

# Food habits and food preferences of white and coloured South African men in the army (1993–1994)

Annemarie T Viljoen & Gertruida J Gericke

## OPSOMMING

Suid-Afrika is 'n ontwikkelende land met 'n sosio-ekonomies heterogene en multikulturele samelewing. 'n Voedingsoorgangsfase is waargeneem, gekenmerk deur 'n verandering in eetgewoontes - van 'n tradisionele patroon na 'n patroon wat 'n tipies Westerse lewenstyl weerspieël, met die gepaardgaande risiko vir die ontwikkeling van nie-oordraagbare siektetoestande wat met die Westerse lewenstyl geassosieer word. Inligting omtrent eetgewoontes, voedselvoorkeure en eetpatrone kan gebruik word om die negatiewe gevolge van "voeding in oorgang" te voorkom, asook vir spyskaartbeplanning.

Beperkte inligting is beskikbaar oor die eetgewoontes en voedselvoorkeure van die Suid-Afrikaanse bevolking. Die eetgewoontes en voedselvoorkeure van mans (16-25 jaar) uit sewe etniese groepe in die Suid-Afrikaanse bevolking is bepaal. Hierdie mans was dienspligtig in die Suid-Afrikaanse Weermag ten tye van die studie (1993 tot Maart 1994). Die resultate van die studie het daarop gedui dat die sewe etniese groepe (blank, kleurling, Noord-Sotho, Suid-Sotho, Tswana, Xhosa en Zoeloe) in twee groepe verdeel kan word. Daar is bevind dat die blankes en kleurlinge, wat 'n tipies Westerse eetpatroon en voedselvoorkeure gerapporteer het, 'n groep vorm, terwyl die vyf swart etniese groepe, wat deels tradisionele eetgewoontes in kombinasie met Westerse eetgewoontes volg, saam gegroep kan word.

Die eetgewoontes en voedselvoorkeure van die blanke en kleurlingmans word in hierdie artikel gerapporteer.

— Mrs AT Viljoen

*Department of Consumer Science, University of Pretoria*

— Ms GJ Gericke

*Division of Human Nutrition, Faculty of Medicine, University of Pretoria*

## ACKNOWLEDGEMENTS

The authors wish to thank:

- Armscor for financing this research project
- Capt Corlia Prinsloo of the Catering Corps of the South African Army for her much appreciated assistance with data collection
- Mrs Ansie Blignaut of Armscor for her valuable assistance with data analysis.

## BACKGROUND

South Africa is a developing country with a heterogeneous socioeconomic and multicultural society. A nutrition transition has been noticed, characterised by a change from traditional eating patterns to those typical of a Western lifestyle, with the associated increased risk of noncommunicable diseases. Data on food habits, food preferences and eating patterns may be used in menu planning and could help combat the negative impact of this nutrition transition.

Since World War II, the armed forces of America have done comprehensive studies on the food habits and food preferences of servicemen (Peryam, 1963). However, very little information in this regard is available in South Africa. The only publications on the food habits of coloureds and white South Africans are those of Leipoldt (1976) and Coetzee (1977). Viljoen (1995) reported on the food preferences of a group of white male university students, but no published information could be found on the food preferences of other South African groups.

This study (Viljoen, 1996) determined the food habits and food preferences of seven different ethnic groups enlisted in the South African Army between 1993 and March 1994. The ethnic groups included whites, coloureds, North Sothos, South Sothos, Tswanas, Xhosas and Zulus. The findings are reported separately due to trends in similarities and/or differences that were identified in the food habits and preferences of these groups. This publication describes the food habits and preferences of white and coloured servicemen.

## EATING PATTERNS OF WHITE AND COLOURED GROUPS IN SOUTH AFRICA

### White South Africans as an ethnic group

**Origin and development** The first white settlement in the Cape occurred in 1652 when the Dutch East India Company (VOC) sent Jan van Riebeeck to establish a refreshment station for ships trading between the Netherlands and the Far East (Coetzee, 1977). The population of the Cape grew from hundreds to thousands in a short period of time. This population increase was mainly due to immigrants from Europe, Chinese labourers, prisoners from Java, and slaves from Mozambique (Leipoldt, 1976). The composition of the Cape population thus became cosmopolitan

with a consequent impact on the habits and traditions of the population. This impact also became apparent in food preparation (Leipoldt, 1976:13; Coetzee, 1977:36-48; Snyman, 1998:14-17).

The culinary ideas and techniques of the different population groups were freely interchanged. The culinary arts and eating culture in South Africa are therefore based on the traditions of Dutch, Flemish, English, French, German, Italian, Portuguese, and Eastern immigrants (Leipoldt, 1976:14).

**Traditional eating patterns** Little has been published on the food habits and eating patterns of white South Africans. Leipoldt (1976) and Coetzee (1977) described the origin and development of the South African culinary art and culture. The food consumption and nutrient intake of South African whites mostly formed part of research on nutritional status or noncommunicable diseases. These studies generally described the eating patterns and food intake of whites as Western (Walker, 1982; Wolmarans et al, 1989; Walker, 1992). The Western eating pattern is characterised by three meals per day with in-between snacks and a weekend meal pattern that differs from the weekday pattern.

#### Coloured South Africans as an ethnic group

**Origin and development** Malay slaves reached the Cape towards the end of the 18<sup>th</sup> century. The coloured group resulted from intermarriage between Europeans and blacks, and may be described as of Euro-African-Malay descent (Langenhoven et al, 1988a). The women were excellent cooks. They introduced the flavoured dishes of the East to the Cape, as well as a variety of Eastern spices that were adapted to local circumstances (Coetzee, 1977:45). Sambal, achar, chutney, and curried dishes such as bobotie, sosaties and stews as well as numerous fish dishes were incorporated into South African culinary art due to Malayan influence (Coetzee, 1977:45-47; Snyman, 1998:15-16).

**Traditional eating patterns** There is a resemblance between the eating patterns and nutrient intakes of coloureds and whites in South Africa (Langenhoven et al, 1988b). Walker (1992) reported that the nutrient intake of the coloured population was becoming more like that of the whites.

