

**THE USE AND INTERPRETATION OF THE NUTRITION INFORMATION ON
THE FOOD LABEL OF SELECTED FAT SPREADS BY FEMALE CONSUMERS
AGED 25 – 45 YEARS, LIVING IN PIETERMARITZBURG.**

**by
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ABSTRACT

Aim: To determine the use and interpretation of the nutrition information on the food label of selected fat spreads by female consumers aged 25 to 45 years, living in Pietermaritzburg.

Objectives: This study set out to determine the following objectives regarding the food label: what the demographics of the consumers making use of the label were; how these consumers used the label and their motivation behind this label use and did the use of the label alter the purchase of that product?

Method: One hundred and fifty women aged 25-45 years were chosen from an accidental, non-probability sample of consumers shopping at selected supermarkets within Pietermaritzburg. Respondents were presented with a four part questionnaire surrounding the purchase of selected fat spreads.

Results: The greatest number of respondents were from the white population group (n = 65), followed by black respondents (n = 46), Indian respondents (n = 29) and then coloured respondents (n = 10). Results showed that the respondent who was most likely to use the nutrition information on the food label had a tertiary education; was a primary food purchaser, lived with other people, had more than R1000 a month to spend on food and was conscious of choosing the healthier option. Fifty five percent of this study sample (n = 82) claimed to use the nutrition information on the label to assist with purchases and 68% (n = 102) found the nutrition information important for purchasing a new product. Of the potential factors that have previously been found to impede the use of the nutrition information label:-inadequate print size, lack of education as well as lack of nutrition information on the food label were found to be factors restricting label use in this study. The most commonly used sources of nutrition information were the media as well as friends and family and the most trusted source was the Health Professional.

Discussion: If the nutrition information is to be used both correctly and effectively, there must be a major educational campaign that sets out to meet the needs of the population that are most vulnerable, especially those with an inadequate education.

Conclusion: The consumer most likely to use the nutrition information on the food label has a tertiary education, is a primary food purchaser with a large amount of money available for groceries and is conscious of choosing a healthier option. The label is most likely to be used when purchasing a fat spread for the first time.

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TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION: THE PROBLEM AND ITS SETTING.....	1
1.1 Background to the importance of the study	1
1.2 Statement of the problem	3
1.3 Type of study.....	3
1.4 Subproblems.....	4
1.5 Study constraints	4
1.6 Study parameters	5
1.7 Definition of terms	5
1.8 Abbreviations	6
1.9 Assumptions.....	7
1.10 Summary	7
CHAPTER 2: REVIEW OF THE RELATED LITERATURE.....	9
2.1 The introduction of food labelling implementation	9
2.1.1 Requirements for food labels in South Africa.....	9
2.1.2 Requirements for food labels in the international arena	10
2.2 The importance of the food label in relation to non-communicable diseases	11
2.2.1 Non-communicable disease background.....	11
2.2.2 The non-communicable disease situation in South Africa.....	12
2.2.3 Dietary intakes in South Africa.....	14
2.2.4 Prevention of non-communicable diseases	17
2.3 Factors associated with the use and interpretation of the nutrition information on the food label.....	19
2.3.1 Characteristics of consumers who use the nutrition information on the food label.....	19
2.3.2 Factors associated with the consumer's decision to purchase a product.....	20
2.3.3 The link between use of the nutrition information on the food label and the decision to purchase the product.....	22
2.3.4 Factors related to the ability of the consumer to use and interpret the nutrition information on the food label	24
2.3.5 Consumer ability to use and interpret the nutrition information on the food label.....	25
2.3.6 Sources of nutrition information to acquire knowledge on how to use the label.....	27
2.4 Summary	31
CHAPTER 3: METHODOLOGY	33
3.1 Research methodology	33

3.1.1	Use of questionnaires in a survey.....	33
3.1.2	Interview techniques	35
3.2	Fieldworker training	36
3.3	Survey design	36
3.4	Population and sample selection	36
3.4.1.	Target and sample population	36
3.4.2	Method of sampling	37
3.5	Survey methods and materials.....	38
3.5.1	Questionnaire development.....	38
3.5.2	Validity, reliability and elimination of bias.....	39
3.6	Variables included in the study	40
3.6.1	Subproblem one: Demographic characteristics.....	40
3.6.2	Subproblem two: Factors related to the decision to purchase the selected fat spreads.....	40
3.6.3	Subproblem three: Use of the nutrition information to influence selected fat spread purchase.....	41
3.6.4	Subproblem four: Factors related to the use and interpretation of the nutrition information on the food label	41
3.6.5	Subproblem Five: Ability of the respondent to locate and apply the nutrition information	41
3.6.6	Subproblem six: Sources of nutrition information.....	41
3.7	Pilot study.....	42
3.8	Data analysis	42
3.9	Consent and ethical considerations	43
3.9.1	Consent.....	43
3.9.2	Ethical clearance	44
	CHAPTER 4: RESULTS	45
4.1	Sample characteristics	45
4.1.1	Demographics.....	45
4.1.2	Other characteristics of the sample	46
4.2	Results of the statistical analysis of the variables	49
4.2.1	Sample characteristics related to the use of the nutrition information on the food label	49
4.2.2	Factors related to the purchase of a selected fat spread	52

4.2.3	Use of the nutrition information to purchase fat spreads.....	54
4.2.4	Factors related to the use of the nutrition information on the food label, including label and print size as well as presentation of the nutrition information.	55
4.2.5	The respondents' ability to locate and apply the nutrition information to specific tasks surrounding fat content.....	56
4.2.6	Sources of nutrition information on how to use and interpret the food labels of selected fat spreads.....	58
4.3	Summary of results.....	59
CHAPTER 5: DISCUSSION		61
5.1	Introduction	61
5.2	Demographic characteristics of the sample.....	61
5.2.1	Demographics of consumers using the nutrition information on the food label	63
5.2.2	Factors related to the decision to purchase fat spreads.....	66
5.2.3	Use of the nutrition information on the food label to influence fat spread purchase	69
5.2.4	Factors potentially restricting the use of the nutrition information on the food label of fat spreads.....	71
5.2.5	Ability of the study sample to locate and apply the nutrition information on the selected fat spread.	72
5.2.6	Sources of nutrition information on how to use and interpret the nutrition information on the food labels	72
5.3	Recommendations for the improvement of the study.....	73
5.3.1	Research design.....	73
5.3.2	Methodology, data collection and analysis	73
5.4	Implications for further research	75
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS		77
6.1	Conclusions	77
6.1.1	Consumer demographics	77
6.1.2	Factors related to the decision to purchase the selected fat spread	77
6.1.3	Use of the nutrition information on the food label to influence the purchase of the selected fat spread	77
6.1.4	Factors related to the use of the nutrition information on the food label to purchase a fat spread	78
6.1.5	Ability of the respondents to use and interpret the nutrition information	78
6.1.6	Sources of nutrition information commonly used	78
6.2	Recommendations for dietetic practice	78
REFERENCES.....		80

APPENDICES

APPENDIX A: LIST OF PARTICIPATING SUPERMARKETS/SHOPS.....	A1
APPENDIX B: DATA COLLECTION TOOL.....	A2
APPENDIX C: LETTER OF PERMISSION & INFORMED CONSENT.....	A10
APPENDIX D: ETHICAL CLEARANCE LETTER.....	A12

LIST OF FIGURES

Figure 2.1:	Theoretical model of determinants of label use.....	21
Figure 4.1:	Histogram of age breakdown.....	45
Figure 4.2:	Bar chart of respondent population group distribution.....	46
Figure 4.3:	Percentage of children per household.....	48
Figure 4.4:	Percentage of household members.....	48
Figure 4.5:	Money available each month versus being the primary purchaser.....	49
Figure 4.6:	Bar chart comparison of education levels versus range of ability.....	57
Figure 5.1:	Modified determinants of label use according to this study's results.....	68

LIST OF TABLES

Table 2.1:	Population group distribution per 100 000 deaths from NCDs in the year 2000.....	14
Table 2.2:	Comparison of macronutrient distribution in seven dietary studies in South Africa.....	15
Table 2.3:	Dietary fat intakes from CORIS, DIKGALE and BRISK studies.....	16
Table 2.4:	Changes in energy and nutrients available for dietary intake from food balance sheets for the years 1962 – 2001.....	17
Table 2.5:	Possible sources of nutrition information.....	31
Table 3.1:	Data Analysis of the subproblems.....	43
Table 4.1:	Home language and highest level of education of respondents.....	39
Table 4.2:	Presence of a pre-existing disease condition and membership to a weight loss group in relation to label use.....	46
Table 4.3:	Cross tabulation of use of the nutrition information on the food label versus highest level of education, being the primary purchaser, number of household members and money available each month for purchases.....	51
Table 4.4:	Chi-Square Tests for the relationship between label use and amount of money available for groceries.....	51
Table 4.5:	Total Variance of eleven derived principal components related to fat spread purchases.....	53
Table 4.6:	Component Matrix of factor loadings of the variables related to fat spread purchase.....	54
Table 4.7:	Five most influential factors influencing the purchase of a fat spread.....	54
Table 4.8:	Responses of respondents regarding use of the nutrition information on the food label.....	55
Table 4.9:	Respondents responses to factors related to use of the nutrition information on the selected fat spread label.....	56
Table 4.10:	Results from the multiple choice “locate” and “apply” tasks.....	57
Table 4.11:	Sources of nutrition information used and not used by respondents.....	58
Table 4.12:	Total Variance of nutrition information sources.....	59

CHAPTER 1: INTRODUCTION: THE PROBLEM AND ITS SETTING

1.1 Background to the importance of the study

South Africa is a country that has malnutrition concerns on two extremes from under nutrition to over nutrition. While an increased mortality rate from infectious diseases including HIV/AIDS is of concern, the increased incidence of morbidity and premature mortality from chronic diseases of lifestyle or non-communicable diseases (NCDs) is on the rise (Steyn, Bradshaw, Norman, Joubert, Scheider & Steyn 2006). The limited studies on dietary intakes within the South African population have shown that South Africans are consuming a diet that is comparatively higher in both energy and fat when compared to previous decades. It has been found that 56% of South African women and 29% of South African men have a body mass index greater than 25 (Steyn 2006). This implies that more than half the South African female population are either overweight or obese. According to Stats SA (2006), in 2004 the largest increase in death rate from NCDs was seen in females aged 20 to 39, where the death rate had nearly doubled its original 1997 value.

The WHO and FAO (2003) state that the risk of NCDs may be reduced by following a healthy diet with an emphasis on the reduction of the intake of dietary fat containing saturated fatty acids, trans fatty acids and cholesterol. In South Africa, food based dietary guidelines have been drawn up to encourage an improved quality of both diet and lifestyle. One such guideline encourages the use of fats sparingly (Love, Maunder, Green, Ross, Smale-Lovely & Charlton (2001). If consumers are to follow these guidelines, they need adequate information available to them to make the healthiest possible informed choice. One such tool that is available for use is the nutrition information on the food label. The nutrition information on the food label has two important advantages as a nutrition communication tool: its location and the frequency of contact that the consumer has with this nutrition information (Coulston 1998).

Current South African legislation however, states that food manufacturers are only required to list the nutrition information such as total fat content, if their product makes a health claim regarding the nutritive value (Regulation 2034/1993 of Act 54 of the 1972 Foodstuffs, Cosmetics and Disinfectants Act, p1216). This implies that the majority of the products on

the supermarket shelf, including sources of dietary fat, could pass under this legislative “radar” because they do not make health claims.

The International Food Information Council (IFC) (1999) stated that more than 80% of the American female population were mainly responsible for food purchases and preparations. It was also proposed that women in the age group of 25-45 would be more likely to be purchasing for a partner and/or children. If these findings were extrapolated to imply that women aged 25-45 years all over the world were the main food purchasers this would mean that they would be the target group most commonly exposed to the nutrition information labels. Considering the earlier statistic that South African women around this age group had increased mortality rates from NCDs, it is important that females of this age group are targeted in this study. It has also been found internationally, that the consumer most likely to make use of the nutrition information label had a higher educational level and income and was more conscious of her diet and health status (Cowburn & Stockley 2005).

When training consumers on how to use the nutrition information on the food label, it is important that they understand how to interpret and apply this information effectively. In other words the consumer needs to know what they are looking for and how to apply this information in terms of reducing their dietary fat intake. In the United States, there are approximately 65 000 dietitians and nutritionists registered with the American Dietetic Association (American Dietetic Association 2006), while in South Africa there are currently 1616 registered dietitians (Daffue 2006). This means that the American public have a much higher exposure rate to professional nutritional advice when compared to the South African public. As a result of this it is important to assess where the South African public is obtaining their knowledge of how to use and interpret the nutrition information label effectively.

A very limited number of studies have been conducted in South Africa regarding the use and interpretation of the nutrition information on the food label. As a result there is a great deficiency of current information available surrounding the use of this nutrition label by South African consumers. Several questions that have not currently been addressed then arise:

- Is the nutrition information on the food label achieving its full potential of reducing dietary fat intake?
- Is the format of the nutrition information on the food label structured to meet all consumers' requirements, or are there groups of consumers unable to make use of this information?
- Does the average consumer have the necessary skills to interpret this information and,
- Are they in fact using the nutrition information to influence their purchase and thus dietary intake?

It was anticipated that the results of this study would provide an insight to these questions and because the consumer can exercise dietary fat restriction through their choice of fat spread¹, the nutrition information on these products would be used in this study.

1.2 Statement of the problem

The following information regarding the nutrition information on the food label was addressed: what were the demographics of the consumers making use of the nutrition information on the food label; how did these consumers use the label and what was their motivation behind this label use and did the use of the nutrition information on the food label alter the purchase of that product?

1.3 Type of study

This cross sectional study included an accidental², non-probability sample of 150 women aged 25 to 45 years, living in Pietermaritzburg. This study design is based on the research of Alfieri and Byrd-Bredbenner (2000) who researched nutrition information label use amongst 150 American women between the ages of 25 and 45.

¹ Fat spreads in this study refer to butter, butter-margarine mix, tub and block margarines.

² Accidental sampling refers to including a respondent based on the fact that they are present by chance (Hornby 1989, p7).

1.4 Subproblems

- 1.4.1 To determine the demographic characteristics of respondents using the nutrition information on selected fat spreads including age, education, number of household members, home language, population group and amount of money available each month to spend on food purchases.
- 1.4.2 To determine whether the decision to purchase selected fat spreads was related to familiarity with the product, presentation of the product and prior recommendations on following a healthy diet received regarding the product.
- 1.4.3 To determine whether the decision to purchase selected fat spreads was related to the use of the nutrition information on the food label.
- 1.4.4 To determine whether the use and interpretation of the nutrition information to purchase a selected fat spread, was affected by factors such as the size, print and presentation of the food label.
- 1.4.5 To determine the ability of the respondent to locate and apply the nutrition information on the food label of selected fat spreads.
- 1.4.6 To determine the respondent's sources of nutrition information on how to use and interpret the food labels of selected fat spreads.

1.5 Study constraints

Due to both monetary and time limitations, only a small sample of the public could be interviewed for this study. The questionnaire was also designed to be as brief as possible, to encourage respondent participation because time limitations would have restricted the response rate.

1.6 Study parameters

The selected sample population consisted of all literate female respondents aged 25 to 45 years, shopping at all supermarkets³ in Pietermaritzburg that stocked the selected fat spreads. Only the literate consumers were included, because it was assumed that illiterate consumers would be unable to use the label, regardless of font size and information presentation.

1.7 Definition of terms

Average consumer:	This refers to the regular “run of the mill” consumer who exhibits typical consumer characteristics when making a purchase.
Eigenvalue:	The “variance extracted by the principal components, the sum of which adds up to the total number of variables” (StatsSoft.com 2006).
Food label:	The panel on the food package that contains information about the product including ingredients, as well as the manufacturer.
Influence:	The ability to affect a belief or action (Hornby 1989, p657).
Interpretation:	The act of describing the meaning of something (Hornby 1989, p657).
Nutrition information:	The “declaration of the amounts of the nutrients and/or energy per 100g or 100ml of the foodstuff when packed.” (Regulation 2034/1993 of Act 54 of the 1972 Foodstuffs, Cosmetics and Disinfectants Act, p1216). This information is presented in a table format on the food label of the product

³ Supermarkets included shops chosen on the basis that they stocked all the selected fat spreads, as defined and gave consent to participate.

Principal Component Analysis: A statistical test used to “reduce the dimensionality of a data set in which there are a large number of interrelated variables, while retaining as much as possible of the variation present in the data set” (Jolliffe 2002, pix).

Principal Component: A “new set of variables that are uncorrelated and ordered so that the first few retain most of the variation present in all the original variables” (Jolliffe 2002, pix).

Product design and packaging: The style in which the selected fat spread’s packaging was designed and presented.

Product Advertising: How the product was marketed for sale. This may range from newspaper/pamphlet/radio/television advertisements to in-store demonstration stands.

Selected fat spreads: Butter, butter-margarine mix, tub and block margarines.

Supermarket / Shop: The place at which the selected fat spreads were available for purchase. Those included in this study were part of franchises including Pick ‘n Pay, Shoprite Checkers, Spar and Woolworths.

Understand: To deduce the intended meaning, significance, explanation of something (Hornby 1989, p1392).

Use: To apply and/or utilize something through a specific method. (Hornby 1989, p1407)

1.8 Abbreviations

FAO: Food and Agricultural Organization of the United Nations

FBDG: Food-Based Dietary Guideline

FDA: Food and Drug Administration

MRC:	Medical Research Council
NCD:	Non-communicable disease
RDA:	Recommended Dietary Allowance
SPSS:	Statistical Package for Social Sciences
US:	United States
WHO:	World Health Organisation

1.9 Assumptions

The following was assumed to be valid:

- The respondent was literate and able to understand the questions. If a respondent was unable to complete the questionnaire it was assumed that they would not have been able to read the nutrition information on the food label.
- The respondent was honest with their responses.
- The respondent was able to read the nutrition information, even if it required the assistance of reading glasses.
- The respondent was able to read and understand English. As the labels only appear in English, one can assume that if English is not spoken or read the label would be of no value.
- The interview was conducted in a standardised manner where the fieldworkers were consistent with their interviewing techniques as discussed during the fieldworker training.

1.10 Summary

The incidence of morbidity and premature mortality from NCDs in South Africa is on the increase. As part of the guidelines on reducing the risk of NCDs, the WHO and FAO recommends a reduction in the intake of dietary fat. The South African food based dietary guidelines also stipulate that consumers should use fats sparingly. One such tool to assist the consumer in reducing their dietary fat intake is the nutrition information on the food label.

The focus of this study is:

- To establish the demographics of South African female consumers using the nutrition information on the food label;
- To determine the factors influencing the decision to purchase selected fat spreads;
- To determine the factors related to the use and interpretation of the nutrition information on the food label;
- To determine the ability of female consumers to locate and apply fat content information when comparing product labels;
- To determine the sources of nutrition information available to female consumers to enable them to use the nutrition information on the food label.

