Consumers' attitudes regarding the use of the salt information on food labels

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Dissertation submitted in partial fulfilment of the requirements for the degree Master of Science in Nutrition at the North-West University

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Graduation May 2018

Student number: 10365788

ACKNOWLEDGEMENTS

I would like to take this opportunity to express my sincere gratitude and appreciation to the following people who contributed to this study, guided and supported me for the duration of the study:

- My supervisors, Prof Edelweiss Wentzel-Viljoen and Prof Daleen van der Merwe for professional guidance, motivation and endless support during this study.
- Prof Suria Ellis for the statistical data analysis of the study.
- Ms Zine Sapula for guidance and assistance with the use of Endnote.
- Mr Stefan van Staden for language editing.
- My colleagues from Consumer Sciences for continuous support and assistance.
- Prof Marius Smuts (Center of Excellence in Nutrition) for granting financial support towards the payment of the fieldworkers.

To my husband Fanie, children Stefan, Adriaan and Mareli, special thanks for your love and support for the duration of this study. Finally, thanks to my sister Mari and all my friends for friendship and encouragement.

SOLI DEO GLORIA

The following is a statement from the co-authors confirming their individual role in the study, and giving permission that the article may form part of this dissertation.

I declare that I have approved the article included in this dissertation, that my role in the study, as indicated, is a representative of my actual contribution, and that I hereby give my consent that it may be published as part of the Master's degree in Nutrtion of Dr J van Staden.

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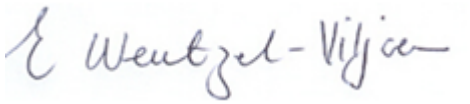

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ABSTRACT

Hypertension (HT) is globally one of the leading causes of cardiovascular diseases (CVDs), also regarded as a non-communicable disease. Various factors contribute to CVDs, and of interest for this study, include socio-demographic (urbanisation, rurality, income, education and ageing), behaviour (nutrition transition towards a Westernised diet) and metabolic (hypertension) risk factors. One of the leading causes of HT is the excess intake of salt from discretionary (salt added when cooking and at the table) and various non-discretionary sources. The aim of this study was to determine rural consumers' attitudes regarding the salt information on food labels. Attitudes were investigated incorporating the tri-component model of attitudes, namely the cognitive, affective, and conative components, and interpreted applying the socio-cognitive approach (SCA) to health behaviour. In this exploratory, quantitative study, data were collected from 268 females (≥18 years; ≥ Grade 5 level of education) residing in a rural setting in the Northern Cape Province (NCP), South Africa, applying interviewer-administered questionnaires. The questionnaire was examined for validity and reliability. Data analysis included descriptive statistics (percentages and means) and inferential statistics (factor and cluster analysis, T-tests, ANOVA's and 2-way frequency tables). Results showed that objective knowledge regarding salt intake, salt content of food, salt/sodium relationship, and knowledge of salt information on food labels were low to average, but high for *'Cardiovascular diseases'*. Subjective knowledge of food labels was also high. Respondents' beliefs and misconceptions about salt possibly contributed to the high intake of salt. They also had negative affective feelings regarding the liking and trust of food labels, and although salt intake was a concern for respondents, the importance to lower intake was not a priority. Respondents adopted a Westernised diet, and sources of salt intake were from discretionary and non-discretionary sources, with the latter mainly from bread and stock- and soup powders. They also indicated to purchase take-away foods. Respondents understood the Front-of-package (FOP) information (in this study the Salt Watch and Heart symbols), presented in traffic light colours well. Although some positive results were found, results in general, examining the cognitive-, affective- and conative components of attitudes regarding food labels, indicated that rural consumers had negative attitudes regarding the salt information on food labels. The SCA can provide understanding and insight into consumers' health behaviour, particularly into how dietary behaviour (intake of salt) influences their health (HT). Consumers' knowledge about their health (HT) is a precondition for changing related behaviour, which is in this case objective knowledge about salt intake, sources of salt, and ultimately the salt information on food labels.

Opsomming

Hipertensie (HT) is wêreldwyd een van die grootste oorsake van kardiovaskulêre siektes, ook beskou as ‘n nie-oordraagbare siekte. Verskeie faktore dra tot kardiovaskulêre siektes by en sluit sosio-demografiese- (verstedeliking, landelikheid, inkomste, opvoeding en veroudering), gedrag- (voedingsoorgang na 'n Westerse dieet) en metaboliese risikofaktore (hipertensie) in. Een van die hoofoorsake van HT is die oormatige inname van sout van diskresionêre- (bygevoeg tydens die kookproses en aan tafel) en nie-diskresionêre bronne. Die doel van hierdie studie was om landelike verbruikers se houding te opsigte van die soutinligting op voedseletikette, te bepaal. Houdings is ondersoek deur middel van die drie-komponentmodel van houdings, naamlik die kognitiewe-, affektiewe- en konatiewe komponente, en is deur middel van die sosio-kognitiewe benadering op gesondheidsgedrag geïnterpreteer. In hierdie verkennende kwantitatiewe studie, is data deur middel van onderhoudvoerder-gebasseerde vraelyste vanaf 268 vroue (≥18 jaar, ≥ Graad 5-vlak van opvoeding), woonagtig in ‘n landelike omgewing in die Noordkaapprovinsie, Suid-Afrika ingesamel. Die vraelys is ondersoek vir geldigheid en betroubaarheid. Data-ontleding het beskrywende- (persentasies en gemiddeldes) en inferensiële statistiek (faktor- en trosontleding, T-toetse, variansie-analises en tweerigting frekwensietabelle) ingesluit. Resultate het aangetoon dat objektiewe kennis van soutinname, -inhoud van voedsel, sout/natriumverhouding en kennis van soutinligting op voedseletikette laag tot gemiddeld was, maar hoog vir 'kardiovaskulêre siektes'. Subjektiewe kennis van voedseletikette was ook hoog. Respondente se oortuigings en wanopvattings oor sout kon tot die hoë inname van sout bygedra het. Hulle het ook negatiewe affektiewe gevoelens gehad aangaande die “hou van” en vertroue in voedseletikette, en hoewel respondente besorg was oor hulle soutinname, was laer innames nie ‘n prioriteit nie. Respondente het 'n Westerse dieët aangeneem, en bronne van soutinname was van diskresionêre- en nie-diskresionêre aard, met laasgenoemde wat hoofsaaklik brood, ekstrak- en soppoeiers ingesluit het. Hulle het ook aangedui dat hulle wegneemetes koop. Respondente het die inligting aan die voorkant van die voedseletiket wat in verkeersligkleure aangebied is (“Salt Watch”- en Hartsimbole), goed verstaan. Alhoewel positiewe resultate gevind is, het resultate oor die algemeen (kognitiewe-, affektiewe- en konatiewe komponente van houdings ten opsigte van voedseletikette) aangedui dat landelike verbruikers negatiewe houdings gehad het ten opsigte van die soutinligting op voedseletikette. Die sosio-kognitiewe benadering kan begrip en insig ten opsigte van verbruikers se gesondheidsgedrag verskaf, veral ten opsigte van hoe dieëtgedrag (inname van sout) hulle gesondheid (HT) beïnvloed. Verbruikers se kennis oor hul gesondheid (HT) is 'n voorvereiste om verwante gedrag te verander, wat in hierdie geval objektiewe kennis van soutinname, bronne van sout en uiteindelik die soutinligting oor voedseletikette insluit.

Key terms:

- Attitudes
- Cardiovascular diseases
- Food labels
- Rural consumers
- Salt behaviour

• Back-of-package	BOP
• Cardiovascular diseases	CVDs
• Department of Health	DOH
• Dietary diversity scores	DDS
• Food based dietary guidelines	FBDG
• Front-of-package	FOP
• Frances Baard district municipality	FBDM
• Guideline Daily Amounts	GDA
• Heart and Stroke Foundation South Africa	HSFSA
• Hypertension	HT
• Living standard measurement	LSM
• Low and middle income countries	LMICs
• Non-communicable diseases	NCDs
• Northern Cape Province	NCP
• North-West University	NWU
• Rural health advocacy project	RHAP
• Socio-cognitive approach	SCA
• South Africa	SA
• South African Audience Research Foundation	SAARF
• Statistical Consultation Services	SCS
• Statistics South Africa	Stats SA
• World Heart Federation	WHF
• World Health Organization	WHO

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1.1 Introduction

Cardiovascular diseases (CVDs) are a global problem, and hypertension (HT) largely contributes to the prevalence of CVDs (World Health Organization [WHO], 2014a:vii). The incidence and subsequent increase of HT is largely ascribed to dietary patterns of consumers, which involve high levels of salt and low levels of potassium intake (Charlton *et al.*, 2005a:43). The prevalence of HT among the South African population is high, as on average, 46% women and 44% men, 15 years of age and older, have hypertension (Department of Health, 2017:48). HT has also increased among rural consumers (Burger, 2015; Steyn, 2006:93). Research indicated that salt intake is a major contributor to HT (Graudal *et al*., 2012:1; He *et al*., 2012:293). Non-discretionary sources of salt that have an impact on HT that have been identified in South Africa (SA) are amongst others, bread, margarine, soup powders, and processed meat (Charlton *et al.*, 2005a:42). The reduction in dietary salt intake is a cost-effective, non-pharmacological way to address HT (WHO, 2012:6), which stresses the importance for consumers to be able to assess the salt content of food products. Food labels are a primary source of information about the nutritional content of food (Grunert & Wills, 2007:385; Koen *et al.,* 2016:1; Rothman *et al.*, 2006:391), which concerns salt/sodium information for the purpose of this study. However, food label information is often difficult for consumers to use and understand (Claro *et al.*, 2012:267, 270; Feunekes *et al.*, 2008:58). If information on food labels can be provided in a format that is accessible for consumers, their attitude and subsequent willingness to use these labels can be increased. Greater label accessibility can help consumers take more responsibility for their health, and ultimately lower levels of HT.

1.2 Background and motivation

1.2.1 The global incidence of cardiovascular diseases and hypertension

Hypertension, and its relation to CVDs among consumers, is a global phenomenon (WHO, 2014a:vii), and non-communicable diseases (NCDs), a collective term for CVDs, cancer, diabetes, chronic lung diseases and mental disorders, have increased with 7% between 2000 and 2011 (Bloom *et al.*, 2012:29). The incidence of NCDs are on the rise (Eksteen & Mungal-Singh, 2015:9), and in 2012 alone, 38 million deaths were caused by NCDs globally. CVDs are the leading cause of NCD-related events and contributed to 46.2% of these deaths (WHO, 2014a:xiv, 9). In 2010, the global prevalence of HT in adults, 20 years and older, affected 1.39 billion of the global population (Mills *et al.*, 2016:444), and it is estimated that in 2025 the number will increase to 1.56 billion people (World Heart Federation, 2015).

1.2.2 The incidence of cardiovascular diseases and hypertension in South Africa

The effects of NCDs on human, social and economic levels are globally significant, but more so in poor and vulnerable populations (Mills *et al.*, 2016:442; WHO, 2014a:xi). SA has one of the highest incidence rates of HT in the world (Lloyd-Sherlock *et al.*, 2014:121), and in 2008 its prevalence was 39.99% and 34.9% for South African males and females (age 25 years and older) respectively. These figures are much higher than the corresponding global figures of 29.2% and 24.8% (WHO, 2014b:125). However, the prevalence of HT in SA tends to be higher in people older than 50 years of age (78%) (Lloyd-Sherlock *et al.*, 2014:121, 126). Also, the figures are higher in females (37%) than males (31%) in the age group of 65 years and older (Department of Health, 2007). Cardio vascular disease related mortality has declined in developed countries, but unfortunately not in developing countries (WHO, 2014a:vii). Twenty five percent of the NCD related mortalities recorded for 2013 in SA (male and female adults) occurred between the ages of 20 and 24 years. This increased considerably to 80% for people aged 70 years and older (Statistics South Africa [Stats SA], 2014:26). These figures, in terms of age and gender, are consistent with mortality rates in the NCP (the setting for this research), where deaths related to hypertensive diseases are the highest among women, but also in the age group 65 years and older (Stats SA, 2014:90, 95, 96). Hypertension increased substantially in SA over the past ten years, which may be attributed to inadequate diagnoses and control, which increases the risk for strokes and heart attacks (Bradshaw *et al.*, 2011; Steyn, 2006:93), specifically in the black population group. There are various risk factors that contribute to the increase in NCDs, and more specific, CVDs in SA.

1.2.3 Risk factors and consequences of hypertension

Hypertension is regarded as the key risk factor for CVDs, which include related diseases such as coronary heart disease and stroke (WHO, 2012:1; WHO, 2014a:67). In adults, HT, amongst other diseases such as diabetes and obesity, is the primary factor that causes an increase in CVDs (WHO, 2014b:116), and accounted for 62% of strokes and 49% of heart attacks in 2004 (Mackay & Mensah, 2004:28). The incidence of HT in SA is very high (2.2) (Lloyd-Sherlock *et al.*, 2014:121), and NCDs are not only on the increase within rural communities in SA, but also affect poor people living in urban settings (Mayosi *et al.*, 2009:934, 935). Furthermore, NCDs in rural SA are the leading cause of death in older people, and the third most important cause of death in younger age groups, placing a large burden on health care in SA (Tollman *et al.*, 2008:895). Although the setting for this study is in rural NCP, the population is residing in a peri-urban area situated on the periphery of the town Jan Kempdorp, and it is therefore necessary to consider both urban and rural factors contributing to HT. The socio-demographic and behaviour-related risk factors leading to the

metabolic risk factor (HT) and its consequences for CVDs, as indicated by the WHO (WHO, 2014a:69) are depicted in Figure 1. Only the socio-demographic- and behaviour-related risk factors relevant to this study that focus on salt and HT in a South African rural context (highlighted in Figure 1-1), will be shortly discussed, but an in-depth discussion will follow in Chapter 2.