In a study on the nutrient intake and eating patterns of coloureds in the Cape Peninsula, Langenhoven et al (1988b) found that most of the respondents consumed only two meals per day. Many skipped breakfast, but enjoyed a substantial midmorning snack. This snack could consist of sandwiches, fricadels, vienna sausages, polony or eggs. Lunch consisted of bread, and supper (the main meal of the day) of meat and vegetables (Langenhoven et al, 1988a).

#### METHOD

An exploratory study into the quantitative research domain was undertaken to determine the food habits and preferences of servicemen. Convenience sampling was used and the sample comprised the seven most representative ethnic groups in the South African Army between 1993 and March 1994. Special care was taken to ensure that the ethnic sample sizes made appropriate statistical processing possible.

A pretested, structured questionnaire was used to collect data on demographics, food habits and food preferences. **Food habits** were determined by means of questions on meal patterns and meal composition. The **food preference** section of the questionnaire determined familiarity with food items, food preferences, and intended frequency of use. A list of 219 food items (typically served in the South African Army at the time of the study) was compiled. Preference ratings were conducted for familiar foods only. A seven-point Likert-type hedonic scale was used.

Frequency ratings (expressed as percentages) were calculated for the data on demographics, habitual eating patterns, meal composition and familiarity of food items.

The following procedure was followed for analysis of food preferences and intended frequency of use of each of the 219 food items:

- ◆ Variables for food preferences and intended frequency of usage were not normal at the 5% level (Shapiro-Wilk, 1965). In view of the risk of using a global calculating method to compare the variables, the test was not done as suggested by O'Mahoney (1986).
- ◆ Median and mode values were calculated and used.
- ◆ Median values on food preferences were used to rate each food item as a high, neutral or low-preference item.
- ◆ The indicated frequency of use (expressed as percentages) was presented as never (0 days), sometimes (1-3 out of 30 days), often (4-10 out of 30 days) and twice a week (11-30 out of 30 days).

This was done separately for each of the seven ethnic groups.

The study methodology has been reported in detail (Viljoen & Gericke, 1998).

#### RESULTS

##### Demographic profile

The demographic characteristics of the sample (N = 448) are presented in Table 1.

TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF WHITE AND COLOURED SERVICEMEN (N = 448)

VARIABLE	WHITES N = 120		COLOUREDS N = 328	
	N	%	N	%
<b>Age</b>				
< 20 years	62	51,7	95	29,0
20-24 years	56	46,7	209	63,7
25-29 years	-	-	13	4,0
30-34 years	-	-	13	4,0
35-39 years	-	-	5	1,5
<b>Religious belief</b>				
Christian	117	97,5	314	95,7
Hindu	-	-	-	-
Muslim	-	-	-	-
None	2	1,7	2	0,6
Other	1	0,8	6	1,8
<b>Education</b>				
Participants with Std 8 or higher	118	98,3	321	97,7

#### Regions where participants grew up (according to provincial boundaries before 1994)

**Whites** The majority (83,3%) grew up in the former Transvaal, of whom 67,5% lived in the cities. Most of these participants had lived in urban areas for longer than ten years.

**Coloureds** The majority (80,2%) of these participants grew up in the Cape Province, specifically in the Eastern Cape (39,6%) and the Western Cape (22,9%). Most of these participants (59,5%) had lived in rural areas.

#### Usual eating patterns

The usual eating patterns of the participants are summarised in Table 2. Differences in their eating patterns over weekends are summarised in Table 3.

These results confirm a typical Western eating pattern. Wolmarans et al (1989) reported similar findings on the eating patterns of a group of whites, and Langenhoven et al (1988a) on the eating patterns of a group of coloureds.

**Foods consumed at different meals** Foods that were usually (3-4 times per week) consumed (at a certain meal or between meals) by >40% of the participants may be described as representative of the eating patterns of a particular ethnic group (see Table 4).

Coloureds consumed a greater variety of items between meals. Langenhoven et al (1988a) reported that the daily food intake of coloureds mainly came from snacks. This could explain the large variety of items reported by the study.

#### Familiarity, food preferences and frequency of use

**Familiarity** The results indicated that most of the participants were familiar with the food items on the questionnaire and had eaten these items before. However, some items were unknown to or have never been eaten by >20% of the white and coloured participants (see Table 5).

**Food preferences** Food preferences were determined by means of a seven-point Likert-type hedonic scale on which **like it extremely** (7) and **dislike it extremely** (1) were used.

The following arbitrary criteria were used for rating the food items (with the aid of median values) to present an indication of the popularity of each food item:

**Low-preference item** Any item with a median value of 1 to 3,99 (These were items the participants did not like.)

**Neutral preference item** Any item with a median value of 4 to 4,99

**High-preference item** Any item with a median value of 5 to 7.

**Frequency of use** The intended frequency of use was determined for each food item.

#### Protein-rich dishes

The **seven beef dishes** (roast beef, steak, T-bone steak, stew, corned beef, curried beef and oxtail) were familiar to the majority (>88%) of white and coloured participants and were evaluated as high-preference items. The median values were five and higher, which indicated that half and more than half of the participants liked beef dishes. The high-preference ratings of these items were supported by the intended frequency of use. Almost half of the study group (35,1% to 50,8%) indicated that they would frequently consume

**TABLE 2: HABITUAL EATING PATTERN OF WHITE AND COLOURED SERVICEMEN (N = 448)**

	WHITES N = 120		COLOURED N = 328	
	N	%	N	%
<b>Number of meals</b>				
One	3	2,5	2	0,6
Two	40	33,3	18	5,5
Three	66	55,0	230	70,1
More than three	11	9,0	76	23,2
<b>Breakfast</b>				
Yes	96	80,0	316	96,3
No	24	20,0	11	3,4
<b>Main meal</b>				
Lunch	30	25,0	94	28,7
Supper	78	65,0	192	58,5
Varies	11	9,2	30	9,1
<b>Different weekend pattern</b>				
Yes	98	81,7	284	86,6
No	21	17,5	43	13,1

beef dishes (4-10 out of 30 days). Vawter and Konishi (1958) and Schuck (1961) also reported high-preference evaluations for beef dishes among soldiers and students.

