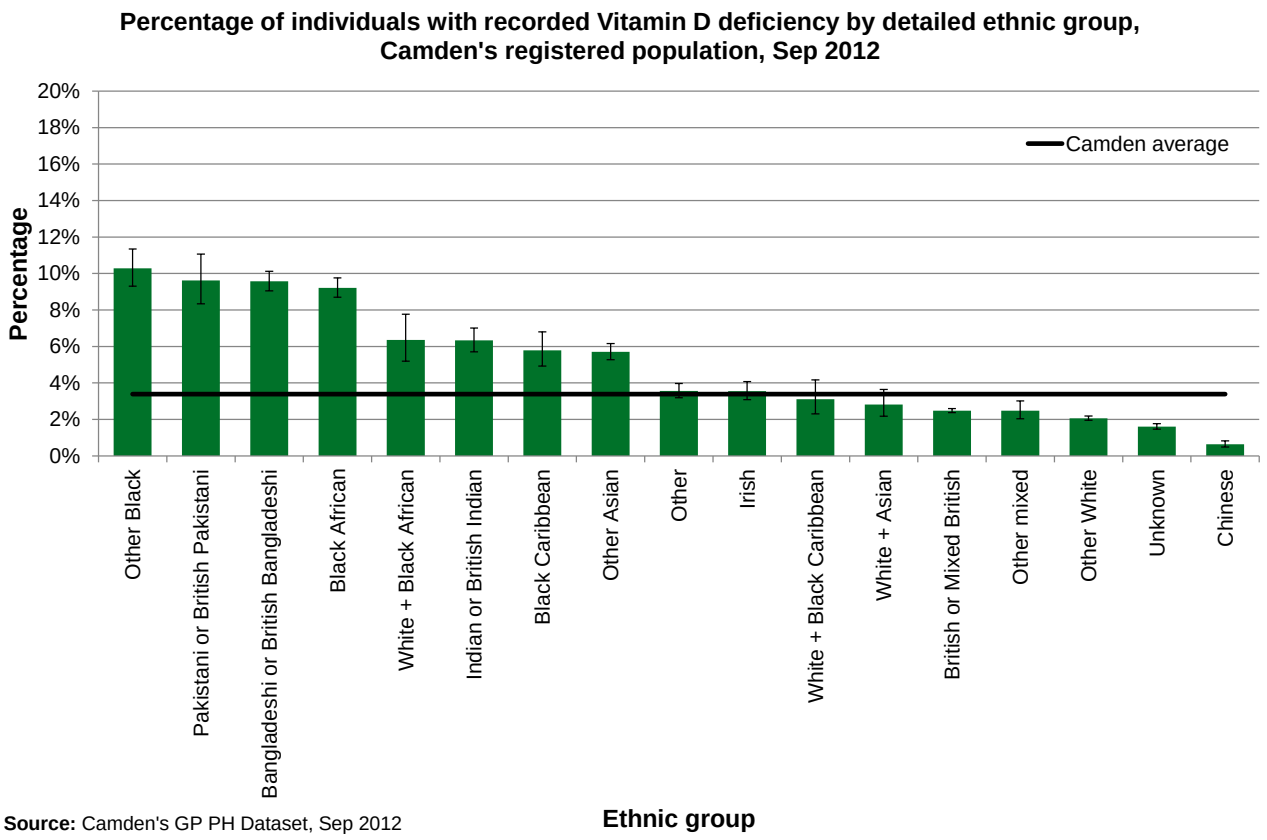
Recorded Vitamin D deficiency by ethnicity



Source: Camden's GP PH Dataset, Sep 2012

- There is a wide range in the recorded prevalence of vitamin D deficiency by ethnicity with a higher recorded prevalence amongst BME groups.
- The highest recorded prevalence of vitamin D deficiency was in the Other Black group (10.3%) followed by Pakistani/ British Pakistani group (9.6%) and Bangladeshi/ British Bangladeshis (9.6%).
- White British were significantly below the Camden average and the lowest recorded prevalence was in the Chinese (0.6%) group.