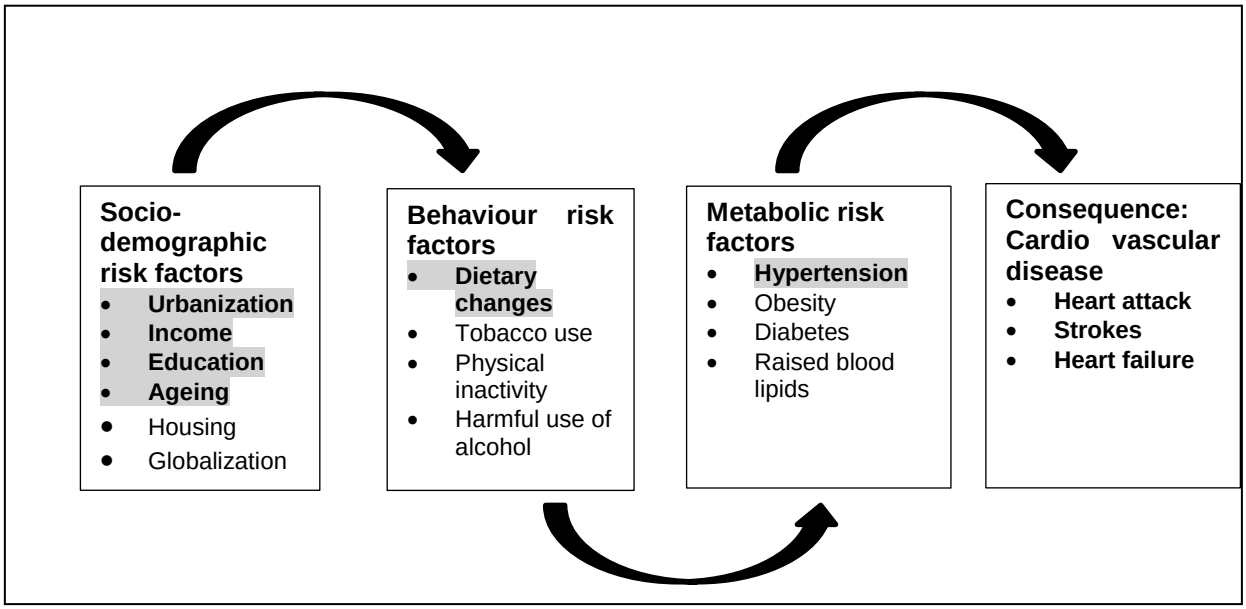


Figure 1-1 Risk factors and consequences of hypertension (WHO, 2014a:69).

1.2.3.1 Socio-demographic-related risk factors of hypertension in South Africa

The living standard measurement (LSM) is a classification system implemented by the South African Audience Research Foundation (SAARF) in order to segment consumers based on their living standards, and includes aspects such as access to services and durables and geographic areas of living. A LSM 1 classification indicates consumers at the lower end of the spectrum of living standards, whereas LSM 10 reflects those consumers on the higher end (SAARF, 2012). Although the LSM segmentation is not based on income and education of consumers, it is indicated that consumers at the lower LSM spectrum, are also those with lower incomes and education levels (SAARF, 2012).

1.2.3.1.1 Urbanisation

The urbanisation of black consumers exponentially increased since South Africas' political transition after 1994, and a rise in NCDs have been evident (Alberts *et al.*, 2005:348). Reasons for this increase may be: stress-related factors (Van Rooyen *et al.*, 2002); higher alcohol consumption (Gopane *et al.*, 2010; Pisa *et al.*, 2010); physical inactivity and

abdominal obesity, specifically in African women (Malan *et al.*, 2006; Seedat, 2007); and dietary changes towards a more Westernised diet that is high in fat and low in carbohydrates as well as an increase in the consumption of processed foods (Bourne *et al.*, 2002; Dolman *et al.*, 2013). The majority of these consumers belong to LSM groups 2-7, as reported by Mungal-Singh (2014) and SAARF (2012), indicating both low income and low literacy levels.

1.2.3.1.2 Rural consumers

Consumers living in rural areas mostly belong to LSM groups 1-6, which imply lower income and school qualification levels, as well as poor living conditions (SAARF, 2012), and are also prone to illnesses such as HT. In the past, black rural consumers were less likely to develop CVDs (Malan *et al.*, 2006:309; Malherbe *et al.*, 2003:12). However, recently the incidence of HT in the rural areas have increased to similar levels found in urban areas (Burger, 2015; Steyn, 2006:82, 83), with a subsequent rise in the prevalence of heart attacks and stroke (Alberts *et al.*, 2005:325; Norton & Woodiwiss, 2011:28). Rural consumers tend to be less aware of their blood pressure status, and often display poor insight into CVD-related diseases (Malan *et al.*, 2008:325; Steyn, 2006:90). Hypertension among rural consumers are often not under control, and for consumers 60 years and older, the figure for controlled HT can be as low as 4% (Steyn, 2006:89; Thorogood *et al.*, 2007:326).

1.2.3.1.3 Income

Income is a socio-economic indicator (Charlton *et al.*, 2008:1403; Sarmugam *et al.*, 2013:2), and for people with low socio-economic status, this can be detrimental for access to health care, and they may be those that experience the burden of CVDs (Kowal *et al.*, 2012:1639; Seedat, 2007:317). As mentioned previously, there is a strong possibility that HT is underdiagnosed in SA (Steyn, 2006:80), especially among lower income and rural populations who experience limited access to healthcare services (Hasumi & Jacobsen, 2012:2104). Consumers with low incomes are often forced to buy low cost foods, which are often high in salt, to increase taste (Feeley *et al.*, 2012:e6; Stupar *et al.*, 2012:203).

1.2.3.1.4 Education

In SA, the highest level of education achieved by 28.9% of the country's adults across all population groups aged 20 years and older in 2011 was Grade 12, whereas 33.9% only partially completed secondary school. However, for black population group the figures were 27.1% and 35.3% respectively (Stats SA, 2012:35), suggesting that South Africa's black population subsequently has lower levels of education than the general South African population. Consumers within lower LSM levels also tend to have lower school qualifications and incomes (SAARF, 2012), while those with lower literacy levels tend to not regard the

association between diet and the incidence of CVD as important (Dolman *et al.*, 2007:953). It is concluded by Rothman *et al.* (2006:396) that the literacy of people play an important role in their understanding of illnesses, and nutrition-related information on food products.

1.2.3.1.5 Ageing

Literature indicates that the number of people 60 years of age and older, will increase substantially by 2025 (WHO, 2014a:vii, 69) and that age is one of strongest indicators for the decline in health status (Kowal *et al.*, 2012:1639). The WHO further indicates that due to ageing of the global population, the prevalence of uncontrolled HT cases will increase (WHO, 2014a:68). The risk for developing CVD is also much higher in older (≥50 years) than in younger people (≤35 years) (Alberts *et al.*, 2005:249, 351; Joubert & Bradshaw, 2006:207; Lloyd-Sherlock *et al.*, 2014:119).

1.2.3.2 Dietary changes as behaviour- and lifestyle-related risk factor

The traditional diet of rural consumers, which is low in fat, high in unrefined carbohydrates, and consists of fibrous and leafy green vegetables such as spinach, is regarded as relatively healthy and is associated with a lower occurrence of CVDs (Bourne *et al.*, 2002:157; Pretorius & Sliwa, 2011:181). However, nutrition transition influences the diet of black consumers, and the traditional diet has been partially replaced with a more Westernised diet, typical of developed countries (Bourne *et al.*, 2002:157; Dolman *et al.*, 2013:1713; Popkin, 2002:93). This type of diet has a high fat and low carbohydrate content, and is associated with the consumption of processed food, often with a high salt content (Stupar *et al.*, 2012:203). This change in dietary patterns contributes largely to the higher prevalence of CVD, and more specifically HT in rural consumers.

1.2.4 Salt intake

Several studies, amongst others Charlton *et al.* (2005a), Charlton *et al.* (2008), Newson *et al.* (2013), Steyn (2006), and Wentzel-Viljoen *et al.* (2013) have confirmed the positive association between high levels of salt intake and the increased risk for developing HT and the aggravation of existing HT. However, a decrease in salt intake can reduce HT (Newson *et al.*, 2013:23; WHO, 2012:2), and ultimately reduce the prevalence of CVDs. Healthy nutrition is an important, modifiable risk factor in the prevention and treatment of diseases (Dolman *et al.*, 2007:953; Seedat, 2007:317), namely HT in this research.

Salt comprises of the elements sodium (40%) and chloride (60%), and 1g sodium equals 2.5g salt (He & MacGregor, 2010:364).The sodium component of salt is known to have an adverse effect on blood pressure when excessively used (Charlton *et al.*, 2005a:40; He &

MacGregor, 2010:364; WHO, 2012:1). The terms salt and sodium are often used interchangeably, but for the purpose of the study, the term salt will be used, and sodium only where applicable. The recommended daily intake of salt is less than 5g/day (Seedat (Seedat & Rayner, 2012:67; WHO, 2014a:xiii), although the current estimated intake of South Africans is about 10g/day (Charlton *et al.*, 2005b:355; Newson *et al.*, 2013:22). However, almost two-thirds of South Africans are unaware of the recommended daily intake of salt, and unable to accurately report their salt intake (Newson *et al.*, 2013:27). Lowering the intake of dietary sodium to reduce HT is a long term goal to prevent CVD (Newson *et al.*, 2013:23; WHO, 2012:2), and is targeted at less than 5g salt per day by 2025 (WHO, 2014a:vii). The reduction in dietary salt intake is a cost effective, non-pharmacological way to treat HT (WHO, 2012:6).

1.2.4.1 Sources of salt intake

Peoples' eating habits have changed (Pretorius & Sliwa, 2011:179; Stupar *et al.*, 2012:199), and the focus has moved from home-cooked meals to an increase in the consumption of fast foods, often obtained from amongst others, take-away facilities and street vendors. These foods are often cheap, energy dense and high in salt (Feeley *et al.*, 2012:e6; Stupar *et al.*, 2012:203). Discretionary sources of salt intake (salt added when cooking and at the table) contribute to 45% of intake for black consumers, while the remainder of salt intake are from non-discretionary sources of which the main contributors are bread, cereal products and meat products (processed meat such as polony, a South African bologna product, and sausages) (Charlton *et al.*, 2005a:42). Other foods with relatively high salt contents, such as block margarine, gravy and soup powders, are often used in food preparation, and also contribute to the daily intake of salt (Charlton *et al.*, 2005a:44, 45).

However, consumers are often not aware of the salt content of non-discretionary sources (Byrne (Byrne *et al.*, 2014:19; Charlton *et al.*, 2008:1404) which may explain poor knowledge of dietary salt intake among black consumers. Global and national initiatives, such as the Heart and Stroke Foundation South Africa (HSFSA), are in place to make consumers aware of, and educate them about the adverse effect of an excessive dietary intake of salt on blood pressure, that subsequently lead to CVDs (HSFSA, 2014; WHO, 2007). One of the initiatives of the SA National Department of Health also focus on the food industry to reduce the salt content of processed foods. SA is the first country with salt regulations that sets targets for a decrease in the salt content of certain categories of processed foods (Department of Health, 2013/2014:13). Although consumers regard their health as important it is no easy task to inform consumers about the relationship between diet and health (Grunert & Wills, 2007:385), and in this case the relationship between salt and HT. Food labels on food

packaging are one of the most important tools to convey nutritional information about food to consumers at the point of purchase (Grunert & Wills, 2007:385; Rothman *et al.*, 2006:391), which is for the purpose of this study, salt/sodium information.

1.2.4.2 Salt information on food labels

Information on food labels is regulated (R146), and include nutritional information, a list of ingredients, health and nutrition-related claims, expiry date, country of origin, allergen information, health logos, identification and address of the manufacturer, quality guarantee, instructions for use, as well as number of servings (Prinsloo *et al.*, 2012:93; SA, 2010:4; Wentzel-Viljoen *et al.*, 2013:s111). In SA, only the sodium content of food is provided as part of the typical nutritional information panel. For the purpose of this study, the focus will be on nutritional information that are mandatory when a health and/or nutrition-related claim are made on food labels (SA, 2010:28), as well as health logos related to salt/sodium information (Byrne *et al.*, 2014). In SA for example, the Heart Mark symbol of the HSFSA is provided to inform consumers to easily make food choices that is heart-healthy products that are lower in fat, salt and added sugar, but higher in fibre (Heart Foundation of South Africa, 2003). Nutritional information on food labels are important to assist consumers in making informed food purchase decisions and the use of such information is related to more healthy diets (Grunert & Wills, 2007:395; Lubman *et al.*, 2012:389), although the extent of use during food purchases remains limited (Stranieri *et al.*, 2010:28). Generally, consumers have better knowledge of the fat and sugar contents of food, but limited knowledge and understanding of salt (dietary sodium). Furthermore, they are not always aware of the relationship between salt and sodium, are unable to convert the sodium quantities to salt quantities, as well as to compare salt/sodium contents of different foods (Grimes *et al.*, 2009:193; Marshall *et al.*, 2007:234; McLean & Hoek, 2013:1143).

It is important that consumers with HT must actively participate in the lowering of their daily salt intake (Sarmugam *et al.*, 2013:7), but must be made aware of the ideal quantities for daily intake, as too low salt intake also has adverse effects on health (Graudal *et al*., 2014:5). Scientific terminology used on food labels may confuse consumers, and for nutrition labels to have an effective impact on consumers to lower non-discretionary salt intake, it must be provided in a format that is user-friendly, simple and easily understood (Claro *et al.*, 2012:267, 270; Feunekes *et al.*, 2008:58; Marshall *et al.*, 2007:234). The use of colourful front-of-pack (FOP) information, for example multiple traffic light labels, which are more comprehensible than typical nutritional information panel (Borgmeier & Westenhoefer, 2009:9; Grunert & Wills, 2007:395) is also advised. However, even when providing nutrition-related information as mentioned, it remains uncertain as to whether consumers will use this

information in order to make healthy food choices in terms of a lower salt content (Grunert *et al.*, 2010:187). It is therefore important to know what consumers' attitude towards food labels are, before it can be expected to change their salt consumption behaviour.

1.2.5 Consumers' attitude towards the use of food label information

Attitude is defined as a learned predisposition wherein consumers act in a consistent way – either positive or negative – towards a given object (Allport, 1935) as cited by Mpinganjira (2013:128), and comprises of three structural components. Firstly, the cognitive component involves consumers' knowledge and perception about objects, expressed as beliefs. Secondly, the affective component comprises consumers' feelings, and is conveyed as liking and trust of the object. Lastly, the conative component describing consumers' behaviour intentions towards an object. Consumers are constantly exposed to objects, and as such form new attitudes towards objects, or may even change their existing attitudes. Attitudes are learned from sources, which may include amongst others, family, friends and the media (Mpinganjira, 2013:127; Schiffman & Wisenblit, 2015:175). For the purpose of this study, salt information on food labels (as part of the typical nutritional information panel) is regarded as the object, and the tri-component model of attitude, which focuses on the cognitive, affective and conative components of attitude, will be applied.