It is important to assess these objectives because South African studies conducted on this topic are minimal and it is hoped that the results of this study would provide a useful insight into factors related to the use/non use of the nutrition information on the food label.

Female consumers aged between 25 and 45 years were chosen to be part of this study because it has been found that they would most likely be responsible for purchasing groceries for the family. This study also specifically focused on the food labels of fat spreads because these may be a significant source of dietary fat intake that consumers could restrict, by choosing a lower fat option.

CHAPTER 2: REVIEW OF THE RELATED LITERATURE

The following chapter will review studies that have been conducted on the use and interpretation of the nutrition information on the food label. The first section, will introduce the implementation of food labelling in both South Africa and the international arena. The second section will cover the importance of the food label in relation to non-communicable diseases by looking at the non-communicable disease background, the situation in South Africa and then how non-communicable diseases can be prevented. The third section, will take a look at the various factors associated with the use and interpretation of the nutrition information on the food label. This section will cover aspects including: characteristics of consumers using the label, factors associated with the consumer's decision to purchase a product, factors related to the ability of the consumer to use and interpret the label, the consumer's ability to use the label and then the sources of nutrition information knowledge on how to use the label. This will be concluded by a section that summarises the review.

2.1 The introduction of food labelling implementation

In 1962, the WHO and FAO formed a commission known as Codex Alimentarius with the intentions of endorsing the implementation of uniform food standards throughout the world. In 1985 Codex Guidelines on nutrition labelling (CAC/G12-1985) were drawn up, with a main goal of ensuring that the consumer was protected against untruthful claims (Crane, Behlen, Yetley & Vanderveen 1990). Codex Alimentarius is highly regarded in South Africa and is used in both food labelling legislation and as well as food exporting policies (Suiwel Diens Organisasie/ Dairy Services Organisation SDO 1990).

2.1.1 Requirements for food labels in South Africa

In South Africa the Department of National Health introduced the Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972) with the intentions of:

- Ensuring high quality, safe food
- Averting both the sale and importation of contaminated and misleadingly described foodstuffs
- Creating minimum and maximum standards of food additives

- Imposing correct food labelling procedures
- Safeguarding the food industry against harmful ingredients
- Protecting the consumer's health (SDO 1990).

Food manufacturers are not legally required to declare the nutrition information on their product unless their product makes a nutritional claim (SDO 1990). The legislation states that each food label should contain the following:

- The heading "Nutrition Information";
- An indication of the mass (grams) or volume (millilitres) per serving
- A statement of the energy content of a serving that must be rounded of to the nearest kilojoule;
- The protein, carbohydrate and fat content in a serving, to be expressed in grams;
- An indication of what the Recommended Dietary Allowances (RDA) of each of the following nutrients when present in serving amounts that exceed two percent of the total content. The order in which these nutrients should be listed is as follows: Vitamin A, Vitamin C, Thiamine, Riboflavin, Nicotinamide, Calcium, Iron, Vitamin D, Vitamin E, Biotin, Folic acid, Pantothenic acid, Vitamin B₆, Vitamin B₁₂, Phosphorous, Iodine, Magnesium, Copper and Zinc (Foodstuffs, Cosmetics and Disinfectants Act 54/1972, p4410).

New food labelling legislation is being drafted in South Africa. When passed, manufacturers will be severely limited in how they market and present their products. Only truthful claims will be permitted and these claims will have to be fully justified by the declaration of the nutrition information on the product. In terms of nutrition information, manufacturers will have to declare the source of the nutrition information that they have used, such as food composition tables, medical research councils or international databases (Dennison 2004). To date, this new legislation has not yet appeared in the Government Gazette or been passed as Law (Badham 2006).

2.1.2 Requirements for food labels in the international arena

Based on recommendations made at a Food, Nutrition and Health conference at the White House in 1969, the United States Food and Drug Administration (FDA) set regulations

whereby processed and packaged food sold in the US were to contain a standard format that declared the product's nutrition content (Crane *et al* 1990). In 1990, the FDA introduced the Nutrition Labelling and Education Act which proposed that nutrition information on the food label was to become compulsory. This was implemented in the United States in 1994 (Brecher, Bender, Wilkening, McCabe & Anderson 2000).

In South Africa, Canada and the European Union, nutrition labelling is not mandatory unless a specific nutrition claim is made (Crane *et al* 1990). In Australia, the declaration of saturated fats on the nutrition information label has become mandatory (Irwin 2002).

The following section will cover the importance of the food label in relation to non-communicable diseases by looking at the non-communicable disease background, the situation in South Africa as well as how non-communicable diseases can be prevented.

2.2 The importance of the food label in relation to non-communicable diseases

2.2.1 Non-communicable disease background

NCDs may be defined as “a group of diseases that share similar risk factors as a result of exposure, over many decades, to unhealthy diets, smoking, lack of exercise and possible stress” (MRC 2006). These diseases may include cardiovascular disease, type 2 diabetes, nutrition and tobacco related cancers, chronic bronchitis, emphysema as well as other conditions that result in high morbidity and mortality rates. In the international arena these chronic diseases of lifestyle are referred to as “non-communicable diseases” or “NCDs” (MRC 2006).

The WHO/FAO (2003) group the risk factors associated with NCDs into the following categories: risk factors caused by behavioural factors such as poor diet, lack of physical activity and abuse of tobacco and alcohol; risk factors caused by biological factors such as hypertension, dyslipidaemia, raised cholesterol levels, hyperinsulinaemia, overweight and obesity; and risk factors related to community factors, including socioeconomic, cultural and environmental limits.

When looking at the specific link between individual NCDs in relation to dietary fat intakes, obesity has been associated with an increased intake of energy dense foods; Type 2 diabetes with an increased intake of saturated fatty acids, total fat and trans fatty acids; cardiovascular disease with an increased trans fatty acid and cholesterol intake; and cancer has been associated with an increased dietary intake of animal fat (WHO 2003). It can be seen that it is not just “dietary fat” per se that contributes to the various NCDs, but rather the various components of dietary fat that play a role in NCD development when consumed in excess. As a result the WHO has stipulated specific guidelines on what quantities of the various dietary fat components one should aim for in their dietary intake, these are discussed under section 2.2.4. It is therefore important to understand how the consumer interprets the nutrition information on the food label, particularly fat content, because these are the components that the consumer should be looking for when trying to make a reduction in their dietary fat intake.

NCDs are not only costly in terms of individual suffering, they also have an expensive impact on the economy in terms of health-care costs, and the indirect expense of working days missed, medical visits as well as reduced quality of life and lives lost prematurely (WHO/FAO 2003). Whilst, NCDs were previously characterized as “diseases of affluence”, it has become apparent that there is an increased incidence of these NCDs occurring in poorer communities, especially the developing countries (WHO/FAO 2003).

2.2.2 The non-communicable disease situation in South Africa

Bradshaw, Groenewald, Laubscher, Nannan, Nojilana, Norman, Pieterse, Schneider, Bourne, Timaeus, Dorrington and Johnson (2003) state that South Africa is bearing a “quadruple burden of disease”, as a result of the following four situations:

- Infectious diseases linked to undernutrition, poverty and underdevelopment;
- The overwhelming effect of the HIV/AIDS epidemic;
- The increasing number of injury-related deaths; and
- Chronic diseases associated with overnutrition and adoption of a western type of diet and lifestyle.

As a developing country with such diverse cultures, South Africa has a population with an extreme variety in education levels, income levels as well as access to retail outlets and food products available. There is a large difference in the amount of income distributed between the low-income households that form a majority, and the high-income households that form a minority (Steyn 2006). This income difference is also manifested in the population's dietary intake as the nutritional status of South Africans ranges from stunting in the rural areas to overweight and obesity in the urban areas. It has been seen that as the people living in the rural areas move into the urban areas, there is major change in lifestyle, known as nutrition transition. People living in the urban areas tend to have a decreased physical activity; replacement of their "traditional home-cooked" meal with the more commonly available fast foods; as well as an increased use of the more freely available alcohol and tobacco (Steyn 2006).

Bradshaw et al (2003) conducted a study to determine the leading causes of premature mortality in South Africans for the year 2000. Results indicated that the two major causes of deaths were: NCDs responsible for 37% and HIV/AIDs which resulted in 30% of South African deaths. Of interest, it was found that more South African females died from HIV/AIDS than an NCD or injury, compared to male South Africans deaths. However within the NCD deaths, females were most likely to die from a stroke, whilst males were most likely to die from ischaemic heart disease (Bradshaw et al 2003).

When looking specifically at the profile of deaths from NCDs amongst the different population groups in the year 2000, it can be seen from Table 2.1 that the highest incidence of deaths from cardiovascular disease and diabetes was amongst the Indian population; from cancer was amongst the Coloured population; while the highest incidence of "other" NCDs was amongst the Black population. Other NCDs includes diseases of the digestive system such as hepatic failure as well as genitor-urinary diseases such as nephrosis.

Table 2.1: Population group distribution per 100 000 deaths from NCDs in the year 2000 (after Bradshaw et al 2003).

	Deaths per 100 000			
	Cardiovascular disease	Diabetes	Cancer	Other NCDs
Population Group				
Black	375	59	126	116
White	384	23	199	91
Coloured	406	64	212	82
Indian	607	111	121	96

2.2.3 Dietary intakes in South Africa

Steyn (2006) compared the macronutrient distribution results from seven dietary studies conducted in South Africa, as shown in Table 2.1. Comparisons of dietary fat intake are made between the WHO (2003) recommended dietary fat intake of between 15% and 30%. The Coronary Risk Factor Study (CORIS) that was conducted in the Western Cape in 1979, measured dietary intakes of 7188 white respondents in three rural towns, using a 24-hour recall. Results showed that fat intake, specifically in the form of eggs, meat and dairy was very high, contributing to between 34.6% and 36.5 % of the total energy intake (Wolmarans, Langenhoven, Benade, Swanepoel, Kotze & Rossouw 1988). The Vanderbijlpark Information Project on Health Obesity and Risk Factor (VIGHOR) conducted in the eighties on 317 white respondents using a 24 hour recall, showed similar results, with fat contributing to between 33.3% and 38.6% of total energy intake (Vorster, Oosthuizen, Steyn, van der Merwe & Kotze 1995). Findings of the VIGHOR study showed that both white males and females suffered from dyslipidaemia, where their serum total cholesterol and serum triglyceride values were above the recommended maximum levels. It was also found that the respondents' high-density-lipoprotein levels fell below the recommended 20% value. These results indicated that the presence of dyslipidaemia which was most likely caused by the higher fat intakes, had lead to increased risks of Ischaemic Heart disease (Steyn et al 1996).

It should also be noted that results of both Wolmarans et al (1999) and Langehoven et al (1999) showed that dietary fat intakes were found to be moderately high amongst the Indian and Coloured populations respectively. Dietary fat contributed between 32.8% and 36.9% for the Indian sample and between 37.3% and 38% for the Coloured population sample. If one

were to go back to the earlier discussion on mortality rates from NCDs in 2000, it was seen that both the Indian and Coloured groups featured as the two populations with the highest death rates from cardiovascular disease, diabetes and cancer respectively. Therefore it could be postulated that these moderately high intakes of dietary fat could be linked to the mortality rates associated with NCDs.

While all of these studies showed dietary fat intakes to be higher than the WHO recommended intakes, two studies revealed intakes within this limit. Steyn *et al* (2001) found intakes in their DIKGALE study amongst a black rural population to be between 15.7% and 17.1%, while Bourne *et al* (1993) found dietary fat intakes in their BRISK study of an urban black sample to be between 23.8% and 28.3%. These findings highlight the nutrition transition that has been seen amongst the black population of South Africa. Nutrition transition hypothesises that a traditional rural black diet is being replaced by a western diet that is higher in dietary fat and lower in unrefined carbohydrate and fibre (Bourne, Lambert & Steyn 2002).

Table 2.2: Comparison of macronutrient distribution in seven dietary studies in South Africa (after Steyn 2006).

Dietary Factor	WHO Energy % Goals WHO (2003)	CORIS White rural Wolmarans <i>et al</i> (1998)	VIGHOR White urban Vorster <i>et al</i> (1995)	DIKGALE Black rural Steyn <i>et al</i> (2001)	BRISK Black urban Bourne <i>et al</i> (1993)	Indians urban Wolmarans <i>et al</i> (1999)	CRISIC Coloured urban Langenhoven <i>et al</i> (1999)
Energy (KJ)		6300-12700	5900-12500	6100-6300	5800-8500	5000-8500	7100-10300
Total Fat (%)	15-30%	34.6-36.5	33.3-38.6	15.7-17.1	23.8-28.3	32.8-36.9	37.3-38.0
SFA	<10%	12.6-13.6	12.2-14.6	3.7-4.4	8.5-9.2	7.0-9.8	11.8-11.9
PUFAs	6-10%	5.9-7.0	5.6-7.8	3.7-3.9	4.5-7.2	9.5-12.5	9.1-9.2
CHO	55-75%	44.1-51.5	46.9-53.3	62.4-70.8	59.2-64.3	45.5-53.0	45.0-46.5
Free Sugar	<10%	10.8-15.4	13.0-18.6	5.2-4.2	10.7-14.6	10.8-15.8	15.0-16.0
Protein	10-15%	13.8-16.6	13.6-16.3	14.2-15.6	13.1-15.3	11.9-13.8	14.9-15.0
Cholesterol	≤300mg/day	243-509	140-176	144.9-116.6		76-117	290-440

When examining the source of dietary fat intakes, specifically focusing on the vegetable oil and fat intake of some of these subjects as shown in Table 2.3, it can be seen that 87.1% of the subjects interviewed in the CORIS study consumed 25.3g of their daily dietary fat intake from vegetable fats and oils. As mentioned earlier it was found that both the rural and urban black subjects of the DIKGALE and BRISK studies were consuming a dietary fat intake

within the recommended WHO range. Interestingly while 61.5% of the urban sample in the BRISK study consumed on average 13.3g of their dietary fat intake from vegetable fat only 25.5% of the rural sample of the DIKGALE study consumed 2.3g of their dietary fat from vegetable fats and oils.

Table 2.3: Dietary fat intakes from CORIS, DIKGALE and BRISK studies (after Steyn 2006).

Population group	Type of study	Type of vegetable fats & oils	% group consuming	Per capita per day (g)
White rural CORIS Wolmarans et al (1998)	Secondary Data Analysis	Brick margarine, medium low-fat margarine in tubs, non-dairy creamer	87.1	25.3
Black rural DIKGALE Steyn et al (2001)	24 hour Recall	Brick margarine, medium low-fat margarine in tubs, non-dairy creamer condensed milk, non-dairy cream salad dressing, mayonnaise	25.5	2.3
Black urban BRISK Bourne et al (1993)	Secondary Data Analysis	Brick margarine, medium low-fat margarine in tubs, non-dairy creamer condensed milk, non-dairy cream salad dressing, mayonnaise	61.5	13.3

From all the results listed in Table 2.3, the only study that showed butter to be a significant contributor to the daily intake was the CORIS study, where 92.6% of their subjects were consuming on average of 306.3g of milk and milk products per day including butter.

Table 2.4 presents data from food balance sheets that show changes in energy and nutrients available for consumption in South Africa from 1962 to 2001 (Steyn et al 2006). The amount of energy available has increased by 11 percent from 10 933 kilojoules in 1962 to 12 2268 kilojoules per day in 2001. Dietary fat intake available for consumption has also increased by 23 percent from 61.2 grams per day in 1962 to 79 grams per day in 2001. It should be noted that the percentage contribution that fat makes to the total energy content in 2001, is still

within the desirable range of 15-30% that WHO stipulates and so this increase does not necessarily make for alarming concern (Steyn *et al* 2006).

However, it is known that a dietary intake that includes concentrated amounts of energy-dense foods, total fat, saturated fatty acids, transfatty acids, sugar and salt; and low amounts of dietary fibre and micronutrients, is strongly associated with the development of NCDs (WHO / FAO 2003), so this moderate increase in both energy and fat intake should be monitored to ensure the public are not exceeding the recommended amounts.

Table 2.4: Changes in energy and nutrients available for dietary intake from food balance sheets for the years 1962 – 2001 (after Steyn *et al* 2006)

Year	1962			2001			Total %
Unit	Grams	kJ	Energy	Grams	kJ	Energy	Increase
Total (kilojoules)			10933			12268	11%
Protein	68.4	287.28	10%	75.10	315.42	10%	9%
Carbohydrates	445.0	1869.00	69%	478.00	2007.60	66%	7%
Fat	61.2	257.04	21%	79.00	331.80	24%	23%

2.2.4 Prevention of non-communicable diseases

The WHO (2003) states that when developing public health policies and programmes to reduce the risk of NCD development, an emphasis should be placed on nutrition (not just focusing on dietary fat but also on high intakes of sugar and certain micronutrients too) as well as the other principal risk factors such as tobacco use and alcohol consumption. As part of the guidelines on reducing dietary fat intake, the WHO recommends a total fat intake of between 15-30% of which less than 10% should comprise saturated fatty acids, 6-10% polyunsaturated fatty acids- of this 5-8% being n-6 polyunsaturated fatty acids and 1-2% being n-3 polyunsaturated fatty acids; trans fatty acids making up less than 1% and monounsaturated fatty acids making up the difference. These recommendations take into account both over- and under- nutrition where intakes have been found to both exceed 30% and amount to less than 15%. In countries where dietary fat intakes are very low, the WHO recommends that an intake of at least 15-20% should be aimed for, the latter particularly in the female population.

Unfortunately the progress in developing countries is much slower because of a lack of resources, including money that prevents effective action plans from taking place. Appropriate public health support is an effective method in NCD prevention because it is inexpensive and available to the majority of people. The promotion of a healthy lifestyle and appropriate dietary intake to the consumer involves input from both the agricultural and food sectors of a country. This is because both sectors may be equally important in developing and promoting a product that is of good quality in terms of nutrients and food safety (WHO/FAO 2003).

2.2.4.1 Food Based Dietary Guidelines

In 1995 at an International Consultation in Cyprus, assembled by the WHO and FAO, it was decided that Food-Based Dietary Guidelines (FBDGs) would be an effective education tool for public health nutrition. Three years later the Nutrition Society of South Africa initiated the formation of a work group for the development of the South African Food-Based Dietary Guidelines. In 1998, at the biennial Nutrition Congress of Southern Africa, eleven FBDGs were drawn up, including one that stated “use fats sparingly” (Love et al 2001).

When testing the “use fats sparingly” guidelines on the South African population, several interpretations by the various settlement⁴ and ethnicity groups⁵ interviewed, were discovered by Love et al (2001). These included:

- Not adding too much fat when cooking;
- Purchasing low-fat foods; and
- Using “less” or “little” amounts of fats.