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

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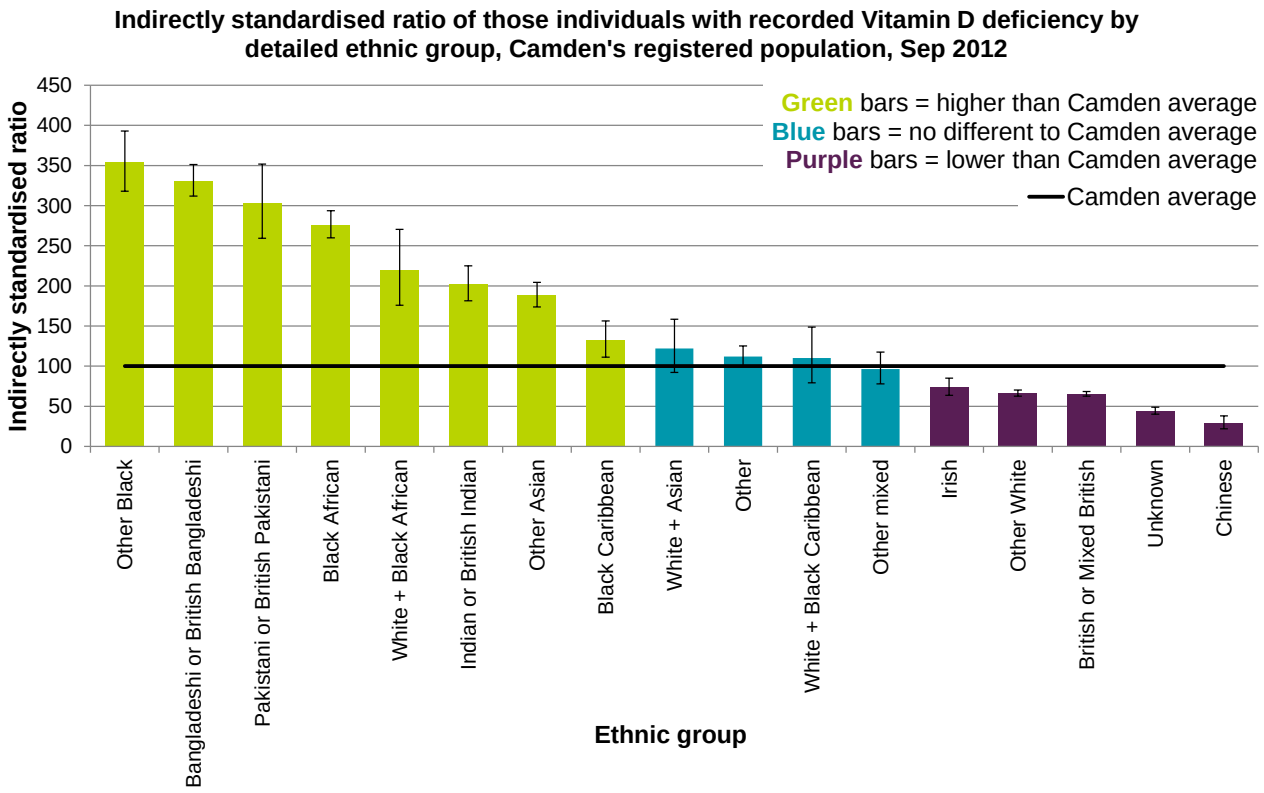
Recorded Vitamin D deficiency by ethnicity



Source: Camden's GP PH Dataset, 2012

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

- When adjusted for age the Other Black group were 3.5 times more likely to be recorded vitamin D deficient than the Camden average.
- The Bangladeshi/ British Bangladeshi and Pakistani/ British Pakistani groups were over 3 times as likely to be recorded vitamin D deficient than the Camden average.