1.2.5.1 Cognitive component

The cognitive component, applicable to this study, concerns consumers' knowledge of:

- The relationship between high salt intake and blood pressure;
- Recommended Daily salt intake;
- The relationship between salt and sodium;
- Sources of non-discretionary salt intake and the amount of salt in the food;
- Reading of salt information on food labels; and
- Beliefs regarding the use of salt and the level of salt consumption.
  (Claro *et al.*, 2012:267, 268, 270; Dolman *et al.*, 2007:947; Feunekes *et al.*, 2008:64; Grimes *et al.*, 2009:191, 192; Marakis *et al.*, 2014:1878; Papadakis *et al.*, 2010:e165, e168).

1.2.5.2 Affective component

Concerning this study, the affective component involves:

- Consumers' feelings about their ability to:
  - understand salt information on food labels;
  - make informed decisions regarding a low salt diet;
  - helpfulness of food labels;

  - improvement in health if they can use the label;
  - healthiness of low salt diets; and
  - importance of lowering salt in their diets;
- Concerns about the amount of salt in their diet;
- Liking of salt information on food labels; and
- Trust (usefulness and accuracy) of salt information on food labels.

(Claro *et al.*, 2012:270; De Brito-Ashurst *et al.*, 2010:89; Feunekes *et al.*, 2008:60; Grimes *et al.*, 2009:190; Land *et al.*, 2014:6; Lubman *et al.*, 2012:400, 401; Misra, 2007:2131, 2132; Schiffman & Wisenblit, 2015:176; Wong *et al.*, 2013:2189).

1.2.5.3 Conative component

For the purpose of this study, the conative component concerns consumers' intended behaviour with reference to their:

- Daily discretionary salt intake;
- Use of salt information on food labels; and
- Self-efficacy perception.

(Bandura, 2004:144; Eksteen & Mungal-Singh, 2015:11; Land *et al.*, 2014:50; Misra, 2007:2131, 2133; Wong *et al.*, 2013:2189).

1.2.6 Barriers in the use of salt information

Bandura (2004) provides, within the social cognitive theory (described in 1.2.7), a two-fold classification for barriers that may inhibit consumers to comply with healthy living behaviours, that includes personal- and healthcare-related barriers (Bandura, 1998:628, 629). For the purpose of the study, the focus will be on personal-related barriers, as it is important for consumers to take responsibility for their own health, in which self-efficacy plays an important role in consumers' ability to manage health problems, such as HT.

The barriers that consumers may experience as identified in literature include:

- Lack of knowledge regarding salt (Bandura, 2004; Kamran *et al.*, 2014:4; Pretorius & Sliwa, 2011:5);
- Low-literacy (Brennan *et al.*, 2010:644; De Brito-Ashurst *et al.*, 2010:92; Lubman *et al.*, 2012:398; Rothman *et al.*, 2006:392; Viswanathan *et al.*, 2009:135);
- Language (Van Biljon & Jansen van Rensburg, 2011:9552; Viswanathan *et al.*, 2009:135); and numeracy skills (Viswanathan *et al.*, 2009:135);
- Dietary beliefs about the use of salt (De Brito-Ashurst *et al.*, 2010:92);
- Taste for salt (De Brito-Ashurst *et al.*, 2010:92, 93; Wentzel-Viljoen *et al.*, 2013:s110);

- Behavioural factors such as the discretionary use of salt in food (De Brito-Ashurst *et al.*, 2010:87, 89; Kamran *et al.*, 2015:6);
- Difficulty and unwillingness to change salt-related behaviour (De Brito-Ashurst *et al.*, 2010:87, 89; Newson *et al.*, 2013);
- Socio-economic factors such as a lack of money (Mungal-Singh, 2014:26; Pretorius & Sliwa, 2011:5; Van Biljon & Jansen van Rensburg, 2011:9552);
- Social norms and opinions of friends (De Brito-Ashurst *et al.*, 2010:92; Eksteen & Mungal-Singh, 2015:11)*;*
- Trust of nutritional information (Wills *et al.*, 2012:233); and
- Liking of labels (Feunekes *et al.*, 2008:59).

1.2.7 Theoretical perspective – A social-cognitive approach

Health is a social phenomenon and consumers' lifestyle behaviour influences their health (Bandura, 2004:144). Globally there is growing pressure on health systems to provide health services, which are unfortunately not always sufficient (Marmot *et al.*, 2008:1661). It is essential for researchers to understand how cognitive and social factors influence consumers' health (Bandura, 1998:623), because it is important that consumers take responsibility for their own health (WHO, 1986). A socio-cognitive approach (SCA) to health may provide a better understanding of, and insight into, consumers' health behaviour, as consumers lack awareness of how their habits may influence their health (Bandura, 1998:624). The social cognitive theory (SCT) postulates five core determinants (Bandura, 2004:144), and the relevance of these determinants to the tri-component model of attitudes (cognitive-, affective- and conative aspects) are indicated as:

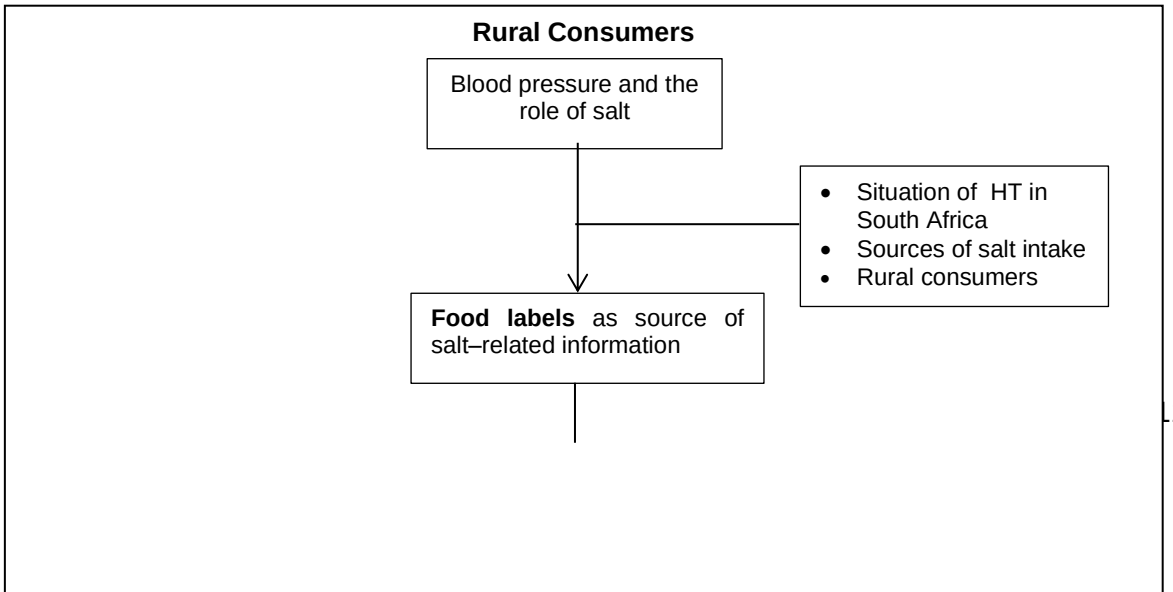
- Knowledge: Consumers must be able to gain knowledge as to how their health behaviour, regarding the consumption of salt, may influence their health (hypertension) (cognitive component);
- Perceived self-efficacy: Positive beliefs of self-efficacy (for example, the correct use of salt information on food labels), play an important role in the change of bad health behaviour (cognitive component);
- Outcome expectations: It is important that consumers must be aware of the outcomes that a change in behaviour may imply (for example, the lowering of blood pressure if they eat less salt), as it will shape the decisions they make (conative component);
- Goals: Consumers must be able to set short term goals (use less salt in their daily diet), and long term goals (lower blood pressure) (conative component); and
- Perceived facilitators: possible barriers that may inhibit consumers to improve their health behaviour (which may be in this study, consumers' low level of understanding of

salt information on food labels) (cognitive component) or their distrust of salt information on food labels (affective component).

It is therefore important that consumers must understand the role of salt in HT and its relationship to blood pressure, as well as belief in their ability to read salt-related information on food labels (cognitive aspects). They must therefore be able to gather knowledge, and the belief of their self-efficacy may influence their affective feelings about salt information on food labels in terms of their trust and liking in, or doubt of the information (affective aspects). Ultimately, if consumers are able to gather knowledge, have positive feelings about their abilities and the information they gather, their behaviour will be changed in terms of the lowering of salt intake (conative aspect).

1.2.8 Theoretical framework

The following theoretical framework serves to provide an overview of this study according to the literature (Figure 1-2). The role of salt in hypertension, food labels as sources of salt information and consumers' attitude and barriers in the use of these labels will be discussed in the context of rural consumers in SA, and will be addressed in the literature review.



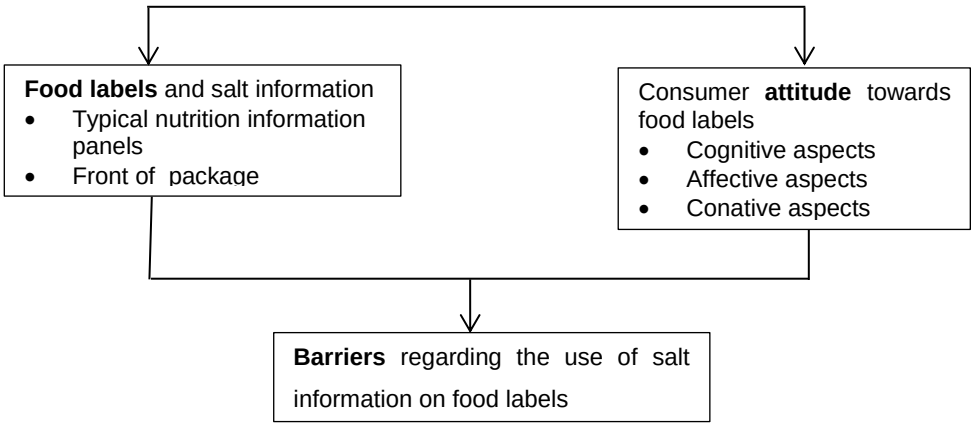


Figure 1-2 Theoretical framework to indicate rural consumers' barriers and attitudes regarding the use of salt information on food labels

1.2.9 Concept clarification

- **Affective component of attitudes** relates to consumers' feelings, for example liking and trust, about an object (Mpinganjira, 2013:129).
- **Attitude** is defined as a learned predisposition wherein consumers can react either positively or negatively towards a given object (Allport, 1935:798).
- **Cognitive** component of attitudes concerns knowledge, perception and beliefs about an object (Mpinganjira, 2013:130).
- **Conative component** involves consumers' behaviour regarding an object of interest (Mpinganjira, 2013:135).
- A **consumer** is defined as a person who identifies a need, and accordingly purchases a product or service, use it, and then dispose of it (Solomon, 2013:32). For the purpose of this study, the population from the rural area will be regarded as consumers that potentially make use of salt information on food labels.
- **Hypertension** can be defined as a systolic blood pressure higher than 140mmHg and/or a diastolic blood pressure higher than 90mmHg (WHO, 2014a:xiv).
- **Sodium** (Na) is the chemical component in salt (NaCl) that is related to hypertension and 2.5g salt contains 1g sodium (He *et al.*, 2012:294).

1.3 Problem statement

Hypertension largely contributes to the global high incidence of CVDs, and SA is one of the countries with the highest prevalence of HT. Rural consumers used to be unaffected by HT, but due to, amongst other reasons, nutrition transition and change in dietary patterns, the occurrence of HT has increased. One of the main factors that contribute to the high

incidence of HT is the over-consumption of dietary salt. Consumers find it difficult to determine their salt intake, and they have poor knowledge of non-discretionary sources of salt. Lowering of consumers' daily salt intake is an inexpensive, non-pharmacological way to address the incidence of HT. Food labels are acknowledged sources of nutritional information, and specifically for the purpose of this study, salt information. Nutritional information on food labels is presented in a highly scientific manner, which is often difficult for the consumer to understand. The salt content of food is presented as sodium, and consumers are unaware of the relationship between salt and sodium, as well as how to calculate the salt content of the food item. In order for consumers to be able to use salt information on food labels, and to manage their daily salt intake, it must be presented in a format that they can read and understand. It is therefore important to investigate rural consumers' attitude towards the salt information on food labels, to draw conclusions about the barriers that could negatively affect their use of the salt information on food labels.

1.4 Purpose statement, research question and objectives

1.4.1 Purpose statement

The purpose of this survey study was to explore and describe, from a social cognitive perspective as well as the tri-component model of attitudes, black consumers' cognitive, affective and conative attitudes regarding the use of salt information on food labels within a rural area in the NCP. Barriers preventing these consumers to use salt information on food labels were deducted from the results of the study. Suggestions can be made to the Department of Health, Directorate: Food Control and food industry for possible changes in the current format of salt information to empower consumers to make informed purchase decisions concerning the salt content of food, in order for them to lower their blood pressure in a non-pharmacological manner.

1.4.2 Research questions

The following research questions, related to the purpose of the study, were applicable:

1.4.2.1 The primary research question

What are black rural consumers' attitudes toward the use of salt information on food labels?

1.4.2.2 The secondary research questions

- What cognitive components influence black rural consumers' attitudes toward the use of salt information on food labels?
- What affective components influence black rural consumers' attitudes toward the use of salt information on food labels?
- What is black rural consumers' behaviour toward the use of salt information on food labels (conative component)?
- What barriers may influence black rural consumers' attitudes toward the use of salt information on food labels?

1.4.3 Aim and Objectives

1.4.3.1 Aim

The aim of this study was to investigate black rural consumers' attitudes toward the use of salt information on food labels. Objectives related to the aim were stated, and for this study were three-fold namely, literature-, empirical- and study implication-related.

1.4.3.2 Literature-related objective

The literature-related objective for this study was to conduct a literature review concerning consumers' barriers and attitudes regarding the use of salt information on food labels. In order to formulate this objective, various scientific databases (for example: Ebscohost, Science Direct, One Search and Google Scholar) were consulted to obtain the relevant background knowledge regarding CVDs, HT, the role of salt in blood pressure and salt information on food labels. Considering this background knowledge, the empirical objectives for this study are stated.