In order to prevent the development of NCDs, it is also imperative that consumers have access to adequate information about the energy, fat, sugar and salt content of food products, in order to make the healthiest choice that they can when making a purchase (WHO/FAO 2003). This information is now available to consumers in the form of the nutrition information label.

⁴ Settlement refers to the respondent living in non-urban, urban informal or urban formal areas.

⁵ Ethnicity refers to the respondent’s population group (black, coloured, Indian or white) Love et al (2001).

The following section will take a look at the various factors associated with the use and interpretation of the nutrition information on the food label. This section will cover aspects including: characteristics of consumers using the label, factors associated with the consumer's decision to purchase a product, factors related to the ability of the consumer to use and interpret the label, the consumer's ability to use the label as well as the sources of nutrition information knowledge on how to use the label.

2.3 Factors associated with the use and interpretation of the nutrition information on the food label

2.3.1 Characteristics of consumers who use the nutrition information on the food label

Cowburn and Stockley (2005) conducted a systematic review on 103 studies performed throughout the world where consumer use and understanding of the nutrition information on the food label was the focus. Fifty one percent of the studies were from North America, 28 percent were from Europe and 21 percent were from the United Kingdom. From these studies it was found that consumers looked at the nutrition information on the food label either "often" or "at least sometimes". Those who read the label were either trying to avoid a specific nutrient such as fat, or compare the content of a specific nutrient amongst different product brands.

The consumer most likely to make use of the nutrition information label was female with a higher educational level and income and, was more conscious of her diet and health status (Cowburn & Stockley 2005). It has been suggested that the higher educated consumer is more conscious of the diet-disease relationship and is therefore more eager to use the nutrition information on the food label. On the other hand, the consumer's higher educational level may also provide an added advantage of being able to interpret the nutrition information faster, thereby reducing time constraints that would outweigh the benefit of a healthier product's search (Guthrie, Fox, Cleveland & Welsh 1995). In terms of the significance of the number of people in the respondent's household, consumers living in households of more than one, are more likely to spend extra time and effort using the nutrition information on the food label compared to consumers living on their own, because more than one person will benefit from the use of this information (Guthrie *et al* 1995).

2.3.2 Factors associated with the consumer's decision to purchase a product

In order to assess the value of the nutrition information on the food label as a tool to reducing dietary fat intake, one needs to understand the factors influencing the purchase of the product. Guthrie et al (1995) developed a theoretical model of the determinants of label use that showed that factors such as the individual's characteristics; situational variables such as time constraints; the marketing environment; product's importance to the consumer; the consumer's knowledge of the product; as well as their decision making strategies, influence the use of the nutrition information on the food label. Figure 2.1 represents the theoretical model of determinants of nutrition information label use (after Drichoutis & Lazaridis 2005, Guthrie et al 1995).

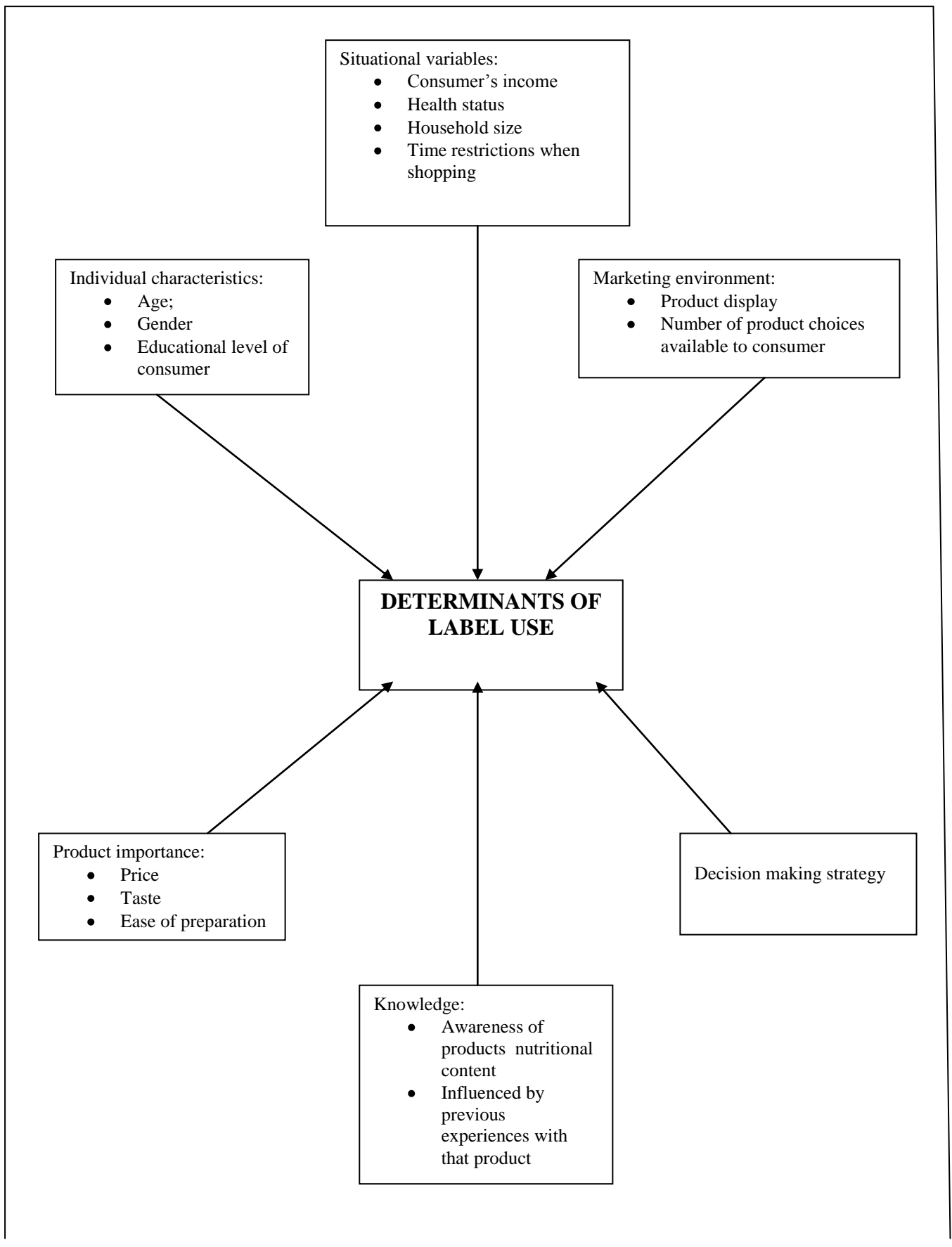


Figure 2.1: Theoretical model of determinants of label use (after Drichoutis & Lazaridis 2005, Guthrie et al 1995)

Mitchell and Boustani (1992) found that when making a purchase, American consumers tend to process as small an amount of information as possible and employ various risk⁶ reducing strategies to make the best possible purchase. The easiest way for consumers to reduce this risk is to choose a familiar brand because the consumer tends to believe that:

- Only high quality products are likely to be well-known;
- Products that are frequently advertised and marketed must be of good quality, because advertising and marketing is expensive, therefore these products must come from a highly regarded company that is unlikely to waste large amounts of money promoting a product that is inferior; and
- Popular products that are most often purchased must be of high quality if everyone is buying them.

Park, Iyer and Smith (1989) measured the influence that both a supermarket's layout and time available for shopping had, on product purchases. Sixty-eight American respondents selected from a consumer panel, were assigned to one of four supermarkets with which they were unfamiliar, and given a set time in which to make particular purchases. The consumer was then followed around the supermarket and asked to provide verbal feedback on how easy it was to locate the products as well as how pressurised they felt to purchase the product in that specific time period. Results showed that unfamiliarity with a supermarket's layout as well as time limits resulted in unplanned purchases as well as switching to alternate brands because of difficulty in locating the usual, preferred product. One could then expand this to include that shopping in an unfamiliar environment or shopping under a time limit, may affect the consumer's decision to choose lower fat options and/or stop to read the nutrition information on the food label (Park et al 1989).

2.3.3 The link between use of the nutrition information on the food label and the decision to purchase the product

It is hypothesised by Guthrie et al (1995) that the consumer will persevere in their quest for a product that is either cheaper or healthier, for as long as the added benefit is not outweighed by the extra expense of the search for the product. This compensation includes a more

⁶ Risk refers to constraints such as time, money, quality and ease of preparation when using the product (Mitchell & Boustani (1992)

nutritious food choice whilst the expense includes decreased time available for both shopping and leisure activities (Nayga, Lipinski & Savur 1998, Guthrie *et al* 1995). This implies that the nutrition information needs to be easy to access and use. According to Cowburn and Stockley (2005), use of the nutrition information on the food label implies the consumer must be able to: a) find the panel with the nutrition information; b) read the information; and c) interpret this information to decide on purchasing the product. Cowburn and Stockley (2005) and Levy and Fein (1998) suggest that the consumer may interpret the nutrition information on the food label to perform the following activities:

- Identify the content of a specific nutrient
- Make a decision as to whether the product has high or low concentration of a particular nutrient
- Assess the validity of any health claim made on the product
- Use the nutrient contents to make comparisons
- Determine the nutrient composition of a serving size
- Determine the product's nutritive contribution to either the meal or the dietary intake for the day

Neuhouser, Kristal and Patterson (1999) used a random-digit-dial telephone survey to administer questions to 1450 American adults, regarding their dietary fat intake and use of the nutrition information on the food label. The questions were designed to assess intakes over the last three months as well as practices related to modifying dietary fat intake. Respondents were provided with a four-point Likert Scale giving them the option of choosing "rarely/never", "sometimes", "often" or "usually". The results revealed that a consumer who acknowledged the importance of a low fat intake was ten times more likely to read the nutrition information on the label, than the consumer who did not (Neuhouser *et al* 1999).

Similar findings were made by Kreuter, Brennan, Scharff, and Lukwago (1997) who conducted a study on 885 patients attending four family medicine clinics in the United States, to determine the link between nutrition label use and dietary intake. Whilst waiting for their appointment, respondents filled out information regarding how high in fat they perceived their diet to be. They could choose "higher than average", "average" or "lower than average". They were also assessed on their use of the label in the past 12 months and provided with a choice of items that they usually searched for, how often they searched for the information, as

well as how often they used the label to help choose an item. A Likert scale was used to gauge their responses (Kreuter *et al* 1997). Results indicated that 80 percent of the respondents reported reading the label during the last twelve months. Only 50 percent of this sample claimed to read the label either “all of the time” or “most of the time”. It was found that the respondents with a higher intake of fruit, vegetables and fibre and a lower dietary fat intake were more likely to use the nutrition information label to influence the purchase of a product. These respondents were also more accurate in their perceptions of the amount of dietary fat they were taking in (Kreuter *et al* 1997).

The findings of these studies can be interpreted to imply that a consumer, who is more conscious of the need for a low-fat diet, will make the extra effort to search for the nutrition information on the food label. As a result they will use this information to make a lower fat product choice.

2.3.4 Factors related to the ability of the consumer to use and interpret the nutrition information on the food label

According to Coulston (1998), consumers are now making themselves accountable for their own health and lifestyle, and are relying on themselves, rather than the food manufacturer or government, to make a healthier purchase. However, whilst it is anticipated that the consumer will receive nutrition education regarding what types of healthier, lower fat options to select, this is not generally the case and so the only nutrition education tool that the consumer has at hand when making a purchase, is the nutrition information on the food label. It is therefore crucial that the consumer is able to understand and use this information (Cowburn & Stockley 2005, American Diabetes Association 2000; Byrd-Bredbenner, Alfieri & Kiefer 2000; Coulston 1998).

Cowburn and Stockly (2005) suggest that the consumer will only be able to read the label accurately if they are familiar with the label format, and have prior knowledge about nutrition. Their systematic review found that consumers with poor nutrition knowledge were less likely to interpret the label. It was also found that the more difficult the calculation task to perform, the less accurate the consumer became. This is especially the case when consumers have lower levels of education. The main reasons consumers did not make use of the nutrition

information label were insufficient time, print size that was too small to read clearly, as well as doubts regarding information validity. They also found that certain consumers struggled with specific terms and concepts such as the relationship between calories and energy, sugar and carbohydrate, sodium and salt and what “cholesterol” and “fatty acids” meant. These consumers also had difficulty calculating the serving size information when they were only provided with the “per 100g” information (Cowburn & Stockley 2005).

Wandel and Bugge (1996) provided their Norwegian respondents with an opportunity to suggest changes to make the nutrition information easier to understand. An initial open interview was used for the pilot study and then a larger survey with structured questions followed. The respondents were assessed on their degree of satisfaction with the label, and asked to respond as to whether they were: “very satisfied”, “rather satisfied”, “medium satisfied”, “rather unsatisfied” or “very unsatisfied”. Those respondents that were “medium satisfied”, “rather unsatisfied” or “very unsatisfied” were probed into making suggestions for improvement. Suggestions from which they could choose included: a shorter list, a more simplified list, declare additive amounts, a more complete list or an “other” response. The largest response to potential improvement was around the simplification suggestion, which was based on the terminology used rather than length of ingredients in the list (Wandel & Bugge 1996).

2.3.5 Consumer ability to use and interpret the nutrition information on the food label

This researcher proposed that if the purpose of the nutrition information on the food label is to provide the consumer with information on which to base their choice of product, it is important that they have some prior knowledge on which they can base this choice on. In other words, the consumer must be able to know what “low fat” actually means and why one product would make a healthier purchase as opposed to another.

Alfieri and Byrd-Bredbenner (2000) investigated the ability of 150 American women aged 25 to 45 years to locate and use the nutrition information on sample food labels. Results indicated that the respondents performed well on the “locate and manipulate” instructions. This success was increased as the education level of the respondent increased, and it was found that those respondents who claimed to regularly read the labels also managed to

achieve higher marks on the tasks prescribed in the study. This could be because the respondents were more familiar with the label format and had often worked with the information when making a purchase (Alfieri & Byrd-Bredbenner 2000).

Anderson and Coertze (2001) who conducted a South African study in 1993, found less positive results. Their study involved 400 white, married women living in the magisterial district of Durban. Nutrition knowledge was measured using multiple choice questions based on locating and manipulating data on four well-known breakfast cereal boxes. Respondents were asked to use the nutrition information on the four food labels to make an informed decision on the best possible answer to the multiple choice question. The respondents were also asked to make links between certain diet-disease relationships. Results indicated that while 64.8 percent of the respondents read the labels, they did not necessarily understand them. Incorrect responses to questions showed that the respondents had difficulty performing calculations and comparisons between products. It should be noted while this is one of the few studies conducted in South Africa, the results are somewhat limited for comparisons because the study only used white middle income women who had achieved a matric.

Badham (2005) conducted a study on 2000 South African adults living in the metropolitan areas of South Africa. The sample population contained equal numbers of males and females and comprised respondents that were from the black, white, Indian and coloured population groups. Respondents were asked to give their opinion of four statements relating to their health: "I believe food can have an effect on my health"; "I always look for health information contained on the packaging of foods"; "I don't take any notice of health information as it is only marketing hype" and "I buy food that claims to contribute to my health".

Results revealed that 54% of the sample population believed food could have an effect on health. Forty-two percent of respondents claimed to always look for health information on product packages and of these respondents, 45% were female. Fifty one percent of the sample population did not believe that health information was marketing hype. Sixty-seven percent of the respondents claimed to buy foods that contributed to their health. As with Cowburn and Stockley's (2005) findings, more women than men claimed to use the food label.

Within the various population groups, the black respondents had the lowest belief in the food and health link, whilst the white respondents had the highest belief. The highest living standards measure (LSM)⁷ group was also found to make the strongest link between food and health and it was found that as the LSM groups decreased, so too did the belief in this link. Lower LSM's were also associated with a decreased frequency of noticing information regarding health on the food label (Badham 2005). This could be extrapolated to imply that the less money available for food purchases, the less interested or motivated the consumer would be to purchase healthier and often more expensive alternatives. This has implications for the development of appropriate nutrition education material because the sector of the public making up the lower LSM's are most likely to have different educational needs in terms of making the material easier to grasp and understand, and goals when compared to the sector of the public making up the higher LSM's.

2.3.6 Sources of nutrition information to acquire knowledge on how to use the label

The researcher hypothesised that in order to understand the nutrition information on the food label, the consumer needed to have acquired some form of reliable and trustworthy background knowledge. There are a number of sources available to the consumer and these include:

- the mass media namely television, radio, newspapers and magazines;
- health education sources such as books, posters and pamphlets;
- individual counselling received from a health professional such as a dietician, doctor, nurse or primary health care worker; and
- the nutrition information on the food label and package (Charlton, Brewitt & Bourne 2004).

⁷ LSM: Living Standards Measure used to distinguish between the various socio-economic groups (Badham 2005). Badham's (2005) study, classified these into three groups based on food industry research practice: LSM 2-3, LSM 4-6, LSM 7-10. LSM 2 was the lowest living standard and LSM 10 was the highest. LSM 1 was excluded as it was unlikely to occur in a metropolitan area (Badham 2005).

2.3.6.1 South African studies on sources of nutrition information

Charlton et al (2004) conducted a study in South Africa to determine the major sources of nutrition information that black women living in the Western Cape and Gauteng provinces, thought were credible. Three hundred and ninety-four women aged 17 to 49 from the Western Cape and Gauteng, were interviewed for this study. Questions were first tested by 39 women in four focus groups. Respondents were also asked how trustworthy they perceived specific sources to be and could list their responses as trust: “a lot”, “a little” or “not at all”.

The results showed that 72.1% of the respondents had sought nutrition information on a healthy diet, in the past year. The highest used source was the media, specifically radio and TV and then family and friends. Even though just less than half (48.5%) of the respondents had actually received some form of nutrition information from a health professional, health professionals were chosen by 91.1% of the respondents as the most trustworthy source of nutrition information. Church groups and traditional healers were the least listed sources of nutrition information and respondents found the traditional healers to be the least trustworthy source (Charlton et al 2004).

Charlton et al (2004) suggests that potential explanations for why the public find their dietary behaviour so difficult to change could be the conflicting and inappropriate nutrition messages that they may be receiving. Unfortunately those groups that most urgently require nutrition education may be the ones who have the smallest contact with nutrition information. This was seen with Badham’s (2005) LSM results, where poorer consumers were least likely to pay attention to the product’s health message. The MRC (2006) suggests that the programmes developed to curb NCDs in the first world, may be inappropriate for the various communities in South Africa. It is essential that education material is tailored to meet the needs of consumers of all educational backgrounds (Byrd-Bredbenner et al 2000).