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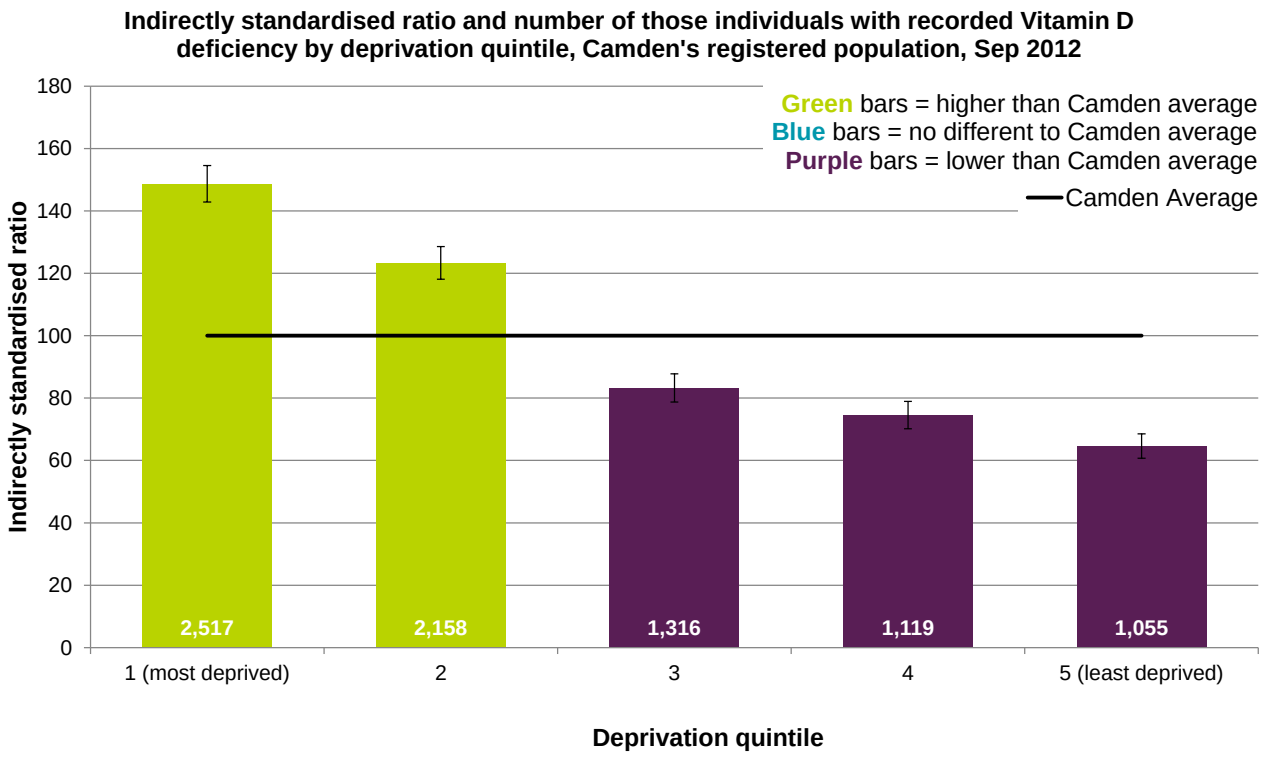
Recorded Vitamin D deficiency and deprivation



Note: 23 Individuals with Vitamin D deficiency have not been included due to their deprivation quintile not being recorded.
Source: Camden's GP PH Dataset, 2012

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

- The recorded prevalence of vitamin D deficiency in Camden increases with deprivation.
- 5.1% of those in the most deprived quintile were recorded vitamin D deficient compared to 2.4% in the least deprived quintile (Data not shown).
- Taking age into account, people living in the two most deprived quintiles are significantly more likely to be recorded with vitamin D deficiency than the Camden average with those in the most deprived quintile 49% more likely to be vitamin D deficient than the Camden average.

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Recorded Vitamin D deficiency in Camden and Body Mass Index (BMI)

This section looks at recorded vitamin D deficiency and body mass index. Vitamin D is a fat soluble vitamin and can be stored in body fat. Obesity is a risk factor for vitamin D deficiency with it being suggested that vitamin D is stored away in fat tissue rather than being released into circulation.