1.4.3.3 Empirically related objectives

The following specific objectives of this study were to:

1.4.3.2.1 Determine the demographic characteristics of the respondents;

1.4.3.2.2 Investigate respondents' attitudes regarding the use of salt information on food labels in terms of:

- The cognitive component of attitudes related to the:
  - knowledge of salt information;

  - perceptions of salt information; and
  - beliefs of salt information.
- The affective component of attitudes related to:
  - the liking of salt information on food labels;
  - the trust of salt information on food labels; and
  - respondents' feelings about the information on food labels.
- The conative component of attitudes related to consumers':
  - purchase behaviour of food;
  - behaviour associated with salt intake; and
  - discretionary and non-discretionary salt intake.

1.4.3.2.3 Determine Spearman's correlation coefficients between nominal and ordinal variables for all parts of the questionnaire;
1.4.3.2.4 Determine statistically significant differences between demographical, biographical data and consumers' attitudes by means of ANOVA and T-tests;
1.4.3.2.5 Interpret the results of the study considering the five core-determinants of the SCA; and
1.4.3.2.6 Draw conclusions about the barriers that respondents may experience when using the salt information on food labels as associated with their:

- Demographic characteristics; and
- Attitudes towards the salt information on food labels.

1.4.3.4 Implication-related objectives

The implication-related objectives of this study were to make recommendations to stakeholders relevant to research about dietary salt intake and HT, as well as the government responsible for the Regulations regarding salt information on food labels, and the format of presentation.

1.5 Chapter division of dissertation

The research study consisted of five chapters and the content of the chapters are summarised as follows:

Chapter 1 consists of the introduction, theoretical background, and motivation for this study. The problem statement, research questions, purpose statement and objectives.

Chapter 2 provides a literature review on the attitudes related to the use of salt information on food labels.

Chapter 3 presents methodology in terms of the population and sample selection, a complete discussion on the research methodology, development of the questionnaire, statistical analysis and ethical aspects for this quantitative study.

Chapter 4 presents a research article regarding the attitudes of consumers regarding salt information on food labels.

Chapter 5 presents the summary of the study, conclusions, recommendations, limitations and implications.

1.6 Research team

Author	**Contribution**
Dr Hanlie van Staden	Primary researcher
Prof Edelweiss Wentzel-Viljoen	Supervisor and general project advisor, funding
Prof Daleen Van der Merwe	Co-supervisor and project advisor on consumer behaviour, funding
Prof Suria Ellis	Statistical analysis and consultation

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CHAPTER 2

LITERATURE REVIEW AND THEORETICAL APPROACH TO RURAL CONSUMERS' ATTITUDE REGARDING SALT INFORMATION ON FOOD LABELS

2.1 Introduction

Cardiovascular diseases (CVDs), are a global problem, and are one of the leading causes of death which is also evident in South Africa (SA) (Nojilana *et al.*, 2016:478; World Health Organization [WHO], 2014a:vii). There are various risk factors for the development of CVDs, namely socio-demographic, behaviour and metabolic risk factors (WHO, 2014a), but of interest in this study, is the excess intake of salt from discretionary and non-discretionary sources. Food labels are the primary source of information of the salt content of processed foods (Grunert & Wills, 2007:385; Lubman *et al.*, 2012:389; Rothman *et al.*, 2006:391) but the question of rural consumers' attitude regarding this information does not exist. Attitude has a triadic structure that includes the cognitive, affective and conative components (Mpinganjira, 2013:129-135), and these three components determine consumers' attitude regarding a product. In this chapter, and overview from the literature will be provided about CVDs which includes heart diseases and stroke, hypertension (HT) and the relation to CVD, the role of salt intake in HT, sources of salt intake as well as food labels as source of information for consumers regarding the salt content of food. Further will consumers' attitude regarding salt information on food labels, also be addressed. The theoretical perspective, namely the socio-cognitive approach (SCA) form which the study is viewed, will also form part of this chapter.

2.2 The burden of non-communicable diseases, cardiovascular disease and hypertension

Globally and nationally, the burden of non-communicable diseases (NCDs), CVDs and HT is evident, and in this section, an overview of these diseases will be provided.

2.2.1 Non-communicable diseases

Non-communicable diseases refer to a group of diseases that are non-infectious and non-transmissible between people, and include diseases such heart disease, stroke, cancers, diabetes, chronic respiratory diseases (pulmonary disease and asthma), cataracts and mental illness (Bradshaw *et al.*, 2011; Puoane *et al.*, 2012/13:116; WHO, 2017). Non-communicable diseases relevant to this study are heart disease, stroke and hypertension-related illnesses, also referred to as CVDs. Globally and nationally, NCDs, are increasing (Eksteen & Mungal-Singh, 2015:9; Mayosi *et al*., 2009:934), and of the estimated 56 million global deaths in 2015, 70% of deaths were attributed to NCDs of which CVDs were one of the three of the top ten causes of death (WHO, 2017). In South Africa, NCDs were the cause

of 39% of total deaths (Nojilana *et al.*, 2016:482). Cardio vascular diseases are a leading cause of 46% (approximately 17 million) of these 38 million deaths (Lim *et al.*, 2012:2240; WHO, 2014a:xiv, 9).

2.2.2 The global and national burden of cardiovascular diseases and hypertension

One of the leading causes of CVDs is HT, generally known as high blood pressure. Globally, in 2014 22% of adults 18 years and older, experienced HT, and it is expected that in 2025 it will affect 1.56 billion people (WHO, 2014b:116). Hypertension, contributes to 7% of the global disease burden for CVDs (WHO, 2014a:xiv), and was the leading risk factor causing 9.4 million deaths in 2010, which include about 50% stroke- and coronary heart disease-related deaths (Lim *et al.*, 2012:2240).

In 2010, CVDs globally accounted for 44% of NCD-related deaths (Nojilana *et al.*, 2016:478), and for 16% of all deaths in SA (Statistics South Africa [Stats SA], 2014:89), while these figures are expected to rise (WHO, 2014a:vii). The leading causes of NCD-deaths, which are all HT related, were stroke, ischaemic and hypertensive heart disease (Nojilana *et al.*, 2016:478). SA is one of the countries that experience the highest levels of HT (Lloyd-Sherlock *et al.*, 2014:121), and in 2008, HT affected 40% of males and 35% of females aged 25 years and older, which is considerably higher than corresponding global figures of 29% and 25% at that time (WHO, 2014b:125). Hypertension is also more visible in people 50 years and older, and SA show of the highest rates (78%) in this age group (Lloyd-Sherlock *et al.*, 2014:121, 126). South African men have higher rates of HT than women, but these rates are reversed for people 65 years and older (Department of Health [DOH], 2007). Self-reported prevalence of HT rates is lower than these provided figures, which suggests high numbers of undiagnosed cases and low treatment levels (Day *et al.*, 2014:685; Steyn, 2006:89). Deaths in 2013 that were NCD-related accounted for 25% of deaths for people between the ages of 20 and 24 years, but escalated to an alarming 80% of deaths for people 70 years and older (Stats SA, 2014:26).

One of the leading risks for HT is the excess intake of salt, and globally the mean daily intake of salt is approximately 10g, which has been associated with 1.7 million annual deaths (WHO, 2014a:xiii). However, the excess intake of salt and the cause of the subsequent rise in HT cannot be viewed in isolation, but needs to be considered within the context of multiple risk factors, such as salt intake. The role of salt in HT and CVDs will be discussed in 2.4.

2.3 Risk factors for the development of cardio vascular diseases

There are various risk factors that contribute to the increase in HT and subsequent CVDs in South Africa. For the purpose of this study, the WHO's model of risk factors (WHO,

2014a:69) will be applied (Figure 1-1). Although various underlying issues contribute to the socio-demographical, behavioural, and metabolic risk factors of CVDs, only the modifiable risk factors (urbanisation, income, education, dietary patterns and HT) most relevant to this study will be discussed in-depth. Age as a non-modifiable risk factor will also be recognised for its role in the development of CVDs (Puoane *et al.*, 2012/13:116).

2.3.1 Socio-demographic risk factors

People are classified according to sociological and demographical characteristics, which are determinants of health (WHO, 2015:149), and for the purpose of this study, indicators and the consequences of HT. Socio-demographic factors of importance to this study are urbanisation, income, education and ageing (WHO, 2014a:69). As the setting of this study is a rural area in the NCP, South Africa, it is deemed necessary to add rural locality as a contributing risk factor to HT. SA is regarded as a high-middle-income country, but displays some of the most unequal income distributions in the world (World Bank, 2015), and therefore holds characteristics of both low-and-middle-income countries (LMICs).

2.3.1.1 Urbanisation

The term urbanisation can be defined as the growth in the population of an urban area in a country due to natural increase of such population, reclassification of rural areas due to development of new towns, and the internal migration of rural people to urban areas within the country (Stats SA, 2006:17; World Heart Federation [WHF], 2012:1). In SA, rapid urbanisation of all four major population groups (black, white, coloured, and Indian population groups) took place, but stabilised since 1991 for all these groups except for the black population group, which is still expected to rise (Stats SA, 2006:22), especially since the political transition in SA after 1994 (Alberts *et al.*, 2005:348). There are several consequences of urbanisation, which include, amongst others, environmental degradation, political- and social instability, and poor housing facilities, but important to this study, health problems and the subsequent development of CVDs (Stats SA, 2006:1; Vorster, 2002:239). Already in 1972, Walker (1972:30) predicted that increasing urbanisation will lead to health problems such as obesity, HT, diabetes and stroke.

Known risk factors leading to the increase in CVDs and subsequent HT among urbanised consumers are: High levels of stress (Steptoe & Kivimäki, 2013:337; Van Rooyen *et al.*, 2002:74), the increase in the use of tobacco and alcohol (DOH, 2007:xxv, 256; Gopane *et al.*, 2010; Pisa *et al.*, 2010), unhealthy diets often high in sugar, saturated and trans fats and of interest to this study, high levels of salt intake (Bourne *et al.*, 2002:157; WHF, 2012:2).

Unhealthy diets and accompanying physical inactivity lead to obesity in consumers, which is also a risk factor for the development of CVDs (Puoane *et al.*, 2012/13:117). Women, especially from black population groups, are prone to abdominal obesity that is directly related to an urbanised lifestyle (Malan *et al.*, 2006:326). These risk factors that especially urban black consumers are prone to, indicate the early stages of an evolving CVD epidemic (Steyn *et al.*, 2005:3560), although Tollman *et al.* (2008:897) suggest that prevalence of CVDs may be more extensive, with HT-related illnesses dominating. In a study conducted in an urban area in South Africa, it was reported that HT was the dominant risk factor related to CVDs, and that it contributed to stroke more in the black than white population groups (Tibazarwa *et al.*, 2009:233). Non-communicable diseases are evident in the black population of South Africa, who unfortunately experiences a lower health status when compared to other population groups in SA (Nojilana *et al.*, 2016:481; Vorster, 2002:243). Changes in dietary patterns of consumers, and the consequences for the development of CVDs will be described in 2.2.2.1.

2.3.1.2 Rural consumers

According the Rural health advocacy project (RHAP), rural areas in South African can generally be described as broad geographical areas with low population densities, consisting of small towns and villages as well as large areas of agricultural land. People living in rural areas tend to be from a lower socio-economic and education status with associated lower levels of access to healthcare, education, water and sanitation (RHAP, 2015:2, 3). The presence of CVDs, in LMICs is rising which is also evident in SA (Puoane *et al.*, 2012/13:119), with a large impact on people living in lower socio-economic circumstances, such as those living in rural areas (Maredza *et al.*, 2015:10; Mayosi *et al.*, 2009:935).

Formerly, in rural areas, deaths from communicable disease such as HIV/AIDS and tuberculosis were more prominent than that from NCDs (Tollman *et al.*, 2008:893), because rural consumers were less inclined to develop NCDs such as CVDs (Malan *et al.*, 2006:309; Malherbe *et al.*, 2003:12). However, the incidence of HT in the rural areas have increased with a subsequent rise in the number of heart attacks and stroke (Alberts *et al.*, 2005:325; Norton & Woodiwiss, 2011:28; Steyn, 2006:82, 83). A longitudinal study, which also included a rural area in the North West Providence, showed that 24% of participants, 35 years and younger with normal blood pressure at baseline in 2005, developed HT during the following five years when measured in 2010 (Schutte *et al.*, 2012:1120). The prevalence of HT in the NCP (the province in which the present study was conducted), is the second highest in SA (DOH, 2007:243, 244), and Burger (2014:58) found that the male participants in a study conducted in the Phokwane Municipality (also the setting for the present study), was on

average hypertensive. The Frances Baard district municipality (FBDM) (including the Phokwane Municipality) experienced the 16th highest level, out of 52 districts in South Africa, of years of life lost, due to NCDs (Day *et al.*, 2014:682).

This increase in CVDs places immense pressure on health systems due to demand for disease care and management, which is often not optimal in rural areas (Maredza *et al.*, 2015:10; Mayosi *et al.*, 2009:935). Although drugs for the treatment of HT are available at community clinics in South Africa, HT noticeably increased in rural areas, which may be due to inadequate diagnoses and poor management of HT (Alberts *et al.*, 2005:353; Thorogood *et al.*, 2007:325). Uncontrolled HT increases the risk for strokes and heart attacks (Bradshaw *et al.*, 2011; Steyn, 2006:93). Although the rural population only comprises about one fifth of South Africa's total population, rural areas experience almost half of the stroke burden in SA (Maredza *et al.*, 2015:9). Rural consumers tend to be less aware of their blood pressure status, and often display poor insight into CVD-related diseases (Malan *et al.*, 2008:325; Steyn, 2006:90), and for consumers, 60 years and older, controlled HT can be as low as 4% (Steyn, 2006:89; Thorogood *et al.*, 2007:326). The possible reasons for the increase in HT in rural areas are due to excessive use of alcohol and tobacco especially among men, abdominal obesity in specifically women (Alberts *et al.*, 2005:348; DOH, 2007:246, 247), and unhealthy diet (Puoane *et al.*, 2012/13:119). As mentioned, the impact of a lower socio-economic status on the health of rural consumers is significant (Stats SA, 2015:61). Income as specific socio-economic indicator will be discussed.

2.3.1.3 Income

Based on the gross national income per capita, SA is classified as a middle-income country (Stats SA, 2015:61). However, SA shows characteristics of both high and low income countries because large disparities exist in the socio-economic status of South Africans (World Bank, 2015), and SA can therefore be regarded as a LMIC. Apart from income, is another indicator of socio-economic status, based on access to services and durables as well as geographic areas of living, is the living standard measurement (LSM). This is a system implemented by the South African Audience Research Foundations (SAARF) to segment consumers, and people from the LSM 1 group are those experiencing the lower end of the spectrum of living standards, while the LSM 10 group reflects consumers on the upper end of the spectrum (South African Audience Research Foundations, 2012). Although LSM is not based on income, the socio-economic status of consumers can be derived from it. It is known that people living in rural areas are from a lower socio-economic status (RHAP, 2015:1), and are mostly from the LSM 1-6 groups as reported by Mungal-Singh (2014). The monthly household income of the majority of people living in the NCP (69%), falls in the

range of ZAR 400-ZAR 499, of which 32% of them receive their income from national social grants (Stats SA, 2015:63). Low levels of income have an impact on various levels of consumers' daily lives, such as unaffordability of nutritious food, unbalanced and unhealthy diets, low health status and poor access to health care (Lewis *et al.*, 2015:6).