2.3.6.2 International studies on sources of nutrition information

de Almeida, Graca, Lappalainen, Giacheti, Kafatos, Remaut de Winter and Kearney (1997) conducted a study on 14 331 adults from the European Union to determine sources of nutrition information that were both used and trusted. Respondents were chosen as part of a

cross-sectional, quota-controlled survey and were considered nationally representative according to their gender, age, as well as regional distribution of their European Union member state. Approximately 1000 respondents were chosen from each of the fifteen European Union member states. According to Kearney, Kearney and Gibney (1997) who reviewed the de Almeida *et al* (1997) study, interviewers were instructed not to reveal the purpose of the study. Options available for certain questions were also reversed to rule out a potential bias of routinely choosing the first item in the list.

To determine the sources of information used, respondents were instructed to choose from a list of multiple choices as seen in Table 3. Respondents were also provided with an open-ended choice for any possible sources not listed. The level of trust was measured using six sources from the initial list. Respondents were provided with a four-point Likert scale with options ranging from “trust fully”, “tend to trust”, “tend to distrust” and “distrust fully”. Four points were awarded for a “trust fully” response and one point awarded for a “distrust fully” response. This implied that the greater the number of points awarded, the greater the level of trust in the nutrition information source (de Almeida *et al* 1997).

Results indicated that the dependable sources of nutrition information in this study included: TV and radio, newspapers and magazines, health professionals, food labels as well as friends and relatives. The nutrition information source most trusted was the health professional, while the source least trusted was advertising. It was also found that level of education, as well as age influenced the type of source trusted in that older and/or higher educated respondents were more likely to trust the health professional. Increased age resulted in an increased dependence on health professionals (de Almeida *et al* 1997).

In a smaller study conducted by van Dillen, Hiddink, Koelen, de Graaf and van Woerkum (2004), 603 Dutch adults were interviewed about their preferred sources of information. The options provided are included in Table 2.3. Respondents were also asked to choose sources that were reliable, clear and accessible.

Feick, Herrman and Warland (1986) looked at the degree to which 1382 American consumers would seek nutrition information from various sources. Possible sources were grouped into six categories as shown in Table 2.3. When asked how often respondents used the particular source, they were given the option of choosing: “never”, “sometimes” or “frequently”. Results showed that when respondents sought nutrition information, they tended to choose the food label, magazines, books as well as family and friends more commonly than television programmes or their doctor.

Thus it can be seen from these studies that there is a common link where both media and Health professionals are commonly used and trusted sources of nutritional information. Unfortunately a negative aspect of consumers using media as a trustworthy source is that those respondents with lower educational levels may be less capable of separating truthful information from advertising and marketing hype (Charlton *et al* 2004). However the positive aspect of this is that the media then provides a perfect source for health professionals to broadcast nutrition education messages.

Table 2.5 shows a summary of the various studies conducted to determine the different possible sources of nutrition information.

Table 2.5: Possible sources of nutrition information

SOURCES USED			
Charlton et al (2004) South African respondents	de Almeida et al (1997) European Union respondent	van Dillen et al (2004) Dutch Respondents	Feick et al (1986) American respondents
Television Radio Magazines Newspapers Health professionals Church Traditional healers	Adverts Food packages Government agencies (e.g. Dept of Health) Health professionals Food industry leaflets Women/family organisations Books Newspaper articles Health food shops Magazine articles School/college/training Relatives/friends/colleagues Waiting room leaflets Slimming clubs Medical aid companies Vegetarian clubs Supermarkets Consumer organisations TV/Radio programmes	Direct environment Education offices of the Food sector Government National education office Food manufacturer Dietician Family doctor Retail trade National nutrition centre Scientific organisations Internet Magazines Newspapers Pharmacist Written education material Consumer alliances Radio TV	Food labels Books/pamphlets Magazines/newspapers TV Programmes Relatives/friends Doctor/Health professional
SOURCES TRUSTED			
Charlton et al (2004) South African respondents	de Almeida et al (1997) European Union respondent	van Dillen et al (2004) Dutch Respondents	
Health professionals Television Radio	Health professionals	Health professionals Government Agencies Food Packages TV/ Radio programmes Newspaper / Magazine Advertising	

2.4 Summary

It is important that one understands the sources of nutrition information knowledge that are available to the consumer as this impacts greatly on the development of an education programme to meet the consumer's nutrition information needs. This is essential when deciding on a medium for nutrition information distribution, because the impact of the information would be lost if the consumer did not have confidence in the source's validity.

The motivating factors influencing the purchase of a selected fat spread are also important, because these factors will influence whether the consumer will in fact stop and take the time to read the nutrition information label. A poor nutritional knowledge as well as poor awareness regarding the value of nutrition may be influential in impeding the success that use of the nutrition information on the food label could achieve (Cowburn & Stockley 2005, Guthrie et al 1995).

If used to its full potential, the nutrition information on the food label can be used as a valuable tool to lowering the consumer's intake of dietary fat. However, it is essential that this information is understood by the consumer and is in fact being used correctly. Unfortunately, there is very little information available on the use of the food label in South Africa. It is anticipated that the study conducted will provide a useful insight into the local situation, and the results could be used to address any particular aspects of this information that is not being used correctly.

CHAPTER 3: METHODOLOGY

This chapter sets out to determine the methodology that was used in this study. The following sections will be covered: review of literature on the research methodology that was used, training of the fieldworkers, the survey design, the population and sample selection, survey methods and materials, variables included in the study, the pilot study, analysis of the data as well as the consent and ethical considerations employed in this study.

3.1 Research methodology

The aim of scientific measurement is to meticulously design a research tool that will achieve its purpose with as minimal risk to the value of the results as possible (Sapp & Jensen 1997).

3.1.1 Use of questionnaires in a survey

According to Salant and Dillman (1994, p9), survey research is “a powerful, scientific tool for gathering accurate and useful information”.

A questionnaire is a printed list of questions that respondents are asked to answer (Goddard & Melville 2001, p48; Kumar 1999, p109). The respondent reads the questions and then responds based on what they understand is expected from them (Kumar 1999, p109). According to Birley & Moreland (1999, p45), questionnaires are useful for simple topics, allow a large number of respondents and may also increase the truthfulness of the response by allowing the respondent to remain anonymous (Leedy & Ormrod 2001, p197; Kumar 1999, p110). The responses to written questionnaires are influenced by the respondents reading and writing skills. Inaccurate data may also be obtained due to misinterpretation of a question and inability to clarify what the researcher expected (Leedy & Ormrod 2001, p197; Birley & Moreland 1999, p45; Kumar 1999, p10).

Fowler and Mangione (1999, p25) states that the main source of survey error is the failure of the interviewer to standardize each interview in terms of asking the question and recording the response. In other words, the interviewer must ensure that they use exactly the same method of interviewing every survey respondent. The main reason for inaccurate interviewing techniques includes the questionnaire being designed poorly (Fowler & Mangione 1999, p33).

The questions should be structured based on the objectives of the study. This allows a logical progression, leading the respondent through the various “themes” (Kumar 1999, p123).

According to Birley and Moreland (1999, p46), Kumar (1999, p119) and Fowler and Mangione (1990, p33) when developing a successful questionnaire, it is essential that the following factors are considered:

- Only necessary, relevant questions are included.
- Clear instructions are provided.
- Questions are read exactly as they are written.
- Responses are documented exactly as they are given in a non-judgemental way.
- The sample population’s characteristics are taken into consideration.
- The sampling approach is considered.
- The independent variables such as gender, age and socio-economic status have been determined for analysis.
- An appropriate length of questionnaire is determined.
- The questionnaire is pilot tested on respondents with the same characteristics as those who will be selected for the survey.
- The questionnaire is valid⁸, reliable⁹ and easy to use.
- There are equal amounts of both positive and negative responses.
- The questions are unambiguous, not too complex, only include one variable, do not lead the respondent, are based on the fact that the respondent will have enough knowledge to answer and will not lead the respondent to guess an answer.
- The potential response style (scales/ranked response/open response) is appropriate for the question.

According to Leedy and Ormrod (2001, p199), a rating scale may be useful when determining a respondent’s behaviour or feelings. Developed in the 1930s by Rensis Likert, these scales are often referred to as Likert scales. Possible examples of responses may include the opportunity to choose from “never” to “always”, as well as “strongly disapprove” to “strongly approve” (Ubersax 2006). The use of a four-point Likert scale compels the respondent to

⁸ Valid is the “extent to which a test measures what it is intended to measure” (Sapp & Jensen 1997)

⁹ Reliable is the “extent to which a test yields the same result on repeated administration when all other factors are held the same” (Sapp & Jensen 1997)

make a choice, whilst the five-point scale provides the option of a neutral response (Goddard & Melville 2001, p48). A five-point scale was used in this study.

3.1.2 Interview techniques

An interview provides one-on-one verbal interaction between the interviewer and the respondent (Goddard & Melville 2001, p49). Interviews have the advantage of allowing more complex issues to be discussed and more in-depth information to be obtained (Birley & Moreland 1999, p45; Kumar 1999 p15). It should be noted however, that this information is dependent on the respondent's ability to accurately recall this information.

According to Leedy and Ormrod (2001, p196), Kumar (1999, p109) and Britten (1995), there are three main categories of interviews:

- Structured interviews with a pre-determined set number of questions to be asked in a standard manner. An advantage of these standardised questions is that the results may be compared (Kumar 1999, p109; Britten 1995).
- Semi-structured interviews with open-ended questions, the researcher may keep to the standard questions but add a few extra probing questions to clarify a particular response (Leedy & Ormrod 2001, p196; Britten 1995).
- Depth/unstructured interviews that are based on where the respondent's conversation leads. A major disadvantage of the unstructured interview is that the researcher may not be able to make accurate comparisons amongst the respondents, due to the variety of information that this type of interview might generate (Leedy & Ormrod 2001, p159; Britten 1995)

A face-to-face interview has the advantage of the interviewer being able to establish a relationship with the respondent (Leedy & Ormrod 2001, p196). This may lead to increased response rates because the interviewer is able to clarify any questions that the respondent may be unsure about (Goddard & Melville 2001, p49; Leedy & Ormrod 2001, p196; Salant & Dillman (1990, p40). The disadvantage of this method is the fact that large amounts of time are required; making it impractical when surveying large numbers of respondents (Leedy & Ormrod 2001, p196). The interviewer must not influence the interviewee's response through

the tone in which the question is asked or wording in which the question is phrased (Goddard & Mellville 2001, p49).

3.2 Fieldworker training

Two postgraduate diploma students completing their research module were used as the fieldworkers for this study. Prior to embarking on the pilot study the researcher went through the questionnaire with the fieldworkers explaining how the questions were to be asked and what would be expected of them as interviewers, during the data collection week. On the day of the pilot study, the researcher met up with the fieldworkers to supervise an interview and to discuss any problems that may have occurred. During the week in which the interviews were conducted, the researcher visited the fieldworkers to monitor their progress and obtain feedback regarding their data collection. The researcher also supervised five of each of the fieldworker's interviews to ensure that the respondents were interviewed in the same standardised manner.

3.3 Survey design

This cross sectional study included 150 women aged 25 to 45 years, living in Pietermaritzburg. Questionnaires were used to interview respondents whilst they shopped in the supermarket.

3.4 Population and sample selection

3.4.1. Target and sample population

In this study 150 women aged between 25 and 45 years, living in Pietermaritzburg and shopping at the selected supermarket/shop were targeted. The respondents were chosen as part of an accidental, non-probability sample. This means that the respondents were picked on the basis that they were present in the selected supermarket/shop at the time in which the fieldworkers were conducting the interviews. The researcher decided to use an accidental sample because of the nature of the study – it was important to test the respondent's ability to use the nutrition information label under the same circumstances and distractions (such as noise) that they would be in when they were reading the label at the point of purchase. Alfieri

and Byrd-Bredbenner (2000) found that not using a shopping centre as their interview site a limitation to their study because these circumstances and distractions could have had a potential influence on label reading ability while shopping. Therefore, based on the fact that a supermarket/shop was chosen as an interview site, it would have been both difficult and unfeasible to target respondents in any other manner other than using an accidental sample.

3.4.2 Method of sampling

The following sequence was employed when collecting the research data:

1. A comprehensive list of all the supermarkets/shops within the central business district and suburban areas of Pietermaritzburg was obtained from the telephone directory.
2. Supermarket / shop managers were telephoned to confirm that they stocked the selected fat spreads and to request permission to conduct the study. Fourteen of the original 22 selected supermarket/shops gave permission for their supermarket / shop to be used in the study. A list of the supermarkets/shops that were surveyed and where they are situated is included in Appendix A, pA1.
3. The 150 questionnaires were then equally divided amongst the participating shops and a roster was drawn up that detailed when the participating shops would be targeted. The purpose of the study was to interview all females shopping in Pietermaritzburg. By ensuring that each shop had the same amount of questionnaires, there was a greater assurance that all females shopping in Pietermaritzburg had an equal chance of being selected. If the researcher had been investigating the influence of residence or socio-economic level, then she would have ensured that the number of questionnaires allocated to each shop was in accordance with the ratios determined by census results.

The order in which the supermarket/shops were interviewed was chosen based on their vicinity within Pietermaritzburg in that supermarket/shops close to each other were interviewed on the same day. Shops were targeted at random times throughout the working week to ensure that women, who shopped during their lunch hours / tea-breaks / after work, had as equal an opportunity of being selected as those women who were able to shop throughout the day. Each session at the selected supermarket lasted until the pre-assigned number of questionnaires had been administered. The

questionnaires were administered in and around the aisles of the supermarket/shop. Approximately twenty women who were eligible, declined to participate in this study.

3.5 Survey methods and materials

3.5.1 Questionnaire development

The questionnaire (Appendix B: Data Collection Tool, pp A2-A9) consisted of four sections:

The first section included the respondent's actual age, population group (race), education¹⁰, number of household members including themselves, estimated monthly food expenditure¹¹ and preferred home language. Membership to a health/weight-loss club as well as presence of a pre-existing disease condition such as diabetes, high blood pressure, high cholesterol and overweight or obesity was obtained. A health/weight-loss club membership and / or presence of a pre-existing disease condition would most likely have exposed the respondent to prior education about the nutrition information on the food label.

The second section included factors related to the purchase of the selected fat spread such as product design and packaging, familiarity with the product or previous recommendations to purchase the product; as well as the type of fat spreads purchased most often each month.

The third section included the potential sources of nutrition information that the respondent used and trusted. The fourth section tested the respondent's ability to interpret the nutrition information on the food label of two selected fat spreads. Respondents were presented with four multiple choice questions that required them to locate and interpret specific pieces of information found in the two sample labels. Scores were awarded based on their level of correctness, with one point for a correct answer and no points for an incorrect or "don't know" answer. The maximum score that could be awarded was 4, whilst the minimum score that could be awarded was 0.

¹⁰ This refers to the highest qualification completed / acquired and ranged from no formal education to a degree.

¹¹ Estimated monthly expenditure refers to the amount of money that was available/budgeted for food expenditure and ranged from less than R500 to more than R1500.

3.5.2 Validity, reliability and elimination of bias

Validity is the extent to which the questionnaire measures what the researcher intended it to measure (Bowers, House & Owens 2006, p97), whilst reliability is the extent to which the questionnaire will consistently reproduce the same result when re-measured (Bowers et al 2006, p99). To ensure reliability, Gibson (2005,p12) recommends that: instructions are drawn up that detail how the researcher would like the information obtained from their respondents; the interviewer is trained to be as consistent as possible during each interview; and the questionnaire is randomly repeated on a selected sample of respondents.

In this study validity was assured through the use of a pilot study. Based on the strengths and weaknesses of the first study conducted in 2005, the questionnaire was fine tuned to ensure that the results could be yielded, based on what the objective set out to determine. Reliability was ensured through both the training and supervision of the interviews conducted by the fieldworkers as described in section 3.2.

Using an accidental sample at a supermarket/shop may have introduced a small amount of bias in that only those respondents that agreed to participate, took part in the study. Perhaps the fact that the respondents were interviewed whilst purchasing could have resulted in a decreased response rate because potential respondents were rushed to make their purchases and would not have been able to spare the time. This therefore may have caused results that were only reflective of a small amount of the population in Pietermartizburg. However it was the intention of the researcher to interview respondents at the point of purchase as discussed in section 5.3.2 and by modifying the questionnaire based on feedback from the pilot study, the researcher hoped to eliminate this bias by reducing the amount of time taken to answer the questionnaire and thus increase the chances of a more diverse sample giving permission to participate.

3.6 Variables included in the study

3.6.1 Subproblem one: Demographic characteristics

In order to determine the demographic characteristics of respondents using the nutrition information on selected fat spreads, the following variables were considered: a job in a health related field, the presence of a pre-existing disease condition, membership to a weight loss club/group, education, number of children living at home, number of household members, person in household most responsible for food purchases, amount of money available for groceries each month and the home language of the respondent (Appendix B, ppA2-A3). For the purpose of simplifying the results, the highest level of education responses were then further conflated into either “school education” or “tertiary education”; the number of household members were conflated into either “one to three”, “four” or “five or more”; and the amount of money available was conflated into either “R1000”, “R1000-R1500” or “R1500”. The results of these new conflated variables will be presented in Chapter 4.

3.6.2 Subproblem two: Factors related to the decision to purchase the selected fat spreads

In order to determine the factors affecting the decision to purchase the selected fat spreads, the following variables were considered: product design and packaging, product advertising, family preference for a specific brand, recommendations of friends and family, the nutrition information on the food label, the price of the product, recommendations of a health professional as well as diet and health preferences that result in the purchase of the product based on the nutrient content (Appendix B, pA4). Respondents were instructed to choose from five options ranging from “strongly disagree”, “disagree”, “neutral”, “agree” to a “strongly agree” response. These responses were further conflated into either “agree” or “do not agree”. The “do not agree” would have included the “neutral” response because “neutral” was interpreted to imply indifference and a negative rather than positive attitude to the question.

3.6.3 Subproblem three: Use of the nutrition information to influence selected fat spread purchase

To determine whether use of the nutrition information on selected fat spreads contributed to the purchase of this product; respondents were asked if they use the nutrition information “in store” when making a purchase or “at home”, and if they use the information when purchasing a new product (Appendix B, pA5).

3.6.4 Subproblem four: Factors related to the use and interpretation of the nutrition information on the food label

To determine the factors related to the use and interpretation of the nutrition information on the food label when purchasing the selected fat spread, respondents were asked about time available to use the information, ease of locating the information, if they could understand the information and if the print size was legible (Appendix B, pA5). Respondents were provided with a five point Likert scale where they could choose either a “strongly disagree”, “disagree”, “neutral”, “agree” or “strongly agree” response. Again for the purpose of simplifying the results these responses were conflated into either ‘agree’ or “do not agree”, with neutral being included as a “do not agree” response.

3.6.5 Subproblem Five: Ability of the respondent to locate and apply the nutrition information

To determine the ability of the respondents to locate and apply the nutrition information on the food label of selected fat spreads, respondents were given two sample labels and asked to locate: the amount of total fat present per hundred grams; the amount of saturated fat per 30g; which of the two would provide the least amount of energy per serving; and which of the two labels contained the highest amount of monounsaturates per 100g serving (Appendix B, pA7).

