

The effects of McDonalds, Kentucky Fried Chicken and Pizza Hut meals on recommended diets

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The objective was to study the effect of three common takeaway meals on recommended healthy diets. New South Wales Department of Health recommended diets of 5020, 6275, 9205 and 12,540 kilojoules were used. An evening meal from each of these diets was substituted with one of three common fast food chain takeaway meals 1, 2, 3 and 5 times per week. The 3 takeaway meals were from McDonalds, Pizza Hut and Kentucky Fried Chicken. The effects of each of these meals on average daily kilojoule, fibre, fat, P/S ratio, protein and carbohydrate intakes were assessed.

The takeaway meals were high in fat and kilojoules and low in fibre and therefore contravened the Dietary Guidelines for Australians. Addition of these meals increased average kilojoule consumption and the percentage energy contribution of fat and decreased the P/S ratio and fibre intake. The magnitude of these deleterious effects was directly proportional to the number of times the meals were included each week and inversely proportional to the energy content of the diet. The adverse effects were greatest with the McDonalds and Kentucky Fried Chicken meals.

Takeaway meals may be convenient but the meals which were tested were too high in fat and kilojoules and too low in fibre to be a regular part of a balanced diet. Even one takeaway meal per week adversely affects the lower kilojoule recommended healthy diets.

Introduction:

Compared with recommended dietary guidelines, the Australian diet is high in fat, low in complex carbohydrate and low in fibre^{1,2}. The Dietary Guidelines for Australians³ encourage eating less fat, particularly saturated fat, eating more complex carbohydrate, more dietary fibre and controlling body weight.

Social changes over the past 30 years have resulted in an increasing proportion of meals being prepared and eaten outside the home with a 1987 survey showing that Australians spent 28-33% of their food budget on such activities. In recent years, this growth has been most evident in the fast food image chains of which three of the most popular are McDonalds, Kentucky Fried Chicken and Pizza Hut. The number of fast food chain outlets tripled from 398 in 1978 to 1161 in 1987 and accounted for 11% of the money spent on food eaten away from home in the early Eighties¹. A survey of 290 adolescents in 1981 showed that 31% ate more than 1 takeaway evening meal per week⁴ and it is likely that there has been a further increase in the consumption of takeaway foods in the past decade. Composite analyses of these takeaway foods indicate that they are generally high in fat, particularly saturated fat, high in kilojoules and low in fibre^{5,6,7,8}.

The potential influence of takeaway foods on the overall health of Australians has not been ascertained. The purpose of this study was to determine the effect of three common takeaway meals on recommended healthy diets.

Methods:

New South Wales (NSW) Department of Health Diets⁹ (5020, 6275, 9205, 12,540 kilojoules (kJ)) were analysed by Homescan¹⁰, a computer dietary analysis programme which uses NUTTAB database, the 1990 Nutrition Composition Tables of the Commonwealth Department of Health.

Three takeaway meals, one from each of McDonalds, Kentucky Fried Chicken and Pizza Hut were studied. The composition of the selected meals is shown in Table 1.

Table 1. Takeaway meals studied

McDonalds	Kentucky Fried Chicken	Pizza Hut
1 Big Mac	2 Piece Box:	3/4 Pizza (Regular Supreme)
1 Large Fries (130g)	-1 Drumstick (50g)	1/2 Garlic Bread (49g)
Regular Thick Shake (325g)	-1 Thigh (85g)	1 Pepsi (1 can)
	1 Small Coleslaw (100g)	
	1 Small Chips (115g)	
	1 Pepsi (1 can)	

The evening meal from each of the four Department of Health recommended diets was replaced by each of the takeaway meals one, two, three and five times per week.

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The effect of the substitution of these takeaway meals for the recommended evening meal was calculated. The revised diet incorporating the takeaway meal(s) was reanalysed using Homescan. The total effect for the week was calculated and then the effect on the daily average intake of protein, fat, carbohydrate, fibre, P/S ratio and kilojoules was derived.

Results:

A sample daily menu for the NSW Department of Health 6275 kJ diet is shown in Table 2 and the analysis of the nutrient content of the four diets is shown in Table 3.