It is well documented that diet, especially one high in fruit and vegetables and low in saturated fats, plays an important role in the prevention of illnesses such as CVDs (Lewis *et al.*, 2015; WHO, 2014a:69). However, considering the low income levels of rural consumers and high food prices, they are mostly subjected to a low-cost, hunger satisfying diet of staple foods such as maize meal porridge and bread (Schönfeldt *et al.*, 2013:232). A healthy diet that is often costly, can impact negatively on low income consumers' optimal nutrient intake (Lallukka *et al.*, 2007:705; Schönfeldt *et al.*, 2013:288; Temple & Steyn, 2011:57). In a study focused on rural consumers, it was found that their budget towards household expenditure on groceries was 39% for maize meal, meat and sugar, 11% for beans, potatoes and cabbage, but no expenditure on fruit was indicated. Interestingly, 3% of the budget was spent on seasonings and spices, which is often high in salt content (D'Haese & Van Huylenbroeck, 2005:105). Related to rural consumers' expenditure on food is the availability of the food. Although there was an increase in the number of supermarkets in SA after 1990 (D'Haese & Van Huylenbroeck, 2005:97), consumers in rural communities in 2011 still mostly shopped for food from local stores, which is often more expensive than supermarkets and also offers a limited selection of food choices (Temple *et al.*, 2011:57). Supermarkets are mostly situated in larger towns, and travelling to these supermarkets hold financial implications for consumers (D'Haese & Van Huylenbroeck, 2005:104; Temple *et al.*, 2011:57). Consumers with low incomes frequently need to resort to low cost foods, which are often high in salt (Feeley *et al.*, 2012:e6; Stupar *et al.*, 2012:203) for example, bread is regarded as a staple food, but has a high salt content (Wentzel-Viljoen *et al.*, 2013:S109). As seen in developed countries, street vendors are increasing in South Africa, which supply inexpensive, unhealthy processed and packaged foods, high in fat, sugar and/or salt (Temple *et al.*, 2011:57). This is a detrimental situation for low-income, rural consumers as they experience challenges in obtaining healthy food due to availability and high prices (Lallukka *et al.*, 2007:709).

Related to rural consumers' low-income levels, the availability of medical schemes and access to sufficient health services pose a problem. Less than 10% of people living in rural areas have medical scheme coverage, implying limited access to health care services (Hasumi & Jacobsen, 2012:2104; RHAP, 2015:1), which can be unfavourable for people experiencing CVDs (Kowal *et al.*, 2012:1639; Seedat, 2007:317). This may confirm the

strong possibility that HT is underdiagnosed and poorly controlled in SA (Alberts *et al.*, 2005:353; Steyn, 2006:80), and that the incidence of HT is still rising among lower income and rural populations (RHAP, 2015:37). Considering that low-income and low-literacy among consumers correlate, the limited possibilities for education has an impact on these consumers' lives (Viswanathan & Gau, 2005:187), specifically related to the development of CVDs (Lewis *et al.*, 2015:6) and for the purpose of this study, the understanding of the relation between high dietary salt intake and HT.

2.3.1.4 Education

As measured in the 2011 census, the highest level of education achieved by only 28.9% of adults of all population groups, aged 20 years and older, was Grade 12, followed by only 33.9% completing some secondary school. Accordingly, for the black population group, the attainment of Grade 12 was slightly lower (27.1%), but the figure for those who only completed some secondary school was higher (35.3%) (StatsSA, 2012b:35). These figures indicate that the black population has lower levels of education than the general South African population, which is consistent with that of the FBDM (the setting of this study in the NCP), where the figure for people who passed Grade 12 was 26.8% (Stats SA, 2012:14). As the association between literacy and income was previously mentioned, it can be derived that consumers within lower LSM levels also tend to have lower school qualifications and incomes (South African Audience Research Foundations, 2012).

Basic literacy is defined as the ability to read and write (Stats SA, 2015:20), although other dimensions of literacy, namely numeracy and visual literacy are complementary to basic literacy. Numeracy is described as the ability of people to understand, compute and draw conclusions from numbers (Rothman *et al.*, 2006:396), whereas visual literacy indicates the ability to derive information form symbols and pictures (Viswanathan *et al.*, 2005:20). In order for people to be able to function effectively in their daily lives they must display functional literacy, a concept that links literacy and numeracy (Viswanathan *et al.*, 2009:136). In the context of this study, functional literacy implies the ability to apply mathematical skills, for example, to determine the salt content of food (numeracy), read and understand salt information on food labels (language), and derive information form symbols (visual literacy) such as the heart symbol on certain types of food.

Functional literacy can be related to health literacy that is broadly defined as the necessary reading and numerical skills in order to find, process, and understand health-related information so as to make appropriate health decisions (Nutbeam, 2000:263; Sørensen *et al.*, 2012:11). Consumers' health literacy plays an important role in their understanding of

illnesses, for example HT and nutrition-related information on food products (Alspach, 2015:10; Rothman *et al.*, 2006:396), the development of healthy food habits (Lallukka *et al.*, 2007:208) and also the association between diet (salt intake) and the incidence of CVDs (Dolman *et al.*, 2007:953). However, considering the fairly low number of people that obtained Grade 12 in the FBDM, their functional literacy with relation to this study is questioned, which may impact negatively on their health and may be insufficient to cope with the multiple challenges related to HT. The specific cognitive challenges of low-literate consumers are discussed in 2.5.2. Considering the influence of income and education on consumers' health, the combined effect of these factors is even more detrimental for older consumers, and specifically for the development of CVDs (Lewis *et al.*, 2015:6, 8).

2.3.1.5 Ageing

Population ageing refers to the process by which elderly people (60 years and older) become an increasing proportion of the total population (Joubert & Bradshaw, 2006:204), and globally, this age group is increasing (WHO, 2014a:vii, 69), and more so in LMICs. This is also evident in SA since in 2001, people 60 year and older, comprised 7.3% of the total population whereas in 2011 it rose to 8%. It is estimated that in 2030 this figure can rise to 10% (Stats SA, 2014:iv). Population ageing is also more evident in women than men (Stats SA, 2014:10, 11), and the demographic changes in terms of age is one of the major factors for the decline in health status (Kowal *et al.*, 2012:1639), hence the increase in NCDs. Older people (≥50 years) are more inclined than younger people (≤35 years) to develop chronic diseases such as CVDs (Alberts *et al.*, 2005:349, 351; Joubert & Bradshaw, 2006:207; Lloyd-Sherlock *et al.*, 2014:119; Mayosi *et al.*, 2009:936), ultimately leading to an increase in uncontrolled HT cases (WHO, 2014a:68). Hypertension-related diseases for example heart disease and stroke, were of the leading causes of death in people 60 years and older in SA (Joubert & Bradshaw, 2006:211; Nojilana *et al.*, 2016:477, 479). Socio-demographic risk factors are important considerations for the development of CVDs, but accompanying behavioural risk factors such as dietary habits are largely influential on the development of CVDs.

2.3.2 Behaviour risk factors

Behaviour related risk factors leading to the development of NCDs such as CVDs, obesity and diabetes, include factors amongst others, diet, smoking, high intake of alcohol and physical inactivity (Vorster, 2002:242; WHO, 2014a:69), but for the purpose of this study the focus will be on the role of diet as behavioural risk factor in the development of HT.

2.3.2.1 Dietary diversity

One of the most important determinants for people to experience optimal health is a balanced diet providing a diversity of foods to ensure sufficient intake of essential nutrients (Kennedy, 2009:4; Ruel, 2003:3911S; Steyn, 2013:13), and is described by the term 'dietary diversity'. Food based dietary guidelines (FBDG) were developed and revised, where the focus is placed more towards recommended local foods and eating patterns, rather than recommended daily nutrient intake (Vorster *et al.*, 2013:S5). The FBDG are based on 11 guidelines, and those relevant to the study are: Enjoy a variety of foods, eat plenty of fruit and vegetables daily, and use salt sparingly (Vorster *et al.*, 2013:S6). Although the dietary diversity of people is related to household food security (Kennedy, 2009:4), is it of importance to this study, as it relates to consumers' food intake and HT. To determine consumers' diversity of their daily diet, dietary diversity scores (DDS) is calculated, and is based on the total number of food groups consumed over a period of time (Kennedy, 2009:4; Steyn, 2013:14). These nine food groups, as recommended by the Food and Agriculture Organization include cereals, roots and tubers, meat, poultry and fish, dairy, eggs, vitamin A rich fruit and vegetables, legumes, other fruit, other vegetables, and fats and oils (Labadarios *et al.*, 2011:3; Steyn *et al.*, 2006b:645). A DDS of lower than four (<4) reflects poor dietary diversity (Labadarios *et al.*, 2011:1).

In a study by Labadarios *et al.* (2011), it was found that 35.1 % of people in the NCP had a DDS of <4, that corresponds with the number of South Africans in general (38.3 %). Furthermore, 50.1% of people living in rural areas had a DDS of <4, with black people from the lowest LSM groups, having a DDS of only 2.93. Foods mostly consumed by these consumers included cereals, roots and tubers, as well as meat and vegetables not rich in Vitamin A (Labadarios *et al.*, 2011:8), while those the least consumed included Vitamin A rich fruit and vegetables (14%) and other fruit not Vitamin A rich (5%). From these figures it is clear that some South Africans experience a lack food diversity, and particularly, a low intake of fruit and vegetables (Shisana *et al.*, 2013:175). Fruit and vegetables have high levels of potassium that is beneficiary for lowering HT, and four to five daily servings for each is recommended, which is unfortunately not the case for black rural consumers (Cappuccio *et al.*, 2003:287; Charlton *et al.*, 2005a:48; Dolman *et al.*, 2013:1709, 1713). A diet poor in diversity, as evident in rural areas, which is high in cereals (maize), bread and added sugar and especially one that is low in fruits and vegetables (Shisana *et al.*, 2013:169), can contribute to the risk of developing CVDs (Mayosi *et al.*, 2009:936).

2.3.2.2 Nutrition transition

The term nutrition transition (NT) describes dietary changes observed over time in populations, due to factors such as globalisation, urbanisation, socio-economic development

and acculturation (Popkin, 2002:93; Vorster *et al.*, 2011:429), which is in this case, is the transition from a traditional African diet towards a more Westernised diet (Vorster *et al.*, 1995:30). The traditional African rural diet consisted of unrefined cereals, usually combined with vegetables such as leafy green vegetables, legumes, pumpkin, and sometimes meat (Vorster *et al.*, 1995:30; Walker, 1995:1056), and better protects against the development of CVDs (Bourne *et al.*, 2002:157; Walker, 1995:1075). Contrasting to this diet is the more palatable Westernised diet that is high in energy dense (high fat and low in complex carbohydrate content) and processed foods (sweet and salty convenience foods and snacks), which is associated with an increase in CVDs (Bourne *et al.*, 2002:158; Stupar *et al.*, 2012:203; Vorster *et al.*, 2011:434; Walker, 1995:1056). Although cereals are still an important part of rural consumers' diet, over time, the traditional diet has been partially replaced with a more Westernised diet (Bourne *et al.*, 2002:157; Dolman *et al.*, 2013:1713; Puoane *et al.*, 2012/13:118), and the consumption of refined grains (such as white bread), sugars, vegetable oils and meat increased (Cordain *et al.*, 2005:344-345; Steyn *et al.*, 2006a:16).

The consumption of convenience foods in the form of processed, packaged, street, and fast foods, is still increasing among black population groups (Pretorius & Sliwa, 2011:179; Puoane *et al.*, 2012/13:118). Street foods, in the form of whole meals, snacks, beverages and fruit, are readily available on the street from kiosks, carts or pavements, whereas fast foods are more organised, often part of franchises and available from formal stores (Steyn & Labadarios, 2011:462). Street foods are more likely to be consumed by rural consumers, as fast foods are more expensive and are more probably purchased by urban consumers (Steyn & Labadarios, 2011:462). A detrimental aspect of convenience foods is that it often has high levels of saturated fat, sugar and/or salt (Pretorius & Sliwa, 2011:179). The high fat and sugar contents of foods contribute to obesity, that in turn contribute to the development of CVDs, whereas a high salt intake is directly related to the development of HT (Charlton *et al.*, 2005a; Wentzel-Viljoen *et al.*, 2013). Metabolic risk factors for CVDs, for example obesity and HT, was usually more evident in first-world countries such as the USA and Europe, but also manifested in LMICs (as in SA) due to nutrition transition (Popkin, 2002:100). Globally, SA is regarded as one of the countries with the highest HT rates (Lloyd-Sherlock *et al.*, 2014:121), which may explain the increase in CVDs among the black population.

2.3.3 Metabolic risk factors for the development of cardiovascular diseases

It is clear that socio-demographic and behaviour-related risk factors are contributing to the metabolic risk factors for the development of CVDs. These metabolic risk factors are identified as obesity, diabetes, raised blood lipids, and of importance to this study, HT, that

has the largest impact on the development CVD (WHO, 2014a:xi, 69). Blood pressure is measured as millimetres of mercury (mm Hg), and is recorded as two values (namely 120/80). Systolic blood pressure (upper value) indicates the highest pressure when the heart contracts, whereas diastolic blood pressure (lower value) shows the lowest pressure in blood vessels when the heart relaxes. Normal blood pressure is measured at 120/80 mg Hg, but a person is regarded as hypertensive if their blood pressure is equal or higher than 140/90 mg Hg (WHO, 2013:17). Uncontrolled HT is specifically related to CVDs namely, heart attacks, strokes and heart failure (WHO, 2014a:69).