3.6.6 Subproblem six: Sources of nutrition information

To determine the respondent’s sources of nutrition information on how to use and interpret the food labels of selected fat spreads the following variables were made available to the respondents: newspapers, magazines, television, radio, friends and family members,

pharmacy, primary health clinics, doctor's waiting rooms, a nutritional health professional such as a dietician or nutritionist or an "other" response (Appendix B, pA7).

3.7 Pilot study

The pilot study was conducted by two post graduate diploma students in 2005. The students compared the use and interpretation of the nutrition information on the food label amongst female consumers shopping in Pietermaritzburg. Initially a larger selection of related fat containing food products including salad dressings and mayonnaises were targeted as well as dairy products such as milk and yoghurt however due to the excessive amount of time taken to complete the questionnaire because of this extra information, it was decided to simplify the product selection and just include butter, margarine and a butter-margarine mix as the selected fat spread selection. The researcher decided to use fat spreads that one could use on their bread as the focus of this questionnaire, because it was postulated that of all the original products selected, butter / margarine / butter-margarine mix were most likely to be a significant contributor to the consumer's daily dietary intake of fat. It was also easier for the fieldworker to interview the respondent at the point of fat spread purchase because these products would all be located together as opposed to being located in various aisles, of the supermarket/shop as in the pilot study. The original questionnaire of the pilot study took approximately 20 minutes to administer while the modified questionnaire in this study took approximately 10 minutes to administer.

3.8 Data analysis

The statistical package SPSS was used to collate and analyse the data. Table 3.1 summarises the methods of analysis as well as parameters and significance that were used for each of the subproblems.

Table 3.1: Data Analysis of the subproblems

Subproblem	Method of Analysis	Parameters & Significance
1. Demographic characteristics of respondents in the study.	Frequencies	
2. Factors related to the decision of respondents to purchase the selected fat spreads.	Principal Component Analysis	Factor loading greater than + or - 0.5 is significant
3. To determine whether use of the nutrition information on the food labels of selected fat spreads contributed to the purchase of this product.	Frequencies Chi-Square Tests (Fisher's Exact Test and Pearson Chi-Square) Pearson Correlation	Correlation is significant at 0.01
4. Factors related to the ability of respondents to interpret the nutrition information on the food label of selected fat spreads.	Principal Component Analysis Pearson Correlation	Factor loading greater than + or - 0.5 is significant Correlation is significant at 0.01
5. The ability of the respondents to use and interpret the nutrition information on the food labels of selected fat spreads.	Four multiple choice questions, scores based on level of correctness, 1 point for correct, 0 points for incorrect/ don't know answer Minimum score is 0, maximum score is 1.	Good knowledge score 3-4 Average knowledge score 2 Poor knowledge score 0-1
6. Sources of nutrition information knowledge that the respondents used to interpret the nutrition information on the food label of selected fat spreads.	Principal Component Analysis	Factor loading greater than + or - 0.5 is significant

3.9 Consent and ethical considerations

3.9.1 Consent

Written consent was obtained from the supermarket /shop manager who gave permission for the study to take place in his/her shop. Before each respondent was interviewed, they were informed that their input would be kept anonymous and strictly confidential and the interviewer was instructed not to commence with the interview until verbal consent was

obtained. A copy of the letter of permission and consent form can be found in Appendix C, p A10.

3.9.2 Ethical clearance

Ethical clearance was obtained for both the pilot study and this study from the University of KwaZulu-Natal's Ethics Committee on the basis that written consent was obtained from the relevant authorities, namely the supermarket managers. A copy of the ethical clearance approval letter (reference number HSS/06034A) for this study can be found in Appendix D, pA11.

CHAPTER 4: RESULTS

This chapter sets forth to present the results that were obtained from the data analysis including the sample characteristics and results of the statistical analysis of the variables.

4.1 Sample characteristics

4.1.1 Demographics

One hundred and fifty female respondents between the ages of 25 and 45 years were interviewed for this study. Figure 4.1 represents a histogram of the respondents' ages with the mean age 33.78 years old and the median age 33 years old. Table 4.1 shows the sample characteristics including age and population group distribution; home language of the respondents and highest level of education achieved.

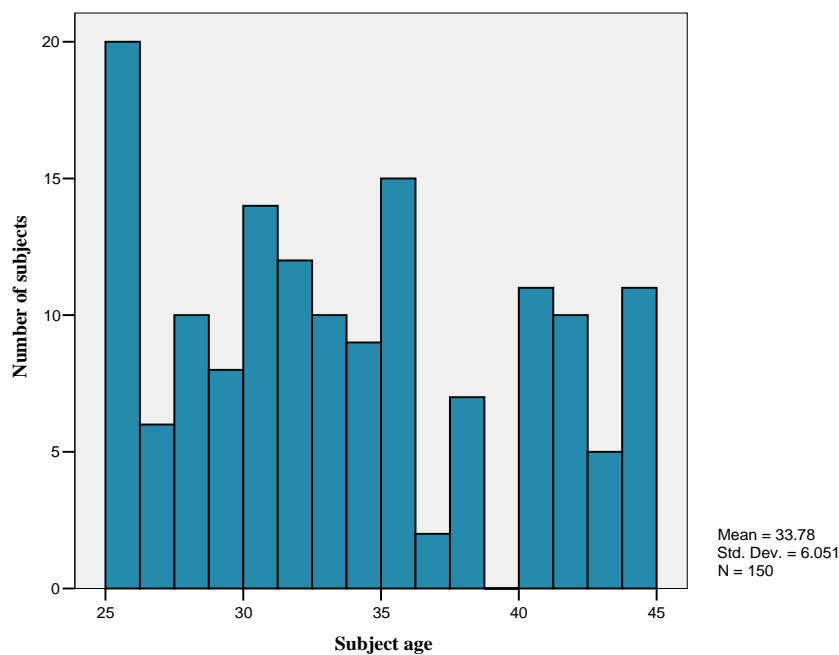
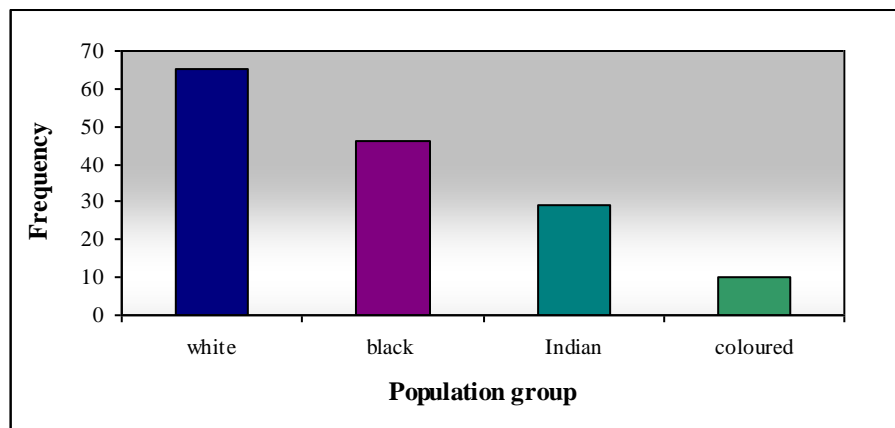


Figure 4.1: Histogram of age breakdown

Table 4.1: Home language and highest level of education of respondents

Variable	n	%	Variable	n	%
Home language (n = 150)			Highest level of education (n = 149)		
English	86	57.3	No Education	2	1.3
Afrikaans	13	8.7	Grade 10 or less	21	14.0
Indigenous	48	32.0	Matric	37	24.7
European	3	2.0	College/Certificate	26	17.3
			Technikon/Diploma	31	20.7
			University degree	32	21.3

Figure 4.2 represents the population group distribution amongst the respondents. The greatest number of respondents were from the white population group 43.3% (n = 65), followed by black respondents 30.6% (n = 46), Indian respondents 19.3% (n = 29) and then coloured respondents 6.6% (n = 10).

**Figure 4.2: Bar chart of respondent population group distribution**

4.1.2 Other characteristics of the sample

The demographic characteristics investigated in this study included the presence of a pre-existing disease condition, membership to a weight loss group, number of children living in the household, total household members and the amount of money available for purchases each month. Those demographic characteristics such as age, population group, education and home language of respondents have been covered in section 4.1. Table 4.2 shows the presence of a pre-existing disease condition and membership in a weight loss group. Results show that 14% (n = 21) of the respondents had a pre-existing disease condition present. Of

these respondents, 52% (n = 11) claimed to use the nutrition information on the food label to influence their fat spread purchase.

Table 4.2: Presence of a pre-existing disease condition and membership to a weight loss group

Variable	n	%	Use of food label		
			Use	Don't use	Neutral
Pre-existing disease condition					
none present	127	86	71	33	23
Present:					
Asthma	1	0.7	1	0	0
Diabetes	2	1.3	1	0	1
Diabetes & high blood pressure	1	0.7	0	0	1
Diabetes & overweight	1	0.7	0	0	1
High blood pressure	6	4.0	4	1	1
High blood pressure & overweight	1	0.7	1	0	0
High cholesterol	4	2.7	1	2	1
HIV/AIDS	1	0.7	1	0	0
Low blood pressure	1	0.7	0	0	1
Overweight / obese	2	1.3	1	1	0
TB	1	0.7	1	0	0
	21	14.2	11	4	6
Percentage for this with pre-existing disease condition			52.4	19.0	28.5
Membership to a weight loss group					
Yes	22	14.7			
No	128	85.3			

Figures 4.3 and 4.4 represent the percentage of children per household and the percentage of household members respectively.

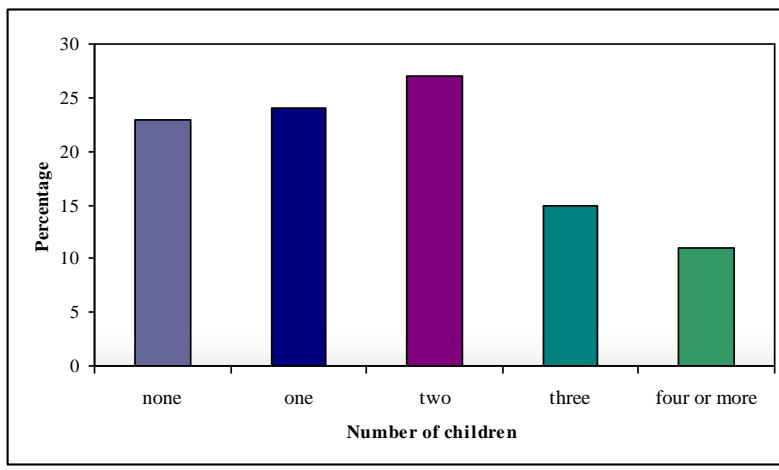


Figure 4.3: Percentage children per household

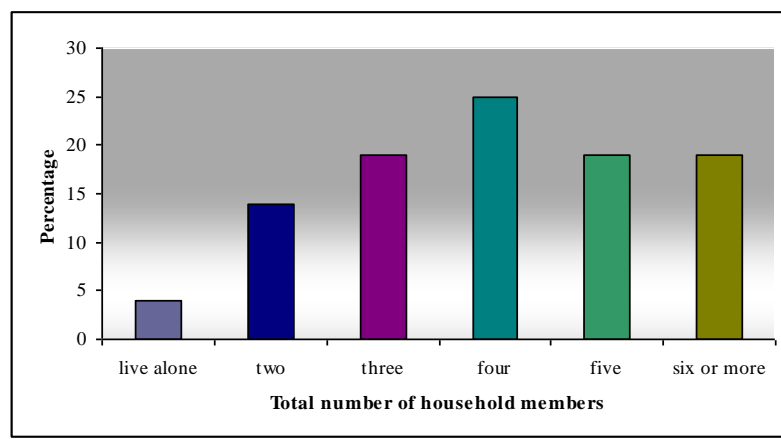


Figure 4.4: Percentage household members

Results indicated that 91% ($n = 137$) of the sample population were the main household members responsible for food purchases. From these respondents, 54% ($n = 74$) used the nutrition information to influence their product purchase. Figure 4.5 compares the conflated results regarding the amount of money that the respondent had available each month for groceries against whether the respondent was the household's primary purchaser¹² or not.

¹² Primary purchaser refers to the person in the household who is most responsible for food purchases each month.

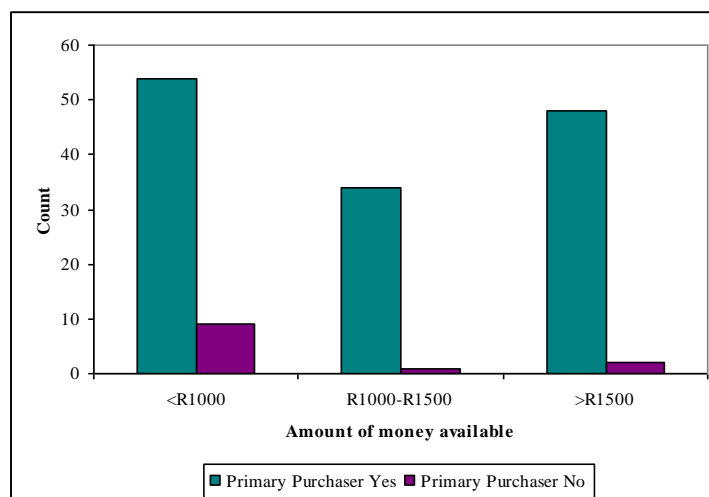


Figure 4.5: Money available each month versus being the primary purchaser

4.2 Results of the statistical analysis of the variables

4.2.1 Sample characteristics related to the use of the nutrition information on the food label

The following sample characteristics were measured against use of the nutrition information on the food label: highest education level achieved; being the household's primary purchaser or not; number of household members as well as money available each month for grocery purchases. Table 4.3 shows the cross tabulation of the use of the food label versus the sample characteristics previously mentioned. It should be noted that in most cases, a few of the respondents did not reply to the question, hence the total responses do not all add up to 150.

In terms of highest education level, school education included grade 12 or less while tertiary education included those respondents who had obtained a qualification from a college, technikon or university. It can be seen that the respondents with a tertiary education level were slightly more likely to use the label.

The median value for the number of household members was four and results show that the respondents with the large number of household members were slightly more likely to use the nutrition information on the label.

The money available each month for groceries was further conflated into three groups: those with less than R1000; those with between R1000 and R1500 and those with more than R1500. It can be seen that the respondents with the most amount of money available each month were more likely to use the nutrition information on the food label.

A multiple regression analysis was done to investigate the potential relationship that both the respondent's education level and money available for purchases had together on the decision to use the label. Results found that these two variables together could only account for 4.3% of the variance affecting label use (Adjusted R Square¹³ = 0.043) indicating a very small relationship.

When Chi-Square Tests were conducted using cross tabs of each of the above mentioned characteristics against label use, the only relationship found to be significant was that of the amount of money available each month versus use of the nutrition information on the food label. Both Pearson's Chi-square Test and the Linear-by-Linear Association showed a positive relationship with a significant p value (0.037 and 0.016 respectively). This means that as the amount of money available each month increased, so too did the chance of label use. Table 4.4 shows the results of the Chi-Square Tests for this particular relationship.

¹³ R Square represents the coefficient of determination. Adjusted R Square, based on the degree of freedom, "attempts to yield a more honest value to estimate the R Squared population" (Massachusetts Institute of Technology 2006)

Table 4.3: Cross tabulation of use of the nutrition information on the food label versus highest level of education, being the primary purchaser, number of household members and money available each month for purchases.

		Use of the nutrition information on the food label to assist selected fat spread purchase						
		Does use		Does not use		Neutral		Total
		n	%*	N	%*	N	%	n
Highest education level	School education	31	52.5	14	23.7	14	23.7	59
			37.8				37.8	
	Tertiary education	51	57.3	23	25.8	15	16.8	89
			62.2				62.2	
Total		82		37		29		148
Primary purchaser	No	8	66.7	0	0	4	33.3	12
			9.8				0	
	Yes	74	54.4	37	27.2	25	18.4	136
			90.2				100	
Total		82		37		29		148
Household members	Live alone	1	16.7	2	33.3	3	50.0	6
			1.2				5.4	
	Two	12	54.5	8	36.4	2	9.1	22
			14.6				21.6	
	Three	16	55.2	8	27.6	5	17.2	29
			19.5				21.6	
	Four	21	58.3	6	16.7	9	25.0	36
			25.6				16.2	
	Five or more	32	58.2	13	23.6	10	18.2	55
			39.0				35.1	
	Lived with one or more	81	57.0	35	24.6	26	18.3	142
			98.8				94.6	
Total		82		37		29		148
Money available	< R1000	27	43.5	21	33.9	14	22.6	62
			32.9				56.7	
	R1000 - R1500	22	62.8	8	22.9	5	14.3	35
			26.8				21.6	
	> R1500	33	66.0	8	16.0	9	18.0	50
			40.2				21.6	
Total		82		37		28		147
a	*a: Total percentage of all those respondents with the same characteristic such as education or lived with five or more people.							
b	b: Total percentage of respondents within the variable that chose “does use” or “does not use” or were “neutral”.							

Table 4.4: Chi-Square Tests for the relationship between label use and amount of money available for groceries

	Value	df	Asymptotic Significance (2 sided)
Pearson Chi-Square	6.589	2	0.037
Likelihood Ratio	6.616	2	0.037
Linear-by-Linear Association	5.844	1	0.016

4.2.2 Factors related to the purchase of a selected fat spread

The following factors that could be related to a fat spread purchase were investigated:

- a) product design & packaging
- b) product advertising
- c) family preference
- d) recommended by family/friends
- e) nutrition information on food label,
- f) price
- g) health professional recommendation,
- h) dietary requirement
- i) grew up using the product
- j) fat content information
- k) aim to choose the healthiest option

Principal component analysis was conducted on these eleven potential variables and from this analysis eleven new Principal components were extracted as shown in Table 4.5. These new components represent a new set of derived variables influencing fat spread purchase with the components listed in order of representing the most variance of the original variables. It is important to note that these eleven Principal components are not the same as the eleven original variables (a to k) listed in Table 4.6. As can be seen from Table 4.5 only three new components exhibit a 59.6% cumulative variance that is, they have a significant relationship to the purchase of the selected fat spreads. These three new components also have Eigenvalues of greater than 1.0.