Table 2. Department of Health Menu 6275 kJ diet

(DA) Daily Allowance	Milk	450 ml
	Butter/ margarine	15 g
Breakfast	Fruit	1 portion
	Cereal	1 portion
	Bread	1 portion
	Milk	From DA
	Butter/ margarine	From DA
	Tea or coffee	No sugar
Morning Tea	Bread, fruit, biscuits	1 portion
	Milk	From DA
	Tea or coffee	No sugar
Lunch	Lean meat- or exchange	30 g
	Vegetables or salad	1- 2 serves
	Bread	2 portions
	Butter/ margarine	From DA
	Fruit	1 portion
	Milk	From DA
	Tea or coffee	No sugar
Afternoon Tea	Bread, fruit, biscuits	1 portion
	Milk	From DA
	Tea or coffee	No sugar
Main Meal	Lean meat (or exchange)	90 g
	Potato, rice or pasta	1 portion
	Vegetables and/ or salad	2- 3 serves
	Fruit	1 portion
	Bread	1 portion
	Milk	From DA
	Tea or coffee	No sugar
Supper	Bread, fruit, biscuits	1 portion
	Milk	From DA
	Tea or coffee	No sugar

The nutrient analysis of the takeaway meals is shown in Table 4. All meals were high in kilojoules ranging from 4084kJ for Kentucky Fried Chicken to 5292kJ for McDonalds. The McDonalds and Kentucky Fried Chicken meals were high in fat (42.8% and 47.9% of total kJ respectively) and low in carbohydrate (41% and 38.3% of total kJ respectively). The Pizza Hut meal more closely resembled the recommended dietary guidelines although the kilojoule content was also high at 4516kJ. All 3 meals had an unfavourable P/S ratio ranging from 0.35 for McDonalds to 0.55 for Kentucky Fried Chicken.

Including these 3 takeaway meals in the recommended diets increased total daily kilojoules and qualitatively changed the nutrient composition of the diet. The effects

on the 5020 and 12,540kJ diets are shown in Tables 5, 6 and 7. All three takeaway meals resulted in an increased energy and fat intake and decreased the P/S ratio. The effect on energy intake was similar for the 3 meals. However the magnitude of this effect was dependent on the total kilojoule content of the recommended diets. Two McDonalds meals per week increased the kilojoule content of the 5020kJ diet by 23.7% but only increased the 12,540kJ diet by 4.5%. In absolute amounts any two takeaway meals (McDonalds, Kentucky Fried Chicken or Pizza Hut) per week resulted in an average daily increase of nearly 940kJ and 395kJ for the 5020 and 12,540kJ diets respectively. Five takeaway meals per week increased average daily kilojoule intake by 2365 for the 5020kJ diet and 980 for the 12,540kJ diet.

Table 3. Composition of NSW Department of Health diets

Nutrient	5020kJ	6275 kJ	9205 kJ	12,540 kJ
Carbohydrate				
Total (g)	156.7	200.0	281.3	357.3
Complex				
Carbohydrate	78.2	111.5	188.2	191.4
Sugar	78.5	88.7	93.1	165.9
Protein (g)	61.2	79.5	114.7	176.8
Fat Total (g)	29.8	44.2	74.7	102.6
-Polyunsaturated	10.0	9.4	19.2	26.3
-Monounsaturated	11.1	15.3	25.8	30.8
-Saturated	6.4	16.1	24.3	34.7
Alcohol	0	0	0	0
Fibre (g)	24.7	32.2	36.7	64.8
Cholesterol (mg)	161.4	215.4	312.6	350.0
KiloJoules (kJ)	4760	6160	9167	12795
KiloCalories	1139	1472	2191	3061
Carbohydrate (%kJ)	55.1	52.8	49.9	46.7
Protein (%kJ)	21.4	21.0	20.3	23.1
Fat (%kJ)	23.5	26.2	29.8	30.2

Table 4. Nutrient analysis of the takeaway meals

Nutrient	McDonalds	Pizza Hut	KFC
Carbohydrate			
Total (g)	133.5	143	95.6
Complex			
Carbohydrate	73.7	99	41.6
Sugar	59.8	44	54.0
Protein (g)	52.2	49	34.5
Fat Total (g)	61.7	34.5	53.2
-Polyunsaturated	9.4	5.4	9.7
-Monounsaturated	21.9	13.4	23.2
-Saturated	27.0	13.6	17.6
Alcohol	0	0	0
Fibre (g)	4.8	*	7.3
Cholesterol (mg)	128.2	37.2	154.7
KiloJoules (kJ)	5292	4516	4084
KiloCalories	1265	1079	976
Carbohydrate (%kJ)	41	53.1	38.3
Protein (%kJ)	16.2	18.1	13.8
Fat (%kJ)	42.8	28.8	47.9
P/S Ratio	0.35	0.40	0.55

