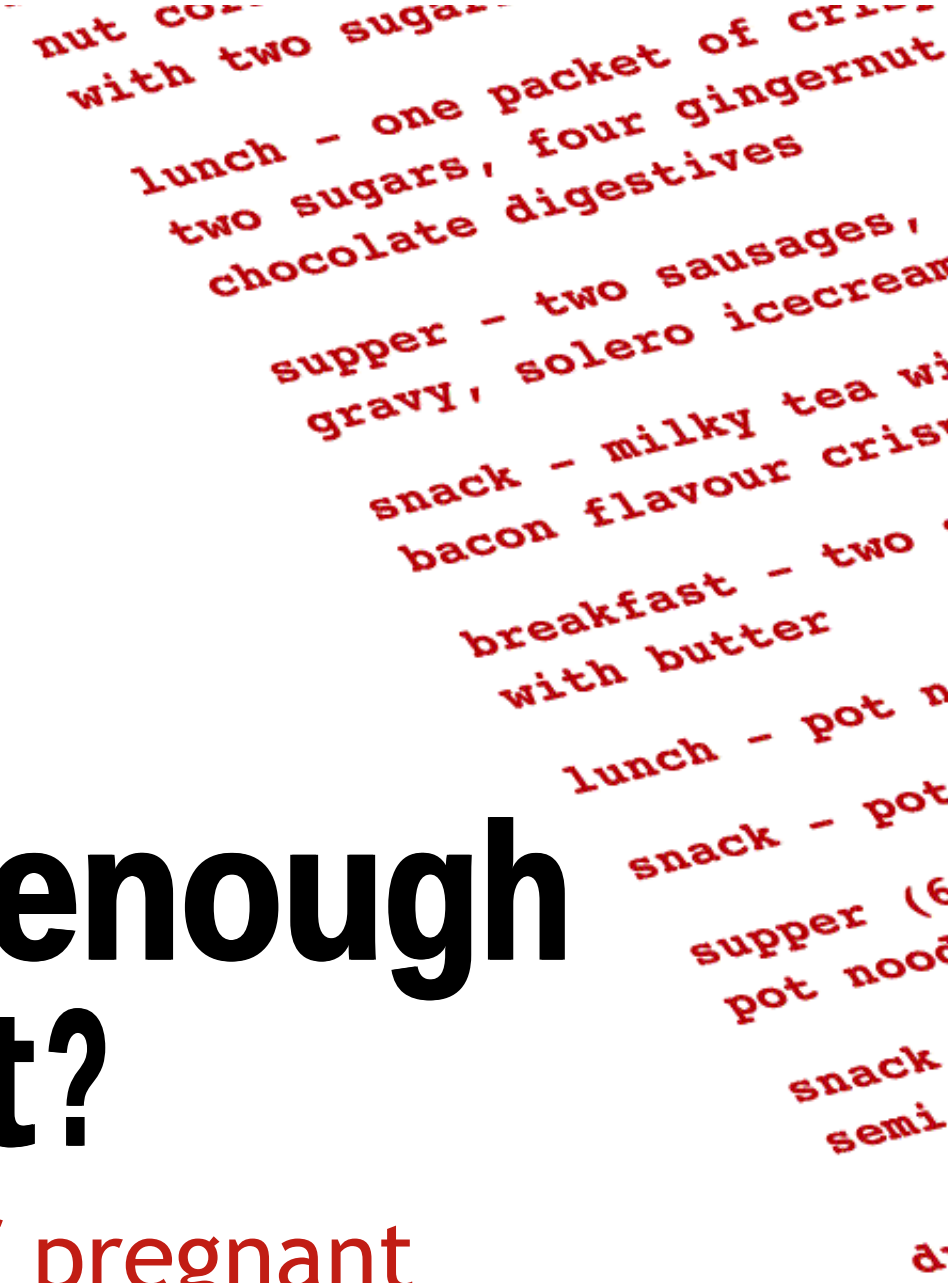

Good enough to eat?

The diet of pregnant teenagers

Helen Burchett
Public Health Policy Officer
Maternity Alliance

Annie Seeley
Campaigns and Research Officer
The Food Commission

THE MATERNITY ALLIANCE

THE FOOD COMMISSION
Publisher of the Food Magazine

For Arthur Wynn

The Maternity Alliance and the Food Commission publish this report in loving memory of Arthur Wynn, a great friend of both organisations, who died in September 2001, aged 91. In partnership with his wife, Peggy, Arthur spent the last thirty years of a highly productive life campaigning for better nutrition for mothers and babies. Together they built up a vast amount of research, providing ammunition for policy and campaigns, that was richly detailed, beautifully crafted, fiercely argued and with unexpected personal insights.

Everything Arthur Wynn did was directed to the future. This report is intended to generate debate about ways to provide better support for today's pregnant teenagers and tomorrow's babies. Arthur would want us to consider the preconception diets of the young women; we will do that elsewhere and, that aside, we hope that he would approve.

Contents

Executive summary

When a teenager becomes pregnant she needs all the help and support she can get. Babies born to teenagers are more likely to have lower birthweights, increased risk of infant mortality and an increased risk of some congenital anomalies[1]. Pregnant teenagers are more likely to be disadvantaged than non-pregnant teenagers and this tends to continue after the birth, with teenage parents often living on a low income[2]. Evidence suggests that the poor health outcomes experienced by pregnant teenagers and their babies are due more to poverty and social exclusion than young maternal age itself[3]. The importance of nutrition during pregnancy for the health of both mother and child is well documented[4].

"I miss meals probably because I ain't got enough money and I haven't got any food in."

Teenagers are renowned for their unhealthy eating habits[5]. Nutritional needs are high in adolescence as the body grows and develops; yet evidence shows that teenagers often have inadequate diets. Their diets tend to be high in sugar, salt and saturated fat and lacking in fruit and vegetables[6]. Common teenage eating behaviours include skipping meals, frequent snacking on foods high in fat or sugar or low in nutritional value, and a reliance on convenient and fast foods[7].

"I'd eat all the time if we had the money!" 16 year old, 7-9 months pregnant, living with partner

The present report looks at the diets being eaten by pregnant under 18 year olds. If such young women are failing to eat healthily, both their health and that of their growing baby are at risk. Inadequate nutrition during pregnancy will affect the mother's long-term health, as the growing foetus draws on her nutrient reserves, and it will affect the foetus which, deprived of an adequate range of nutrients, will be at risk of stunting and early symptoms of heart disease and diabetes.

"Now I'm making an effort to eat them (fruit and vegetables) because I want my baby to be healthy."

Interviews were carried out with 46 pregnant teenagers aged under 18 from seven locations around England. Most of the teenagers consumed too many high salt/sugar/fat foods in the 24-hour period analysed. Commonly consumed foods included milk, breakfast cereals (usually sweetened), squashes/fizzy drinks, white bread and crisps/bagged snacks. Almost all of the teenagers did not eat enough fruit and vegetables. A nutritional analysis of a sample of participants showed that the majority ate diets that did not meet energy requirements (despite frequent consumption of high sugar/fat foods). Most ate too much fat (particularly saturated fat), too much sugar and not enough fibre. Insufficient intakes of vitamin A, magnesium, zinc and vitamin C were common.

Most participants missed meals frequently and the two main reasons for this were not being hungry and not having the money.

Almost all participants had made changes to their diet since becoming pregnant and over half had made healthy improvements. Changes were made because of changes in taste (e.g. cravings, nausea) and because their pregnancy created a motivation to eat more healthily for the sake of their baby's health.

Most of the teenagers were aware of the basic components of a healthy diet. However, taste preferences were the most common reason for not eating the foods they thought they should. Everyone remembered receiving some form of dietary advice; the most common source was midwives. However, negative advice (i.e. what foods to avoid or cut down on) was more easily recalled than positive advice about what to eat more of. The majority reported trying to follow the advice given. Of those who did not follow advice, or only followed it sometimes, almost all said that this was because it was too expensive.

Food choices were affected by financial constraints for a substantial number, with more 'cheap fillers', less variety and less fresh produce eaten as money ran out.

These problems were particularly common for those living away from family, although some were able to visit family to eat, or to borrow money for food.

Family had a considerable impact on the food that the young women ate. For over half, their family shopped and cooked for them so they may not have been in direct control of their food choices. Family often had a positive impact on their diet, encouraging them to eat healthily and providing meals for those living away from family. However, for some, dependence on the family meant eating the same food as the rest of the family, which was often less healthy than they would have liked.

The majority would spend an extra £5 a week on baby things, although a considerable number said they would spend it on food. When asked what they would spend an extra £5 for food on, most said fruit and/or vegetables, although some mentioned less healthy options such as cakes/sweets or takeaways. Several mentioned money management skills/techniques that they used to make the most of their food spending money.

"When I saw the midwife she didn't really say what to eat, she just said what not to eat."

An adequate income is essential if pregnant teenagers are to eat properly for themselves and their growing baby. The present report estimates that the minimum amount a pregnant woman needs to spend on food is just over £20 per week assuming she has local access to a wide range of foods at current average prices, and that she knows what she should buy to obtain a nutrient-rich diet. In such circumstances, an estimated £20.25 would be just enough to buy a 'modest but adequate' diet.

The present survey found that most teenagers who shopped and cooked for themselves are not able to afford even this modest amount. For a pregnant woman aged 16-17 who is living at home, the benefit rate is £32.90 per week. If she is living away from home and can prove that she is estranged from her parents, the rate is £43.25. The benefit rate for a woman aged 18-24 is £43.25 and for women aged 25 or older it is £54.65. Furthermore, for those aged 16-17, this money is available only after she has been pregnant for 29 weeks (with certain exceptions), beyond the time when her growing foetus has the maximum need for essential nutrients.

"I just can't afford them. I love veg and all that, I just can't afford it."

Without sufficient cash, no amount of nutrition information and knowledge, and no amount of skill in food preparation, will help to improve these women's diets. With less than £5 per day to pay for all their needs, it is not surprising that typically less than £3 could be afforded for food. To eat healthily on less than £3 is virtually impossible: sliced ham from Sainsbury's might cost 95p, a lettuce 43p, three tomatoes 35p, half a cucumber 49p and a small wholemeal loaf at the corner shop 65p. That's it. The money is spent and you have not bought enough to survive on. Cheaper less healthy ways to fill up can be easily managed: a packet of custard creams is 39p, a big bag of chips 70p, sausages, sweet tea, white bread, margarine and jam - you can buy enough calorie-dense food to keep you going two days for less than £5.