A marked increase in HT in SA was evident, and the inadequate diagnoses and control of HT contributed to the increase in the incidence of strokes and heart attacks, which are the second highest cause of death in SA (HSFSA, 2014a:8; Nojilana *et al.*, 2016:478). This is more evident in the black population group in SA (Bradshaw *et al.*, 2011; Steyn, 2006:93). Hypertension affects almost 30% of people 15 years and older, and the risk factors for the development of CVDs can start in childhood, specifically due to unhealthy life styles and eating habits (HSFSA, 2014a:8,17). As mentioned in 3.2.2, the high intake of salt is related to the development of HT. Although medication is essential for the treatment of HT, changes in the diet, amongst others lowering dietary salt intake, is as important for the lowering of HT (Charlton *et al.*, 2008:1404).

From the above discussions is it clear that there is various risk factors contributing to CVDs, and in particular HT, that is a modifiable risk factor for CVDs. Hypertension in turn, can be modified by amongst others, lowering the intake of dietary sodium which is relevant for the purpose of this study.

2.4 The role of salt in diet and health

The terms salt and sodium are often used interchangeably, but salt is a chemical substance comprising two elements, namely sodium (Na) and chloride (Cl) and on a weight basis, sodium contributes to 40% and chloride 60% of salt, therefore 1g sodium equals 2.5g salt (He *et al.*, 2012:294). Sodium is the component of salt that effects blood pressure and the main source of it in a daily diet is through the consumption of salt (He *et al.,* 2012:294). It is confirmed that an excess intake of dietary salt is related to the risk of development of HT (Charlton *et al.*, 2008; Charlton *et al.*, 2005a; He & MacGregor, 2010; Newson *et al.*, 2013; Steyn, 2006). Subsequently, the role of it in the development in HT, the sources of salt intake and salt reduction strategies will be discussed.

2.4.1 The role of salt in food

In ancient times salt was a highly priced commodity and played an important role in human civilisation, as it has been used to preserve food products (Desmond, 2006:189; He & MacGregor, 2010:363). With the invention of the refrigerator the use of salt as preservative declined, but increased again due to modern food processing techniques due to salt's effectiveness and low price (He & MacGregor, 2010:363). Salt plays an important role in modern food processing technologies as it is used for, amongst others, flavour development, microbial stability of food, texture formation in cheese, meat, snacks and cereals, yeast activity and firming of gluten in bread baking (Desmond, 2006:189; Gomes *et al.*, 2011:2703; Kim *et al.*, 2012:S308; Lynch *et al.*, 2009:891). The consumption of processed food steadily increased over time, which lead to an increase in population salt intake (He & MacGregor, 2010:367).

2.4.2 Salt intake and sources of salt

Globally, and in South Africa, the recommended daily sodium intake is 2g (5g salt) (Seedat & Rayner, 2012:67; WHO, 2012b:1), but currently it is estimated that the average global daily sodium intake varies between 3.6g and 4.8g per day (9-12g salt per day) (He & MacGregor, 2010:363; Mozaffarian *et al.*, 2014:624; WHO, 2014a:xiii), with an average intake of salt in SA of 7.2g/day (Swanepoel *et al.,* 2016:.829). However, more than 60% of South Africans are unaware of the recommended daily intake of salt, the sources of salt intake, and are also unable to accurately report their salt intake (Newson *et al.*, 2013:27).

The salt content of food is ranked according to the following guidelines per 100g of food (South Africa, 2010:37):

- <5mg Na per 100g serving: Sodium free
- ≤40mg Na per 100g serving: Very low sodium content
- ≤120mg Na per 100g serving: Low sodium content
- 120 – 600mg Na per 100g serving: Medium sodium content
- ≥ 600mg Na per 100g serving: High sodium content

The sources of salt intake are classified as natural, discretionary, and non-discretionary sources:

2.4.2.1 Natural sources of salt

Small amounts of salt is naturally found in foods, including vegetables, meat and milk (Byrne *et al.*, 2014:8; Wentzel-Viljoen *et al.*, 2013:S105).

2.4.2.2 Discretionary sources of salt intake

Discretionary source of salt intake is when salt is added during cooking of food or added at the table (Wentzel-Viljoen *et al.*, 2013:S112). It is reported that discretionary salt intake is higher among low-income populations in LMICs than in developed countries (Anderson *et al.*, 2010:742; Brown *et al.*, 2009:807), which is also the situation in SA (Charlton *et al.*, 2005b:360). The average discretionary salt intake in SA varies between 33% and 46% among ethnic groups, with the highest among the black population group (Charlton *et al.*, 2005a:47), whereas in developed countries it is as low as 15% of total dietary salt intake (Brown *et al.*, 2009:807). The self-reported salt intake among hypertensive men in the NCP was higher from eating "very salty food" than from processed foods such as salty snacks (DOH, 2007:246, 247), which reflects higher discretionary salt intake in SA among low-income communities.

Dietary behaviour is closely related with factors such as culture and education, but it is important to consider income, because of its influence on the type of food that consumers are able to purchase (Lallukka *et al.*, 2007:709). Consumers experiencing economic difficulties often resort to inexpensive foods (Lallukka *et al.*, 2007:704), which in SA often entail purchasing products such as maize and white rice (Bourne *et al.*, 2002:159; Charlton *et al.*, 2005a:47; Pretorius *et al.*, 2011:6). These foods are naturally low in sodium, but the concern lies with the high quantities of added salt (Charlton *et al.*, 2008:1403), and flavouring products such as stock cubes and soup and gravy powders that can contribute to as much as 17% of salt intake in ethnic groups (Wentzel-Viljoen *et al.*, 2013:S109).

2.4.2.3 Non-discretionary sources of salt intake

Sources of non-discretionary salt include snacks, processed, restaurant, and fast foods (He & MacGregor, 2010:367). Due to the nutrition transition in SA (3.2.2), changes in food habits became evident (Pretorius & Sliwa, 2011:179; Stupar *et al.*, 2012:199). Urban and rural consumers' diets have changed towards a more Westernised type of diet that includes more processed foods, which have a high salt content (Vorster *et al.*, 1995:30; Wentzel-Viljoen *et al.*, 2013:S105). Although South Africans' discretionary salt intake is higher than global figures (Brown *et al.*, 2009:807), the consumption of fast foods has risen. These foods are often cheap, energy dense and high in salt (Feeley *et al.*, 2012:e6; Stupar *et al.*, 2012:203), and consumers are often not knowledgeable of the salt content of non-discretionary sources, which may explain black consumers' low knowledge of their salt intake (Charlton *et al.*, 2008:1404).

Foods contributing to non-discretionary salt intake, in a South African context, have been identified (Charlton *et al.*, 2005a). Although there are differences in the non-discretionary salt intake among ethnic groups, as well as between urban and rural consumers, the main sources of non-discretionary salt in all population groups are bread and cereal products, with bread (white and brown) as the main contributor in the black population group (Charlton *et al.*, 2005a:47; Wentzel-Viljoen *et al.*, 2013:S109). Bread and cereals can provide as much as 70% of black rural consumers' daily salt intake (Charlton *et al.*, 2005a:39). Other food products, with relatively high salt contents, that contribute significantly to non-discretionary salt intake are processed meats, block margarine, and gravy and soup powders (Charlton *et al.*, 2005a:44, 45).

The differences in the salt content of processed and homemade foods are illustrated by Brown *et al.* (2009:806), where the salt content of a takeaway cheese burger and potato chips was 3.1g, whereas a portion of a comparable homemade meal has a salt content of 0.23g, almost 13 times less than the processed meal. The same pattern is evident for the salt content of tinned foods in comparison with fresh or home-cooked foods (Brown *et al.*, 2009:805). The figures of the salt content for food products from a famous international takeaway food outlet (also available in SA) is extremely high, and one meal (a cheese burger and potato chips) can provide as much as 46% of adults' allowed salt intake (World action on salt & health, 2007). Also alarming is that the salt content of a popular breakfast cereal (made from corn) in SA has of the highest salt content in comparison with the same product in other countries (World action on salt & health, 2007). From these figures is it clear that the salt content of non-discretionary food sources are alarmingly high, which necessitates action to lower the salt content of these foods, to ultimately contribute to lower salt intake, and in turn the reduction of HT.

2.4.3 Salt reduction strategies

A decrease in daily salt intake from discretionary and non-discretionary sources is a cost effective, non-pharmacological way to reduce HT (He *et al.*, 2012:296; Maredza *et al.*, 2015:1; Norton & Woodiwiss, 2011:34) and will eventually reduce the risk to develop CVDs (Charlton *et al.*, 2008:1405; Newson *et al.*, 2013:23; WHO, 2012a:1, 6). A global target has been set, that by 2025 salt intake should not exceed 5g/day (2 g/day sodium) (WHO, 2014a:xiii), and in SA the same goal has been set for 2020 (South Africa, 2013b:27)

Concerning non-discretionary food sources of salt, the SA government has set targets for 2016 and 2019 to reduce the salt content of processed foods (South Africa, 2013a), which can result in an estimated 7400 fewer deaths due to CVDs (Department of Health, 2013/2014:13). The SA food industry has already started to implement these targets, and

foods mostly affected include bread, breakfast cereals, margarines and butter, salty snacks, potato crisps, processed meats (including sausages), soup and gravy powders, instant noodles and stock cubes (HSFSA, 2016). A summary of salt reduction targets for these foods are presented in Table 1-1.

Table 1-1. Targeted reduction of total sodium (Na) content of certain foods (South Africa, 2013a; South Africa, 2016)

	Food	***Maximum total sodium per 100g food***	***Implementation dates of for reduction***
1	Bread	400mg Na	30 June 2016
		380mg Na	30 June 2019
2	Breakfast cereals	500 mg Na	30 June 2016
		400 mg Na	30 June 2019
3	Margarines and butter	550 mg Na	30 June 2016
		450 mg Na	30 June 2019
4	Salty snacks (excl. salt and vinegar)	800 mg Na	30 June 2016
		700 mg Na	30 June 2019
5	Potato crisps(excl. salt and vinegar)	650 mg Na	30 June 2016
		550 mg Na	30 June 2019
6	Processed meats (cured)	1300 mg Na	31 March 2017
		1150 mg Na	30 June 2019
7	Dry soup- powders	5500 mg Na	30 June 2016
		3500 mg Na	30 June 2019
8	Dry gravy powders	3500 mg Na	30 June 2016
		1500 mg Na	30 June 2019
9	Instant noodles (with powder)	1500 mg Na	30 June 2016
		800 mg Na	30 June 2019
10	Stock cubes, - powders	18000 mg Na	30 June 2016
		13000 mg Na	30 June 2019

The SA government's strategy, aimed at industry level to reduce the salt content of processed foods is highly commendable and necessary. However, it remains difficult to inform consumers about the relation between diet and health (Grunert & Wills, 2007:385), which is in this case means the relation between excess salt intake and HT. Apart from this strategy to reduce the salt content of processed foods, an initiative aimed at population level, namely the "Salt Watch" campaign was instituted by the HSFSA. The aim of the "Salt Watch" campaign is to inform consumers about eating less salty food, adding less salt to food, using unsalted spices and herbs for flavouring, the dangers of too much salt in the diet, how much salt to eat, sources of salt intake, how to choose less salty foods, and how to infer salt information from food labels (HSFSA, 2014b). It is important for consumers with HT to take responsibility for their health (WHO, 1986), and to participate in lowering daily salt intake

(Sarmugam *et al.*, 2013:7). Food labels on food packaging are regarded as important sources of information for consumers, to make informed purchase decisions at the point of purchase (Grunert & Wills, 2007:385; Rothman *et al.*, 2006:391), in particular regarding the salt content of food.

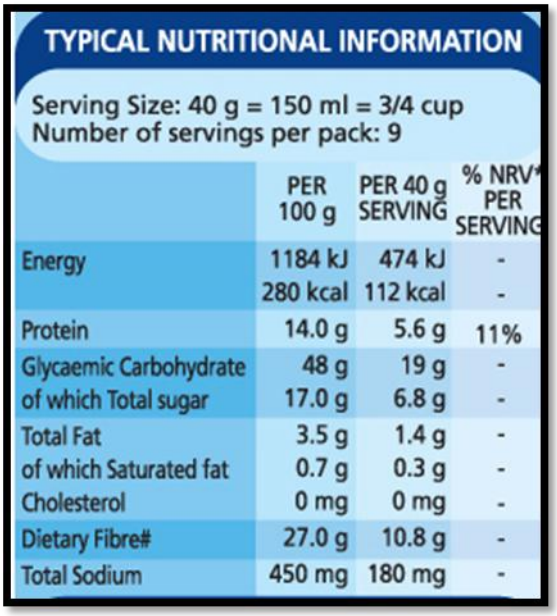
2.5 Food labels as source of food-related information

2.5.1 Information on food labels

Food labels on food packaging are widely recognised as an important source of information to convey nutrition-related information to consumers for them to able to make healthy food choices at the point of purchase (Grunert & Wills, 2007:385; Lubman *et al.*, 2012:389; Rothman *et al.*, 2006:391; Wentzel-Viljoen *et al.*, 2013:S111). Various types of information appear on food labels, and mandatory label information in South African include product identification (name of the product, name and address of manufacturer, instructions for use, list of ingredients, special storage conditions and net contents of the container), country of origin, batch identification and bar code, date marking (expiry date), serving suggestions and directions for use, presence of possible allergens, nutritional information and approved health claims (South Africa, 2010:28). Of specific interest to this study is the salt information on food labels, presented as sodium levels in the Typical nutritional information panel on the back or side of food packaging, and related information on the front of food packaging. It is in the context of this study, imperative for consumers experiencing HT to consult food labels to compare different food products' sodium content in order to make informed purchase decisions, although the question remains whether consumers actually understand and use information on food labels, and are satisfied with food labels at the point of purchase (Grunert & Wills, 2007:385; Kim *et al.*, 2012:S308; Stranieri *et al.*, 2010:28).

2.5.2 Consumers' use of salt information on the back of food packaging

The nutritional content and values of foods are presented as numerical information in the typical nutritional information panel as 'g per 100g', 'g per serving' of the specific food and as nutrient reference value per serving (NRV), whereas the sodium content of food is presented as milligram (mg) and of the particular food (Figure 2-1) (Feunekes *et al.*, 2008:69; Rothman *et al.*, 2006:394; Van der Colff *et al.*, 2015:220).