*No data available for fibre content of Pizza Hut meal

The McDonalds and Kentucky Fried Chicken meals had a greater effect in increasing fat intake compared with the Pizza Hut meal. The McDonalds meal had the most deleterious effect on the P/S ratio. The Pizza Hut meal increased percent carbohydrate content of both the 5020 and the 12,540kJ diets. The other 2 meals (McDonalds and Kentucky Fried Chicken) decreased carbohydrate in the 5020kJ diet and increased carbohydrate in the 12,540kJ diet, however the overall effects were small and none significantly altered the carbohydrate contribution from the recommended range. Fibre content was reduced below recommended levels by the McDonalds and Kentucky Fried Chicken meals for the 5020kJ diet but the effect on the 12,540kJ diet was negligible. No data were available for the fibre content of the Pizza Hut meal.

Table 5. Average daily effect of the McDonalds meal on the 5020 and 12,540 kJ diets

5020 kJ Diet	Baseline	Takeaways per week			
	Diet	1	2	3	5
kJ	4760	5325 (+11.9)	5890 (+23.7)	6455 (+35.6)	7580 (+59.3)
Fat (g)	29.8	37.5	45.3	53.0	68.5
Fat (%)*	23.5	26.5 (+12.8)	28.9 (+23)	30.9 (+31.5)	33.0 (+42.6)
P/S Ratio	1.56	1.13 (-27.6)	0.93 (-40.4)	0.80 (-48.7)	0.67 (-57.1)
CHO*#(%)	55.1	53.7 (-2.5)	52.5 (-4.7)	51.7 (-6.2)	50.2 (-8.9)
Fibre (g)	24.7	24.0 (-2.8)	23.2 (-6.1)	22.5 (-8.9)	21.0 (-15)
12,540 kJ diet					
kJ	12,795	13,085 (+2.3)	13,376 (+4.5)	13,670 (+6.8)	14,255 (+11.4)
Fat (g)	102.6	108	113	118	128
Fat (%)*	30.2	31.0 (+2.6)	31.8 (+5.3)	32.5 (+7.6)	33.8 (+11.9)
P/S Ratio	0.76	0.73 (-3.9)	0.69 (-9.2)	0.67 (-11.8)	0.64 (-15.8)
CHO*#(%)	46.7	46.9 (+0.4)	47.0 (+0.6)	47.1 (+0.9)	47.3 (+1.3)
Fibre (g)	64.8	63.2 (-2.2)	62.0 (-4.3)	60.6 (-6.5)	57.8 (-10.8)

The above effects were seen at all levels of inclusion of the takeaway meals although the effects were proportional to the number of times each week that the takeaways were included as part of the diet. Even one takeaway meal a week adversely affected the daily composition of the diet averaged over the week but the effect was dependent on total daily kilojoules being most evident with the 5020 kJ diet and least with the 12,540kJ diet.

Discussion

The Australian diet is high in fat and sugar and low in fibre and complex carbohydrate¹. The diets tested in this study are recommended by the NSW Department of Health⁹ and comply with Dietary Guidelines for Australians³ being low in fat (less than 30% of total kilojoules), high in fibre (at least 25g/ day) and high in complex carbohydrates (approximately 50% of total kilojoules).

Americans now eat one of every three meals outside the home and in 1991 spent 40 billion dollars in fast food outlets¹¹. Similarly, Australians in 1987 spent 30% of the food budget on food eaten away from home¹. An increasing proportion of this is being spent on fast foods from image chain outlets. Reasons for this include: increasing numbers of takeaway outlets, marketing of family entertainment, low priced meals, heavy advertising and sponsoring of sporting events.