The dilemma between not enough healthy food and too many fatty, sugary calories cannot be resolved on a low income. For teenage women living alone, especially for those with no support from parents, partner or friends, the risk of a seriously inadequate diet is high. In the present survey, a detailed analysis of the diets of six such young pregnant women found that five were consuming insufficient calories and of these, four had diets that were seriously deficient (less than 1,700 per day). Yet all six were eating more than the recommended maximum amount of saturated fat, and five were eating more than the recommended maximum amount of sugar.

Many of the young women living away from family survived by continuing to depend heavily on their parents, their partners or partner's parents, or their friends. This puts a strain on relationships at an age when these young women are least able to cope, adding to their difficulties and the likelihood of ill health. To

exhort them to improve their diets without offering them the means to do so is worse than futile, for it encourages resentment and distrust.

The nutrition of pregnant teenagers needs more attention. The first step to helping these women to eat a healthy diet is clearly to provide them with the means to shop for and cook the food they need, by ensuring that they have sufficient money to purchase a healthy diet and adequate facilities to cook food. They can then be supported to make the dietary improvements necessary for themselves and their babies. Working to improve the diets of pregnant teenagers will give their children the chance of a healthy start in life and so provide a sound foundation for the health of the next generation.

Recommendations

Recommendations to the Department of Health, the Benefits Agency, Sure Start Plus and the Foods Standards Agency arising from the findings of this survey.

"...I normally just fill myself up on bread or crisps or chocolate because it's cheap."

- Pregnant teenagers should be entitled to welfare benefits as soon as they confirm their pregnancy, rather than having to wait until they are 29 weeks pregnant.
- All pregnant women should be entitled to the same rates of benefit as the current rates set for women over the age of 25.
- All pregnant under 18 year olds should be entitled to welfare foods (Healthy Start foods), irrespective of welfare benefit entitlement, as soon as they confirm their pregnancy.
- A pregnancy premium should be introduced for all pregnant women on benefit to ensure that nutritional requirements can be met at a time when other expenses also increase.
- The Benefits Agency should ensure that sufficient training and monitoring of staff is in place so that women are not given incorrect advice or wrong benefit amounts.
- The Food Standards Agency should carry out routine assessment of the costs for a "modest but adequate" diet, with allowances made for specific dietary requirements and local price variations.

"I have to have veg, me mum always makes sure I have veg."

- The Food Standards Agency should include pregnant women as a specific group in National Diet and Nutrition Surveys.
- Accommodation for pregnant teenagers living away from family should provide suitable food storage and cooking facilities.
- Training for midwives and other health professionals should reflect the fact that a pregnant teenager's ability to follow advice offered is affected by her social circumstances and broader determinants to health.
- Programmes involving food-related activities for pregnant teenagers should be provided with sufficient resources and support so that they can evaluate their work thoroughly to identify what works and how successful programmes can be replicated elsewhere.
- More research is needed to identify the barriers to dietary improvements for pregnant teenagers that can inform the development of effective programmes to tackle these issues.

Other policy recommendations that may assist teenage mothers to achieve healthier diets (drawn from previous studies).

- The Department of Health, in partnership with the Department for Education and Skills, should set nutritional standards for school meals based on minimum nutrient levels (the current standards operate on the basis of food groups). Systems for monitoring the implementation of nutritional standards should be put in place.

- The Department of Health, in partnership with the Department for Education and Skills, should ensure consistency of food and nutrition messages in schools, to include the curriculum, food provision in the canteen, vending machine policies, breakfast clubs, snacking and lunchbox policies, etc. This could be implemented through the National Healthy Schools Scheme.

- The Food Standards Agency should push for clear nutrition labelling that is easily understandable, trialled with young people, people on a low income, and people from different ethnic origins.

- The Department of Health, in partnership with the Food Standards Agency, should conduct research and develop policies to address the main factors causing poor diets in teenage years, including price, income, availability, nutrition labelling, food marketing, nutrition knowledge and attitudes.

- The Department of Health should issue a guidance note to GPs, encouraging them routinely to offer vitamin supplements to pregnant women, especially young mothers and those on a low income.

- The advertising and promotion of fatty, salty and sugary snacks to children should be restricted.

Introduction

There were over 23,000 conceptions leading to maternities among under 18 year olds in England and Wales in the year 2000[8]; the highest teenage pregnancy rate in Western Europe[9]. Babies born to teenagers are more likely to have lower birthweights, increased risk of infant mortality and an increased risk of some congenital anomalies[10]. Pregnant teenagers are more likely to be disadvantaged than non-pregnant teenagers and this tends to continue after the birth, with teenage parents often living on a low income[11]. There is evidence to suggest that the poor health outcomes experienced by pregnant teenagers and their babies are due more to poverty and social exclusion than young maternal age itself[12].

The importance of maternal nutrition in achieving a satisfactory birthweight is well documented. Poor gestational diet is one of the main causes of low birthweight in developed countries, along with smoking and inadequate pre-pregnancy weight[13]. Birthweight is the single most important determinant of newborn survival and low birthweight (<2,500 g) increases the risk of a variety of illnesses and poor development[14].

Research has found that the average diets of pregnant women do not meet the recommended Reference Nutrient Intakes (RNIs) for key nutrients including energy, magnesium, potassium and folic acid, deficiencies of which are associated with increased risk of low birthweight[15]. The most disadvantaged pregnant women have the lowest nutrient intakes[16]. *Poor Expectations: Poverty and Undernourishment in Pregnancy*, published by the Maternity Alliance and the Food Commission in 1995, found that pregnant women on a low income generally ate diets that did not provide all the nutrients they required[17].

Teenagers are renowned for their unhealthy eating habits[18]. Nutritional needs are high in adolescence as the body grows and develops; yet evidence shows that teenagers often have inadequate diets. Their diets tend to be high in sugar, salt and saturated fat and lacking in fruit and vegetables[19]. Common teenage eating behaviours include skipping meals, frequent snacking on foods high in fat or sugar or low in nutritional value, and a reliance on convenient and fast foods[20].

Aims

This study aimed to look at what foods pregnant teenagers were eating, how they made their food choices and what factors influenced their eating behaviours. We wanted to find out if pregnant teenagers were eating healthily, or whether their diets were cause for concern. We also wanted to know what were the main issues that appear to influence their diets.

Methodology

Between August and November 2002, one-to-one interviews were conducted with 46 pregnant teenagers aged under 18, using a questionnaire that covered:

- Demographic information
- Living arrangements and employment
- Financial circumstances
- Food and drink consumed the previous day (using a 24-hr recall method)
- Frequency of consumption of a range of foods (using a food frequency questionnaire)
- Dietary changes since becoming pregnant, and reasons for these changes
- Perceptions of healthily eating and barriers preventing dietary improvements
- Eating behaviours/patterns
- Dietary advice (from whom, what was it, whether followed and if not, why not)
- Factors relating to food choice e.g. cooking, shopping, special dietary requirements
- Spending choices if more money was available (both general and food-specific spending)

Participants were asked about their diets using two methods; a 24 hour recall and a food frequency questionnaire. In the 24-hour recall, participants were asked to recall everything that they had eaten or drunk from midnight to midnight on the day prior to the interview. Additional questions were asked to prompt participants to describe the foods eaten, and paper plates and bowls were used as an aid to estimate portion sizes. The food frequency questionnaire asked how often certain foods were eaten (e.g. at least once a day, 3-6 times a week). These tools were adapted from a questionnaire used by Kings College Nutrition Department.

The interview questionnaire was piloted before use; pilot interviews were not included in the results.

Participants were identified through professionals (working with pregnant teenagers), such as Sure Start workers and Teenage Pregnancy Advisors. Interviews were conducted in seven locations around England[i]. Only women who were currently pregnant and under 18 years of age were interviewed. They were provided with an information sheet detailing the nature and purpose of the research and a consent form. On completion of the interview, participants were given £10 and a factsheet explaining which welfare benefits they were entitled to. It was made clear to all participants that the interviews were completely anonymous and that, whilst something they said may be quoted in the report, they would not be identifiable. Interviews were tape recorded and responses were logged onto an answer sheet.

i Stoke on Trent, Rochdale, Liverpool, Lambeth (London), Gloucester (West Midlands), Croydon (London), St Leonards on Sea (Sussex)

Findings

Demographics and circumstances

Forty-six pregnant women were interviewed, aged between 14 and 17 years (most were 16 or 17 years old; three were 15 years old and one was 14 years old). Twenty-seven were 7-9 months pregnant and eighteen were 4-6 months pregnant; one was 1-3 months pregnant. None of the women had any other children. Eleven were from ethnic minorities. Two thirds were living with family[ii] at the time of interview. Table 1 shows the living situation of the participants.

Table 1 Living Situation

Living Situation	Number
Family	30
Partner	5
Alone	4
B&B	2
Friends	2
Supported accommodation	2
Other (foster parents)	1
TOTAL	46

"I've moved loads of times since I found out I was pregnant! About four, because I've been moving round B&Bs and stuff like that."

16 year old, 7-9 months pregnant, living with partner

Just over a quarter had moved since finding out they were pregnant, with three women moving three times or more since living with their parents.

Twenty six were involved in a training scheme or were studying; three participants were working (two part time), one was on maternity leave and sixteen were not in employment, education or training.

Financial circumstances

Nearly half received a training allowance (usually £40-45 per week). One fifth of participants received welfare benefits. Of those living with family or partners, half of their families/partners were claiming welfare benefits. Just over a quarter of participants received milk tokens and the same number received free vitamin/mineral supplements (these were prescribed by their GP and were mostly iron or folic acid tablets). Nobody claimed vitamins through the welfare food scheme[iii]. Several participants were receiving the wrong amount of benefit or none

Table 2 Income per week per person

Income per week per person (£)	Number
0	8
1-10	3
11-20	2
21-30	5
31-40	12
41-50	10
51-60	2
61+	4

ii Throughout the report the term 'family' describes the women's own family and that of her partner.

iii Pregnant women claiming income-based jobseekers allowance or income support can get one free pint of milk a day and vitamins A, C and D from antenatal and child health clinics.

at all (despite being entitled) and some had received incorrect advice from the Benefits Agency.

Incomes ranged between nothing and £100 per week. Twenty two women had incomes between £1 and £40 (see table 2). Eight received no money at all each week; all of these women were living with family. Sixteen had an income of more than £40 per week per person; two participants received £100 per week per person (both of these were living with partners).