The **five mutton dishes** (roast leg of mutton, fried mutton chops, curried mutton, mutton stew and fried mutton ribs) were familiar to the majority of the participants (>98%) and were all evaluated as high-preference items. Median values of five and higher were obtained. The results on the intended frequency of use supported the preference evaluations. Almost half of the study group (28,7% to 52,5%) indicated that mutton dishes would frequently be consumed (4-10 out of 30 days). 14,2% to 55,2% indicated consumption twice per week (11-30 out of 30 days). These results differ from the findings of the American studies (Einstein & Hornstein, 1970; Meiselman & Waterman, 1978) that reported a low preference for mutton dishes, probably because Americans do not consume mutton regularly.

The **seven pork dishes** (roast pork, fried pork chops, crumbed pork chops, sweet and sour pork, pork sausage, bacon and ham) were familiar to the majority of participants, with the exception of sweet and sour pork that was unfamiliar to 19% of the coloured participants. The whites rated all the pork dishes as high-preference items, but the coloured participants rated sweet and sour pork as a low-preference item and crumbed pork chops as a neutral preference item.

All **six chicken dishes** (fried chicken, chicken stew, curried chicken, Kentucky fried chicken, chicken pie and chicken liver) were familiar to and have been eaten before by both groups. These dishes were evaluated as high-preference items with median values of five and even higher than five. The intended frequency of use supported these high-preference ratings: 27% to 51,5% of the participants indicated that they would consume chicken dishes often (4-10 out of 30 days) and some (18,3% to 61,6%) indicated

consumption twice per week. Vawter and Konishi (1958), Meiselman & Waterman (1978), and Viljoen (1995) also reported high-preference ratings for chicken dishes among soldiers and students.

**Five organ meat dishes** (pickled tongue, kidneys, fried liver, liver cakes and tripe) were evaluated. With the exception of pickled tongue which was unknown to some 20% of the coloured participants, the other dishes were familiar to both groups. The coloured participants rated fried liver, liver cakes and tripe as high-preference items, whereas the whites evaluated these items as neutral (median value of four) and low-preference items. The mode value of one indicated that the whites more frequently marked the "dislike it extremely" category on the evaluation scale. The intended frequency of use supported the preference evaluations. Most of the white participants (35,8% for chicken liver and 36,7 % for fried liver) indicated that they would never eat these dishes, whereas the coloured participants indicated that they would eat these items often (36,6% for chicken liver and 39,6% for fried liver). Liver seemed to be a low-preference dish for white adolescent males. Rolls (1988) reported that liver was a low-preference item among white adolescent Australian males. Einstein and Hornstein (1970) and Viljoen (1995) reported similar results. Organ meats appeared to be more popular among coloured adolescents - probably due to cultural influences (Abrahams, 2000).

Both groups evaluated pickled tongue a neutral preference item. The mode value of one for whites indicated that this group more frequently marked the "dislike it extremely" category.

Both groups evaluated kidneys as a neutral preference item (median values of four). However, the mode value of one for the whites indicated that this group marked the "dislike it extremely" category more often than the coloured group for whom the mode value was five.

**TABLE 3: DIFFERENCE IN WEEKEND EATING PATTERNS OF WHITE AND COLOURED SERVICE MEN (N = 448) \***

	Whites (N = 120) %	Coloureds (N = 328) %
Breakfast is bigger	29	17
Don't eat breakfast	16	15
Eat breakfast	14	30
Eat lighter on Saturdays	21	50
Eat a bigger meal Sunday midday	61	69
Eat a lighter meal Sunday midday	2	6
Don't eat Sunday evenings	9	8
Eat a lighter meal Sunday evening	23	41
Eat more between meals	25	18
Consume more alcoholic beverages	28	9

\* Relative to habitual eating patterns during the week

The coloured participants rated tripe as a high-preference item, whereas the whites evaluated it as a low-preference item with median and mode values of one. The intended frequency of use, where 40,8% of the whites indicated that they would never eat tripe, supported this finding.

**Ten minced-meat dishes** were evaluated, namely hamburgers, meatballs (fricadels), bobotie, savoury mince, hamburger patties, home-made sausage, spaghetti bolognaise, cottage pie and sausage rolls. With the exception of bobotie and spaghetti bolognaise, which were unknown to the coloureds, the minced-meat dishes were familiar to both groups. All the dishes were evaluated as high-preference items. This finding was supported by the results on intended frequency of use. Almost half of the participants (22,3% to 51,7%) in both groups indicated that they would frequently consume minced-meat dishes (4-10 out of 30 days).

**Five processed-meat products** (polony, frankfurters, Vienna sausages, Russian sausages and bully-beef) were evaluated. With the exception of frankfurters, all the processed-meat items were familiar to the majority of participants. Frankfurters were unknown to 40,85% of the coloured participants and to 11% of the whites. However, all these products were rated as high-preference items (median values of five and higher than five). Vawter and Konishi (1958) and Viljoen (1995) reported low-preference ratings for these products.

Imana/Toppers (**textured vegetable protein dishes**) were indicated as unknown by 31,71% of the coloureds. Both groups evaluated these items as low-preference items. Median values of four for both groups indicated that half and more than half of the participants were neutral towards or did not like textured vegetable protein dishes. 30% of the white participants indicated an intended frequency of use as "never", whereas 45,7% of the coloureds did not indicate an intended frequency of use for these items. These results confirm a well-accepted fact that tex-

ured vegetable dishes is not popular among the South African population.

Most of the **eight fish dishes** (fish fried in batter, fish cakes, sardines, pilchards in tomato sauce, haddock, tuna, fish fingers and curried fish) were familiar to >90% of the participants in both groups. The exception was tuna, which was unknown to 32% of the coloureds. Similar to the findings of Meiselman and Waterman (1978), both groups rated most of the dishes as high-preference items, with the exception of pilchards in tomato sauce and fish cakes which the white participants rated as neutral preference items (median values of four). The mode values for both items were marked as five, indicating that the whites more frequently marked the "like it" category. Haddock was the only fish dish the coloured participants marked as a neutral preference item. The intended frequency of use supported these findings as the participants in both groups indicated that they would eat fish dishes often (4-10 out of 30 days).