Table 6. Average daily effect of the Kentucky Fried Chicken meal on the 5020 and 12,540 kJ diets

5020 kJ Diet	Baseline	Takeaways per week			
	Diet	1	2	3	5
kJ	4760	5150 (+8.2)	5540 (+16.4)	5930 (+24.6)	6710 (+41.0)
Fat (g)	29.8	36.3	42.9	49.4	62.5
Fat (%)*	22.8	26.5 (+12.8)	29.1 (+23.8)	31.3 (+33.2)	35.1 (+49.4)
P/S Ratio	1.56	1.32 (-15.4)	1.17 (-25)	1.07 (-31.4)	0.95 (-39.1)
CHO*#(%)	55.1	53.8 (-2.4)	52.6 (-4.5)	51.6 (-6.4)	50.0 (-9.3)
Fibre (g)	24.7	24.3 (-1.6)	23.9 (-3.2)	23.6 (-4.5)	22.8 (-7.7)
12,540 kJ diet					
kJ	12,795	12910 (+1)	13035 (+1.9)	13150 (+2.8)	13385 (+4.6)
Fat (g)	102.6	106.5	110.4	114	122
Fat (%)*	30.2	31.0 (+2.6)	31.9 (+5.6)	32.6 (+7.9)	34.3 (+13.6)
P/S Ratio	0.76	0.75 (-1.3)	0.75 (-1.3)	0.74 (-2.6)	0.74 (-2.6)
CHO*#(%)	46.8	46.9 (0.2)	46.8 (0)	46.9 (0.2)	47.1 (+0.6)
Fibre (g)	64.8	63.7 (-1.7)	62.7 (-3.2)	61.5 (-5.1)	59.4 (-8.3)

The takeaway meals studied (Table 1) were selected because they were reported by the respective food chains to be their most common meal packages sold. These meals are energy dense containing 4084 to 5292kJ (Table 4) while the evening meals from the recommended diets contained only 1345kJ for the 5020kJ diet up to 3240kJ for the 12,540kJ diet. Replacing the evening meal of the recommended diets (5020, 6275, 9205 and 12,540kJ) twice a week with the takeaway meals increased daily kilojoule intake by an average 730kJ. This would theoretically translate into an average weight gain of 8.8kg a year if not offset by extra exercise. In a population where overweightness and obesity are prevalent both in adults and adolescents^{12,13}, eating high kilojoule takeaway foods will only accentuate the problem.

The McDonalds and Kentucky Fried Chicken meals are high in fat (42.8% and 47.9% of total kilojoules respectively) and both exceed the recommendation of reducing fat to less than 30% of total kilojoules. The Pizza Hut meal more closely approximated dietary guidelines with a fat content of 28.7%. However, all were high in saturated fat and had an unfavourable P/ S ratio ranging from 0.35 to 0.55. In Australia, a cholesterol of greater

than 5.5 mmol/l is found in 47% of men and 39% of women between the ages of 20 to 69 and hyperlipidaemia is already prevalent in 7 to 15 year old children^{12,13}. Eating takeaway meals is not conducive to curtailing this problem.

The average Australian presently consumes 19-23 grams of fibre a day² and it is recommended that this be increased to a minimum of 25 grams. Both the McDonalds and Kentucky Fried Chicken meals have a relatively low fibre content (4.8 and 7.3g respectively) and resulted in a reduction below recommended levels for the 5020kJ diet. While fibre content was reduced with other diets, absolute quantities did not fall below recommended amounts.

Table 7. Average daily effect of the Pizza Hut meal on the 5020 and 12,540 kilojoule diets

5020 kJ		Takeaways per week				
Diet	Baseline Diet	1	2	3	5	
kJ	4760	5215 (+9.5)	5670 (+19.1)	6120 (+28.5)	7090 (+48.9)	
Fat (g)	29.8	33.7	37.6	41.4	49.2	
Fat (%)*	22.8	24.3 (+3.4)	25.0 (+6.4)	25.5 (+8.5)	26.1 (+11.1)	
P/S Ratio	1.56	1.34 (-14.1)	1.18 (-24.4)	1.06 (-32.1)	0.95 (-41.7)	
CHO*#(%)	55.1	55.2 (+0.2)	55.4 (0.5)	55.5 (+0.7)	55.7 (+1.1)	
12,540 kJ diet						
kJ	12,795	12975 (+1.4)	13155 (+2.8)	13335 (+4.2)	13690 (+7.0)	
Fat (g)	102.6	103.8	105	106.1	108.5	
Fat (%)*	30.2	30.1 (-0.3)	30.0 (-0.7)	29.9 (-1.0)	29.7 (-1.7)	
P/S Ratio	0.76	0.75 (-1.3)	0.74 (-2.5)	0.73 (-3.9)	0.71 (-6.6)	
CHO*#(%)	46.7	47.5 (+1.7)	48.2 (+3.2)	48.8 (+4.5)	50.1 (+7.3)	

Results in tables 5,6,7 are expressed in absolute numbers and percent change are indicated in brackets. * Percent contribution to total energy in the diet # CHO refers to carbohydrate. No data available for fibre content of Pizza Hut meal.