When asked 'how do you manage on the money you receive each week?', two thirds said that they found it a strain to get by, they had to be careful or they had to borrow money to get by (see Table 3). Only one in ten said that they were able to manage with no difficulty.

Table 3 Responses to 'How do you manage on the money you receive each week?'

How do you manage?	Number
Find it a strain to get by from week to week	12
Have to be careful about money	9
Have to borrow money to get by	9
Able to manage without much difficulty	7
Able to manage with no difficulty	5
No answer	4
TOTAL	46

A weekly menu for a modest but adequate diet during pregnancy was drawn up for our previous report, *Poor Expectations*[21]. In 1995, the average cost of this weekly menu was £18.12. Adjusting this in line with the Retail Price Index (RPI) increase for food, in 2002 the cost of this diet was calculated to be £20.25 per week.

Nearly one third of women (n=14) spent no money on food each week (see Table 4); all of these lived with family or foster parents who bought food for them. Nearly one third spent above £20.25. Two fifths (n=18) spent less than £20.25 on food each week. For ten women, the only food they spent money on were takeaways; all of these also lived with family who bought food for them. For the ones who only spent money on takeaways, spending ranged between £1.00 and £40 per week.

Table 4 Food spending per person per week

Food spending per person per week, including takeaways	Number
£0.00	14
£1-10	10
£11-20	8
£21-30	10
£31-40	3
£41-50	1
TOTAL	46

Health problems

Four fifths of participants said that they had experienced health problems during their pregnancy. Over two thirds had problems related to, or affecting, their food consumption. The most common problems were morning sickness (n=25) and anaemia (n=12).

Daily diets

Three fifths of participants said that what they ate in the 24-hour recall was typical of what they normally ate. The remainder felt that their 24-hour recall did not reflect their typical diet for a number of reasons, such as illness or because of unusual activities that day preventing usual eating patterns.

Frequency of foods eaten

The foods consumed in the 24-hour recalls were classified according to food type (e.g. bread product, processed meat) and the frequency of their consumption was then calculated. This gives an indication of the basic components of the women's diets.

Table 5 Frequency of foods eaten in 24-hour recall

Type of food	Number eating this food (n=46)	Average number of portions
Milk	40	2-3
Bread/toast/rolls	35	3-4
Squashes and soft drinks	34	2-3
Crisps/bagged snacks/pot snacks	31	2
Breakfast cereals	29	1
Low sugar breakfast cereals	13	1
High sugar breakfast cereals	16	1
Vegetable/salad (excluding potatoes)	27	1-2
Processed meat products	26	1-2
Confectionary	25	1-2
Sweet tea/coffee	18	2-3
Chips/French fries	18	1-2
Fresh/lean meat	18	1
Fruit and fruit juice	17	1
Biscuit/cake/dessert	16	4-5
Cheese	15	1-2
Potatoes (not chips/crisps)	12	1
Pastry	9	1-2
Pasta/rice	7	1
Eggs	6	1
White fish and processed fish products	7	1
Seeds/nuts/pulses	3	1
Yoghurt	3	1
Alcohol	2	1-2
Oily fish	0	0

As Table 5 shows, the most commonly consumed food was milk, with 40 of the 46 participants reporting consuming it in the 24-hr recall. In the food frequency questionnaire, slightly less (n=35) reported consuming milk at least once a day.

Breakfast cereals were a common feature of most of the participants' diets. Only three participants reported eating breakfast cereals less than once a week, rarely or never. Half of those eating breakfast cereals chose high sugar varieties.

The most commonly consumed forms of complex carbohydrate were bread products, followed by various forms of fried potato. Almost all of the bread eaten was white rather than wholemeal. Half of the participants reported consuming chips, crisps or other fried potatoes at least once a day and over a quarter ate them on average 3-6 times a week. None of the participants reported eating them rarely or never.

Only two women had eaten the recommended five portions of fruit and vegetables in the 24-hour recall; average consumption was two portions. Three fifths had eaten no fruit or fruit juice and two fifths had not eaten any vegetables or salad. One fifth had eaten neither fruit nor vegetables.

Processed meat was more commonly consumed than fresh or lean meat, with 26 consuming the former compared to 18 the latter. Consumption of fish was very low, with only one in seven eating white or processed fish products in the 24-hour recall. Self reported fish consumption was also low; approximately three quarters of participants reported eating fish or fish products less than once a week, rarely or never. None of the women ate oily fish.

Approximately three quarters of the sample drank squashes or soft drinks and two fifths had drunk sweetened tea or coffee. Over half had eaten confectionary and over one third had eaten biscuits, cakes or desserts. Two fifths estimated that they ate sweets or chocolate at least once a day and a quarter, 3-6 times a week. One third reported eating biscuits or cake at least once a day and one fifth, 3-6 times a week.

Two of the 46 participants reported consuming alcohol (between one and two units of lager) in the 24-hour recall. In the food frequency questionnaire, three women estimated that they drank alcohol once or twice a week and two reported drinking less than once a week. None reported drinking alcohol more regularly than once or twice a week; 41 participants reported drinking rarely or never.

Consumption of foods high in fat, sugar and/or salt

Foods consumed in the 24-hour recalls were classified as high in total fat, saturated fat, non-milk extrinsic sugars[iv], and salt in line with government recommendations, as set out in Table 6. The number of participants consuming these foods, and the frequency of their consumption was then calculated.

Table 6 Classification of foods high in fat, sugar or salt[22]

Amount per 100g (or per serving if larger than 100g)

	High	Low
Total fat	20g	3g
Saturated fat	5g	1g
Sugar	10g	2g
Sodium	0.5g	0.1g

iv Hereafter referred to as 'sugar'

The great majority of women (n=40) had eaten more than five portions[v] of foods that were high in salt, fat and/or sugar. Eight portions were eaten on average. As Table 7 shows, almost all participants ate foods that were high in either salt, sugar or fat and on average several portions of each were eaten.

Table 7 Number of participants eating high salt, sugar and fat foods

	Number eating food (n=46)	Average number of portions eaten
Foods high in salt	44	4-5
Foods high in sugar	43	3-4
Foods high in fat	45	4-5

The table below shows a 24 hour recall that contains ten portions of high salt, sugar and fat foods.

Example of 24-hour recall containing 10 portions of high salt, sugar and fat foods (15 year old, 7-9 months pregnant, living with family)

Time	Food	Classification
Breakfast	Glass of whole milk Crunchy nut cornflakes with whole milk Milky tea with 2 sugars	High in salt & sugar = 1
Lunch	1 packet of crisps Milky tea, 2 sugars 4 gingernut biscuits 2 chocolate digestives	High in salt & fat = 1 High in sugar & fat = 2
Supper	2 sausages, fried chips, peas & gravy Solero icecream	High in salt & fat = 3 High in sugar = 1
Snack	Milky tea, 2 sugars Smoky bacon flavour crisps	High in sugar = 1 (all teas combined) High in salt & fat = 1

v The portions were estimated to be equivalent to the usual amount eaten eg, two slices of bread, or a 33g chocolate bar, a meat pie, or a banana were all classified as a portion of food

Nutritional analysis of 24-hour recalls

A sample of twelve 24-hour recalls was analysed to provide a more detailed breakdown of their nutritional composition. Half were recalls from participants living with family and half from those living alone (in a flat, B&B or in supported accommodation).

Example of 24-hour recall from woman living alone
(16 year old,7-9 months pregnant, living in supported accommodation)

Meal	Food
Breakfast	2 slices toast (white sliced) with butter
Lunch	Pot noodle snack
Snack	Pot noodle snack
Supper (6.30pm)	2 packets of crisps Pot noodle snack
Snack (9pm)	Crunchy nut cornflakes with semi skimmed milk
Drinks	2 cups of coffee with milk and 2 sugars Tea with milk and 2 sugars

Example of 24-hour recall from woman living with family
(16 year old, 7-9 months pregnant)

Meal	Food
Breakfast	2 slices toast (white sliced) with margarine and marmalade 2 shredded wheat with semi skimmed milk Tea with milk
Snack	1 slice of toast with margarine
Lunch	Cheese and onion pasty Meat and onion pie with ketchup 1 cup of tea with milk Onion rings with mayonnaise
Snack	2 packets of crisps 1 can of Dr Pepper
Supper	Chips (homemade, fried) Fried egg with ketchup 1 slice of bread and margarine 1 cup of tea with milk
Drinks	3 cups of tea with milk 1 glass of blackcurrant squash
Snack	Cheese and onion sandwich with mayonnaise
Snack	1 cup of tea with milk 1 small bag of salted peanuts 1 big bag of peanut M&Ms

Macronutrients

An overview of both samples combined shows that many did not consume enough energy but consumed too much fat (particularly saturated fat) and sugar and insufficient fibre.

Table 8 Number of inadequate macronutrient intakes in the 24-hr recall

Nutrient	Classification of inadequate intake[vi]	Family sample (n=6)	Alone sample(n=6)
Energy[23]	Excessive: above 2,500 kcal	3	1
	Inadequate: 1,700-2190 kcal	2	1
	Estimated seriously inadequate: below 1,700 kcal	1	4
Carbohydrates[24]	Less than the recommended intake of between 55-75% of energy intake	3	1
Total fat[23]	More than the recommended 33% of total energy	4	2
Saturated fat[23]	More than the recommended 10% of total energy	4	6
Sugar[23]	More than the recommended 10% of total energy intake	4	5
Protein[23]	Less than the recommended 43.1 grams	0	2
Fibre[23]	Less than the recommended 18 gram	4	5

As Table 8 shows, five of the women living alone consumed insufficient energy compared to three of those living with family. Four of those living alone had energy intakes that could be considered to be seriously inadequate (ranging from 1,160-1,610 kcals), as did one of those living with family (1,400 kcals).

Micronutrients

Looking at both samples together, none of the 12 women met all of their micronutrient requirements. Inadequate intakes were most common for vitamin A, magnesium, zinc, folic acid and iron (eight or more had inadequate intakes of these). Half of those analysed had inadequate calcium intakes and half had salt intakes above recommended maximum intakes.

As Table 9 shows, there are clear differences between those living with family and those living alone, with more women living alone having inadequate or seriously inadequate intakes of vitamins A, B2, B6, C, calcium, folic acid, iron, magnesium and zinc.

"I miss meals probably because I ain't got enough money and I haven't got any food in."

