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Nutritional assessment of the diets of prisoners in Young Offender Institutions

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Adequate nutrition is necessary for overall health and development[(1)]. Prisoners in general lack autonomy over their diet, in addition to being a population with a high risk of poor health outcomes[(2, 3)]. It is important therefore that prisons are offered menus which meet dietary reference values (DRVs), as set by the UK government, aiming for equity with the general population, and that prisoners choose food options that are beneficial for their health. The aim of this study was to conduct a nutritional analysis of prisoners' food diaries to determine whether dietary recommendations were being met.

Seven-day food diaries were collected from prisoners eating the normal food supplied by three young offender institutions in 2009. Food eaten was analysed using DietPlan6 version 6.0 (Forestfield Software Ltd). Individual nutrient data were tested for normality and compared against the UK DRVs and NDNS data from 2008/9 using either the one-sample T-test, or one-sample Wilcoxon Signed Rank Test. Data in the results is presented as (Mean ± SD).

There were n=466 diaries analysed, from male participants aged between 16 to 24 years. Twenty- eight nutrients were compared with their respective DRVs by age categories: 16-18y (n=156), 19-24y (n=310), and 16-24y (n=466).

For ages 16-24y, chloride (5556 ± 1692mg), folate (302 ± 112ug), iodine (195 ± 81ug), monounsaturated fat (35 ± 10g), potassium (3667 ± 1161mg), sodium (3899 ± 1392mg), sugar (136 ± 73g), riboflavin (2 ± 1mg), vitamin B_{12} (6 ± 4ug), vitamin C (92 ± 63mg), and zinc (11 ± 3mg) exceeded DRV requirements (P<0.01). Carbohydrates (53 ± 5%E), saturated fat (12 ± 5%E), and sugar (19 ± 9%E) all exceeded their DRVs (P<0.05). Vitamin A (553 ± 531ug) and fibre (15 ± 6g) were found 24% and 18% lower than the DRVs, respectively (P<0.01). Fat (34 ± 5%E), polyunsaturated fat (6 ± 1%E), and protein (14 ± 2%E), as a percent of energy, were below the DRV by 3%, 8%, and 7% respectively (P<0.01). Magnesium (301 ± 107mg) was equal to the DRV (P=0.81).

For 16-18, and 19-24 respectively, calcium (1286 ± 928mg; 1337 ± 489mg), copper (1 ± 0.6mg; 2 ± 0.6mg), iron (14 ± 5mg; 15 ± 6mg), niacin (19 ± 7mg; 21 ± 7mg), phosphorus (1545 ± 381mg; 1620 ± 493mg), protein (96 ± 24g; 100 ± 29g), thiamine (2 ± 0.6mg; 2 ± 0.7mg), and vitamin B_6 (2.3 ± 0.7ug; 3 ± 0.9ug) exceeded their DRV (P<0.01). For 16-18y, energy (kcals) was equal to the DRV (2748 ± 787kcal, P=0.91). For years 19-24y, energy (kcal) exceeded the DRV (2931 ± 939kcal, P<0.01).

This study represents the largest assessment of dietary intake of prisoners and demonstrates that the prison catering, for the most part, met the DRVs. However, sugar, fat, and energy intake exceeded their DRV target, posing clear risks to health by possibly contributing to later obesity, hypertension, Type 2 diabetes and heart disease.

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