All **six cheese and cheese dishes** (cheddar cheese, sweet-milk cheese, pizza, macaroni and cheese, toasted cheese sandwiches and cottage cheese) were familiar and have been eaten before. Both groups rated sweet-milk and cheddar cheese and cheese dishes like pizza, macaroni and cheese, and toasted cheese sandwiches as high-preference items. The results on intended frequency of use indicated that these items would be consumed often (4-10 out of 30 days) and sometimes twice per week (11-30 out of 30 days). Both groups rated cottage cheese a neutral preference item (median value of four), and the mode value of one for the white group indicated that they more frequently marked the "dislike it extremely" category. The intended frequency of use by whites supported the preference rating as 35,8% of the whites said they would never eat cottage cheese. A low-preference rating for cottage cheese was also reported in a similar study among white male students (Viljoen, 1995). The coloured participants indicated that they would frequently consume cottage cheese (4-10 out of 30 days).

**TABLE 4: FOODS CONSUMED HABITUALLY (3-4 TIMES PER WEEK) BY >40% OF PARTICIPANTS (N = 448) AT MEALS AND BETWEEN MEALS**

	Whites (N = 120) %	Coloureds (N = 328) %
<b>Breakfast</b>		
Cooked porridge	47	62
Breakfast cereal	60	46
Sugar with porridge/cereal	69	58
Milk with porridge/cereal	63	68
Bread/toast	48	63
Egg	48	67
Bacon	43	-
Cheese	- *	42
Tea/coffee	56	62
Milk in tea/coffee	45	50
Sugar in tea/coffee	44	58
<b>Lunch</b>		
Sandwiches	67	61
Bread with margarine	-	55
Meat/cold meat	44	40
Rice	-	46
Potato	42	52
Dessert	-	40
Chips	-	42
Vegetables/salads	-	40
Milk	44	-
Soft drinks	43	42
Fruit juice	40	-
Tea/coffee	-	50
Milk in tea/coffee	-	40
<b>Supper</b>		
Meat, fish, chicken	93	90
Rice	80	82
Pasta	48	40
Potato	82	80
Vegetables/salads	67	65
Bread	-	43
Milk	48	-
Tea/coffee	-	50
Milk in tea/coffee	-	42
Sugar in tea/coffee	-	44
<b>Between meals</b>		
Fruit/dried fruit	55	68
Chocolate	65	66
Cake/biscuits	46	55
Biltong/dried sausage	50	42
Potato crisps	56	58
Sandwiches	-	50
Bread with spreads	-	42
Peanuts	-	52

\*- Indicates consumption by fewer than 40% of participants

Both groups rated **plain and flavoured yoghurt** as high-preference items. The intended frequency of use supports this finding as both groups indicated that they would consume yoghurt often (4-10 out of 30 days) and even twice per week (11-30 out of 30 days).

Wyant and Meiselman (1984) and Viljoen (1995) reported low-preference ratings for plain yoghurt. However, Viljoen (1995) reported a high-preference rating for flavoured yoghurt.

With the exception of omelets, the **five egg dishes** (soft-boiled egg, hard-boiled egg, scrambled egg and French toast) were familiar to the majority (>92%) of white and coloured participants. Omelet was unknown to 18% of the coloured participants. All the other egg dishes were rated as high-preference items. The intended frequency of use supported these ratings as 33,2% to 51,7% of the participants indicated that they would consume egg dishes often (4-10 out of 30 days), and even twice per week (11-30 out of 30 days). Vawter and Konishi (1958) also reported high-preference ratings for egg dishes.

#### Starch dishes

All **five potato dishes** (boiled potatoes, mashed potatoes, jacket potatoes, potato salad and potato chips) were familiar to >92% of the participants in both groups. With the exception of potatoes boiled in the skin, the other dishes were rated as high-preference items. The coloured participants rated potatoes boiled in the skin as a neutral preference item. The intended frequency of use supported the preference rating as 29,2% to 45,8% of the participants indicated that they would frequently consume potato dishes (4-10 out of 30 days). Potato chips, which received the highest-preference rating of all the starch dishes (median value of six and mode value of seven for both groups), would be consumed twice per week (11-30 out of 30 days). These findings correspond with the results of other preference studies (Einstein & Hornstein, 1970; Meiselman & Waterman, 1978; Rolls, 1988; Viljoen, 1995) which also reported potato chips as a high-preference item among young men.

The **two sweet potato dishes** (cooked sweet potatoes and sweet potatoes fried in butter and sugar) were familiar to both the white and coloured participants, and both dishes were rated high-preference items. The intended frequency of use supported the preference rating as most of the participants (28,7% to 39,2%) indicated that they would consume them often.

The **five rice dishes** (cooked white rice, yellow rice with raisins, brown rice, savoury rice and rice salad) were familiar to both groups, and both groups rated cooked white rice, yellow rice with raisins, savoury rice and rice salad as high-preference items. These results were supported by the intended frequency of use, indicated as often (4-10 out of 30 days). Cooked white rice would be consumed twice per week (11-30 out of 30 days). Both groups rated brown rice as a neutral preference item. However, the intended frequency of use indicated by the two groups differed. The white participants indicated that they would eat brown rice often, whereas 54,3% of the coloured participants indicated that they would never eat it. Viljoen (1995) reported that only cooked white rice was rated

a high-preference item, and that white male students rated the other rice dishes as neutral or even low-preference items. Meiselman and Waterman (1978) also reported low-preference ratings for rice.

All **six dishes in the pulses/legume** group (baked beans, baked beans in tomato sauce, lentils, dried beans, dried peas and soya beans) were familiar to the white and coloured participants. The whites rated baked beans as a neutral preference item, and the coloured participants rated it a high-preference item. Both groups rated baked beans in tomato sauce as a high-preference item. The intended frequency of use for both these items was indicated as often (4-10 out of 30 days).