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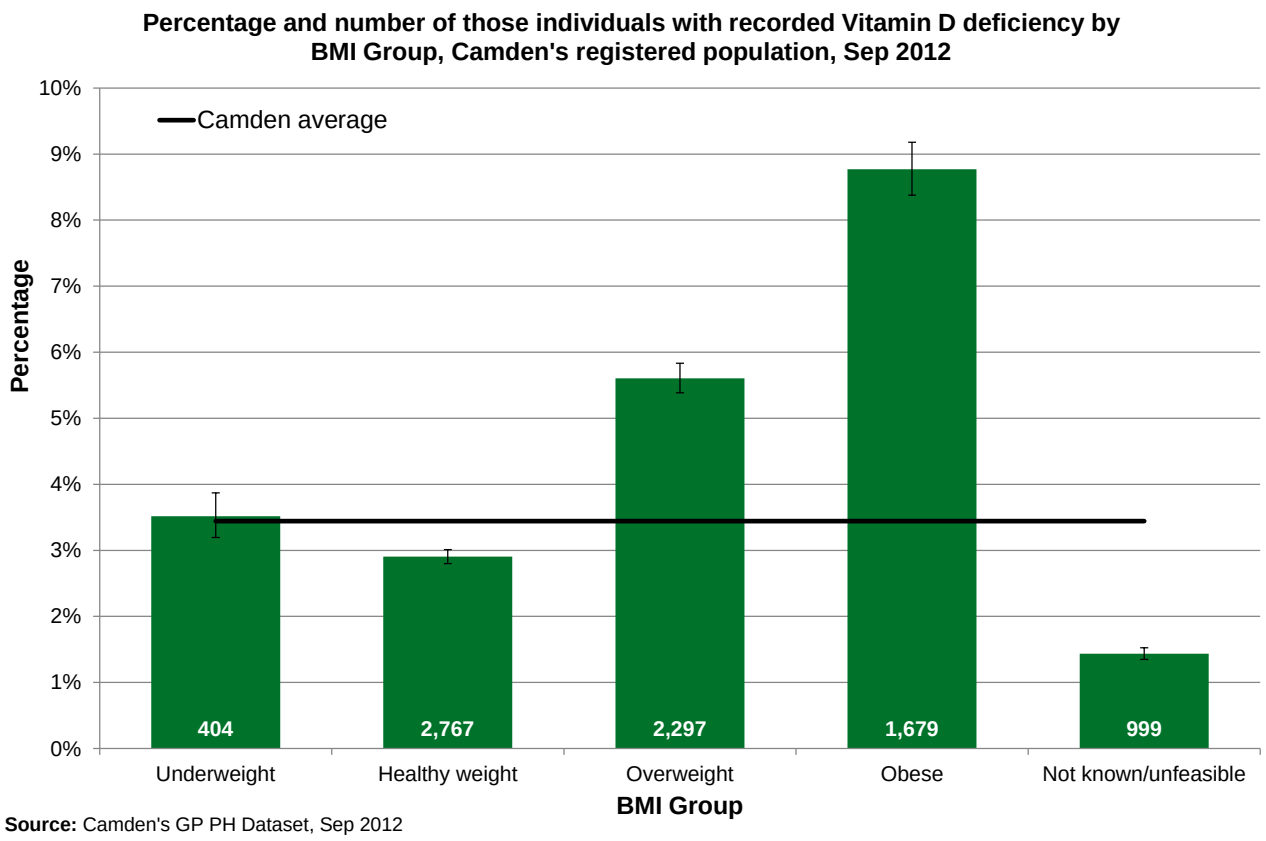
Recorded Vitamin D deficiency and BMI