17 year old, 7-9 months pregnant, living alone

Missing meals

Three quarters of participants said that they missed meals sometimes. On average, the women missed three to four meals a week. Two fifths missed four or more meals a week. Half missed breakfast once a week or more and half missed lunch once a week or more. One in four missed an evening meal at least once a week. When asked why they missed meals, one third said it was because they weren't hungry, one quarter because they didn't have enough money and one seventh because they didn't have the time.

Some of the women who were studying or training mentioned that they missed midday meals because they couldn't afford to buy lunch whilst they were out. This has been found in other studies of homeless young people .

vi Reference nutrient intakes were for 15-18 year old pregnant women

"When I'm at college I hardly eat …if I'm out it's 'cos I've got no money and sometimes I don't have much time or I'm in the wrong place." 16 year old, 4-6 months pregnant, living with family

Changes to diet

Almost all of the participants (n=43) had made some changes to their diet since becoming pregnant. Over half had made healthy changes to their diet, such as eating more fruit or vegetables, or cutting down on fatty or salty foods.

"…'cos before I just ate what I wanted and I didn't care, but now I'm trying to [eat healthily]" 15 year old, 7-9 months pregnant, living with family

Over a third had made unhealthy changes, such as eating more chocolate, chips or giving up healthy foods such as fish.

"(Has your diet changed since you became pregnant?) Chips, a lot more chips. They're a lot cheaper." 16 year old, 4-6 months pregnant, living with boyfriend's family (but shops and cooks separately)

"…I normally just fill myself up on bread or crisps and chocolate because it's cheap." 16 year old, 7-9 months pregnant, living with partner

Table 9 Number of inadequate micronutrient intakes in the 24-hour recall

Nutrient	Reference nutrient intakes	Family sample (n=6)	Alone sample (n=6)
Vitamin A[25] (including retinal equivalents)	Inadequate: 350-700mg/d	3	2
	Seriously inadequate: <350mg/d	3	2
Vitamin B1[25]	Inadequate: 0.5-0.9mg/d	0	0
	Seriously inadequate: <0.5 mg/d	0	0
Vitamin B2[25]	Inadequate: 1.1-1.4mg/d	2	1
	Seriously inadequate: <1.1 mg/d	1	2
Vitamin B6[25]	Inadequate: 0.8-1.2 mg/d	0	2
Vitamin B12[25]	Inadequate: 1.0-1.50mg/d	1	2
	Seriously inadequate <1.0	1	0
Vitamin C[25]	Inadequate: 20mg-50mg/d	0	3
	Seriously inadequate: <20mg	2	1
Calcium[25]	Inadequate: 480-800mg/d	1	1
	Seriously inadequate: <480/d	1	2
Folic Acid[25]	Inadequate intake: 200-300mg/d	3	4
	Seriously inadequate intake: <200mg/d	1	1
Iron[25]	Inadequate: 8-14.8 mg/d	3	4
	Seriously inadequate <8mg/d	1	1
Magnesium[25]	Inadequate: 190-300mg/d		
	Seriously inadequate: <190mg/d	12	14
Zinc[25]	Inadequate: 4-7mg/d	1	4
	Seriously inadequate: <4mg/d	1	0
Salt[26]	Above maximum recommended: 6g/day	4	2

Nearly half (n=22) were eating more because of increased appetite. However over three quarters of these did so with 'cheap fillers', many of which are unhealthy, such as chips, pasties and chocolate. One in eight ate more healthy foods, such as milk, fruit and vegetables, potatoes and pasta and over half ate more of both unhealthy and healthy foods. This may reflect both a desire to eat more healthily and the need to satisfy an increased appetite cheaply.

"I'm eating more…I didn't used to eat a lot…" 16 year old, 4-6 months pregnant, living with family

"I've tried to eat all the time now, well at least three meals a day, 'cos before I got pregnant I didn't hardly eat anything, but that's 'cos I'm not living at home really, isn't it?" 16 year old, 7-9 months pregnant, living with partner

Over half made changes because of taste factors, such as cravings, nausea or because they had 'gone off' that particular food. However, for many, becoming pregnant motivated them to improve their diet for the sake of their baby's health. Over a quarter made changes to their diet for health reasons.

"…now I'm making an effort to eat them (fruit and vegetables) because I want my baby to be healthy."

17 years old, 4-6 months pregnant, living with family

"I've cut down on high fat and salt foods like crisps, chocolate, pizza and chips. And more vegetables and meat like chicken, so my baby's got a healthy birthweight and so I don't get too fat that I can't burn it off after I've had the baby." 16 years old, 7-9 months pregnant, living with partner

"I want to give my child a head start; I want my child to be healthy." 16 years old, 7-9 months pregnant, living with partner

Some participants mentioned making changes due to financial restraints, such as eating more own-brand goods and more chips as they were a 'cheap filler'.

"…I normally just fill myself up on bread or crisps and chocolate because it's cheap."

16 year old, 7-9 months pregnant, living with partner

"I have been trying to eat more healthily but it's not that easy…(why not?) well basically because meat and stuff like that is really expensive and you know like they do that really cheap mince but it just tastes so disgusting, I can't eat it." 16 year old, 7-9 months pregnant, living with partner

Awareness of healthy eating

Most of the women seemed to be aware of the basic components of a healthy diet. When asked if there were any foods that they thought they should eat more of whilst pregnant, three quarters mentioned fruit and/or vegetables. Other foods mentioned included meat, fish and dairy products, nutrients such as vitamins, protein and iron or general 'healthier foods'.

"I just can't afford them. I love veg and all that, I just can't afford it."

17 year old, 4-6 months pregnant, sharing flat with a friend

The most common reason given for not eating these foods as much as they thought they should was because they didn't like them; nearly half of participants gave this reason. One in five said that they couldn't afford to eat these as much as they should and one in eight said that they weren't given them, or didn't have them at home. Other reasons mentioned included not being bothered to cook or prepare the food, or not buying the food.

Dietary advice

When asked if they had been given any advice about what foods to eat more or less of whilst pregnant, all of the participants could think of at least one person who had given them advice. The most common source of dietary advice was midwives, followed by The Pregnancy Book[28]. Table 10 shows the common sources of advice.

When asked what advice they had received, most of the participants recalled foods that they should avoid or cut down on during pregnancy, such as peanuts or liver (see Table 11).

Table 10 Sources of dietary advice during pregnancy

Source of advice	Number (n=46)
Midwife	40
The Pregnancy Book	37
Family/friends	33
Booklet	27
Family doctor	19
TV/magazines	11
Support worker	9
Health visitor	2

Table 11 Commonly recalled dietary advice

Advice	Number (n=46)
Eat more fruit and/or vegetables	26
Avoid certain cheeses	16
Avoid liver	15
Avoid nuts	14
Avoid pate	10
Cook eggs properly/avoid runny yolks	9
Cut down on fatty foods	8
Eat more healthy foods	8
Avoid mayonnaise/home made mayonnaise	8
Eat more meat/more lean meat	7

"When I saw the midwife she didn't really say what to eat, she just said what not to eat"

17 year old, 4-6 months pregnant, living with family

Participants were prompted to recall anything they had been told to eat more of, if they had only recalled foods to avoid.

"…they tell you more of what you can't eat than what you should eat more of." 17 year old, 4-6 months pregnant, living with family

Two thirds said that they have tried to follow the advice they were given and a further one fifth said that they followed it sometimes. Of those who didn't, or only sometimes followed advice, almost all said that this was because it was too expensive (one quarter of participants in total).

"Actually sometimes it is just too expensive. I want to buy it for the baby - for myself, no, I don't want for myself…for myself I can eat a crisp a day and it is ok for me, a chocolate a day and it is ok if I don't eat anymore, but just for the baby…" 16 year old, 7-9 months pregnant, living alone

"(why do you find it hard to follow healthy eating advice?) 'cos there's no money, we haven't got any income" 16 year old, 4-6 months pregnant, living with family

Family influence

For many of the women, family had a substantial impact on the food they ate. As mentioned above, over half spent no money on food each week as their family

"I have to have veg, me mum always makes sure I have veg."

15 year old, 7-9 months pregnant, living with family

bought the food, and the same number reported that someone else usually cooked their meals for them.

Many women mentioned family encouraging them to eat healthily.

"Me mum kicks off on me though, if I don't eat me fruit and veg - she wants me to be healthy…but me mum gets a lot of food in, like plenty of milk 'cos she wants me to drink loads so I've got plenty of calcium, 'cos me mum's all for healthiness." 15 year old, 7-9 months pregnant, living with family

"I don't really like them (vegetables) but me mum makes me." 17 year old, 4-6 months pregnant, living with family

"But I normally make sure I have vegetables every day. I have to eat healthily now, my family make me, for the baby's sake." 17 year old, 4-6 months pregnant, living with family

However, not all families had a positive impact on the women's diet. One in eight said that the reason they didn't eat certain foods as much as they thought they should was because they weren't given them, or they didn't have them at home. Some found that, although they wanted to eat healthily, they had to eat whatever the rest of the family were given, which wasn't always a healthy option.

"…family buy chips for everyone else but so (they) don't buy potatoes, they buy frozen chips." 16 year old, 4-6 months pregnant, living with family

"(why don't you eat the foods that you think you should?) erm not really sure, it's just what I get given." 15 year old, 7-9 months pregnant, living with family

Extra spending

Nearly two thirds said that if they had an extra £5 a week, they would spend it on baby things. Two fifths said they would spend it on food, one in eight said clothes and three said they'd use it to pay bills.

When asked what they would buy if they had an extra £5 a week to spend on food, three quarters said fruit and/or vegetables (see Table 12). One quarter said they would buy more cakes, biscuits, sweets or chocolate, and one fifth said they would spend it on takeaways.

Table 12 What would you buy if you had an extra £5 a week to spend on food?

Food	N=46
Fruit	28
Vegetables	18
Cakes, biscuits, sweets, chocolate	11
Takeaways	9
Meat	8
Crisps	7
Fizzy drinks	7
Other	7
Cheese	2
Alcohol	0

"I wouldn't buy any crisps or fizzy drinks, I'd probably…just like healthy things like vegetables and boil them up and eat them…fruit, just more healthy stuff." 16 year old, 4-6 months pregnant, living with family

Diet and money

Our findings show that money had a considerable effect on the food choices and eating behaviours of many participants. As mentioned above, two thirds of those who bought their own food spent less than £20.25, the estimated minimum cost of a healthy diet. Three quarters of participants missed meals sometimes and one quarter of these said it was because they didn't have the money. Given the current government drive to encourage pregnant teenagers into education or training, it is worrying to note that several mentioned that they missed midday meals when at college because they couldn't afford to buy food when out. Although most of the women knew what foods they should be eating more of during pregnancy, one in five said that they couldn't afford to eat enough of these foods. Although all of the women recalled receiving dietary advice during their pregnancy, almost all of those who did not follow this advice, or only followed it sometimes (one quarter of participants in total), said that this was because it was too expensive. Several women mentioned making unhealthy changes to their diet since becoming pregnant due to financial constraints.