The whites rated lentils a neutral preference item, and the coloured group rated lentils a high-preference item. Both groups indicated the intended frequency of use as often (4-10 out of 30 days). Both groups rated dried beans and dried peas as neutral preference items. A median value of four indicated that half or more than half of the participants felt neutral about or did not like these two items. The majority of white participants indicated that they would never eat dried beans (30,8%) or dried peas (31,7%), 30,2% of the coloured group indicated that they would willingly eat dried beans often (4-10 out of 30 days), and 32,3% said they would eat dried peas often.

The whites rated soya beans as a low-preference item (median value of three), and the coloureds rated soya beans as neutral preference item. Approximately 25% of the white participants indicated that they "extremely disliked" soya beans and intended never to eat them, whereas 30,2% of the coloured group indicated that they would eat soya beans often (4-10 out of 30 days). Viljoen (1995) also reported low-preference ratings for pulses by a mainly white study population. The coloured participants seemed to have a higher preference for these dishes, probably due to cultural influences (Snyman, 1998:16).

All **eight maize dishes** (creamed sweet corn, pitted mealies, corn on the cob, mealie rice, samp, stiff mealie meal porridge, crumbed mealie meal porridge (putu), and soft mealie meal porridge) were familiar to and have been eaten before by the white and coloured participants. The American studies of Knickrehm et al (1969) and Meiselman and Waterman (1978) found that most maize dishes were rated as high-preference items.

Both the white and coloured participants rated samp, creamed sweet corn, corn on the cob, stiff mealie meal porridge, and crumbed mealie meal porridge (putu) as high-preference items. The intended frequency of use supported these ratings as both groups indicated that they would eat these items often (4-10 out of 30 days). Viljoen (1995) found, however, that white male students disliked samp and stiff mealie meal porridge.

Both groups rated mealie rice as a neutral preference

item with an intended frequency of use indicated as often (4-10 out of 30 days). The white participants rated pitted mealies as a high-preference item, whereas the coloured group rated it as a neutral preference item. However, both groups indicated the intended frequency of use as often (4-10 out of 30 days).

The **five pasta dishes** (spaghetti, spaghetti in tomato sauce, macaroni, noodles and noodle salad) were familiar to and have been eaten before by both the coloured and white participants. Both groups evaluated these dishes as high-preference items. Median values of five and higher than five indicated that half and more than half of the participants liked these items. The preference ratings were supported by the intended frequency of use, which was indicated as often (4-10 out of 30 days).

**Pearled wheat** was unknown to 18% of the coloured group. Both the white and coloured participants evaluated it as a neutral preference item (median values of four). The intended frequency of use was indicated as never, sometimes (1-3 out of 30 days) and often (4-10 out of 30 days) by approximately 25% of the white participants. 41,8% of the coloured participants did not indicate their intended frequency of use. The unfamiliarity of this item must be kept in mind when these results are interpreted.

#### Vegetable dishes

The vegetable dishes were familiar to >20% of the white participants (with the exception of French salad which was unfamiliar to 20,83%). Certain categories of vegetables were unknown to or have never been eaten by >20% of the coloured participants (see Table 5).

The **green bean dishes** (battered green beans, green beans with onions and potatoes, and curried green beans) were familiar to both groups. Battered green beans and green beans with onions and potatoes were rated as high-preference items by the whites, whereas the coloured participants rated them as neutral preference items. (The median value of four indicated that half and more than half of this group were neutral about the two green bean dishes or did not like them.) The intended frequency of use was indicated as often (4-10 out of 30 days). However, the results also indicated that approximately 20% of the white participants did not like these green bean dishes. This was reflected in the intended frequency of use where some 40% of the whites indicated that they would never or sometimes (1-3 out of 30 days) eat these dishes. The study by Schuck (1961) found that green beans was one of the most popular dishes, whereas Viljoen (1995) found that white male students rated green bean dishes as neutral preference items. The coloured group rated curried green bean salad as a high-preference item (median value of five), whereas the whites rated it a neutral preference item (median value of four). Half and more than half of the whites felt neutral about or did not like curried

**TABLE 5: ITEMS UNKNOWN TO OR NEVER CONSUMED BY WHITE AND COLOURED PARTICIPANTS (N = 448)**

FOOD ITEM *	WHITES N = 120		COLOUREDS N = 328	
	Unknown (%)	Never (%)	Unknown (%)	Never (%)
<b>Pork</b>				
Sweet and sour pork	-	-	-	20,41
<b>Organ meats</b>				
Pickled tongue	-	-	20,12	-
<b>Minced meat</b>				
Bobotie	-	-	30,49	-
Spaghetti bolognaise	-	-	21,04	-
<b>Processed meat</b>				
Frankfurter	-	-	40,85	-
<b>Textured vegetable products</b>				
Toppers/Imana	-	-	31,71	-
<b>Fish</b>				
Tuna	-	-	31,71	-
<b>Starch</b>				
Potato salad	-	-	-	23,78
Brown rice	-	-	-	30,73
<b>Vegetables</b>				
Brussels sprouts, buttered	-	-	35,67	20,73
Brussels sprouts with white/cheese sauce	-	-	35,98	23,78
Broccoli, buttered	-	-	26,22	20,73
Broccoli with white/cheese sauce	-	-	26,52	-
Gems, buttered with nutmeg	-	-	32,32	20,43
Gems, buttered with sugar	-	-	31,10	-
Baby marrow	-	-	38,10	23,48
Eggfruit, fried	-	-	29,57	28,35
Eggfruit with tomatoes and onions	-	-	29,27	26,22
Mushrooms	-	-	-	21,59
Celery	-	-	32,32	23,78
Stir-fried vegetables	-	-	-	20,73
Achaar	-	-	32,32	-
Greek salad	-	-	45,73	27,44
French salad	-	-	46,34	25,61
<b>Bread and bread products</b>				
Maize bread	-	-	-	20,73
<b>Beverages</b>				
Horlicks	-	-	23,48	-
Magou	-	20,00	-	-

\* Based on 219 menu items

- Indication that participants were familiar with item and /or have eaten it before

green bean salad. The mode value of four for the coloured group means that this group marked the neutral category more often. Both groups indicated the intended frequency of use as often. Viljoen (1995) found that white male students did not like curried green bean salad.