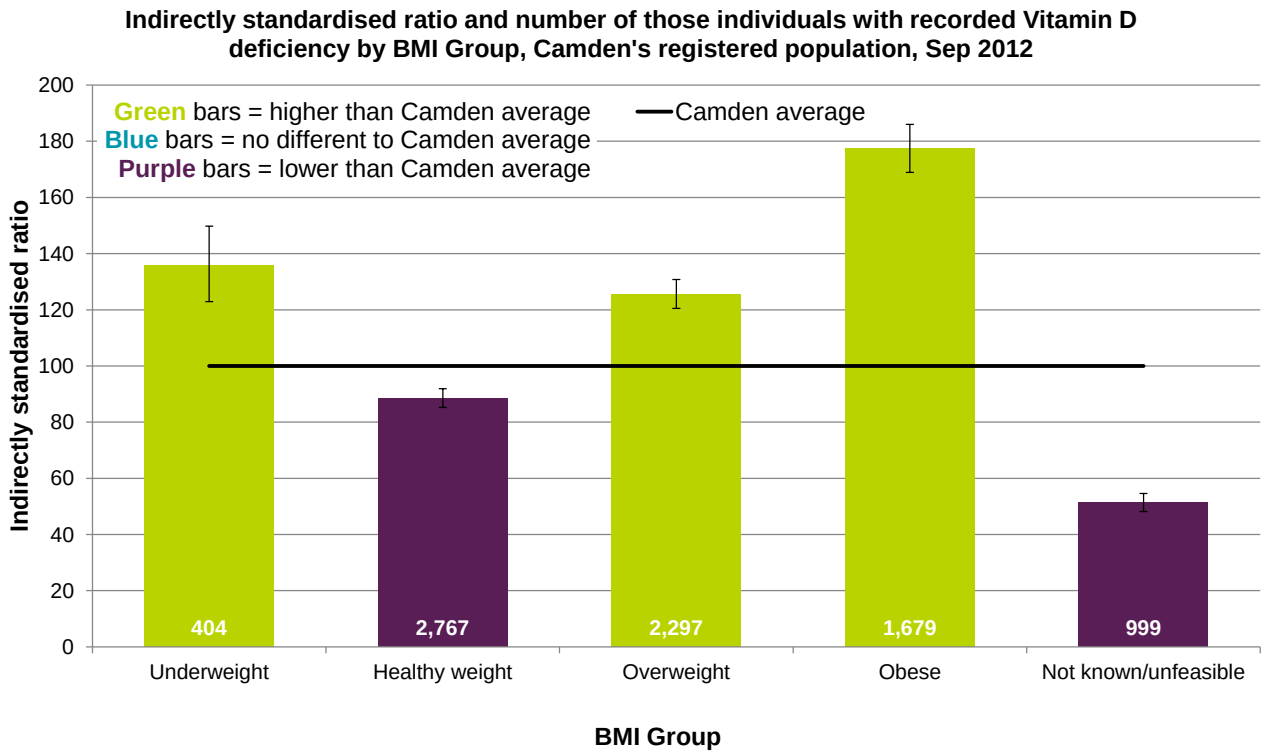


Source: Camden's GP PH Dataset, Sep 2012

- The prevalence of recorded vitamin D deficiency was highest in obese (8.8%) and overweight people (5.6%) which were significantly above the Camden average (3.4%).
- Recorded vitamin D deficiency in underweight individuals (3.5%) was not significantly different from the Camden average whilst prevalence in those of a healthy weight (1.4%) was significantly below the average.

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

Recorded Vitamin D deficiency and BMI



- After adjusting for age, recorded vitamin D deficiency was 77% higher in those who were obese and 26% higher in those who were overweight than the Camden average .
- Recorded vitamin D deficiency was 36% higher in individuals who were underweight. However, the small numbers in this group mean these results should be interpreted with caution.