"'Cos obviously I've got a baby coming I've got to try and fit my money and my partner's for things like food, bills, baby clothes…food always seems to be bottom of the list." 16 year old, 4-6 months pregnant, living with boyfriend's family (but shops and cooks separately from them)

More than one in three said that the food they ate varied as their money ran out. Some started to eat more 'cheap fillers', ate less variety or less fresh meat and vegetables. Several ate less food in general. Others went to family to eat or borrow money if they started to run out of food or money.

"(When my money starts running out) I stop eating fruit and vegetables and just eat things like crisps, crisp sandwiches, things like that, cakes, biscuits." 16 year old, 4-6 months pregnant, living with boyfriend's family (but shops and cooks separately from them)

"Yeah, the first week I eat dead well and then on the second week I'll eat not so well."

17 year old, 4-6 months pregnant, living with family and at boyfriend's flat.

Budgeting/money management skills

Several of the women mentioned skills and techniques that they use in order to try and make the most of the money that they have.

- Buying own-brand goods rather than branded products

- Buying tinned fruit and vegetables rather than fresh

"Fresh fruit doesn't last as long…tinned stuff lasts for ages, doesn't it so…and with getting paid every two weeks it is hard to keep stuff for that long." 16 year old, 7-9 months pregnant, living with partner

- Eating more foods that are cheap but filling

"Because I normally just fill myself up on bread or crisps and chocolate because it's cheap." 16 year old, 7-9 months pregnant, living with partner

- Looking out for products that are on special offer. The data collected in the 24-hour recalls showed that a few women ate several portions of the same food in one day, indicating bulk buying to save money. For instance, one (aged 17 years, living with a friend) had eaten six bags of Hula Hoop crisps, five ham rolls and two ham sandwiches, and three small Kit Kat bars in the previous 24 hours.

"When I get paid I will shop around in the small shops 'cos there are 'buy one get one free' offers." 16 year old, 7-9 months pregnant, living with partner

- Adding cheap ingredients to make meals go further

"(If I had an extra £5 a week to spend on food) I'd probably get meat and, even though I don't like them that much, vegetables, 'cos you can make a dinner out of them, can't you?" 17 year old, 4-6 months pregnant, living in a hostel

Living Away From Family

"I probably would've been having a more balanced diet (before I moved out) because I was living with my mum and her partner then."

16 year old, 4-6 months pregnant, living with partner

One third of participants (n=15) did not live with family (or foster parents). All of these women had incomes of £45 or less per week, except for three who were living with partners. All were on benefits except for one, who lived with her partner and had a joint income of £200 per week. Nearly half received a training allowance of between £40-45 per week; most of the others received income support.

Most of the women living away from their family found it hard to manage on the money they received. Only two (who were living with partners) said that they managed without much difficulty or with no difficulty.

"I get by with money off my auntie and my mum and then pay it back when my money comes, stuff like that." 17 year old, 7-9 months pregnant, living alone

Ten of the fifteen (two thirds) spent less than £20.25 on food per person per week (the estimated cost of a modest but adequate diet). Three spent between £22.50 and £25, one spent £30 and one £40 per week per person.

Two thirds said that their diet varied as their money ran out, before they received their next benefit payment. Some said that they ate less food just before they got their money; others said that they had a less varied diet as their money ran out.

"Yeah because I have to leave it (benefit cheque) in the bank for when my bills come. I eat less or I can go to my auntie's house and eat there - she's always forcing food down me!"

17 year old, 7-9 months pregnant, living alone

"I've been eating more unhealthy (since becoming pregnant)…than I have done…like chips everyday. Because I moved in with him, 'cos like before, when I lived at home, my mum didn't cook chips and stuff, and neither of us have any money." 16 year old, 4-6 months pregnant, living with boyfriend at his parent's house

Another problem experienced by those living in temporary accommodation was poor or non-existent cooking facilities.

"…(the kitchen is) not a very nice place, where you'd want to go to cook stuff…There is a communal one (cooker) downstairs. It's…I don't know…it's not like…I suppose it's only supposed to be a roof over your head but…there's all little creatures down there and the cooker's hardly ever cleaned and they're all greasy and everything so…" 17 year old, 4-6 months pregnant, living in a hostel

For many women living away from home, their family and their boyfriend's family were important food providers. Three quarters went to their family for at least one meal a week (over a third ate three or more meals there each week). One third mentioned borrowing money from family (particularly as their money began to run out).

"(Do you ever go to your family to eat?) yeah…but that's only 'cos they're making sure we eat!" 16 year old, 7-9 months pregnant, living with partner

Case study: Lara [vii]

Lara is 17 years old. Her father threw her out when she was 10 weeks pregnant. She is living in a hostel and gets £75 every two weeks from job seekers' allowance. She has to borrow money from her mother in order to manage on her income and she sometimes goes to her mother's to eat. Her diet varies as her money runs out at the end of her fortnight, before her next benefit payment.

"…if I haven't got enough money to get anything then I just stay at my mum's or I borrow money off her until I get paid."

She doesn't often cook at the hostel, as there is one kitchen shared between thirty people and it is dirty and infested. There are no cupboards to store food; everything has to be kept in her room and carried downstairs to the kitchen every time she wants to cook.

She eats almost all her meals outside the hostel; her mother and her boyfriend's mother cook for her regularly (an estimated three breakfasts and seven evening meals per week).

"When I first got pregnant I didn't really eat that much 'cos I went off food, and my boyfriend's mum said 'I'll do your tea and you come here and you've to eat it', so I had to go to theirs to see my boyfriend so they were making me eat. Now I just haven't got a choice, they're making me dinner now."

24 Hour Recall: Lara

Meal	Food eaten
Breakfast	Chocolate (dairy milk) Cornflakes with whole milk and sugar
Lunch	Tuna pasta with sweetcorn and mayonnaise
Supper	Chicken curry with onion and mushroom Rice
Snacks	Crisps Sausage roll Chocolate (dairy milk)
Drinks	Coffee, milk and 2 sugars Tea, milk and 2 sugars Water Fanta

vii Case studies do not use real names

Case study: Roxanne

Roxanne is 17 years old and her baby is due in two weeks. She has moved four times since becoming pregnant and now lives in supported accommodation. She receives £37 per week from income support because she is paying back a crisis loan (she was receiving £42.70 per week). She applied for a crisis loan when she was moving into her current accommodation.

She has a fixed weekly expenditure of £14.50 for bills. This leaves her with £22.50 to spend on food and other necessities, which she finds doesn't last her the week.

"I've got TV licence plus the rent and shopping…it's just too much…Yeah, 'cos Friday all the way to Tuesday, I'm broke…my money doesn't even last up to seven days."

24 Hour Recall: Roxanne

Meal	Food eaten
Breakfast	Water Fruit cocktail
Lunch	Pizza with chicken and pineapple (takeaway)
Supper	Granary bread with raw onion
Snacks	Vegetarian hot dog in bun
Drinks	Pepsi Cranberry juice

Case study: Jackie

Jackie is 17 years old and is staying in a B&B where meals are provided for £20 per week. She is on income support but she only receives £24.40.

"I pay £20 a week, but I can't pay it right now 'cos I'll end up with £4.40 a week. I'm not paying it right now 'cos…they're giving me time 'cos Income's messing me about. But if you don't pay it by a certain time you get kicked out."

Although she has to pay for meals at the B&B, she does not eat them and either goes to family to eat or buys food to cook at friends' houses.

"I have to go to my uncle's to eat because I can't eat the food that they cook here…it's not edible! The food is nasty and I can't eat pork…I end up eating potatoes most of the time…I have to buy things to cook at my friends', so I tend to buy more things like meat if I've got the money. If not, I'll buy things like pasta and stuff…you're not allowed to cook at the hostel, they don't have facilities to cook at the hostel. You can store it (food) downstairs, but not for long."

She misses about nine meals per week, mainly for financial reasons.

"...sometimes 'cos I'm not hungry, but most of the time, it's 'cos I just don't have the money."

24 Hour Recall: Jackie

Meal	Food Eaten
Breakfast	Cornflakes + milk Yoghurt
Lunch	Hot chocolate (milk and water) Spaghetti stirfry with yam, potato, chicken, soy sauce, vegetables
Supper	Spaghetti stirfry (as before)
Snack	Cheese sandwich (hard dough bread) with margarine Time out (2 sticks) Crisps (salt and vinegar)
Drinks	2 glasses of water 2 glasses of orange juice Lemonade

Examples of food-related activities with pregnant young people

Waltham Forest Young Parents' Project

In Waltham Forest, there is a weekly peer support programme for pregnant women and young mothers up to the age of 19. The aim is to support their personal, social and educational development, and to address relevant health and social issues. Initially the programme planned to provide a short course in food safety and hygiene leading to certification, as an adjunct to the healthy eating session that was structured around lunch each week. However, the programme changed as it soon became apparent that the young women needed to develop food preparation skills and safe food handling practice, as well as knowledge of healthy eating. Project workers found significant gaps in young parents' knowledge:

Nutrition	A reasonable level of knowledge for children and infants, but little thought for themselves
Cooking	Lack of basic skills, confidence
Shopping	Limited knowledge of the range and variety of fresh (and prepared) foods available, particularly of content, quality and costs
Finance	Little knowledge of the comparative costs of fresh and convenience foods
Healthy eating	How to combine and balance ingredients

Activities to date include:

- Eating lunch at the start of our sessions, varying the content to include fresh foods and commodities that the young women may not routinely buy, healthy choices of course! Preparing taster plates (e.g. with small pieces of cheese) for mothers to try with their children (if appropriate). Gruyere was popular with quite a few, with the children also liking it.

- Getting parents to prepare a food diary, both for themselves and the children, to consider where changes could be made to improve the nutritional value, and to introduce the concept of planned meals which are suitable for all (the majority prepared separate meals for the children).

- Running practical classes to develop basic skills, presenting a range of ingredients and basic food combinations to encourage participants to put healthy eating theory into practice.

- Holding taste-testing sessions to compare the quality and content of fresh and convenience food products. The Chicken Nugget Challenge!