Both groups rated **cooked beetroot and beetroot salad** as high-preference dishes and the intended frequency of use was indicated as often (4-10 out of 30 days). However, 15% of the white participants indicated that they "extremely disliked" cooked beetroot, and this was reflected by the intended frequency of use. 44% of this group indicated that they would never

or sometimes (1-3 out of 30 days) eat cooked beetroot. Sweet and sour beetroot was rated a neutral preference item and both groups indicated the intended frequency of use as often (4-10 out of 30 days).

The coloured participants were not familiar with all the dishes prepared from varieties of the cabbage family (**cauliflower, Brussels sprouts, broccoli and cabbage**). Some 35% of the coloureds did not know the Brussels sprouts dishes, and about 26% of this group did not know the broccoli dishes. Approximately 20% of the coloureds were familiar with these dishes but have never eaten them (see Table 5).



Similar to the findings of other preference studies (Schuck, 1961; Viljoen, 1995), it was found that the dishes prepared from some cabbage varieties were not very popular. Most dishes in this group were rated neutral or low-preference items. Only two dishes were rated as high-preference items: cauliflower with a white or cheese sauce was rated a high-preference item by the whites, and cabbage with potatoes, onions and tomatoes was rated a high-preference item by the coloureds.

Both groups rated buttered cauliflower and buttered cabbage as neutral preference items. The intended frequency of use for buttered cauliflower was indicated as "never" by 35,8% of the whites and 27,4% of the coloureds, and 32,5% of the whites and 29,0% of the coloureds indicated that they would eat it often (4-10 out of 30 days). The intended frequency of use for buttered cabbage was indicated as "never" by 35,0% of the whites and 20,1% of the coloureds, whereas 36,7% of the whites and 31,4% of the coloureds indicated that they would eat it often (4-10 out of 30 days). Although these two dishes received neutral preference ratings, the intended frequency of use indicated a strong dislike among participants.

Brussels sprouts and broccoli dishes were unpopular. The median values were four and lower than four for the whites (18% to 24% of the white participants "extremely disliked" Brussels sprouts and broccoli), and three for the coloureds. These values indicated that half and more than half of the participants in both groups disliked these items. This finding was also reflected in the intended frequency of use, as approximately 50% of the participants indicated that they would sometimes (1-3 out of 30 days) or never (indicated by the majority of white participants) eat Brussels sprouts and broccoli dishes. 50% of the coloured group failed to indicate the intended frequency of use. These results corresponded with the findings of a study by Schuck (1961) in which as many as 20% of a group of American students indicated that they would be unwilling to eat broccoli.

The white participants rated cabbage prepared with potatoes, onions and tomatoes as a neutral preference item, and the coloureds rated it a high-preference item. Both groups indicated the intended frequency of use as often (4-10 out of 30 days). Both groups rated cabbage served with a white or cheese sauce as a neutral preference item. However, the mode value for the whites indicated that the "like it" category was marked more often. 16% to 18% of the whites "extremely disliked" the above-mentioned cabbage dishes, and this was reflected in the intended frequency of use as 28,3% and 35,0% of the participants indicated that they would never eat these dishes. Both groups rated coleslaw as a neutral preference item, and the intended frequency of use was indicated as often (4-10 out of 30 days).

Both groups rated **carrots** (buttered carrots, carrots with potatoes and onions, carrot salad with orange juice) as high-preference items. These ratings were

supported by the intended frequency of use as both groups indicated that they would eat these dishes often. The white participants rated carrots with orange juice as a high-preference item, and the coloured participants rated it as a neutral preference item. Both groups indicated an intended frequency of use as often (4-10 out of 30 days). Schuck (1961) indicated that carrot dishes were one of the five most popular vegetable dishes and reported similar high-preference ratings.

The white participants rated **peas** (buttered peas and buttered peas with sugar) a high-preference item and the coloured participants rated it a neutral preference item. However, mode values of five for the coloureds indicated that they more frequently marked the "like it" category on the seven-point scale. The intended frequency of use supported these ratings as both groups indicated that they would frequently eat these two dishes (4-10 out of 30 days).

The **pumpkin** varieties such as Boer pumpkin, Hubbard squash, gem squash and baby marrows were evaluated. Some of these dishes were unknown to or have never been eaten by the coloureds. The gem squash dishes were unknown to approximately 32% of the participants, and approximately 20% indicated that they have never eaten them. (The lack of familiarity with the gem squash dishes could perhaps be ascribed to the fact that the item was known by another name.) Baby marrow was unknown to 38% of the participants and 23% indicated that they have never eaten it before. Both groups rated the pumpkin dishes similarly, with the exception of the gem squash with butter and sugar. Both groups rated buttered pumpkin, pumpkin with butter and sugar, fried pumpkin and pumpkin fritters as high-preference items, and the intended frequency of use was indicated as often. Both groups evaluated Hubbard squash, gem squash with nutmeg, and baby marrows as neutral preference items. The white participants rated gem squash served with sugar a high-preference item, whereas the coloured group rated it a neutral preference item. The above dishes were all indicated as items that would be frequently consumed by the whites. However, most of the coloured participants (between 39% and 65% for some items) did not indicate an intended frequency of use for these items. The unfamiliarity of the coloureds with these items should be kept in mind when the results are interpreted.

The white participants rated **spinach** (buttered spinach and spinach with tomatoes and onions) as a low-preference item (approximately 25% indicated that they "extremely disliked" spinach), and the coloureds rated it a neutral preference item. These results were supported by the intended frequency of use as most of the white participants (40%) indicated that they would never eat spinach, whereas the coloured participants (24% and 22% respectively) were willing to eat these dishes often (4-10 out of 30 days). Schuck (1961) and Viljoen (1995) also found that spinach was a low-preference item.