Table 4.6 shows the component matrix of the underlying factors influencing fat spread purchase. The eleven original variables (a-k) are listed in column 1 and are compared against the three extracted Principal components (from Table 4.5) that achieved an Eigenvalue of greater than 1 as shown in columns 2, 3 and 4. Of these possible factors, those with a factor loading of greater than plus or minus 0.5 are thought to be significantly associated with the extracted component. It can be seen that the first significant Principal component exhibiting 28% of the variance was related to the variables “nutrition information on food label”, “health professional recommendation”, “dietary requirement”, “fat content information” and “aim to choose the healthiest option”. From this association it can be seen that awareness of the

products nutritional content because of health consciousness, is a significant factor related to fat spread purchase. The second significant Principal component exhibiting 17% of the variance was significantly related to the variables “product design and packaging”, “product advertising” and “recommended by family and friends”. This implies that the selected fat spread’s marketing, presentation and popularity is significantly associated with its purchase. The third and last significant Principal component exhibiting 13% of the variance was significantly related to the variables “price” and “grew up” using the product. This implies that familiarity and cost awareness of the selected fat spread are also significantly related to the product’s purchase. It is interesting to note that the variable “family preference” was not a significant variable influencing the selected fat spread purchase.

Table 4.5: Total Variance of eleven derived principal components related to fat spread purchases.

Derived Principal Component	Initial Eigenvalues				
	Total	% Variance	Cumulative %	% Variance	Cumulative %
1	3.692	33.559	33.559	28.978	28.978
2	1.570	14.274	47.834	17.177	46.155
3	1.297	11.787	59.620	13.465	59.620
4	0.891	8.103	67.723		
5	0.834	7.582	75.304		
6	0.704	6.401	81.706		
7	0.495	4.496	86.202		
8	0.457	4.151	90.352		
9	0.446	4.053	94.406		
10	0.320	2.905	97.310		
11	0.296	2.690	100.000		

Results in bold font indicate a significant relationship.

Table 4.6: Component Matrix of factor loadings of the variables related to fat spread purchase

	Principal Components		
	1 (28% Variance)	2 (17% Variance)	3 (13% Variance)
a) Product design & packaging	0.374	<u>0.521</u>	-0.477
b) Product advertising	0.471	<u>0.614</u>	-0.066
c) Family preference	0.342	0.216	-0.439
d) Recommended by family & friends	0.458	<u>0.534</u>	-0.066
e) Nutrition information on food label	<u>0.730</u>	-0.254	-0.121
f) Price	0.121	0.478	<u>0.607</u>
g) Health professional recommendation	<u>0.759</u>	-0.111	0.232
h) Dietary requirement	<u>0.766</u>	-0.174	0.280
i) Grew up using the product	0.339	0.170	<u>0.568</u>
j) Fat content information	<u>0.755</u>	-0.301	-0.138
k) Aim to choose the healthiest option	<u>0.779</u>	-0.368	-0.095

Results that are underlined and in bold indicate a significant association.

Respondents were asked to choose five of these eleven variables and rank them in order of importance as the five most influential factors affecting the purchase of a fat spread, as seen in Table 4.7. The most influential variable was “aim to choose the healthiest option”, then “family preference”, then “price”, then “diet recommends the product” and lastly “fat content information”.

Table 4.7: Five most influential factors influencing the purchase of a fat spread

Rank	Variable	Response
1	Aim to choose healthiest option	24.7% (n = 37)
2	Family preference	16.0% (n = 24)
3	Price	15.3% (n = 23)
4	Diet recommends the product	11.3% (n = 11)
5	Fat content information	12.7% (n = 19)

4.2.3 Use of the nutrition information to purchase fat spreads

As part of the eleven potential factors related to fat spread purchase from the previous objective (a – k), respondents were asked to choose the level of importance that they placed on nutrition information. Twenty three percent found the nutrition information to be most important, 32% very important, 34% important, 9 % less important and 2% not important at

all. Respondents were also presented with five separate questions related to the use of the nutrition information on the selected fat spread label; results are shown in Table 4.8. Responses have been conflated into either “agree” or “do not agree” options as mentioned in Chapter 3.

It can be seen that the respondents mainly agreed to the statements “I use the nutrition label to assist my purchase” and “The nutrition label is important for a new product purchase”. The respondents mainly did not agree to the statements “I would rather read the nutrition label at home” and “I buy on the basis of price and not the nutrition label”. The respondents were mainly neutral about the statement “I use the nutrition label to plan my daily energy intake”.

A binomial test was performed comparing the label usage rate of this respondent sample to that of Alfieri and Byrd-Bredbenner (2000) who also conducted their study on 150 respondents and found that 91% of the respondents claimed to use the label to influence a product purchase. The results revealed that this study’s sample usage rate was significantly lower ($p < 0.001$) than Alfieri and Byrd-Bredbenner (2000).

Table 4.8: Responses of respondents regarding use of the nutrition information on the food label

	Agree	Do not agree	Neutral
I use the nutrition information to assist my purchase	55% (n = 82)	25% (n = 37)	20% (n = 29)
I would rather read the nutrition label at home	29% (n = 43)	51% (n = 76)	20% (n = 30)
The nutrition label is important for a new product purchase	68% (n = 102)	17% (n = 26)	14% (n = 21)
I use the nutrition label to plan my daily energy intake	34% (n = 51)	26% (n = 38)	40% (n = 60)
I buy on the basis of price and not the nutrition label	29% (n = 43)	52% (n = 78)	19% (n = 29)

Results in bold represent the largest response rate

4.2.4 Factors related to the use of the nutrition information on the food label, including label and print size as well as presentation of the nutrition information.

Respondents were presented with eight statements surrounding the ease in which the label could be both read and used; results are shown in Table 4.8. The respondents mainly agreed to the statements “Adequate time scheduled”, “Understand the nutrition information on the food label”, “Easy to locate fat content from nutrition information label”, “More nutrition

information on the food label needed”, “Presentation of the information is easy to understand” and “Need educational programme on the nutrition information label”. The respondents mainly did not agree with the statements: “Print size too small” and “Do not have sufficient background knowledge”. It should be noted that there was an overwhelming response to the “Understand the nutrition information on the food label” where 78% (n=116) of the respondents agreed; and the “Need educational programme on the nutrition information label” where 71% (n=106) of the respondents agreed.

Table 4.9: Respondents responses to factors related to use of the nutrition information on the selected fat spread label.

	Agree	Do not agree	Neutral
Adequate time scheduled	55% (n = 82)	18% (n = 27)	27% (n = 40)
Understand the nutrition information on the food label	78% (n = 116)	7% (n = 10)	15% (n = 23)
Easy to locate fat content from nutrition information label	66% (n = 98)	10% (n = 15)	24% (n = 35)
Print size too small	32% (n = 48)	41% (n = 62)	27% (n = 40)
More nutrition information on the food label needed	63% (n = 94)	8% (n = 12)	29% (n = 44)
Do not have sufficient background knowledge	18% (n = 27)	50% (n = 74)	32% (n = 48)
Presentation of the information is easy to understand	63% (n = 95)	14% (n = 21)	23% (n = 34)
Need educational programme on nutrition information label	71% (n = 106)	11% (n = 17)	17% (n = 26)

Results in bold represent the largest response rate

4.2.5 The respondents’ ability to locate and apply the nutrition information to specific tasks surrounding fat content.

To determine the respondents ability to locate and apply the nutrition information on the fat spread label, respondents were presented with four multiple choice questions surrounding two sample labels. Scores were awarded based on level of correctness with one point being awarded for a correct answer and no points awarded for either an incorrect answer or a “don’t know” response. Table 4.9 shows the number of correct and incorrect answers. Based on the final score, the respondents ability was categorised as being either “good” (scored either 3 or 4 total points), “average” (scored 2 out of a possible 4 points) or “poor” (scored 0 or 1 total points). Fifty one percent of the respondents (n = 77) had a “good” ability, 17 % (n =25) had an “average” ability, while 32% (n=48) had a “poor” ability.

A Pearson’s Correlation Test was done to compare the relationship between the range of ability and the education level achieved. Results indicated that there was a significant positive relationship with $p = 0.004$ and $r^2 = 0.232$. This means that respondents with a higher

level of education were more likely to achieve a higher score in the tasks. If one was to examine this correlation more closely and compare these two groups in a bar chart as seen in Figure 4.6, it would be seen that in the group receiving tertiary education, there was not an obvious incline in the bars and rather a dip in the middle “average” bar. This result does not follow the expected trend as shows that more people were “poor” than “average” and one would assume it would be the other way round.

Table 4.9: Results from the multiple choice “locate” and “apply” tasks

	Correct	Incorrect / Don't know
Total fat per 100 grams	67% (n = 100)	33% (n = 50)
Saturated fat per 30 grams	42% (n = 63)	58% (n = 87)
Least amount of fat per serving	53% (n = 79)	47% (n = 71)
Highest amount of monounsaturates	60% (n = 90)	40% (n = 60)

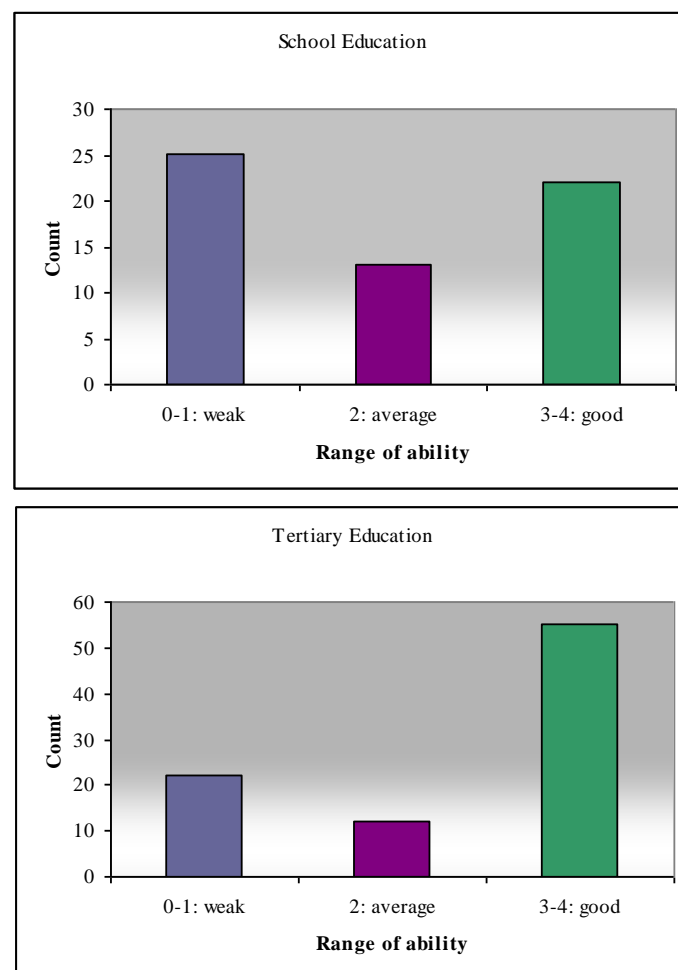


Figure 4.6: Bar chart comparison of education levels versus range of ability

4.2.6 Sources of nutrition information on how to use and interpret the food labels of selected fat spreads

In order to both use and interpret the nutrition information on the food label, the respondent would have needed to acquire some form of background information. This objective set out to determine what the commonly used sources of nutrition information were. Respondents were presented with four possible sources of nutrition information as listed in Table 4.11, as well as an “other” choice where they could provide a source not listed. Principal Component Analysis was conducted on these options to determine what sources were significantly related, as shown in Table 4.12. Two Principal components accounted for most of the variance of the original variables. These two components exhibited an Eigenvalue of greater than 1, with a cumulative variance of 63%, thereby indicating that there were two significantly used sources of nutrition information.

Within each component only one variable showed a significant factor loading of greater than plus or minus 0.5. The first component was significantly related to the “friends and family members” variable (factor loading 0.779), which implies that the respondent was most likely to use a friend and or family member as a source of nutrition information. The second component was significantly related to the “newspapers / magazines/ TV / radio” variable (factor loading 0.805), implying that these were the second most used sources of nutrition information.

Table 4.11: Sources of nutrition information used and not used by respondents

Source	Commonly used
Newspapers / magazines / TV / radio	76% (n = 114)
Friends / family members	47% (n = 71)
Pharmacy / public health clinics doctors waiting rooms	43% (n = 65)
Nutritional health professional	39% (n = 58)
Other	9% (n = 14)

Table 4.12: Total Variance of nutrition information sources

Derived Principal Component	Initial Eigenvalues		
	Total	% Variance	Cumulative %
1	1.368	34.192	34.192
2	1.158	28.952	63.144
3	0.840	21.002	84.146
4	0.634	15.854	100.000

Results in bold font indicate a significant relationship.

The most trusted source of nutrition information as chosen by 34% (n = 51) of the respondents was the nutrition health professional, followed by pharmacy/public health clinic/doctors waiting rooms (30%, n = 45) and newspapers/magazines/TV/radio (24%, n=36). Friends and family members (26.7%, n=40) were the fourth least trusted sources of nutrition information, followed by “other” (20.7%, n=31).

4.3 Summary of results

The results of the questionnaire that was used to determine the use and interpretation of the nutrition information on the food label of the selected fat spreads was presented in this chapter. The following noteworthy findings were made:

The mean age of the respondents was 33.78 and the majority of the respondents were white. English was the most commonly spoken home language. The median number of household members was four and it was found the larger the household, the more likely the respondent was to use the nutrition information label. Sixty percent of the respondents had achieved a tertiary education and it was found these respondents would be more likely to use the nutrition information label. Ninety two percent of the respondents were the primary purchaser for their household, and the more money that these respondents had available to them, the higher the likelihood of using the nutrition label. A significant relationship was found between the amount of money available each month and use of the nutrition information label.

Three significant Principal components were found related to the purchase of a fat spread. The first was related to the variables “nutrition information on food label”, “health

professional recommendation”, “dietary requirement”, “fat content information” and “aim to choose the healthiest option”. The second was significantly related to the variables “product design and packaging”, “product advertising” and “recommended by family and friends”; while the third and last significant Principal component was significantly related to the variables “price” and “grew up using the product”.

Eighty nine percent of the respondents found the nutrition information to be important when making a fat spread purchase. The respondents agreed that the nutrition label was important when making a fat spread purchase for the first time, while most respondents considered the nutrition information more important than the product’s price.

The respondents tended to agree that they scheduled enough time to read the label, that they understood the label and that it was easy to locate the product’s fat content from the label. There was also an agreement, however, that an educational programme on how to read the nutrition information label was required and that the respondent required more nutrition information on the food label.

Just over half of the respondents had a “good” ability to locate the required information, while just below a third of the respondents were “poor” in this task. Education was found to be a significant influence on range of ability as the respondents with a higher education tended to perform better than those who had not exceeded a school education.

The most commonly used source of nutrition information was the media, followed by friends and family members. Respondents rated the health professional as the most trusted source of nutrition information.

CHAPTER 5: DISCUSSION

5.1 Introduction

The purpose of this study was to determine the use and interpretation of the nutrition information on the food label of selected fat spreads by female consumers, aged 25 to 45 living in Pietermaritzburg.

The following objectives were set: Firstly to determine the demographic characteristics of respondents using the nutrition information on selected fat spreads including age, education, number of household members, home language and amount of money available each month to spend on food purchases. Secondly to determine whether the decision to purchase selected fat spreads was related to familiarity with the product, presentation of the product and prior recommendations received regarding the product. Thirdly to determine whether the decision to purchase selected fat spreads was related to the use of the nutrition information on the food label. Fourthly to determine whether the use and interpretation of the nutrition information to purchase a selected fat spread, was affected by factors such as the size, print and presentation of the food label. Fifthly to determine the ability of respondents to locate and apply the nutrition information on the food label of selected fat spreads. And finally to determine the respondents sources of nutrition information on how to use and interpret the food labels of selected fat spreads.

5.2 Demographic characteristics of the sample

The results showed that just less than sixty percent of the respondents were aged 25 to 34. Within the population group distribution, white respondents formed the bulk of the sample at (43%, n = 65), followed by the black respondents (31%, n = 46). In comparison with the 2001 Census statistics, of the 44 819 778 South Africans 79% of the population were black, 10% white, 9% coloured and 2% were Indian (Stats SA 2004, p4). Within KwaZulu-Natal, the 2001 Census found that of the 9 426 017 people living in the province, 85% were black, 8% Indian, 5% white and 2% coloured. English was the most commonly spoken home language by 57% of this study sample, followed by isiZulu which was spoken by 25% of this sample. This is in contrast to the findings of both the 1996 and 2001 census where isiZulu

was found to be the main language home language of KwaZulu-Natal, followed by English (Stats SA 2004, p8).

Forty percent (n = 60) of the sample population had only achieved a school education, while 60% (n = 89) had achieved a tertiary education. These figures are very different to the 2001 Census Statistics that found that 93% of the female population of KwaZulu-Natal had had some form of schooling, while 7% of the female population had achieved a tertiary education (Stats SA 2004, p36). This sample population therefore was not reflective of the province or country in terms of the demographic characteristics. One possible explanation for this could be the fact that there is a large portion of the poorer black population still living in the more rural parts of KwaZulu-Natal. It is also anticipated that these women have received minimal amounts of school education. As a result of this, the females interviewed in this study were living in urban areas, and were most likely working and would therefore have completed their schooling and achieved some form of tertiary education.

It should be noted that two respondents marked that they had not received any education at all, yet participated in the study. In order for the respondent to have taken part in the study, she would have had to have been literate therefore, one can assume that the two respondents with no education must have learned to read and write somewhere other than in a school setting.

Most the participants (86%) did not have a pre-existing disease, nor were members of a weight loss group (86%). This could be extrapolated to imply that these respondents were unlikely to have received specific dietary counseling beforehand, which would have provided them with a pre-existing nutritional knowledge of how to interpret the food label. This pre-existing knowledge influencing label use was found with Kessler and Wunderlich (1999) who investigated the use of food labels in American people with diabetes and found them to be more frequent label readers with a greater ability to interpret the nutrition information. Amongst those that did have a pre-existing disease condition, high blood pressure was the most common condition present. It was also found that the respondents with the most money available each month for groceries, were also most likely to be the primary purchaser of these groceries. Possible reasons for this could have been the fact that they had either pooled their

income for groceries with their spouse / partner, who had nominated the respondent to be responsible for grocery shopping; or were shopping for themselves.

5.2.1 Demographics of consumers using the nutrition information on the food label

The results from this study showed that the respondents with some form of tertiary education were more likely to use the nutrition information on the food label (62%, n = 51 out of 82) compared to those respondents with a matric or less (38%, n = 31 out of 82). Whilst not a big difference, this result is consistent with the findings of Guthrie *et al* (1995) and Wang, Fletcher and Carley (1995) who proposed that a higher education level would place the consumer at an advantage of being more informed about nutrition and more able to interpret the nutrition information on the food label.