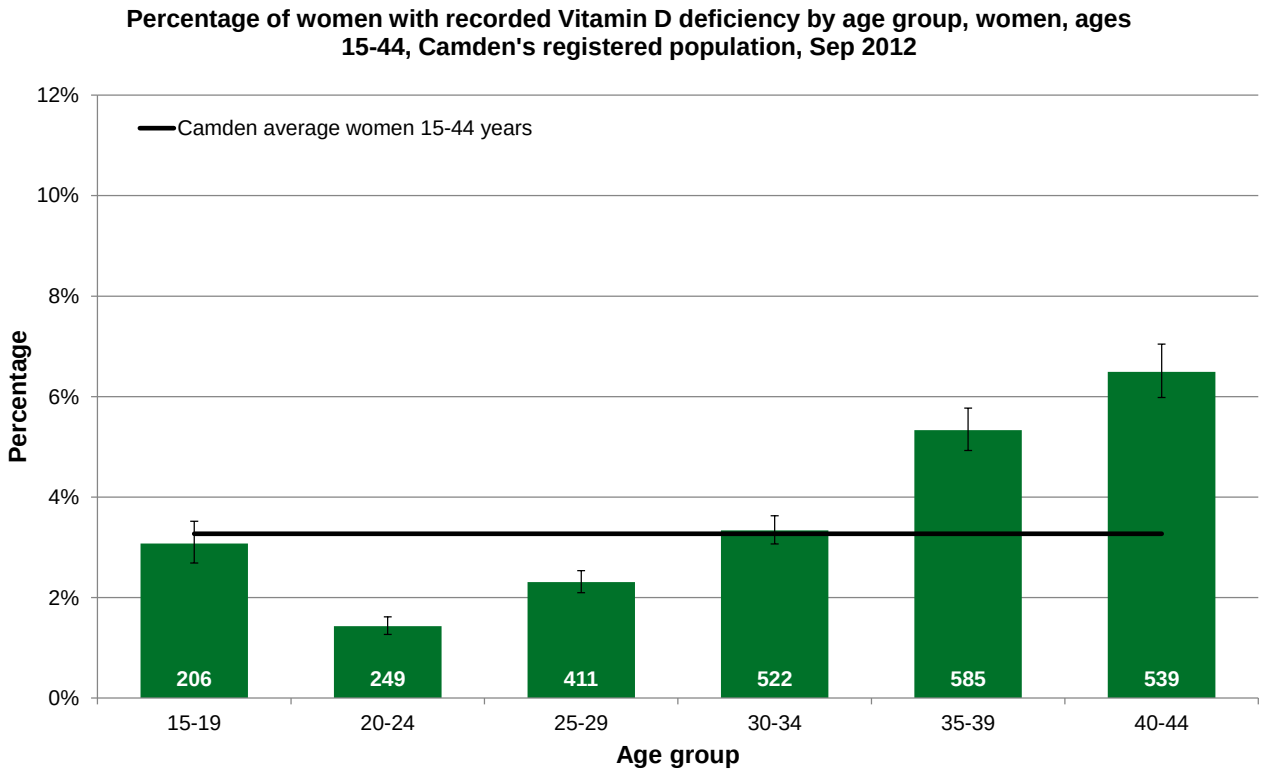
Source: Camden's GP PH Dataset, 2012

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

Recorded vitamin D deficiency in women aged 15-44 in Camden

Women of child bearing age (traditionally measured as women aged between 15-44 years) have been a focus for public health recommendations due to additional nutritional requirements during pregnancy and breastfeeding. In Camden women of child bearing age represent 32% of the population (77,000 women).