Both groups rated **fried onions** as a high-preference item, with an intended frequency of use indicated as often (4-10 out of 30 days). Meiselman and Waterman (1978) reported similar preferences for fried onions among American soldiers. Both groups rated **onion salad** as a low-preference item, with an intended frequency of use indicated as "never" by 21,7% of the whites and 25% of the coloureds. Some 20% of the whites and 29,6% of the coloureds did not indicate an intended frequency of use.

Both groups rated **tomatoes and tomato salad** as preferential dishes. The intended frequency of use was indicated as often (4-10 out of 30 days) and even twice per week (11-30 out of 30 days). High-preference ratings for tomatoes were also reported in the studies of Schuck (1961), Knickrehm et al (1969), and Viljoen (1995).

### Other vegetables

Some of these other vegetable dishes were unknown to or have never been eaten by 20% of the coloured group. (See Table 5 for information on eggfruit, celery, stir-fried vegetables, mushrooms and achaar.)

Both groups rated **buttered mixed vegetables** as a high-preference item, with an intended frequency of use indicated as often (4-10 out of 30 days).

The white group rated both fried **eggfruit** and eggfruit prepared with tomatoes and onions as low-preference items, and the coloured participants rated these two dishes as neutral preference items. The majority of white participants (40%) indicated the intended frequency of use as "never", whereas the majority of the coloureds (58% and 61% respectively) gave no indication of the intended frequency of use.

The whites rated **mushrooms** as a high-preference item (with a median value of six) and an indicated frequency of use that supported this rating as 35,8% indicated consumption twice per week (11-10 out of 30 days). The white male students in the study of Viljoen (1995) indicated similar preferences for mushrooms. However, the coloured group rated mushrooms as a neutral preference item. 25% indicated that they would never eat mushrooms and 34,5% did not indicate an intended frequency of use.

The whites rated **celery** as a neutral preference item and the coloured group rated it a low-preference item. The majority of participants in both groups did not indicate an intended frequency of use. The unfamiliarity of celery to both groups should be taken into account when the results are interpreted.

The whites rated **stir-fried vegetables** a high-preference item, whereas the coloureds rated it a neutral preference item. The whites indicated the intended frequency of use as often (4-10 out of 30 days), whereas 36,6% of the coloureds did not indicate the intended frequency of use.

Both groups rated **turnips** a low-preference item. The

whites indicated the intended frequency of use as never, whereas 37,5% of the coloured group did not indicate the intended frequency of use.

Both the white and coloured groups rated **achaar** a low-preference item. The majority of participants in both groups did not indicate the intended frequency of use.

Both groups rated **green pepper** a neutral preference item. The mode value of one for the whites indicated that the "dislike extremely" category was marked more often. The whites indicated the intended frequency of use as never, whereas the coloureds indicated that they would consume green pepper often (4-10 out of 30 days). Schuck (1961) found that as much as 40% of a group of American students would not eat green peppers.

Both groups rated **mixed vegetable salad, cucumber salad and tossed salad** as high-preference items. Both groups indicated that they would be willing to eat these salads often (4-10 out of 30 days). Lettuce was rated a high-preference item by the whites and as a neutral preference item by the coloureds. Both groups indicated the intended frequency of use as often. The ratings for Greek salad and French salad by the two groups differed. The white participants rated both as high-preference items and indicated the intended frequency of use as often (4-10 out of 30 days). 46% of the coloureds were unfamiliar with these salad dishes and rated the Greek salad as a low-preference item and the French salad as a neutral preference item. The majority (about 75%) of the coloured group did not indicate the intended frequency of use for these two salads.

The listed vegetable items that were familiar to the participants were either rated as neutral or high-preference items, and the frequency of use seemed to be often (4-10 out of 30 days). However, there were exceptions. The following vegetable dishes obtained low-preference and/or low-frequency ratings: green bean dishes (whites), cooked beetroot (whites), buttered cauliflower and cabbage, Brussels sprouts and broccoli, spinach dishes (whites), onion salad, eggfruit dishes, turnips, achaar, green pepper (whites).

The ratings for most salad dishes were either high or neutral. These results corresponded with those of previous American preference studies reported by Knickrehm et al (1969) and Meiselman and Waterman (1978), as well as a study by Viljoen (1995) among white male South African students.

### Fruit salads

Both groups rated pineapple slices and banana salad as high-preference items. The intended frequency of use supported these ratings and was indicated as often (4-10 out of 30 days).

### Fruit

All the listed fruits were familiar to and have been eaten before by both the white and coloured participants. Both groups rated fruit as a high-preference item. These findings correspond with the research results of Schuck (1961), Knickrehm et al (1969), Meiselman and Waterman (1978) and Viljoen (1995). The only exception was grapefruit, which the white participants rated a neutral preference item. The intended frequency of use supported the high-reference rating for fruit as the majority of participants (24,2%) indicated that they would eat fruit twice per week (11-30 out of 30 days).

#### Desserts and dessert sauces

Both groups rated all the items in this group (baked puddings, jelly, instant puddings and canned fruit, as well as custard and chocolate sauce) as high-preference items. The intended frequency of use was indicated as often (4-10 out of 30 days). As reported in the studies of Knickrehm et al (1969), Einstein and Hornstein (1970), Meiselman and Waterman (1978) and Viljoen (1995), ice cream was found to be the most popular item in the dessert group.

#### Breakfast cereals

All the cooked breakfast cereals (oats, mabela, Taystee Wheat, soft and stiff mealie meal porridge) were rated high-preference items. Both the white and coloured participants gave the ready-to-eat breakfast cereals (Weet Bix, Post Toasties, Rice Crispies, All Bran and ProNutro) a higher preference rating than the cooked cereals. Similar findings also reported by Schuck (1961), Meiselman and Waterman (1978) and Viljoen (1995).

#### Bread and baked products

Bread and baked products were rated high-preference items. Both groups rated all types of bread, bread rolls, scones and vetkoek as high-preference items. These findings correspond with those of studies by Vawter and Konishi (1958), Einstein and Hornstein (1970), Meiselman and Waterman (1978), and Viljoen (1995). Mealie meal bread was the exception, as both groups rated it a neutral preference item.