TYPICAL NUTRITIONAL INFORMATION

Serving Size: 40 g = 150 ml = 3/4 cup
Number of servings per pack: 9

	PER 100 g	PER 40 g SERVING	% NRV* PER SERVING
Energy	1184 kJ 280 kcal	474 kJ 112 kcal	- -
Protein	14.0 g	5.6 g	11%
Glycaemic Carbohydrate of which Total sugar	48 g 17.0 g	19 g 6.8 g	- -
Total Fat of which Saturated fat Cholesterol	3.5 g 0.7 g 0 mg	1.4 g 0.3 g 0 mg	- - -
Dietary Fibre#	27.0 g	10.8 g	-
Total Sodium	450 mg	180 mg	-

Figure 2-1 Typical nutritional information panel (Kelloggs, 2016)

Although consumers may be interested in the use of food labels, their actual use is often associated with demographical characteristics such as education (Lubman *et al.*, 2012:144). Consumers may experience several challenges concerning the use of salt information presented in typical nutritional information panel, and it stated that consumers with high literacy levels may experience challenges to sufficiently use nutrition-related information on food labels (Rothman *et al.*, 2006:396), which is more so for consumers with lower literacy levels as in the present study. Low-literate consumers display specific cognitive predilections, namely concrete and pictographic thinking. Consumers utilising concrete thinking have difficulty engaging in abstract thinking, because they normally infer information from single pieces of information (Viswanathan *et al.*, 2009:136), and as such the relation of the salt levels of food to the sodium content will be difficult to understand. Pictographic thinking relates to concrete thinking and consumers may, for example, view food labels as pictures instead of reading the information on the label, and therefore prefer information presented as graphic images or health claims (Viswanathan *et al.*, 2009:136, 143). Related to these cognitive predilections, the following challenges, relevant to this study are discussed.

Information in the typical nutritional information panel and ingredients list is presented using scientific terminology (for example, sodium to indicate salt content of food), and consumers are often unfamiliar with these terms (Van der Merwe *et al.*, 2014:106), making it difficult for consumers to understand and use (Rothman *et al.*, 2006:394; Viswanathan *et al.*, 2009:394).

Apart from unfamiliarity with scientific terminology, consumers need to have a fair amount of numeracy skills to be able to calculate the salt content of food (Rothman *et al.*, 2006:396). In the case of salt, it is presented as 'mg sodium per 100g' or 'per serving' (Feunekes *et al.*, 2008:58). Related to scientific terminology and numeracy skills, is knowledge about the salt/sodium relationship, and it is noted by various authors that consumers have poor knowledge of the term sodium as well as the salt/sodium relationship (Grimes *et al.*, 2009:191; Marshall *et al.*, 2007:234; McLean & Hoek, 2013:1143).

In order for consumers to infer the salt content of food, they first need to know and understand the salt/sodium relationship, and secondly be able to convert the sodium levels of the food to grams of salt. This can be difficult if they do not know the relation of 'mg' and 'g' and that the 'mg of sodium' needs to be multiplied by 2.5 to calculate the salt content (2.3). Secondly, if consumers come to an answer, they need to relate the salt content to the portion size of the food, and lastly they need to know whether it indicates a high, medium, or low level of salt content (3.1). Consumers may have difficulty using salt information in this format (Grimes *et al.*, 2009:193), because this is a rather complex calculation, and for consumers with low literate levels this can lead to cognitive overload which will only confuse them (Feunekes *et al.*, 2008:58; Viswanathan *et al.*, 2009:144), and limit their ability to use the information. Scientific terminology and calculations result in challenging experiences for consumers, ultimately resulting in making poor and uniformed purchase decisions with implications for HT. Considering that the rural consumers presented in this study may experience HT as well as lower levels of literacy, it is undebatable that the salt information on food labels must be presented in such a format for them to be able to understand and use (Feunekes *et al.*, 2008:58; Marshall *et al.*, 2007:234).

2.5.3 Consumers' use of salt information on the front of food packaging

Related to the nutritional content of food, front-of-package (FOP) information is also presented. Various types of the FOP is available, such as % Guideline Daily Amounts (GDA) (that specifies the quantity of energy, sugar, fat and saturated fats in 'g', sodium in 'mg' as well as percentages GDA per serving), traffic light symbols, health ticks, and health logos (Feunekes *et al.*, 2008:58; Hersey *et al.*, 2013:2; Watson *et al.*, 2014:93) (Figure 2-2). Although the % GDA of nutrients presented on the front of food packaging (Feunekes *et al.*, 2008:58), provides information that is easier to understand, it may still pose the same challenges for consumers with low literacy levels as discussed in 4.2. It is also noted, that in general, consumers have better knowledge of the fat and sugar contents of food, but limited knowledge and understanding of salt (dietary sodium) (Marshall *et al.*, 2007:242). Colourful FOP information are more comprehensible than typical nutritional information panels

(Borgmeier & Westenhoefer, 2009; Grunert & Wills, 2007:395), and within traffic light food labels, levels of nutrients (usually energy level, fat, sugar and sodium) are represented as the colours of traffic lights where green represents low levels, orange medium levels and red high levels of a particular nutrient (Hersey *et al.*, 2013:2). Traffic light food labels are not available on South African food products.

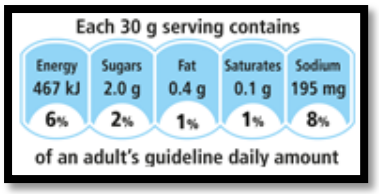
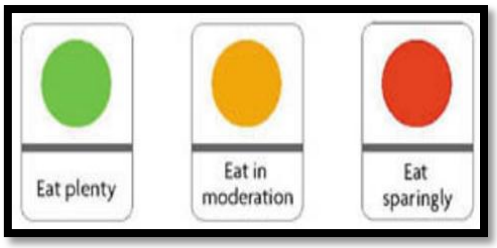
		
% Guideline Daily Amounts (GDA)	Health tick: Product high in Fibre	Traffic light food label

Figure 2-2 Front-of-Package food labels (Foodmanufacture.co.uk, 2012; Kelloggs, 2016).

A health logo, in the South African context, namely the Heart mark symbol of the HSFSA is a health logo related to foods that is high in fibre, but lower in fat, salt and added sugar (Byrne *et al.*, 2014; Heart Foundation of South Africa, 2003). The Salt Watch symbol is used on education material to create awareness among consumers of the salt content of food (Figure 2-3).

	
Heart mark symbol	Salt Watch symbol

Figure 2-3 Heart mark symbol (Heart Foundation of South Africa, 2003); Salt watch symbol (HSFSA, 2014b).

It is uncertain whether consumers will use nutritional information in order to make healthy food choices (Grunert *et al.*, 2010a:187) regarding the salt content of food, and it is therefore important to know what consumers' attitude towards food labels are, before salt consumption behaviour can be changed. Consumers' attitudes regarding food label information, specifically salt information, will be addressed in the next section.

2.6 Attitudes regarding salt information on food labels

Consumers' behaviour are influenced by external factors such as social class, cultural and familial influences, as well as internal factors namely motivation, learning, perception, personality, and attitudes. In this study regarding consumers' use of salt information on food labels, the focus will be on attitude as an internal factor influencing the use of such information. Following is a discussion regarding attitudes in terms of the definition, structural components and the model of attitudes.

2.6.1 Defining attitudes

The term attitude can be defined a learned predisposition wherein consumers act in a consistent way, either positively or negatively, towards a given object (Allport, 1935:798), which is for the purpose of this study, towards the salt information on food labels. Attitudes can further be used to describe consumers' feelings, knowledge and beliefs, and probability to engage in specific behaviours regarding a specific object (Mpinganjira, 2013:127; Takalani, 2014:194). Attitudes are object specific, and can include aspects such as a product, product category, brand, service, retailers, or people (Takalani, 2014:194).

Agreement exists that attitudes are learned, which imply that attitudes relevant to a specific situation are formed due to experience with the object and information obtained from external sources such as family or friends, advertisements and the internet (Takalani, 2014:194). Attitudes are motivational inclinations to respond to the object in a specific situation (behaviour regarding salt information on food labels) and reflect either a positive or a negative evaluation of that object. Attitudes tend to be consistent, but can change from situation to situation, and it cannot be assumed that consumers' behaviour is constant in different situations (Mpinganjira, 2013:127; Takalani, 2014:195). Relevant to this statement, the following six characteristics of attitudes are described.

First, favourability refers to how much consumers like or prefer the attitude object, but also in contrast, their dislike towards the object. Secondly, attitude accessibility denotes how readily attitudes can be retrieved form consumers' memory. Attitude confidence, a third characteristic, indicates how strong with confidence or weak with less confidence,

consumers hold attitudes. The fourth characteristic, persistence, shows the endurance of attitudes, in other words, how long it will last. The resistance to change attitudes is the fifth characteristic, and finally, the ambivalence of attitudes show that a strong attitude can be hold towards one aspect of a product, but weak towards another characteristic (Hoyer *et al.*, 2013:129). With relation to this study, consumers may show:

- no liking of the salt information on food labels (Feunekes *et al.*, 2008:61);
- no knowledge stored in their memories about salt information (Grimes *et al.*, 2009:191);
- low confidence (trust) in the information (Misra, 2007:2132);
- no long-lasting attitude towards the salt information (Lubman *et al.*, 2012:404);
- resistance to change behaviour regarding the use of salt information on food labels (Ollberding *et al.*, 2010:1237); and
- may like the FOP information, but perceive the taste of the product as poor (Liem *et al.*, 2012:193)

From these characteristics of attitudes, the structural components of attitudes, and applicable model to this study are described.

2.6.2 Tri-component model of attitudes

Attitudes have a triadic structure, namely the cognitive component (consumers' knowledge and perceptions regarding an object), affective component (consumers' feelings or emotions about an object), and conative component (consumers' behaviour regarding the object) (Mpinganjira, 2013:129-135). The cognitive and affective components are regarded as information bases for the prediction of the conative component of attitudes (Aikman & Crites, 2007:516), specifically in food-related studies. These three structures comprise the components of the tri-component model of attitudes, which will be applied to this study. Although other models of attitudes exist (amongst others, the multi-attribute attitude model, theory of trying-to-consume model and attitude-toward-the-advert-model) (Takalani, 2014:194), the tri-component model of attitudes is regarded as suitable for this study, because cognitive, affective and conative aspects, as part of attitudes, were investigated in this study. The tri-component model of attitudes, is indicated in Figure 2-4. This model will be described within the scope of this study, namely consumers' attitudes towards the salt information on food labels, wherein salt information and food labels are regarded as the attitude objects.

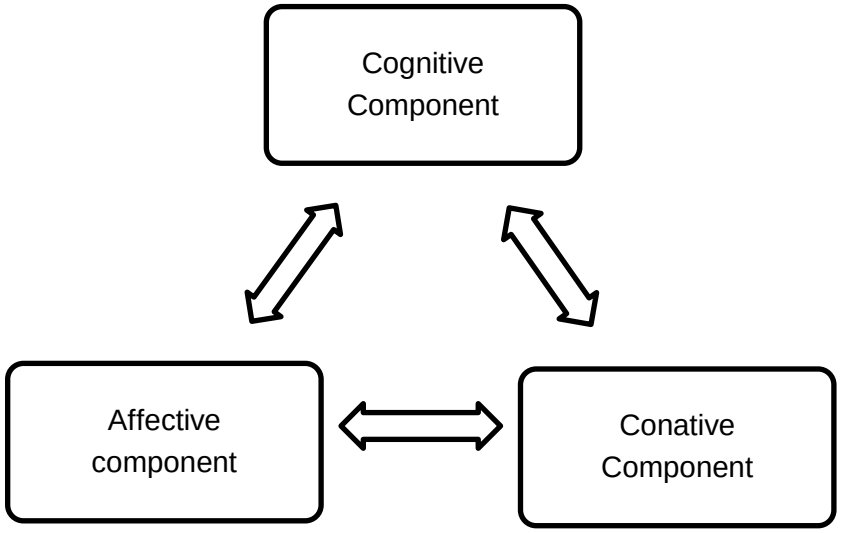


Figure 2-4 Tri-component model of attitudes (Schiffman & Wisenblit, 2015:197).

2.6.2.1 The cognitive component of attitudes

The cognitive component of the tri-component model of attitudes concerns consumers' knowledge and perceptions about an object, and are expressed as beliefs about this object (Mpinganjira, 2013:130).

2.6.2.1.1 Perceptions about information on food labels

Perception is a complex process, but simply described, it is the process through which consumers become aware of stimuli that they are exposed to, and the subsequent attention given to these stimuli. Consumers need to make meaning of the stimuli, by interpreting information from the stimuli. If information is interpreted, it can become part of the memory and can be regarded as newly gained knowledge (Du Toit, 2013:79-82; Hoyer *et al.*, 2013:80). However, perception is not only related to the senses, but also involves learning and experiences (Du Toit, 2013:75), thus involving previous knowledge about, and experience with the product. With relation to this study, perception implies that consumers may observe a new product with, for example, the heart logo as FOP information. They give attention to the logo because they have previously seen it in advertisements that explained the health benefit of products that is endorsed by the Heart and Stroke foundation (Heart Foundation of South Africa, 2003). Consumers then infer previous knowledge about the health advantages of products with the heart logo on the package. Resulting from previous experience with the heart logo, knowledge is gained and consumers may now decide to buy a previously unbought product.

2.6.2.1.2 Knowledge of salt information on food labels

It is generally accepted that consumers have a need for new knowledge (cognitive need) about the products or services they consume, which is an important consideration for marketers when positioning their product in order for consumers to have positive attitudes about products or brands (Tshivhase, 2014:209). This statement can be debated, as it is known that consumers display different needs for knowledge, depending on the type of product and information as well as consumers' level of engagement with information, which can be described as consumers' needs for cognition (NFC) (Du Preez, 2014:111; Hoyer *et al.*, 2013:399). Consumers with a high NFC tend to engage more with textual and numerical product information, whereas consumers with a low NFC, tend to infer information more from brand logos, pictures, background or a product presented by for example, a well-known actor (Hoyer *et al.*, 2013:399). Consumers with lower levels of literacy tend to display a lower NFC as for example, the textual and numerical product information typical nutritional information panels of food labels, may be too difficult to understand (Viswanathan *et al.*, 2009:143). These consumers then buy product habitually and are often brand loyal.

Although consumers display different needs for information, and the way of obtaining such information, cognitive learning is not merely a reaction to stimuli, but a mental process whereby consumers infer knowledge in order to come to conclusions about the information (Botha, 2013:59). The knowledge content in consumers' memories is not simply stored randomly, but is organised in cognitive structures or associative networks known as schemas and scripts (Worsley, 2002:S580). Schemas can be formed about various aspects, but for the purpose of this study, product category schemas will be applied (Hoyer *et al.*, 2013:106), because it specifically relates to salt information on food labels. Schemas is related to declarative knowledge that is the "what" about objects (Hoyer *et al.*, 2013:200) (e.g. What is the salt content information on food labels?), and can be either objective or subjective in nature (Philippe & Ngobo, 1999:569). Objective knowledge denotes consumers' actual knowledge about an object that is stored in the memory, whereas subjective knowledge refers to consumers' perception of their knowledge about an object (Hoyer *et al.*, 2013:200). With respect to this study, objective knowledge implies that consumers may know that excessive salt intake is related to HT whereas subjective knowledge relates to what they think they know about the salt content of food.