Recorded Vitamin D deficiency in women aged 15-44 by age group

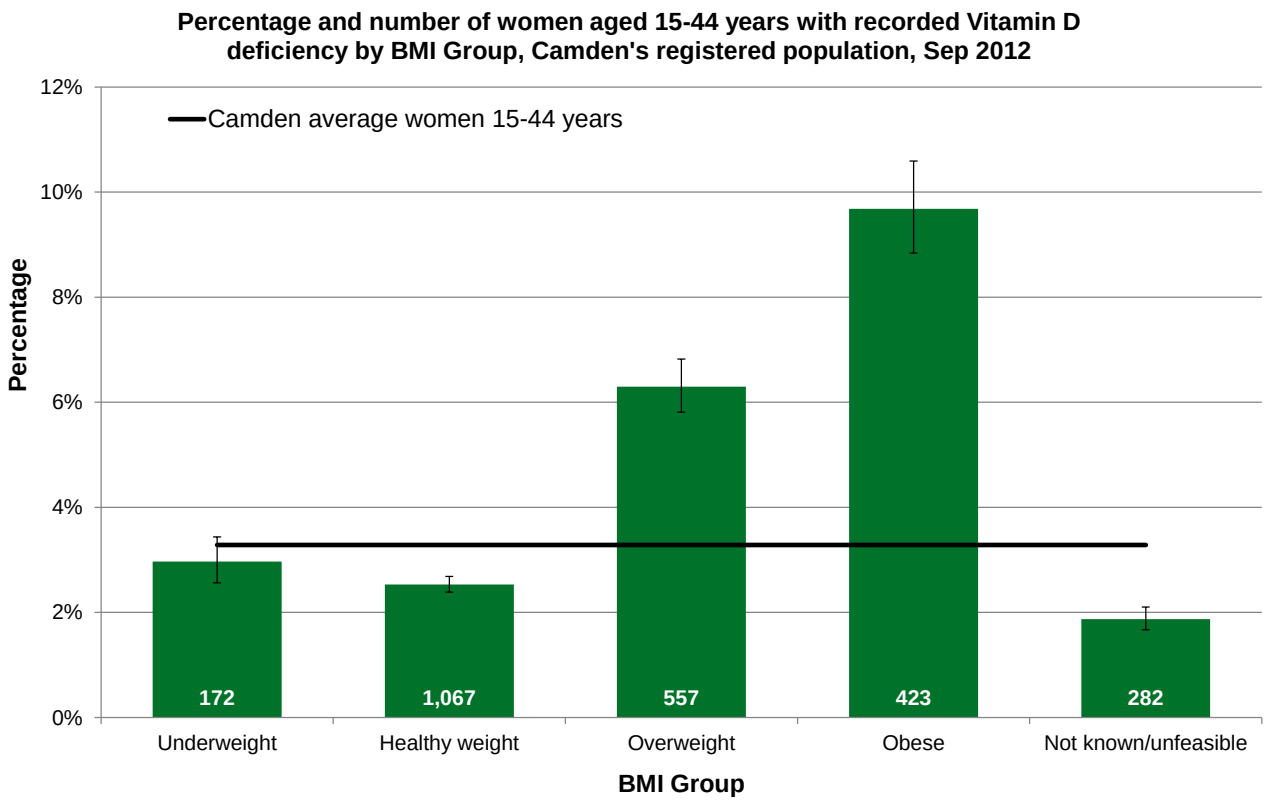


- Overall, the prevalence of recorded vitamin D deficiency was similar in women aged 15-44 (3.3%) in Camden than the Camden average (3.4%).
- Amongst women aged 15-44, the prevalence of recorded deficiency was significantly higher in those aged 40-44 (6.5%) and 35-39 (5.3%).

Source: Camden's GP PH Dataset, Sep 2012

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

Recorded Vitamin D deficiency in women aged 15-44 by BMI group



- Among women between the ages of 15-44, the highest prevalence of recorded vitamin D deficiency is in obese women (9.7%) followed by those who are overweight (6.3%).

Note: 11 individuals with missing data were not included in the analysis **Source:** Camden's GP PH Dataset, Sep 2012