#### Beverages

With a few exceptions (sour milk, magou and buttermilk), both groups rated beverages as high-preference items. As in other studies (Vawter & Konishi, 1958; Schuck, 1961; Einstein & Hornstein, 1970; Meiselman & Waterman, 1978; Viljoen, 1995), fresh milk was found to be the most popular item in this group. It received the highest preference rating (seven) of all the items evaluated in this study. The whites rated sour milk a low-preference item, whereas the coloured participants rated it as a neutral preference item. The whites rated buttermilk and magou as low-preference items, whereas the coloureds evaluated these beverages as high-preference items. Schuck (1961) and

Wyant and Meiselman (1984) also reported low-preference ratings for buttermilk.

As reported by Meiselman and Waterman (1978), fizzy drinks were also rated as high-preference items in this study. Fruit juices received high-preference ratings, as in the studies by Einstein and Hornstein (1970) and Viljoen (1995).

#### CONCLUSIONS

Adolescence and early adulthood (11-25 years) are complex and exciting in terms of developmental transition. It is a critical time for developing health behaviour patterns that are independent of family. Health habits that began in childhood or were initiated in adolescence have the potential to influence people's well-being or affecting their health in adulthood.

Nutrition in transition is marked by changes in the structure and composition of the diet, rapid urbanisation, epidemiological transition and economic change (Popkin, 1995). In South Africa there have been changes in eating patterns and the intake of food items and/or nutrients (Walker, 1995), and the prevalence of noncommunicable diseases. Data on eating patterns can assist in combating the negative impact of transition.

The results on the food habits and food preferences of the white and coloured participants in this study showed that the food habits and food preferences of these two groups are very similar. These results corresponded with the findings of Langenhoven et al (1988b) and Walker (1992) who reported a Western eating pattern for these two groups.

Meal composition and eating patterns differed over weekends in terms of the type and quantity of food consumed. The eating patterns of these two groups may be described as representative of a Western eating pattern, characterised by the consumption of three meals per day with snacks in between. Both groups indicated similar preference profiles and patterns of intended use for the majority of menu items listed in the preference questionnaire. However, the coloured participants were unfamiliar with a number of food items. These findings may be used for menu planning for whites and coloureds, and in the development of food-based dietary guidelines for South Africa.

#### REFERENCES

- ABRAHAMS, C. 2000. *Cass Abrahams cooks Cape Malay*. Hoheizen. Metz.
- COETZEE, R. 1977. *Spys en drank*. Kaapstad. Struik.
- EINSTEIN, MA & HORNSTEIN, I. 1970. Food preferences of college students and nutritional implications. *Journal of Food Science* 35:429-436.
- KNICKREHM, ME, COTNER, CG & KENDRICK, JG. 1969. Acceptance of menu items by college students. *Journal of the American Dietetic Association* 55:117-120.
- LANGENHOVEN, ML, STEYN, K, VAN ECK, M & GOUWS,

- E. 1988a. The meal pattern in the Cape Peninsula coloured population. *Ecology of Food and Nutrition* 22:107-116.
- LANGENHOVEN, ML, WOLMARANS, P, GROENEWALD, G, RICHTER, MJC & VAN ECK, M. 1988b. Nutrient intakes and food and meal patterns in three South African population groups. *Frontier Gastrology Research* 14: 41-48.
- LEIPOLDT, CL. 1976. *Leipoldt's Cape cookery*. Cape Town. Flesch.
- MEISELMAN, HL & WATERMAN, D. 1978. Food preferences of enlisted personnel in the armed forces. *Journal of the American Dietetic Association* 73:621-629.
- O'MAHONEY, M. 1986. *Sensory evaluation of food. Statistical methods and procedures*. New York. Dekker.
- PERYAM, DR. 1963. The acceptance of novel foods. *Food Technology* June:33-39.
- POPKIN, BM. 1994. The nutrition transition in low-income countries: an emerging crisis. *Nutrition Reviews* 52(9):285-298.
- ROLLS, BJ. 1988. Food beliefs and food choices in adolescents. *Medical Journal of Australia* 148(Suppl):S9-S13.
- SCHUCK, C. 1961. Food preferences of South Dakota students. *Journal of the American Dietetic Association* 39 (12):595-597.
- SHAPIRO, SS & WILK, MB. 1965. An analysis of variance test for normality. *Biometrika* 52:591-611.
- SNYMAN, L. 1998. *Rainbow cuisine*. Hout Bay. S&S Publishers
- VAWTER, HJ & KONISHI, F. 1958. Food acceptance by soldiers under an ad libitum regimen. *Journal of the American Dietetic Association* 34(1):36-41.
- VILJOEN, AT. 1995. Kliëntfokus in spyskaartbeplanning: 'n situasie-analise. *Tydskrif vir Dieetkunde en Huishoudkunde* 23(1):26-40.
- VILJOEN, AT. 1996. Eetgewoontes en voedselvoorkeure van mans (16-25 jaar) van die Suid-Afrikaanse bevolking. M Dieetkunde-verhandeling. Pretoria. Universiteit van Pretoria.
- VILJOEN, AT & GERICKE, GJ. 1998. Methodology for the collection and application of information on food habits and food preferences in menu planning of heterogeneous groups. *Journal of Family Ecology and Consumer Sciences* 26(2):89-102.
- WALKER, ARP. 1982. Nutrition and disease in South African populations: a brief review. *Journal of Dietetics and Home Economics* 10(2):67-71.
- WALKER, ARP. 1992. Trends of nutritional intake patterns of South African interethnic populations. *Continuous Medical Education* 10(8):1395-1403.
- WALKER ARP. 1995. Nutrition-related diseases in Southern Africa: with special reference to urban African populations in transition. *Nutrition Research* 15(7):1053-1094.
- WOLMARANS, P, LANGENHOVEN, ML, VAN ECK, M & SWANEPOEL, ASP. 1989. The contribution of different food groups to the energy, fat and fibre intake of the Coronary Risk Factor Study (CORIS) population. *South African Medical Journal* 75:167-171.
- WYANT, KW & MEISELMAN, HL. 1984. Sex and race differences in food preferences of military personnel. *Journal of the American Dietetic Association* 84(2):169-175.
-