- Constantly emphasising food safety - formal training will now take place at a suitable point after these supplementary sessions. The aim will be to concentrate on food hygiene standards within the home as well as in the workplace.So far, the response from the young women has been positive: one mother now regularly buys and eats salads, which once would have been anathema to her, and others have broadened their eating habits, and their babies' too.

The group is part of Watlham Forest's Young Parents' Project, which is partly funded by the European Social Fund and the DfES Standards Fund. For more information about this project, please contact Catherine Pallet, Waltham Forest Teenage Pregnancy Reintegration Officer and co-ordinator Waltham Forest Young Parents Project, Chapel End Early Years Centre, Brookscroft Rd., E17 4LH. Fax/tel: 0208 501 9999, or email catherine.pallet@edu.lbwf.gov.uk.

Examples of food-related activities with pregnant young people

Breakfast club for school age mothers, Education Leeds

Pregnant schoolgirls and school age mothers in Leeds benefit from a Breakfast Club set up in 2002 with a grant from Leeds Children`s Breakfast Initiative, and staffed by the Teenage Pregnancy and Parenthood Team at Education Leeds (a private company that runs Leeds Local Education Authority). Previously, many pregnant pupils were not having breakfast, and new mothers also often missed their first meal of the day as they were too busy getting their baby ready to come to classes with them. The basic aim of the Breakfast Club is to ensure that pupils get plenty of carbohydrates and fruit at the start of the day, and that they also take in adequate amounts of fluids. In practice, the Breakfast Club has created a broader range of benefits.

The variety of foods eaten by the young women increased significantly during the first year of the Breakfast Club. At the start, pupils were only willing to eat familiar children's cereals, toast with strawberry jam, and fruits such as apples, bananas and green grapes. Less than a year later, the young women are much more adventurous, eating foods that were left on the plate before, such as red grapes, satsumas, muesli, croissants, low sugar cereal bars and jam with pips! Pupils no longer arrive with pockets full of chocolate and bags of crisps for breakfast.

This more confident attitude to making food choices is reflected in an increase in proactive requests from pupils for foods they would like to try, whereas previously they would just pick out the bits they liked from what was provided. The Breakfast Club provides an opportunity to consider the benefits of a balanced diet for mother and baby. The older babies can also join in by eating mashed bananas for example, and the young mothers can discuss weaning with the nursery nurses and specialist learning mentors who run the Breakfast Club.

Aspects of nutrition are also addressed through the formal curriculum, and lesson content often links to issues raised during the Breakfast Club. Pupils have explored the nutritional content and costs of different baby foods, using computer software to make comparisons, and have made their own baby foods and done blindfolded taste tests. By providing a positive and sociable start to the day, the Breakfast Club provides social and educational benefits too. New group members are able to meet the others in a relaxed situation before formal lessons begin, lessons start more calmly, and pupils are able to concentrate better on their work.

For more information about this project, contact Education Leeds on 0113 395 1213.

Discussion

Discussion of dietary findings

- Like most teenagers, many of the pregnant teenagers interviewed ate too many high salt/sugar/fat foods in the 24-hour period analysed[29]. It reflects not only a taste preference for sweetened/fatty foods, but also a tendency to eat easily available, calorie-rich, low-cost foods.

- The regular consumption of milk is relatively surprising, since many studies have found that milk consumption declines with age among adolescent women, often being replaced with soft drinks[30]. Frequent consumption of soft drinks was evident among those interviewed which provide calories but few nutrients and may be consumed at the expense of nutrient-rich foods.

- Almost all of the women interviewed did not eat enough fruit and vegetables. On average two portions were eaten in the 24-hour recall, a finding similar to that of the National Diet and Nutrition (NDN) Survey of 4-18 year olds, which showed that British children ate on average less than half the recommended five portions of fruit and vegetables a day, with one in five children eating no fruit and vegetables at all[31].

- Despite frequent consumption of high fat/sugar foods, most of the women were not eating sufficient food to meet their energy requirements. Previous research on pregnant adolescents has reported similar findings[32, 33]. Recent research has also shown that malnutrition during pregnancy may pre-dispose the baby to heart disease, high blood pressure and Type II diabetes in later life[34].

- Sugar intakes often exceeded recommended levels, a worrying finding as high sugar intakes among pregnant teenagers have been linked to an increased risk of small-for-gestational-age (SGA) births[35].

- The sample analysed in detail showed that most women had insufficient intakes of several vitamins and minerals. This reflects findings of the recent NDN survey report, which showed that a significant proportion of girls had intakes and blood levels below the lower reference nutrient intakes for nutrients important during pregnancy, including vitamin A, folate, zinc, iron and calcium. Inadequate intakes of these micronutrients during pregnancy may cause competition between the adolescent mother, who is still growing and developing, and the foetus[36].

- All the women whose diets were analysed in detail had insufficient intakes of Vitamin A. Vitamin A is needed for foetal growth, particularly in the third trimester, and a deficiency during pregnancy has been associated with increased intrauterine growth retardation, premature birth and lower birthweight[37].

- Insufficient vitamin C intakes were found in five of the twelve 24-hour recalls analysed. Vitamin C has an important role to play in helping absorption of non-meat sources of iron, so insufficient intakes may impact on the mother's iron status, particularly if she has a low intake of non-meat iron. Previous studies have shown that deficiencies are linked to pregnancy complications, including intrauterine growth retardation, pre-term births, perinatal mortality and pre-eclampsia[38].

- Insufficient calcium intakes were found in five of the twelve recalls analysed; during adolescence these have been associated with the development of osteoporosis later in life. For women, adolescence is an important period for laying down bone calcium and foetal demands on the maternal calcium stores are therefore likely to compromise the mother's bone density[39].

- One quarter of all participants reported suffering from anaemia and several others reported symptoms that may be caused by anaemia. Inadequate iron intakes were found for nine of the twelve analysed 24-hour recalls. Adolescent pregnancy puts increased demands on maternal iron stores, particularly if iron stores are already low, as is likely in a group of this type. Teenage women from low socio-economic groups are particularly at risk of iron deficiency, leading to iron anaemia. Previous research into the diets of low income pregnant teenagers found a high prevalence of anaemia[40]. This can have a detrimental impact on both the baby and the mother. Pregnant adolescents with low iron status are more likely to have a low birthweight baby, premature birth, or perinatal mortality[41].

- Eight of the twelve recalls analysed in detail had insufficient folic acid intakes. Deficient intakes of folic acid have been associated with congenital malformations[42]. Research has shown an association between peri-conceptual and first trimester supplementation of folic acid and reduction in neural tube defects. As most adolescent pregnancies are unplanned and many teenagers present late for antenatal care, they are unlikely to be taking folic acid supplementation when they conceive, or during the first trimester of pregnancy.

- Half of the recalls analysed in detail had insufficient zinc intakes. Zinc deficiency has been linked to pregnancy and delivery complications including pre-eclampsia, pre-term delivery and fetal growth retardation and congenital abnormalities . Conversely, zinc supplement has been linked with a reduced incidence of pregnancy-induced hypertension or low birthweight and pre-term delivery[43].

- Most of the young women often missed meals and the two main reasons for this were lack of hunger and not having enough money. Missing meals, particularly breakfast, is common among non-pregnant teenagers, for similar reasons[44].

Money and diet

There is a wealth of evidence showing that when money is tight, one of the easiest items to cut is food, as it is one of the few areas of people's budgets that is not fixed (unlike fuel bills and rent, for example)[45]. The easiest ways to reduce food costs is to buy cheaper foods and to eat less. Our research found evidence of both of these practices.

Previous research by the Food Commission has shown that healthier options tend to cost more than their less healthy alternatives (e.g. brown bread compared to white)[46]. The difference is shown in table 13.

Table 13 Additional costs of healthier food options

	Regular basket	Healthier basket	Average extra cost of healthier foods
1988	£9.78	£11.56	18%
1995	£11.04	£15.11	37%
2001	£12.72	£19.19	51%

- Eating foods that fill you up cheaply is common. These 'cheap fillers' tend to be fatty, sugary, processed foods, such as biscuits, white bread, soft drinks and confectionary, all of which offer much cheaper calories than fruit, vegetables or fresh meat. We found that cheap fillers were frequently eaten by participants.

Cheaper ways to fill up can be easily managed: a packet of custard creams costing 39p, or a big bag of chips at 70p are ways to buy enough calorie-dense food to keep you going for two days for less than £5.

- Financial factors affected food choices and eating behaviours for a considerable number of participants, particularly those living away from family. This not only has implications for their health, but also negatively effects cognitive functions and behaviour[47]. This is particularly relevant to those training, studying or working, especially as several mentioned college attendance as a reason for missing meals.

- The findings from our study concur with the latest NDN survey of adults that showed that women living on benefits ate fewer portions of fruit and vegetables, compared to those living in non-benefit households (1.9 portions compared to 3.1 portions a day)[48]. Previous research into the diet of low income pregnant adolescents in USA reported similar findings[49].

- A pregnant teenager under 16 years of age is not entitled to welfare benefits in her own right, although her parents may be able to claim income support, job seekers allowance (JSA) or tax credits for her. If they do claim they can also receive welfare foods (i.e. milk tokens and vitamins A, C and D).

- If she is 16-17 years old and living with her parents, she can still only claim benefit for herself in limited circumstances. She may get JSA if her parents are unable or refuse to support her financially, or income support when she is 29 weeks pregnant, or earlier if she is not well enough to work because of her pregnancy. A number of women interviewed in this study (whose parents were not claiming on their behalf) had been told that they were unable to claim until they were 29 weeks pregnant, which meant that not only did they miss out financially, but they were also unable to claim welfare foods. The benefit rate for this group is currently £32.90 per week[viii].

- Teenagers aged 16-17 years of age who are living away from their parents may be able to get benefits at a higher rate of £43.25 per week, providing they can show 'good cause' for not living with their parents (otherwise they will receive the lower rate of £32.90). This higher rate is the same as the rate for 18-24 year olds, but less than that for women aged 25+, who are entitled to £54.65. Pregnant teenagers living away from home have the same costs of living as older pregnant women, yet a pregnant 25 year old is entitled to £11.40 a week more than a pregnant 16-17 year old, assuming the latter is able to claim the higher rate. If she is living away from home but is not estranged from parents, the difference would be £21.75 a week.