Although there is a general adverse effect of including these takeaway foods in the diet, the magnitude of the effect is dependent on the frequency with which the meals are eaten and the total energy of the diet. It is possible for a person who is consuming 12,540kJ per day to substitute 3 evening meals with any of the 3 takeaway meals each week without contravening recommended dietary guidelines. There is, however, one proviso. In this analysis, the takeaway meals were substituted as part of the recommended balanced Department of Health diets, which conform to the Australian Dietary Guidelines. Few Australians, however, conform with these guidelines. The addition of the takeaway meals on the average Australian

diet would be expected to have adverse effects significantly beyond those demonstrated in this study.

The results of the analyses on fat, kilojoule and fibre performed in this study are applicable to other meals from these fast food outlets since burgers from McDonalds, pizzas from Pizza Hut or fried chicken from Kentucky Fried Chicken contain the same basic ingredients and utilise the same cooking methods. For example, the fat content of McDonalds burgers ranges from 47 to 55% of total kilojoules⁶, chicken from Kentucky Fried Chicken from 52 to 64%⁸ and Pizza Hut pizzas from 29-35%⁷.

It is possible for people with adequate dietary knowledge to select meals from these outlets with less deleterious effects on dietary recommendations. Having half of a Regular Thin Pizza (the filling does not matter) with a large salad (no dressing) and a Diet Pepsi from Pizza Hut provides 1750kJ. A Kentucky Fried Chicken meal of "Chicken N'Salad" (1/4 BBQ bird, stuffing and a small coleslaw) plus mashed potato provides 2190kJ. These carefully selected meals compare favourably, at least in total kilojoules, to evening meals from the recommended diets which ranged from 1345kJ in the 5020kJ diet to 3240kJ in the 12,540kJ diet. However, these takeaway meals remain higher in saturated fat and lower in fibre content.

Our findings indicate that even one of any of these takeaway meals eaten per week can adversely affect the recommended diet especially in those people on a low daily kilojoule diet. Of the fast foods tested, the Pizza Hut meal is the preferred choice since these meals have the lowest fat content and the least deleterious effects on recommended daily nutrient intakes.

Although the exact frequency of usage of takeaway foods by different age groups remains uncertain, it is likely that young Australians are the most frequent consumers. Eating takeaway meals has become part of our society and there is a need to educate consumers, particularly children and parents, about the effect of takeaway foods and their judicious incorporation into the diet to minimise adverse effects. In addition, food outlets could significantly improve the nutrient content of their foods with relatively minor changes including reducing the quantity of fat, cooking in vegetable oils rather than animal fat, introducing salad bars and increasing the fibre content of their breads. Such changes would result in fast food outlets moving towards complying with health department dietary recommendations.

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麥當奴、肯德基 (Kentucky) 和必勝客 (Pizza Hut) 快餐對被推薦的膳食的影響

摘要

目的：研究三種常用快餐對被推薦的健康膳食的影響。

方法：新南威爾士州衛生部推薦的膳食分別為 5020, 6275, 9205 和 12540 仟焦耳。每周晚餐用三種快餐的任何一種代替 1, 2, 3 和 5 次。這三種快餐來自麥當奴、肯德基 (Kentucky) 和必勝客 (Pizza Hut)，並評估這些快餐對每日平均仟焦耳、纖維素、脂肪及高度不飽和/飽和脂肪酸比值、蛋白質和碳水化合物進食的影響。

結果：快餐是高脂肪，高仟焦耳和低纖維素，因此違反了澳洲的膳食指導。這些快餐增加了平均仟焦耳的進食，增加了脂肪佔總能量的百分數和降低了高度不飽和/飽和脂肪酸比值和纖維素的進食。這些有害作用的大小直接與每周進食的次數成比例，並與每日膳食總能量的多少成反比，麥當奴和肯德基的有害作用最大。

結論：快餐是方便的，但在平衡膳食中快餐內含脂肪和仟焦耳太高，而纖維素太低，因此即使每周進食一次快餐對低仟焦耳的推薦的健康膳食將產生有害的影響。

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