Ninety one percent (n = 137) of this sample population were the main household members responsible for food purchases. While a certain proportion of these respondents could have received prior instruction or requests from other household members on what brands to purchase, this result could to some extent be extrapolated to imply that a large proportion of these respondents could wield the most influence on what product would be purchased and thus consumed by the household members. If this was the case, this result could then be used effectively by both nutrition educators and the fat spread marketers as it clearly defines the target range of the population most responsible for selected fat spread purchases. It was also found that of the 136 respondents that were the primary purchasers, 52% (n = 74) used the nutrition information to influence their purchases. This is much lower than the findings of Alfieri and Byrd-Bredbenner (2000) who found that 80% (n = 122) of their 150 American respondents were the main household shoppers and used the nutrition information label more often. This major difference emphasizes an important gap in South Africa when compared to the more advanced United States. The American consumers are exposed to a greater amount of nutrition information educational campaigns and their higher frequency of label use re-emphasises the need for an increased South African consumer exposure to education on nutrition label information.

The findings of this study also showed an increase in label usage as the number of household members increased. Only 17% (n = 1) of those respondents who lived alone (n = 6) claimed to use the nutrition information on the food label compared to a 57% (n = 55) use of those who lived with more than one person (n = 81). Interestingly the respondents that lived in a household of six or more (n=28) claimed the greatest use of the nutrition information on the food label. Guthrie *et al* (1995) also found a marked increase in label usage as household numbers increased. Researchers have proposed that consumers living alone are less likely to be spending extra time and exertion searching for nutrition information on a food label, compared to those who know that this nutrition information search has an influence on not just their own dietary intake, but that of other household members too (Nayga 1996, Guthrie *et al* 1995, Wang *et al* 1995).

There was also a marked increase in label usage as the amount of money available for food purchases increased. This agrees with the findings in the literature where consumers with a higher income are thought to have the added advantage of being able to choose a greater variety of foodstuffs that are also more expensive and of a higher quality which could mean a healthier nutritional content (Drichoutis & Lazaridis 2005). In terms of fat spreads, an increased amount of money available to the consumer may allow them to choose a better quality fat spread with a much lower saturated fat content such as the Floro ProActive range which is much more expensive than regular fat spreads, and has proven cholesterol lowering effects (Cleghorn, Skeaff, Mann & Crisholm 2003).

With regards to money, the Census statistics of 2001 revealed that the greatest proportion of the KwaZulu-Natal population (21%) were living on between R801 – R1600 a month, while 18% of the population were living on between R401 – R800 a month (Stats SA 2004, p75). This study did not look at total income per month and therefore cannot compare any findings with the Census statistics. However one can use the Census results to imply that a large sector of the population have minimal amounts of money available each month for food and are more than likely choosing their fat spreads based on price and not the nutrition information on the food label. This emphasizes that nutrition education campaigns should be targeting the most vulnerable populations and designed in a manner that will allow this population to make the healthier purchase based on what they have available to them.

Interestingly, of those respondents with a pre-existing disease condition ($n = 21$), only 52% claimed to use the nutrition information on the food label versus 56% ($n = 71$) of the 127 who did not have a pre-existing disease condition. This contradicts other findings in the literature that show a consumer with preexisting disease condition will be more aware of nutritional information and more likely to use it (Neuhouser *et al* 1999, Naygar *et al* 1998, Kreuter *et al* 1997, Guthrie *et al* 1995). A potential explanation for the finding in this study could be the lack of or inadequacy of the dietary counselling that was provided to the respondent when they were diagnosed. Perhaps the respondents did not seek dietary counselling upon diagnosis, or perhaps the information they received did not cover nutrition labelling adequately. As mentioned in Chapter 1, in the United States there are a larger number of Dieticians / Nutritionists available per person, whereas in South Africa the situation is very different as there are much fewer dieticians available per person.

When investigating the influence of health awareness on the use of the nutrition information on the food label it was found that 62% of the 126 respondents that claimed they try to choose the healthiest option (which would be lower in fat), also claimed to use the nutrition information on the food label of selected fat spreads to influence their selected fat spread purchase. While this study did not directly test dietary fat intake, this finding of increased health awareness related to label usage, could tentatively link with both Kreuter *et al* (1997) who found that respondents who used the nutrition information on the food label often were more likely to be following a healthy diet; and Wang *et al* (1995) who proposed that a lower level of health awareness and thus minimum usage of the nutrition information on the label was also linked to a diet higher in fat and cholesterol.

The findings of this study therefore show that the respondent who was most likely to use the nutrition information on the food label had achieved a higher level of education; was a primary food purchaser, lived with other people, had a higher disposable income for food and was conscious of choosing a healthier option. Conversely, the respondent who was not making use of the label was more likely to have a high school education or less; lived on their own; have a small amount of money available each month for grocery purchases and is not largely responsible for household grocery purchases. It is just as important to know who is using the label as it is to know who is not; because the latter group should then become the main target of nutrition education campaigns to ensure that their nutritional and educational requirements are also being met.

These nutrition education campaigns should particularly focus on groups in nutrition transition, because the adoption of a more westernized lifestyle and dietary intake may place this population group at a higher risk of NCD development. This raises concerns on a few levels, especially if this group has not received enough education and information, specifically focusing on nutrition, to be cautious about the products that they consume. Food that is energy dense, especially in the form of fat is easily available and it is important that this group of consumers are informed appropriately to understand that a large intake of these products will make them more susceptible to NCDs. It is also important, especially if this population has had a poorer quality education, that they understand how to interpret the nutrition information on the food label so that they can make a more informed healthier choice. This population group should also be encouraged to keep up their traditional lifestyle especially in terms of their physical activity, because this will decrease their risk of developing certain NCDs.

5.2.2 Factors related to the decision to purchase fat spreads

The Principal Component Analysis performed on the factors influencing a fat spread purchase showed that three components were found to be significantly associated with a fat spread purchase. These were: awareness of the products nutritional content because of health consciousness; the selected fat spread's marketing, presentation and popularity; and familiarity and cost awareness of the selected fat spread. This is in line with Drichoutis and Lazaridis (2005) and Guthrie *et al* (1995) theoretical determinants of label use. One could then propose that because of this nutritional content awareness, the nutrition information on the food label is a significant factor influencing the purchase of a fat spread.

When asked to choose the five most influential factors of the eleven variables listed in Table 4.6 of Chapter Four and rank them in order of importance (as presented in Table 4.7), it was found that the most important factor was “try choose the healthiest option” (n = 37, 24.7%), followed by “family prefers the taste” (n = 24, 16%), then “price” (n = 23, 15.3%), “diet recommends the product” (n = 11, 11.3%), and lastly “information about fat content” (n = 19, 12.7%). Again this showed that the nutrition information on the selected fat spreads label is a significant influencing factor in the purchase of a fat spread, because in order to choose the healthiest option; follow a dietary recommendation; and determine the product's fat content,

the consumer will have to read the nutrition information on the food label. There are no literature findings to compare these results.

One could use the results of this study to modify Figure 2.1 from Chapter 2. Figure 5.1 represents the modified determinants of label use according to this study's results. Compared to the original figure, it can be seen that there were more factors influencing the respondent's product knowledge and less factors influencing the product's importance and situational variables. Changes to the original figure have been emboldened. Determinants that were deleted include the consumer's income, health status and time restrictions under the "situational variables" determinant; number of product choices available to the consumer under the "marketing environment" determinant; previous experiences with that product under the "knowledge" determinant; taste and ease of preparation under the "product importance" determinant as well as gender and age under the "individual characteristics" determinant.

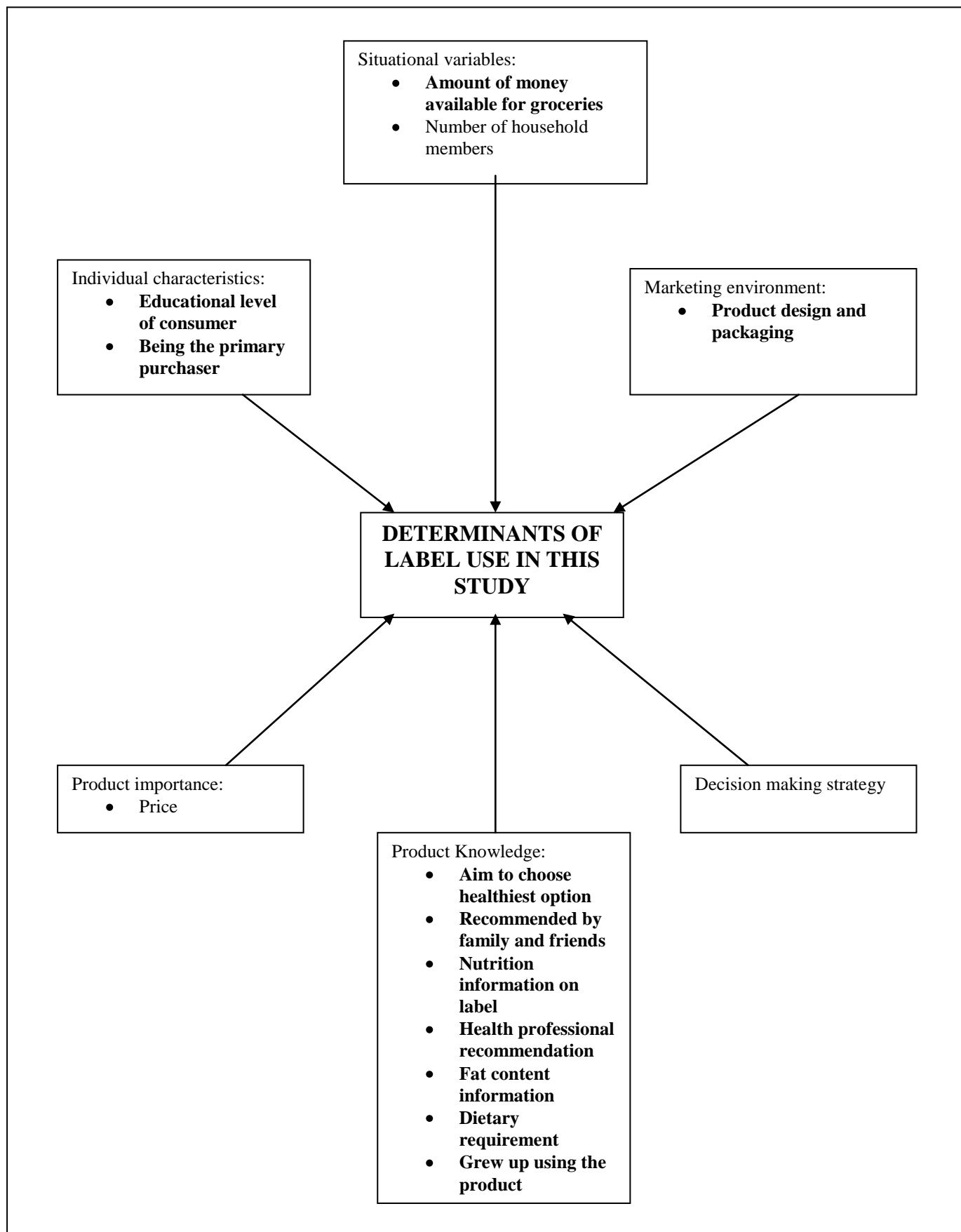


Figure 5.1: Modified determinants of label use according to this study's results

5.2.3 Use of the nutrition information on the food label to influence fat spread purchase

Fifty five percent of this study sample (n = 82) claimed to use the nutrition information on the selected fat spreads label to assist with purchases and 68% (n = 102) found the nutrition information important for purchasing a new product. Anderson and Coertze (2001) found in their South African study that 64.8% of their 388 female respondents read the food label when making a purchase, with 79.2% specifically using the label when buying a product for the first time. However it should be reiterated that Anderson and Coertzee (2001) investiaged a very different type of sample to this study as highlighted in the Chapter 2 and therefore one cannot rely too heavily on the results of their study to make a significant comparison.

The binomial test results showed this usage rate of this study was significantly lower than Alfieri and Byrd-Bredbenner (2000) who found that in their American study 91% of their 150 respondents used the nutrition information on the food label to influence a purchase. Byrd-Bredbenner *et al* (2000) found that 92% of their United Kingdom respondents always or sometimes read the nutrition information on the food label while, 80% of their respondents claimed to read the label when purchasing a new product for the first time. It should be noted however that this UK sample only consisted of 50 respondents therefore the results may be inflated because of this. This shows that there is a distinct difference between consumers from the developed countries such as the US and UK compared to the developing country of South Africa. South African consumers are less likely to use the nutrition information on the food label compared to their British and American counterparts. This could be due to a number of reasons such as less exposure to nutrition information labels because the declaration of this information is not mandatory in this country; or more obviously the lack of an efficient education campaign to teach the South African consumer how to use the label effectively.

It is suggested that because most consumers tend to repeat menu patterns, there is no need to keep reading the nutrition information at each shopping visit (Kreuter *et al* 1997). Therefore if the consumer is only going read the label when they purchase the product for the first time and not thereafter, this places importance on the accuracy of the consumer being able to read the label both efficiently and correctly. It also implies that the brief period in which the consumer does pick up the product and examine the label, should be as significant as possible

in terms of being able to interpret the information to make the healthier decision. If the consumer is not entirely sure what they should be looking for; or what the information per serving / per 100g implies in terms of their daily dietary fat intake – the advantage of the having the nutrition information available may be lost.

Fifty one percent (n = 76) disagreed with the statement “I would rather read the nutrition label at home”. In other words this means they would rather read the label at the point of purchase. This implies that just over half this study population feels they have sufficient time to effectively use the nutrition information on the food label whilst shopping. This is slightly lower than Anderson and Coertze’s (2001) findings that 57.8% of their South African respondents in 1993 preferred to read the label at home. Perhaps because of the ever increasing time constraints that are placed on the female consumer at home – especially if they are looking after children, there is less time available for the consumer to peruse food labels at their own leisure. This re-emphasizes the fact that consumers are most likely to spend mere seconds glancing at the food label whilst they compare products and make a purchase, therefore it is vitally important that the consumer knows exactly what she is looking for and that the information is easy to locate and interpret.

Fifty two percent (n = 78) disagreed with the statement “I buy on price and not using the nutrition information on the food label”. This showed that there was generally a slightly higher emphasis on a product’s nutritional content as opposed to its price. This was found earlier in section 5.2.2 where nutritional content was found to be a slightly more influential factor than price. Anderson and Coertze (2001) South African study also found that price was less important than nutritional content. However, it should be mentioned again that a large proportion of the South African population are living on a very small income and may not have the luxury of picking a healthier and more often expensive choice.

The results therefore show that respondents are using the nutrition information on the food label at the point of purchase, most likely whilst purchasing a product for the first time and while price is influential, the nutrition information has a slightly higher weighting and so the consumer is more likely to use the nutrition information to influence her selected fat spread purchase.

5.2.4 Factors potentially restricting the use of the nutrition information on the food label of fat spreads

Earlier in Chapter 2 it was proposed that certain factors such as time restrictions, poor label layout and format, may hamper the use of the nutrition information on the food label.

Results of this study showed that 55% of the respondents (n = 82) felt that adequate time was scheduled for using the nutrition information on the food label when making a fat spread purchase. This coincides with the finding that 51% of the respondents in this study would rather use the nutrition label at the point of purchase. Research has shown that time restrictions can have a negative influence on food label use and that the consumer is only likely to spend extra time searching for a healthier option if they feel the benefit of this healthier option outweighs the time lost in searching for it (Guthrie *et al* 1995).

It has been found that use of terms and formats that are too technical can impede consumer understanding and use of the nutrition information on the food label (Cowburn & Stockley 2005). Results of this study showed that 49% (n = 74) felt that they had sufficient background knowledge to interpret the nutrition information on the food label, 77% (n = 116) agreed that they understood the nutrition information and 66% (n = 98) found that it was easy to locate the fat content. However it should be noted that whilst one can claim to understand the nutrition information, the validity of this claim can only be justified through an ability task- results to be discussed in more detail in section 5.2.5.

In this study, 41% of the respondents (n = 62) found that the print size was adequate as opposed to the 32% (n = 48) who did not, whilst 27% (n = 40) were neutral. This implies that 59% of the study population was either unsure or unhappy about how the information is presented. This may be an important factor impeding both the use of the nutrition information, because of the difficulty in legibility and, the accuracy of tasks performed whilst using the information due to potential errors in distinguishing figures.

Sixty three percent (n = 94) agreed that more nutrition information was needed, while 71% (n = 106) agreed to the statement that an educational programme regarding the nutrition information label is required. It can be seen that of the potential factors that have been found to impede the use of the nutrition information label- print size as well as lack of education and

nutrition information on the food label were found to be factors restricting label use in this study.

5.2.5 Ability of the study sample to locate and apply the nutrition information on the selected fat spread

Just over half the respondent sample (51%, $n = 77$) were able to perform the tasks as they scored seventy five percent and above (either 3 out of 4, or 4 out of 4). Seventeen percent of the sample ($n = 25$), had an average ability, scoring 50% for the “locate and apply” tasks, while the remainder of the sample (32%, $n = 48$) had a poor ability scoring 25% and below. This implies that the nutrition information on the food label was moderately easy to read and apply.

Respondents that had achieved a tertiary education tended to perform much better on the ability tasks compared to those who had a matric or less. Of the fifty one percent who achieved a score of 75% ($n = 77$) or higher, 71% ($n = 55$) of these respondents had a tertiary qualification; whilst 29% ($n = 22$) had a matric or less. This substantiates Guthrie *et al* (1995) findings that a tertiary education places the consumer at the added advantage of being able to accurately use and interpret the nutrition information on the food label. This finding therefore raises awareness that nutrition education campaigns surrounding interpretation of the food label will need to specifically target those consumers who have not had the benefit of receiving a tertiary education.

The results therefore show that just over half the respondents performed well on the “locate and apply” tasks and that respondents with a higher educational level were more likely to accurately locate and interpret the nutrition information on the food label.

5.2.6 Sources of nutrition information on how to use and interpret the nutrition information on the food labels

The most commonly used sources of nutrition information were the media and friends and family. Both results are consistent with the findings of both de Almeida *et al* (1997) who investigated 14 331 European opinions and Charlton *et al* (2004) who conducted a local study

on 394 women; however Charlton *et al* (2004) found the media was the most used source followed by friends and family. Consumers are constantly exposed to the media in all forms from listening to the radio and watching television to reading about various topics in newspapers and magazines, therefore it makes sense that this constant exposure will have an imprint on their opinions. The consumer would also be more likely to discuss nutrition topics with family members and apply what they have heard.

Health professionals were chosen as the most trusted source of nutrition information, which is also consistent with the findings of de Almeida *et al* (1997) and Charlton *et al* (2004). While this is a positive result in that the respondents are aware that the media and their friends and family may provide information that is both inaccurate and untrustworthy. However this result is of concern as the respondents are not placing a priority on obtaining reliable information from a health professional first.

In summary two significant sources of nutrition information were found: friends and family members, and the media. The most trusted source was the health professional while the least trusted source were the respondent's friends and family members.