- For a 16-17 year old living away from home claiming £43.25 per week, the estimated cost of a healthy diet represents almost half her weekly income. Our research found that this reduced rate of benefit was not enough survive on, with women running out of food before their next payment and having to buy cheaper, less healthy foods to fill them up. The continued reliance on family for food or money by those living away from parents highlights the fact that benefit levels are inadequate and it draws attention to the needs of those who do not have family support. Considering the high levels of relationship breakdown with parents, which is often the reason why they moved, this will include significant numbers of pregnant teenagers[50].

- A large number of participants appeared to have received incorrect advice from The Benefits Agency or were receiving incorrect levels of benefit, resulting in a greater risk of financial hardship.

viii As at April 2003

Positive attitudes/motivations

An encouraging finding from this research is the positive attitude that the women had towards their baby's health.

- Most women had made healthy changes to their diet or had wanted to do so but were restricted by factors such as money. Most of the women interviewed showed clear concern for their baby and wanted to give it a good start in life.

- Their pregnancies seemed to provide a motivation (that is generally lacking in non-pregnant teenagers) to improve their diet and health. However, it should be noted that selection bias is likely to have excluded those with a less positive attitude towards pregnancy, as these women would be less likely to have accessed antenatal training or healthcare (which is how we reached participants).

- All of the women recalled receiving advice about nutrition during pregnancy from at least one source and midwives were the most common advisor. This indicates that they offer a vital opportunity for providing advice and information to these women.

Family influence

Family often had a substantial influence on the food choices and eating behaviours of those interviewed.

- Family influence was mostly positive, encouraging the women to eat healthily and ensuring healthy options were available.

- However some mentioned that they were unable to eat more healthily as they were being fed the same (unhealthy) foods that were offered to the rest of the family.

- Many of those whose families shopped and cooked for them did not feel that they were in control of their own food choices.

- Many of the young women living away from family survived by depending heavily on their parents, their partners or partner's parents, or their friends. This puts a strain on relationships at an age when these young women are least able to cope, adding to their difficulties and the likelihood of ill health. To exhort them to improve their diets without offering them the means to do so is worse than futile, for it encourages resentment and distrust.

- Even for those living away from family, the potential influence of family on eating behaviour was great. For many, family offered a 'safety net', providing meals or money for food if they ran out of money. Given the greater risk of nutritional inadequacies among those living away from home, it is clear that this can be much needed support. However, this raises the issue of the needs of those without this assistance from family. They may be at the most risk of nutritional disadvantage, without the 'safety net' of receiving extra food or finances to top up their benefit payments.

The potential family influence (both positive and negative) should not be overlooked when considering ways to improve pregnant teenagers' diets.

Pregnant teenagers: not a homogenous group

One of the difficulties in developing effective and appropriate services for pregnant teenagers is that they are not a homogenous group.

- The factors affecting their food choices vary considerably, depending on their circumstances.

- Some teenagers were living with family who shopped and cooked for them. These women may not have complete control over their food choices and behaviours, with family eating habits exerting a substantial effect. Their diets were similar to those of non-pregnant teenagers and this suggests that peer/cultural influences may be important.

- For those living away from family, issues of food poverty made it very difficult to eat a healthy diet even for those who did aspire to eat healthily.

Limitations of our research

Our study was small, yet its findings reflect results and issues reported in research elsewhere. Due to the time restraints, we accessed teenagers through professionals working with pregnant teenagers (hence the high proportion of participants involved in training) and so were unable to interview any women who were not already in contact with professionals such as midwives or trainers (those who did not realise that they were pregnant, were in denial or who had not accessed local services). These women are more likely to be lacking support and so may well have worse diets and less motivation for improving them than the women we interviewed.

The 24-hour recall method is commonly used in dietary studies. It is easy to use and is particularly useful for looking at the dietary patterns of groups. Limitations of the method include the reliance on participants' memory and their ability to estimate portion sizes. A validity study comparing 24-hour recalls with weighed intakes found average nutrient estimates were similar to recorded intakes. For some nutrients and certain groups, under- or over-reporting may occur (e.g. under-reporting of high-energy foods)[51]. Food frequency questionnaires can offer an element of triangulation when used in conjunction with 24-hour recall methods.

The 24-hour recall method is not indicative of an individual's overall diet (because of the frequency of 'atypical' days), however it is a useful estimate of the dietary intakes of the group as a whole (because the 'typical and 'atypical' days tend to average out over the group).

The importance of nutritional status and diet before pregnancy, in the peri-conception period, and during the first trimester (when many teenagers are unaware of their pregnancy and very few have accessed services) has been well documented[52,53]. Only one participant was in their first trimester of pregnancy in this study. Many pregnant teenagers may be unaware of their pregnancy, or may not have accessed services during their first timester, so that the motivations or support/advice for improving their diets could be lacking. If the outcomes of dietary improvements are to be maximised, effective methods for improving the diets of teenagers preconceptually and during the first timester need to be identified and implemented.

Improving pregnant teenagers' diets

It is encouraging that our study found many pregnant teenagers are motivated to change their diet for the health of their baby. However, it is clear that we should do more to improve the diets of pregnant teenagers in the UK.

There has been some research into the effectiveness of nutrition education programs and other initiatives aimed at improving the diets of pregnant teenagers. These have produced mixed results, with some having no effect on behaviour at all[54]. It should therefore be noted that setting up a food initiative, or including nutrition education in an existing programme, might not necessarily have a

positive effect. More research is needed into barriers preventing teenagers from improving their diets, to assist the development of effective programmes.

Several studies have shown that whilst nutrition education programmes can lead to significant improvements in knowledge, this does not automatically translate into improved dietary behaviour[55,56]. Our research has shown that pregnant teenagers often know what dietary changes would improve their diet but there are many barriers other than knowledge that make it difficult for them to make these changes. Effective initiatives will need to go beyond education alone in order to tackle these barriers. Given that for many pregnant teenagers, particularly those who living away from family, financial issues and food poverty are strong barriers to eating a healthy diet, it seems logical that initiatives and policies that aim to improve their financial circumstances, or limit the effects of food poverty, would be more effective in improving diets than nutrition education.

There are examples of projects in the UK that incorporate food activities or nutrition education (see pages 26-27). However, like most local projects with short term funding, they are often not evaluated. Without evaluating these initiatives, there will be no evidence to support their existence and to show that there is a real need to continue funding and supporting such work. Furthermore, unless the projects are able to ensure that the participants have financial means to make the necessary changes, the projects may not result in significant changes.

Conclusion

Most of the pregnant teenagers we interviewed did not eat an adequate diet for pregnancy. Pregnant teenagers, particularly those living away from family, face multiple obstacles to maintaining their health and eating a nutritious diet. Those living with family may lack control over their diet and often eat a diet typical of (non-pregnant) teenagers. Living on a low income, particularly for those living away from family, is one of the major factors that has a detrimental effect on their diet.

The nutrition of pregnant teenagers needs more attention. The first step to helping these women to eat a healthy diet is clearly to provide them with the means to shop for and cook the food they need, by ensuring that they have sufficient money to purchase a healthy diet and adequate facilities to cook food. They can then be supported to make the dietary improvements necessary for themselves and their babies. Working to improve the diets of pregnant teenagers will give their children the chance of a healthy start in life and so provide a sound foundation for the health of the next generation.

Recommendations

Recommendations to the Department of Health, the Benefits Agency, Sure Start Plus and the Foods Standards Agency arising from the findings of this survey.

- Pregnant teenagers should be entitled to welfare benefits as soon as they confirm their pregnancy, rather than having to wait until they are 29 weeks pregnant.
- All pregnant women should be entitled to the same rates of benefit as the current rates set for women over the age of 25.
- All pregnant under 18 year olds should be entitled to welfare foods (Healthy Start foods), irrespective of welfare benefit entitlement, as soon as they confirm their pregnancy.
- A pregnancy premium should be introduced for all pregnant women on benefit to ensure that nutritional requirements can be met at a time when other expenses also increase.
- The Benefits Agency should ensure that sufficient training and monitoring of staff is in place so that women are not given incorrect advice or wrong benefit amounts.
- The Food Standards Agency should carry out routine assessment of the costs for a "modest but adequate" diet, with allowances made for specific dietary requirements and local price variations.
- The Food Standards Agency should include pregnant women as a specific group in National Diet and Nutrition Surveys.
- Accommodation for pregnant teenagers living away from family should provide suitable food storage and cooking facilities.
- Training for midwives and other health professionals should reflect the fact that a pregnant teenager's ability to follow advice offered is affected by her social circumstances and broader determinants to health.

- Programmes involving food-related activities for pregnant teenagers should be provided with sufficient resources and support so that they can evaluate their work thoroughly to identify what works and how successful programmes can be replicated elsewhere.

- More research is needed to identify the barriers to dietary improvements for pregnant teenagers that can inform the development of effective programmes to tackle these issues.

Other policy recommendations that may assist teenage mothers to achieve healthier diets (drawn from previous studies).

- The Department of Health, in partnership with the Department for Education and Skills, should set nutritional standards for school meals based on minimum nutrient levels (the current standards operate on the basis of food groups). Systems for monitoring the implementation of nutritional standards should be put in place.

- The Department of Health, in partnership with the Department for Education and Skills, should ensure consistency of food and nutrition messages in schools, to include the curriculum, food provision in the canteen, vending machine policies, breakfast clubs, snacking and lunchbox policies, etc. This could be implemented through the National Healthy Schools Scheme.

- The Food Standards Agency should push for clear nutrition labelling that is easily understandable, trialled with young people, people on a low income, and people from different ethnic origins.

- The Department of Health, in partnership with the Food Standards Agency, should conduct research and develop policies to address the main factors causing poor diets in teenage years, including price, income, availability, nutrition labelling, food marketing, nutrition knowledge and attitudes.

- The Department of Health should issue a guidance note to GPs, encouraging them routinely to offer vitamin supplements to pregnant women, especially young mothers and those on a low income.

- The advertising and promotion of fatty, salty and sugary snacks to children should be restricted.