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

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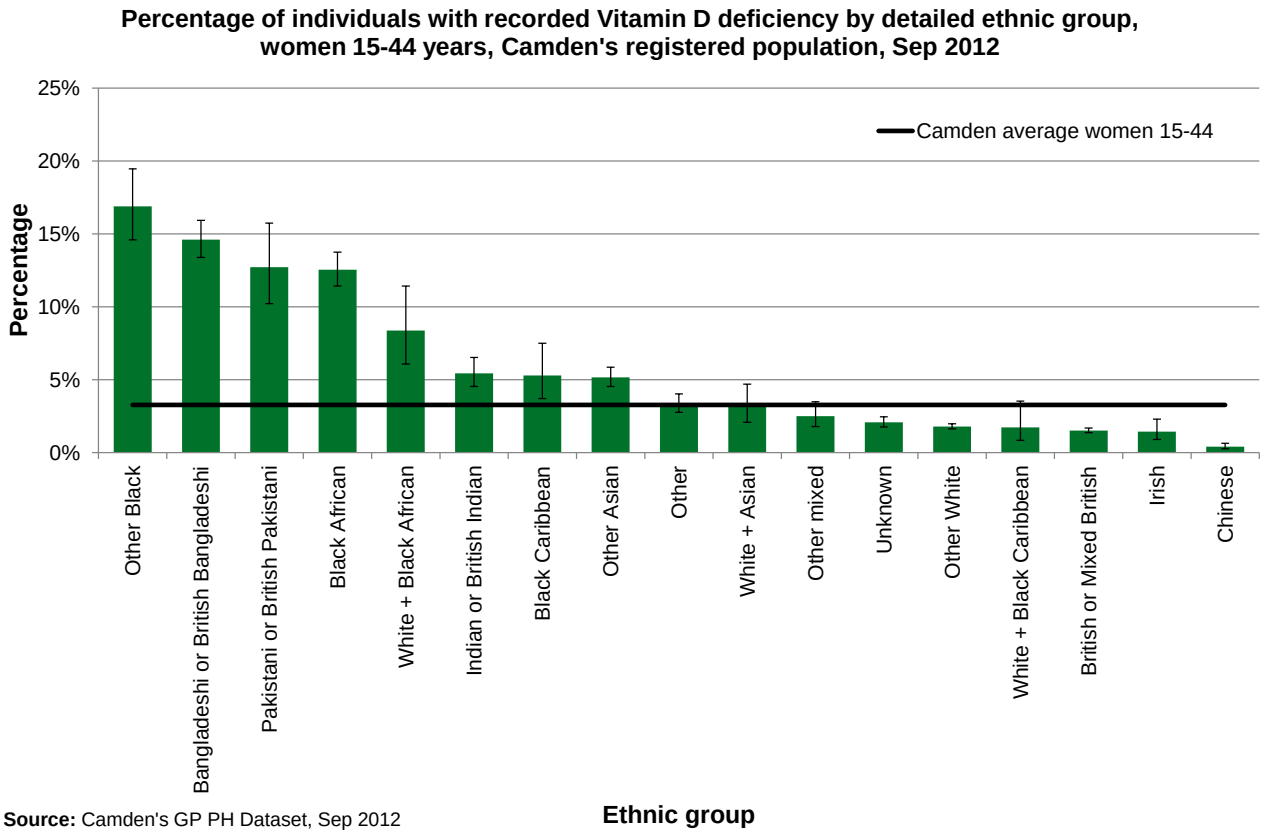
Recorded Vitamin D deficiency in women aged 15-44 by ethnicity



Source: Camden's GP PH Dataset, Sep 2012

- There is a wide range in the prevalence of recorded vitamin D deficiency by ethnicity with a higher prevalence amongst BME groups.
- The highest prevalence of recorded vitamin D deficiency in women aged 15-44 in Camden is in the Other Black women (16.9%) followed by Bangladeshi or British Bangladeshi women (14.6%) which is similar to the recorded deficiency at the overall Camden population level.

Note: Recorded prevalence could reflect different patterns of testing at a GP practice level as the number of Vitamin D tests carried out in each GP practice is unknown. Actual prevalence could be higher than shown as NICE guidelines do not recommend testing unless the patient is symptomatic or has significant risk factors.

About Public Health Intelligence

Public health intelligence is a specialist area of public health. Trained analysts use a variety of statistical and epidemiological methods to collate, analyse and interpret data to provide an evidence-base and inform decision-making at all levels. Camden and Camden's Public Health Intelligence team undertake epidemiological analysis on a wide range of data sources.

FURTHER INFORMATION & FEEDBACK

This profile has been commissioned and created by Camden and Camden's Public Health Intelligence team. For further information please contact Victoria Makepeace-Warne.

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We would also very much welcome your comments on these profiles and how they could better suit your individual or practice requirements, so please contact us with your ideas.