5.3 Recommendations for the improvement of the study

5.3.1 Research design

In retrospect, the sample size could have been larger and more representative of the South African population, to gain a much clearer relationship between the use and non-use of the nutrition information on the food label. South Africa consists of such a diverse population of many socio-economic and educational levels as well as urbanizations, that it is difficult to draw a significant conclusion from such a small population as this study sample was.

5.3.2 Methodology, data collection and analysis

Using the point of purchase as the data collection site had the limitation of a low response rate because the respondents were most likely to decline participation due to their restricted time available whilst shopping. However it was important that they were interviewed at all times

of the day to gain a wider knowledge on potential factors impeding the nutrition information labels use.

As mentioned earlier, the sample population was not reflective of the province or country in terms of the demographic characteristics and therefore the study results have limitations in the extent to which a conclusion can be drawn regarding the South African consumer as a whole. One possible explanation for this could be the fact that the study was conducted in an urban supermarket which limited the sample somewhat in that there is a large portion of the province who live in the rural areas that would have been excluded from participating. Perhaps a larger portion of the population in the province would not necessarily have been shopping in a supermarket/shop and rather relied on the “spaza” type shop found in the townships for their basic groceries. Using a bigger style shop certainly limited the sample to those respondents who could both afford the products and easily access these shops, especially those located in the suburban areas which are slightly less easier to access via public transport.

Perhaps other methods could be used such as focus groups, or interviews at either the respondent’s home or work. This would allow a calmer environment for more constructive feedback, however one consider that the consumer is most likely to be using the label whilst in a supermarket and will have many distractions placed upon them..

Ideally, to ensure that the data captured was reliable, the researcher should have implemented stricter quality control methods. This could have been achieved by randomly selecting a sub section of the respondent sample and repeating the questionnaire. It was impossible to do this during this study because the respondents had remained anonymous and could therefore not be traced later. While the researcher could have overcome this by repeating the questionnaires at the site of the interview, the quality control questionnaires would have had the bias of not being randomly selected. Also, it would have been inappropriate and inconvenient to re-interview a consumer especially if they had arrived at the shop with limited time available to make their purchases.

Unfortunately the respondents used in this study were not completely representative of all consumers shopping in Pietermaritzburg because not all supermarkets/shops gave permission to be used as an interview site for the study. Of the original 22 supermarkets/shops chosen for the study six were eliminated based on the fact that on closer inspection they did not stock the selected fat spreads, one manager refused to grant permission on the basis that he did not want his customers “disturbed”, whilst another supermarket/shop was undergoing renovations at the time of the data collection.

5.4 Implications for further research

Fat content was specifically focused on in this study, if one had greater resources available to them, it could be more meaningful to investigate the nutrition information on the food label of a greater variety of products. Although food manufacturers are currently not legally required to list the nutrition information on their products, nearly all the fat spreads (with the exception of butter) used in this study did in fact have a nutrition contents table. One could have looked at the health claims that appear on certain fat spreads and researched their accuracy. A closer look could also be taken to determine what the consumer actually interprets “nutrition information” to mean and establish whether they interpret this just to mean the declaration of nutrients, or perhaps any health claims that may have been declared on the packaging as well. It would also be useful to investigate the influence that health claims have on the decision to purchase particular products. Perhaps the consumer purchases a product purely on the basis of the health benefit that the product claims to make (for example “fat free”) without actually assessing the nutrition information to check that the claim is in fact truthful.

When implemented, the new food labeling legislation will make for very interesting research because there are going to be many implications involved for both the food manufacturer and consumer. Food manufacturers are going to have to conform to much stricter guidelines and this will require close work with dietetic professionals. There will be cost implications involved with the new legislation, manufacturers will have to redesign their labels and packaging which may result in an increased product price. Perhaps the removal of untruthful health claims will also result in decreased product sales.

It may be more useful to include both males and females in a study on this topic. While the results showed that females were more likely to be the household's primary purchaser, one should not isolate the male population from an investigation like this. A greater age range including adolescents and elderly should also be investigated – perhaps there are factors impeding label use in these age groups.

A more in depth test of understanding could be conducted. While this study tested the ability to locate and apply nutrition information, one could also test the consumer's ability to actually manipulate the information. One could also take the study further by developing a nutrition education tool specifically focusing on how to use the nutrition information on the food label, and then test how successful this tool was.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The nutrition information on the food label is a potentially valuable nutrition tool for consumers to reduce their dietary fat intake. This study set out to determine the use and interpretation of the nutrition information on the food label of selected fat spreads, by female consumers aged 25 – 45 living in Pietermaritzburg.

6.1.1 Consumer demographics

The demographic findings showed that the respondent who was most likely to use the nutrition information on the food label had achieved a tertiary education, was a primary food purchaser, lived with other people, had a higher disposable income for food and was conscious of choosing a healthier option. There is a great need to address this situation, because there is a large portion of the population who do not fit this category.

6.1.2 Factors related to the decision to purchase the selected fat spread

The purchase of a selected fat spread was influenced by an awareness of the products nutritional content because of health consciousness; the selected fat spread's marketing, presentation and popularity; and familiarity and cost awareness of the selected fat spread.

6.1.3 Use of the nutrition information on the food label to influence the purchase of the selected fat spread

Most of the respondents found the nutrition information to be important when making a fat spread purchase. The respondents agreed that the nutrition label was important when making a fat spread purchase for the first time, while most respondents considered the nutrition information more important than the product's price.

6.1.4 Factors related to the use of the nutrition information on the food label to purchase a fat spread

It was also seen that of the potential factors that could impede the use of the nutrition information, inadequate print size as well as a lack of education and nutrition information on the food label were found to be factors restricting label use in this study.

6.1.5 Ability of the respondents to use and interpret the nutrition information

Just over half of the respondents had a “good” ability to locate the required information, while just below a third of the respondents were “poor” in this task. Education was found to be a significant influence on range of ability as the respondents with a higher education tended to perform better than those who had not exceeded a school education.

6.1.6 Sources of nutrition information commonly used

The most commonly used source of nutrition information was the media, followed by friends and family members. Respondents rated the Health professional as the most trusted source of nutrition information.

6.2 Recommendations for dietetic practice

Assuming that the information that the “friends and family” are basing their advice on, is the second most used source – the media, there is an important need to ensure that the nutrition messages put out to the public are in fact accurate and from a well established scientific source. Unfortunately in South Africa it is unlikely that the average consumer is going to be exposed to a health professional’s opinion as often as they are to the media and so it becomes absolutely vital that health professionals specifically become much stronger figures in the media, to ensure that the integrity of accurate nutrition information is maintained.

Implementation of the new legislation will create an excellent opportunity for Dietitians to become more involved with the food manufacturer, especially in terms of what may / may not be included on the new label.

There is a much larger scope to which this study could extend and it would be most useful to determine the use of the label on a much broader scale amongst a greater, more representative sample of South Africans.

If the nutrition information is to be used both correctly and effectively, there must be a major educational campaign that sets out to meet the needs of the population that are most vulnerable, that is those with insufficient education and not using the nutrition information label. One should investigate this concern in greater detail, especially considering both the lower literacy rates and educational levels of a large portion of the population. According to UNICEF (2006) 81% of the South African female population is literate.

If used to its full potential, in other words if all consumers are trained correctly on how to use the label with regards to what to look for and how to apply this information, the nutrition information on the food label can and will become a valuable communication tool. If this can be achieved, then the nutrition information on the food label will become essential to endorse the “Eat fats sparingly” FBDG, with the ultimate goal of reducing morbidity and mortality from NCDs.

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APPENDIX A: LIST OF PARTICIPATING SUPERMARKETS/SHOPS

1. Pick 'n Pay, Hayfields
2. Pick 'n Pay, Longmarket Street, Central
3. Pick 'n Pay, Liberty Midlands Mall, Chase Valley
4. Parklane Spar, Central
5. Northway SuperSpar, Northdale
6. Jonathan's Spar, Mayors Walk
7. Jonathan's Spar, Commercial Road, Central
8. Jonathan's Spar, City Square, Central
9. Southgate Spar, Southgate
10. Shoprite Checkers, Church Street, Central
11. Shoprite Checkers, Cascades, Chase Valley
12. Shoprite Checkers, Durban Road, Scottsville
13. Woolworths, Durban Road, Scottsville
14. Woolworths, Liberty Midlands Mall, Chase Valley

APPENDIX B: DATA COLLECTION TOOL**SECTION A:**

Please note that your responses are anonymous and will be kept strictly confidential.

Consent obtained: _____ Supermarket: _____

Time completed: _____

Respondent Number: _____ Age: _____ Race: _____

Do you live in Pietermaritzburg:

a) Yes

b) No

Please place a tick in the box of the most appropriate choice:

1. Do you or your spouse/partner work in a health related field?

1	Yes	
2	No	

2. Have you been recently diagnosed and /or treated for one of the following conditions:

1	Diabetes	
2	High Blood Pressure	
3	High Cholesterol	
4	Overweight / Obesity	
5	Other, please specify	

3. Do you belong to a weight loss club/ group?

1	Yes	
2	No	

4. What is your highest level of education?

1	No education	
2	Grade 10 or less	
3	Matric	
4	College / Certificate	
5	Technikon / Diploma	
6	University / Degree	

5. How many children live in your household?

1	No children	
2	One child	
3	Two children	
4	Three children	
5	Four or more children	

6. How many people, including yourself, live in your household?

1	Live alone	
2	Two	
3	Three	
4	Four	
5	Five	
6	Six or more	

7. Are you responsible for purchasing most of the groceries each month?

1	Yes	
2	No	

8. How much money do you have available each month to spend each month on food for your household?

1	Less than R500	
2	Between R500 and R1000	
3	Between R1000 and R1500	
4	More than R1500	

9. What is your home language?

1	English	
2	Afrikaans	
3	IsiZulu	
4	IsiXhosa	
5	SeSotho	
6	SeTswana	
7	Sepedi	
8	Tshivenda	
9	SiSwati	
10	IsiNdebele	
11	XiTsonga	
12	Other, please specify	

SECTION B:

10. Please indicate the type of fat spreads that you purchase each month, specify a brand most regularly bought:

1	Butter	
2	Brick Margarines	
3	Tub Margarines	
4	Butro / Butter Marg mix	

11. Which of these factors do you consider when purchasing these products:

Please tick the level of importance that most applies to you:

1. Design & packaging of product	Not important at all	Less important	Important	Very important	Most important
2. Product advertising	Not important at all	Less important	Important	Very important	Most important
3. Family prefers the taste	Not important at all	Less important	Important	Very important	Most important
4. Recommended by friends & family	Not important at all	Less important	Important	Very important	Most important
5. The nutrition information on the food label	Not important at all	Less important	Important	Very important	Most important
6. The price	Not important at all	Less important	Important	Very important	Most important
7. Recommended by a health professional	Not important at all	Less important	Important	Very important	Most important
8. Your diet recommends this product	Not important at all	Less important	Important	Very important	Most important
9. You grew up using this product	Not important at all	Less important	Important	Very important	Most important
10. The information about fat content	Not important at all	Less important	Important	Very important	Most important
11. You try to choose the healthiest option	Not important at all	Less important	Important	Very important	Most important

12. Of these factors listed in 11, choose five that are most important to you, starting with the most influential first:

1		2		3		4		5	
---	--	---	--	---	--	---	--	---	--

Questions 13-27 refer to these products:

Butter, Margarine, Butter-Margarine mixes

Choose a response that best suits your feelings about the following statements:

Make a cross on your most appropriate answer

13. I usually schedule adequate time to shop for my groceries

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	----------------------	---	----------	---	---------	---	-------	---	-------------------

14. I do not use the nutrition information on the food label to assist my purchase

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	----------------------	---	----------	---	---------	---	-------	---	-------------------

15. I would rather read the nutrition information at home as it is more convenient

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	----------------------	---	----------	---	---------	---	-------	---	-------------------

16. I do not read the nutrition information on the food label when planning meals at home.

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	----------------------	---	----------	---	---------	---	-------	---	-------------------

17. I understand the nutrition information on the food label

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	----------------------	---	----------	---	---------	---	-------	---	-------------------

18. It is easy to locate a certain nutrient from the nutrition information table on the food label:

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	----------------------	---	----------	---	---------	---	-------	---	-------------------

19. The size of the print is too small to read

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

20. The nutrition information on the food label is not important when purchasing a new product.

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

21. I use the nutrition information to plan my daily energy intake and/ or other nutrient intake.

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

22. I would like more nutrition information on the food labels to assist me in making a choice when purchasing food items.

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

23. I do not have sufficient background knowledge to use the nutrition information on food labels.

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

24. I find the way in which the information is presented, easy to understand.

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

25. I buy on the basis of price and do not compare the nutrition content of different foods.

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

26. I purchase food items out of habit without reading the nutrition information on food labels.

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

27. There is a need for an educational programme to equip the consumer to read nutrition information on food labels.

a	Strongly Disagree	b	Disagree	c	Neutral	d	Agree	e	Strongly Agree
---	-------------------	---	----------	---	---------	---	-------	---	----------------

SECTION C:

28. Where do you obtain your nutrition information? Cross the most appropriate answer:

		YES	NO
1	Newspapers / Magazines / TV / Radio		
2	Friends / Family Members		
3	Pharmacy / Primary Health Clinic / Doctor's waiting rooms		
4	Nutritional Health professional e.g Dietician, Nutritionist		
5	Other, please specify		

29. Whom do you **trust** for the most accurate information?
Rank them in order from **1 = trust most** to **5 = trust least**

1	Newspapers / Magazines / TV / Radio	
2	Friends / Family Members	
3	Pharmacy / Primary Health Clinic / Doctor's waiting rooms	
4	Nutritional Health professional e.g Dietician, Nutritionist	
5	Other, please specify	

SECTION D:

Using the two attached samples A and B to answer the last few questions:

Using **SAMPLE A:**

30. The amount of total fat present per hundred grams is:

1	15g	
2	17g	
3	56g	
4	Don't know	

31. The amount of saturated fat per 30g is:

1	5g	
2	17g	
3	20g	
4	Don't know	

Using **both SAMPLE A** and **SAMPLE B**:

32. Which of the two would provide the least amount of energy per serving?

1	Sample A	
2	Sample B	
3	Don't know	

33. Which of the two samples contains the highest amount of monounsaturates per 100g serving?

1	Sample A	
2	Sample B	
3	Don't know	

Thank you for answering these questions, your time and effort is greatly appreciated.

SAMPLE A**NUTRITION INFORMATION**

Typical Values per	100g Serving	per 30g daily intake	%RDA* per daily intake
Energy	2070kJ	621 kJ	
Protein	Trace	Trace	
Carbohydrates	Trace	Trace	
Total Fat	56 g	17 g	
of which saturated	17 g	5 g	
of which monounsaturated	11 g	3 g	
of which polyunsaturated	27 g	8 g	
Moisture	42 g	13 g	
Sodium	855 mg	257 mg	
Vitamin A		225 µg RE	23%
Vitamin D		40 IU	28 %

* (for persons 10 years and older)

SAMPLE B**35 % LOW FAT SPREAD WITH PLANT STEROLS**

	PER 10g	PER 100g
ENERGY	135 kJ	1351 kJ
PROTEIN	0.01 g	0.1 g
CARBOHYDRATE	0.32 g	3.2 g
OF WHICH SUGARS	0.02 g	0.2 g
FAT (excluding 8g sterols*)	3.5 g	35 g
OF WHICH SATURATES	0.8 g	8 g
TRANS	0.05 g	0.5 g
MONOUNSATURATES & POLYUNSATURATES	0.9 g 1.75 g	9 g 17.5 g
FIBRE	0.03 g	0.3 g
SODIUM	0.035 g	0.35 g
VITAMIN E (108% of RDA)	6.6 mg	66 mg

* sterols do not contribute to the energy value

APPENDIX C: LETTER OF PERMISSION & INFORMED CONSENT



THE MANAGER

Dear Sir / Madam

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH

I am a student studying towards an MSc in Dietetics at the University of KwaZulu-Natal. My research topic is Food Labelling. I am also supervising two post graduate diploma students, Mary-Jane Boyle and Ntokozo Masondo who will be conducting the fieldwork. Our research will be targeting women aged 25-45, living in Pietermartizburg.

During the random selection process, your supermarket was selected to be interviewed on the following date. I am currently requesting to interview eight customers in your supermarket.

If you have any queries regarding this please do not hesitate to contact me.

Yours Sincerely,

Nicola Wiles
MSc (Dietetics) student, UKZN
(033) 260 5115

Marie Paterson
Supervisor
Acting Head of Discipline

INFORMED CONSENT:

- I hereby confirm that I have been informed by the postgraduate dietetic intern research group under the guidance of Nicola Wiles, about the nature of their study on “The use and interpretation of selected fat spreads by female consumers aged 25-45 living in Pietermaritzburg.
- I have also received, read and understood the written information (letter of introduction) regarding this study.
- I understand that I may contact Nicola Wiles (033 260 5115), at any time if I have questions about the research.
- I understand what my supermarket’s involvement in the study means and I voluntarily agree to participate.

Name: _____ Signature: _____

Supermarket Name: _____ Date: _____

APPENDIX D: ETHICAL CLEARANCE LETTER



RESEARCH OFFICE (GOVAN MBEKI CENTRE)
WESTVILLE CAMPUS
TELEPHONE NO.: 031 – 2603587
EMAIL : ximbap@ukzn.ac.za

7 APRIL 2006

MS. NL WILES (982119346)
DIETETICS AND HUMAN NUTRITION (SASA)

Dear Ms. Wiles

ETHICAL CLEARANCE APPROVAL NUMBER: HSS/06034A

I wish to confirm that ethical clearance has been granted for the following project:

"The use and interpretation of the nutrition information on the food label of selected fat spreads by female consumers aged 25 – 45 living in Pietermaritzburg"

Yours faithfully

A handwritten signature in blue ink that reads "Phimba".

MS. PHUMELELE XIMBA
RESEARCH OFFICE

PS: The following general condition is applicable to all projects that have been granted ethical clearance:

THE RELEVANT AUTHORITIES SHOULD BE CONTACTED IN ORDER TO OBTAIN THE NECESSARY APPROVAL SHOULD THE RESEARCH INVOLVE UTILIZATION OF SPACE AND/OR FACILITIES AT OTHER INSTITUTIONS/ORGANISATIONS. WHERE QUESTIONNAIRES ARE USED IN THE PROJECT, THE RESEARCHER SHOULD ENSURE THAT THE QUESTIONNAIRE INCLUDES A SECTION AT THE END WHICH SHOULD BE COMPLETED BY THE PARTICIPANT (PRIOR TO THE COMPLETION OF THE QUESTIONNAIRE) INDICATING THAT HE/SHE WAS INFORMED OF THE NATURE AND PURPOSE OF THE PROJECT AND THAT THE INFORMATION GIVEN WILL BE KEPT CONFIDENTIAL.

- cc. Faculty Officer
- cc. Supervisor (Marie Paterson and Jill Meaker)