References

1 Botting B, Rosato M, Wood R, 1998, 'Teenage Mothers and the Health of Their Children', *Population Trends*, vol.93(3) p19-28

2 Social Exclusion Unit, 1999, *Teenage Pregnancy,* TSO, London

3 Smith GCS, Pell JP, 2001, 'Teenage Pregnancy and Risk of Adverse Perinatal Outcomes Associated with First and Second Births: Population Based Retrospective Cohort Study', *British Medical Journal,* vol.323 p476-479

4 Kramer MS, 1987, 'Determinants of Low Birth Weight: Methodological Assessment and Meta-Analysis', *Bulletin of the World Health Organisation,* vol.65(5) p663-737

5 Story M, Moe J, 2000, 'Eating Behaviours and Nutritional Implications', in Story M & Stang G (eds) *Nutrition and the Pregnant Adolescent: A Practical Reference Guide,* Centre for Leadership, Education and Training in Maternal and Child Nutrition, Minnesota USA

6 Food Standards Agency, 2000, *National Diet and Nutrition Survey of Young People Aged 4-18 Years,* TSO, London

7 Story M, Moe J, 2000, 'Eating Behaviours and Nutritional Implications', in Story M & Stang G (eds) *Nutrition and the Pregnant Adolescent: A Practical Reference Guide,* Centre for Leadership, Education and Training in Maternal and Child Nutrition, Minnesota USA

8 Summerfield C, Babb P (eds), 2003, *Social Trends No.33,* TSO, London

9 Social Exclusion Unit, 1999, *Teenage Pregnancy,* TSO, London

10 Botting B, Rosato M, Wood R, 1998, 'Teenage Mothers and the Health of Their Children', *Population Trends,* 93(3) p19-28

11 Social Exclusion Unit, 1999, *Teenage Pregnancy,* TSO, London

12 Smith GCS, Pell JP, 2001, 'Teenage Pregnancy and Risk Of Adverse Perinatal Outcomes Associated With First and Second Births: Population Based Retrospective Cohort Study', *British Medical Journal*, 323 p476-479

13 Kramer MS, 1987, 'Determinants of low birth weight: methodological assessment and meta-analysis', *Bulletin of the World Health Organisation,* 65(5): 663-737

14 MacFarlane A, Mugford M, 2000, *Birth Counts: statistics of Pregnancy and Childbirth Vols 1&2,* TSO, London

15 Committee on Medical Aspects of Food and Nutrition Policy Panel on Child and Maternal Nutrition, 1999, *Report to the Welfare Food Scheme Review Group (7th Draft)*

16 Wynn *et al*, 1994, "The association of maternal social class with maternal diet and the dimensions of babies in a population of London women" *Nutrition and Health,* vol.9 pp303-315

17 Dallison J & Lobstein T, 1995, *Poor Expectations: Poverty and Undernourishment in Pregnancy',* NCH Action for Children and The Maternity Alliance, London

18 Story M, Moe J, 2000, 'Eating Behaviours and Nutritional Implications', in Story M & Stang G (eds) *Nutrition and the Pregnant Adolescent: A Practical Reference Guide,* Centre for Leadership, Education and Training in Maternal and Child Nutrition, Minnesota USA

19 Food Standards Agency, *2000: National Diet and Nutrition Survey of young people aged 4-18 years,* TSO, London

20 Story M, Moe J, 2000, 'Eating Behaviours and Nutritional Implications', in Story M & Stang G (eds) *Nutrition and the Pregnant Adolescent: A Practical Reference Guide,* Centre for Leadership, Education and Training in Maternal and Child Nutrition, Minnesota USA

21 Dallison J & Lobstein T, 1995, *Poor Expectations: Poverty and Undernourishment in Pregnancy,* NCH Action for Children and The Maternity Alliance, London

22 Food Standards Agency, 2001, Healthy Eating pamphlet series on *"Fat", "Sugar"* and *"Salt")*

23 Department of Health, 1997, *COMA Report no 41,* TSO, London

24 World Health Organization recommended nutrient intakes: http://www.who.int/mediacentre/releases/2003/pr20/en/

25 Department of Health, 1997, *COMA Report no 41,* TSO, London

26 Department of Health, 1994, *COMA report 46: Nutritional Aspects of Cardiovascular Disease,* TSO, London

27 Centrepoint, 2002, *Breadline: Centrepoint Health and Social Exclusion Briefing,* Centrepoint

28 Health Promotion England, 2001, *The Pregnancy Book. Your complete guide to: a healthy pregnancy, labour, giving birth and life with your new baby,* London

29 Story M, Moe J, 2000, 'Eating Behaviours and Nutritional Implications', in Story M & Stang G (eds) *Nutrition and the Pregnant Adolescent: A Practical Reference Guide,* Centre for Leadership, Education and Training in Maternal and Child Nutrition, Minnesota USA

30 Story M, Hermanson J, 2000 'Nutrient Needs During Adolescence and Pregnancy', in Story M & Stang G (eds) *Nutrition and the Pregnant Adolescent: A Practical Reference Guide,* Centre for Leadership, Education and Training in Maternal and Child Nutrition, Minnesota USA

31 Food Standards Agency, *2000: National Diet and Nutrition Survey of young people aged 4-18 years,* HMSO

32 Endres J, Dunning S, *et al*, 1987, 'Older Pregnant Women and Adolescents: Nutrition Data After Enrolment In WIC', *Journal American Dietetic Association,* vol.87(8) p1011-6

33 Giddens JB, Krug SK *et al*, 2000, 'Pregnant Adolescent and Adult Women Have Similarly Low Intakes Of Selected Nutrients', *Journal American Dietetic Association,* vol 100(11) p1334-40

34 Barker, DJP, 1995, 'Foetal origins of coronary heart disease', *BMJ,* vol.311: 171-174.

35 Lenders CM, Hediger ML, Scholl TO, Khoo CS, Slap GB, Stallings VA, 1997, 'Gestational Age and Infant Size at Birth Are Associated With Dietary Sugar Intake Among Pregnant Adolescents', *Journal of Nutrition,* vol.127(6) p1113-7

36 Food Standards Agency, *2000: National Diet and Nutrition Survey of young people aged 4-18 years,* TSO, London

37 Shah RS, Rajalakshmi R, 1984, ' Vitamin A status of the newborn in relation to gestational care, body weight and maternal nutritional status', *American Journal of Clinical Nutrition,* vol.40 p794-800.

38 Black RE, 2001, 'Micronutrients in Pregnancy', *British Journal of Nutrition,* vol.85 (S2) pS193-S197

39 Weaver, CM, 2000, 'The growing years and prevention of osteoporosis in later life', *Proceedings of the Nutrition Society,* vol.59, p303-306.

40 Schneck ME, Sideras KS, Fox RA, Dupuis L, 1990, 'Low Income Pregnant Adolescents and Their Infants: Dietary Findings and Health Outcomes', *Journal American Dietetic Association,* vol.90 (4) p555-8

41 Ward, B, 2000, 'Sandwell report in note 31', in J Seymour (ed), *Poverty in plenty: a human development report for the UK,* Earthscan, London

42 Scholl TO and Johnson WG, 2000, 'Folic acid: influence on the outcome of pregnancy', *American Journal of Clinical Nutrition,* vol.71 p1295-1303.

43 Black RE, 2001, 'Micronutrients in Pregnancy', *British Journal of Nutrition,* vol.85 (S2) pS193-S197

44 Story M, Moe J, 2000, 'Eating Behaviours and Nutritional Implications', in Story M & Stang G (eds) *Nutrition and the Pregnant Adolescent: A Practical Reference Guide,* Centre for Leadership, Education and Training in Maternal and Child Nutrition, Minnesota USA

45 Dowler E, Turner S, Dobson, B, 2001, *Poverty Bites: Food Health and Poor Families,* CPAG, London

46 Food Commission, 2001, 'Healthier diets cost more than ever', *Food Magazine,* 2001, issue 55, p.17.

47 Kleinman RE, Hall S, Green H, Korzec-Ramirez D, Patton K, Pagano ME, Murphy JM, 2002, 'Diet, Breakfast and Academic Performance in Children', *Annals of Nutrition and Metabolism,* vol.46 (S1) p24-30

48 Food Standards Agency, *2003, National Diet and Nutrition Survey of 18-65 year olds,* TSO, London

49 Schneck ME, Sideras KS, Fox RA, Dupuis L, 1990, 'Low Income Pregnant Adolescents and Their Infants: Dietary Findings and Health Outcomes', *Journal American Dietetic Association,* vol.90 (4) p555-8

50 Social Exclusion Unit, 1999, *Teenage Pregnancy,* TSO, London

51 Thompson FE, Subar AF, 1994, 'Dietary Assessment Methodology: Dietary Assessment Resource', *Journal of Nutrition,* vol. 124 p2245S-2318S

52 Wynn SW, Wynn AHA, Doyle W, Crawford MA, 1994, 'The Association of Maternal Social Class With Maternal Diet and the Dimensions of Babies in a Population of London Women', *Nutrition and Health,* vol.9 p303-315

53 Godfrey K, Robinson S, Barker DJP, Osmond C, Cox V, 1996, 'Maternal nutrition in early and late pregnancy in relation to placental and fetal growth', *British Medical Journal,* vol.312 p410-4

54 Owen D, Kendall P, Wilken K, 1997, 'Development and Evaluation of Activity-Oriented Nutrition Classes for Pregnant and Parenting Teens', *Journal of Extension,* vol.35 (5) www.joe.org

55 Hermann J, Williams G, Hunt D, 2001, 'Effect of Nutrition Education by Paraprofessionals on Dietary Intake, Maternal Weight Gain, and Infant Birth Weight in Pregnant Native American and Caucasian Adolescents', *Journal of Extension,* vol.39 (1) www.joe.org

56 Alley H, McCloud-Harrison J, Rafter JA, 1995, 'Expectations May Be Too High for Changing Diets of Pregnant Teens', *Journal of Extension,* vol.33 (1) www.joe.org
Owen D, Kendall P, Wilken K, 1997, 'Development and Evaluation of Activity-Oriented Nutrition Classes for Pregnant and Parenting Teens', *Journal of Extension,* vol.35 (5) www.joe.org

Good enough to eat?

The diet of pregnant teenagers

Helen Burchett
Public Health Policy Officer
Maternity Alliance

Annie Seeley
Campaigns and Research Officer
The Food Commission

The Maternity Alliance

The Maternity Alliance is a national charity, working to end inequality and promote the health and wellbeing of all pregnant women, new parents and their babies.

The Maternity Alliance
2 - 6 Northburgh Street
London EC1V 0AY
Tel: 020 7490 7639. Fax: 020 7014 1350
Email: info@maternityalliance.org.uk
Web: www.maternityalliance.org.uk

The Food Commission

The Food Commission is a national, not-for-profit organisation campaigning for the right to safe, wholesome food for all.

The Food Commission
94 White Lion Street
London N1 9PF
Tel: 020 7838 2250. Fax: 020 7837 1141
Email: enquiries@foodcomm.org.uk Web: www.foodcomm.org.uk

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Design: ian@foodcomm.org.uk