Scripts are procedural knowledge related to the "how to" with information (Hoyer *et al.*, 2013:106), in other words for this study, how to apply the knowledge gained from food labels. For example, it implies that consumers must be able to know that they must not add

salt as well as stock cubes when preparing food (objective procedural knowledge). Subjective procedural knowledge refers to consumers' perception of their ability to perform as task (Philippe & Ngobo, 1999:569) for example, consumers' belief that they know how to select food with a low salt content. Although declarative and procedural knowledge are relevant to this study, the focus will be on the objective and subjective knowledge of consumers. Procedural knowledge, which is related to the behaviour of consumers, is addressed in this study as the conative component of the tri-component model of attitudes.

Complimentary to the knowledge of nutrition-related information on food labels, is the understanding of such information for consumers to be able to use it (Grunert *et al.*, 2010b:182; Rothman *et al.*, 2006:396). It is stated that consumers will be able to make healthier food choices if they have nutrition knowledge (Grunert *et al.*, 2010b:182), which is in this case, knowledge about the salt information on food labels, on the condition that they need to understand the information. Consumers may, for example, have knowledge about the respective terms salt and sodium, but do not understand the relation between them, and can therefore experience difficulty to use such information on a food label (Grimes *et al.*, 2009:190). However, it was found that subjective knowledge played a more important role in consumers' use of information on food labels, than objective knowledge (Liu *et al.*, 2015:109), although high levels of subjective knowledge is not an indicator of high levels of objective knowledge (Pieniak *et al.*, 2010:586). It is suggested that subjective knowledge has a higher motivational influence on consumer behaviour than objective knowledge (Liu *et al.*, 2015:109). There are various factors influencing consumers' effective use of information on food labels, such as interest in healthy eating and awareness of health conditions (Grunert *et al.*, 2010b), levels of literacy and numeracy (Carrillo *et al.*, 2012; Rothman *et al.*, 2006) and the format of label information (Viswanathan *et al.*, 2009), to name a few. The challenges that consumers may experience related to the use of salt information on food labels, were addressed in 2.4.1.

2.6.2.1.3 Beliefs

Beliefs are a cognitive component of attitude expressed through the perceptions and knowledge that consumers hold about an object, which could have been attained through direct experience with the object, or related information from different sources such as discussions with family or friends (Asiegbu *et al.*, 2012:39; Mpinganjira, 2013:130). Beliefs can either be informational (based on the attributes of the product) or evaluative (associated with the benefits of the product), and these two types of beliefs are related, as the benefits of a product are often derived from the attributes of the product (Mpinganjira, 2013:130). This is of interest to marketers, because these beliefs may generate positive or negative attitudes

towards a product, and may then affect product choice and buying behaviour (Asiegbu *et al.*, 2012:39).

Concerning the present study, beliefs are primarily concerned about the role of salt in the diet. The beliefs about salt are not always objective, but aspects such as culture, dietary customs and familial habits play important roles in subjective knowledge about salt. Cultural influences regarding the beliefs about salt for example, was demonstrated in a study by De Brito-Ashurst *et al.* (2011:89), wherein participants were aware of the relation between excess salt intake and HT. They believed that it was not applicable to them because low salt intake will be bad for their health as salt contributes to the digestion of food. Regarding consumers' beliefs about the contribution of salt to the taste of food, participants in another study evaluated three identical samples of a food product differently, due to different FOP labels related to the salt content. Food with labels indicating 'low in salt' were perceived as poor tasting, and participants were unwilling to exchange taste for health (Liem *et al.*, 2012:193, 197). However, the price of food can be indicative of purchases, as consumers were willing to buy food products marked as 'low in salt', if it was lower in price than similar products (Grimes *et al.*, 2009:191).

In the present study, the cognitive component of attitudes refers to knowledge of, and beliefs about:

- Dietary recommendations regarding salt intake;
- The salt/sodium relationship;
- Discretionary and non-discretionary salt intake;
- Diet-disease relationship;
- The salt content of food; and
- Salt information on food labels.

Apart from the role of the cognitive component in the use of food label information, and of interest to this study, is the affective component of attitudes.

2.6.2.2 The affective component of attitudes

The second component of the tri-component model of attitudes, namely the affective component, is related to consumers' feelings and emotions about products (Hoyer *et al.*, 2013:200; Mpinganjira, 2013:129). This component is described as a broad evaluation of objects, by describing it in general terms such as good or bad, like or dislike and trust or distrust (Asiegbu *et al.*, 2012:39; Mpinganjira, 2013:129). This broad evaluation may be non-

specific, and developed without cognitive information about the product, wherein an affective reaction towards a specific attribute of the product, often in combination with another attribute, will determine the general affection towards the brand (product) (Asiegbu *et al.*, 2012:43). An explanation of this statement may be that consumers may like the colours of the food packaging, but do not trust the brand of the product, and then have a general negative feeling towards the product.

In this study, the affective component of attitudes refers to consumers' liking and trust of salt information on food labels. Related studies investigated liking in terms of the liking of salt taste of food (De Brito-Ashurst *et al.*, 2011:87,89), the attractiveness of health claims (Feunekes *et al.*, 2008:61; Wong *et al.*, 2013:1292) and the presentation of nutrient information by means of the "multiple traffic light" (Feunekes *et al.*, 2008:61). In a review of literature, Grunert and Wills (2007:388) found factors that may cause a dislike of food labels, namely poor legibility of- and difficult terminology on food labels, inability to interpret simplified label formats and consumers that felt intimidated and pressurised by health logos to buy products. Related to the liking of food label information, is the trust of such information.

Regarding the trust of food label information, related studies mostly concerned the trust of nutrition and health claims (Misra, 2007:2132; Wong *et al.*, 2013:1289, 1295). Although participants in these studies found food labels useful and relevant, they distrusted the accuracy of label information and truthfulness of health claims. Consumers' affection towards a product can precede and influence cognitive efforts towards label reading (Asiegbu *et al.*, 2012:39, 44), in other words, if they like and trust salt information on food labels, they will be more willing to read and use the information.

2.6.2.3 The conative component of attitudes

Conation refers to the behavioural component of the tri-component model of attitudes, and concerns consumers' likelihood to display specific behaviour towards the attitude object, which can be reflected as positive or negative (Mpinganjira, 2013:135). The cognitive- (knowledge and beliefs of salt information on food labels) and affective components (liking and trust of food labels) of attitudes are predictive of the behavioural component of attitudes (Bandura, 2004:146). Relevant to this study is the risk factors (2.2) that inform the behaviour of consumers regarding the use of salt information on food labels. The socio-demographical risk factors are related to rurality of consumers, that plays in on factors such as income, literacy and ageing as well as behavioural risk factors that is evident in dietary changes in rural consumers.

In this study, the conative component of attitudes refers to:

- Food purchase behaviour;
- Discretionary salt intake; and
- Non-discretionary salt intake.

2.7 A socio-cognitive approach to consumers' use of salt information on food labels

Health is a social phenomenon and consumers' lifestyle behaviour influences their health (Bandura, 2004:144; WHO, 2014a:69). From statistics, presented in the section concerning the global and national burden of CVDs (2.1.2), it is clear that globally and nationally, populations experience high levels of illness related to HT. Cardiovascular diseases, and specific HT, is the cause for growing pressure on health systems, which are not always sufficient and available (Marmot *et al.*, 2008:1661), and it is confirmed that HT is poorly controlled and treated among the black population group in SA (Steyn, 2006:93). The risk factors for developing CVDs were discussed (2.2), and although socio-demographic-, behaviour-and metabolic risk factors are interrelated in the development of CVDs (WHO, 2014a:69), is it important to understand how social and cognitive factors as well as related behaviour influence consumers' health (Bandura, 1998:623). Therefore, the SCA to consumers' health behaviour can provide understanding and insight into how dietary behaviour influence their health (Bandura, 1998:624). In the present study, the social concept is reflected by the health environment (high levels of HT among consumers), whereas the cognitive concept is presented by the attitudes of consumers regarding salt information on food labels.

Consumers are often unaware of how dietary habits can impact their health, as adherence to dietary advice is often low because knowledge and understanding of these concepts and related sources of information, especially in an environment where low-literacy is evident, is often low (Bandura, 1998:624; Schwarzer & Renner, 2000:487). Preventative nutrition (adhering to low salt intake when experiencing HT) is amongst other behavioural risk factors, such as physical exercise, smoking and alcohol consumption, a socio-cognitive determinant of health behaviour (Schwarzer & Renner, 2000:487). Consumers need to be motivated to change unhealthy dietary behaviours (behavioural intention), and must be able to plan how to change this behaviour in order to improve their health (actual behaviour) (Schwarzer & Renner, 2000:488). Although governmental policies are in place to reduce the salt content of some categories of non-discretionary food sources (South Africa, 2013a), a bottom-up

approach is often necessary to address and change consumers' health-related behaviour (Vorster *et al.*, 2011:436).

Consumers need to take responsibility for their health (WHO, 1986), and changes in dietary behaviour is influential in health improvement (Bandura, 2004:143, 144). The lowering of salt intake is a non-drug treatment for HT, and is cost-effective as it will reduce the economic burden on health systems (Bertram *et al.,* 2012:744; Echouffo-Tcheugui *et al.*, 2015:751; He *et al.*, 2012:296; Norton & Woodiwiss, 2011:29). In view of the SCA, five core determinants (Bandura, 2004:144), relevant to this study are discussed and the relevance to the tri-component model of attitudes (cognitive, affective and conative aspects) is indicated:

- **Knowledge:** Health consciousness is described as consumers' interest in their own health and the awareness of the healthiness of their diet (Ellison *et al.*, 2013:2), with specific application to this study concerning consumers' dietary salt intake. It is important for consumers to come to the belief that they can be at risk for the development of illnesses (HT if salt intake is too high) (Schwarzer & Renner, 2000:488). It was found that health conscious consumers are more inclined to use food labels for health information (Ellison *et al.*, 2013:2; Kempen *et al.*, 2012:20). Therefore, if consumers are educated to increase their nutrition knowledge, for example about the role of high dietary salt intake in HT, they will become more conscious of their health, which in turn leads to information seeking behaviour (Rimal, 2000:232). Due to this behaviour, they will gain more knowledge about their health and ultimately develop a positive attitude towards food labels (Misra, 2007:2133), indicating the relation between knowledge and attitude (Acheampong & Haldeman, 2013:6). Consumers' knowledge is thus a precondition for behaviour change (Bandura, 2004:144), and plays a mediating role in health consciousness, outcome expectations and self-efficacy (Sun *et al.*, 2015:3031);
- **Outcome expectations:** Consumers' health-related behaviour is influenced by the expected outcomes the changes may impose, and it is important for them to believe in the benefits of such changes (Schwarzer & Renner, 2000:488). These outcomes are visible as physical outcomes, social approval or disapproval and self-evaluative reactions to change in behaviour (Bandura, 2004:144). Regarding the physical outcome of changes in behaviour, consumers must realise the health benefits of lowering the intake of salt in relation to HT (Wentzel-Viljoen *et al.*, 2013:S107). However, intentions to change dietary behaviour can be influenced by barriers (Schwarzer & Renner, 2000:493), and apart from a lack of knowledge, the influence of cultural and social approval/disapproval of lowering salt intake cannot be ignored. Cultural influences, for

example that salt aids in food digestion (De Brito-Ashurst *et al.*, 2011:86), and social influences, for example, adapting to a more Westernised diet that is high in salt (Stupar *et al.*, 2012:199), can lead to social approval or disapproval. Concerning self-evaluative reactions to changes in behaviour, it is important that consumers must gain self-satisfaction and self-worth (Bandura, 2004:144), when understanding that lowering their daily salt intake resulted in lowering HT, and ultimately adapting to a diet that is lower in salt (conative component of this study);

- **Perceived self-efficacy:** Another concept important for health behaviour change is self-efficacy, which describes consumers' confidence or belief in their abilities to accomplish a specific behaviour regarding health-related tasks (Bandura, 2004:145; Cha *et al.*, 2014:332; Rimal, 2000:230; Schwarzer & Renner, 2000:488), such as believing in one's own ability to reduce the intake of salt (Papadakis *et al.*, 2010:e168), and to use information on food labels (Sun *et al.,* 2015:3031). However, Papadakis *et al.* (2010:e166) found that although consumers had fairly high levels of knowledge regarding salt consumption and salt content of processed foods, they had rather low self-efficacy regarding the lowering of their salt intake. It is important for consumers to belief in their ability to take control of their health situations (Schwarzer & Renner, 2000);
- **Goals**: Consumers' beliefs in their self-efficacy related to health behaviour will enhance knowledge seeking, which is for the purpose of this study, about dietary salt intake, sources of dietary salt and salt information on food labels. Consumers must therefore be able to set short term goals with relation to salt intake (use less salt on a daily basis). Success with short term goals will lead to long term goals of personal change (Bandura, 1998:624; Bandura, 2004:144) that imply a sustainable diet low in salt in order to obtain long term results of lowering blood pressure (Charlton *et al.*, 2008; Wentzel-Viljoen *et al.*, 2013:S107); and
- **Perceived facilitators and barriers**: Facilitators of consumers' health imply positive attitudes towards their health (Bandura, 2004:145), requiring sufficient knowledge (cognitive component), positive feelings (affective component) and positive behaviour change (conative component) regarding specific health situations (the use of salt information on food labels in order to make informed purchase decisions regarding the salt content of food). However, consumers can experience barriers that may influence attitudes towards their health. Possible barriers, relevant to this study are: consumers' low literacy levels implying poor understanding of information on food labels (Rothman *et al.*, 2006; Viswanathan *et al.*, 2009) and consequent low health literacy levels (Alspach, 2015); distrust and dislike of salt information on food labels (Misra, 2007;

Wong *et al.*, 2013); beliefs about dietary salt (Asiegbu *et al.*, 2012; Eksteen & Mungal-Singh, 2015; Grimes *et al.*, 2009); and cultural influences about the use of dietary salt (De Brito-Ashurst *et al.*, 2011; Eksteen & Mungal-Singh, 2015; Pretorius & Sliwa, 2011:180).

Therefore, if consumers with HT are conscious of their health situation and belief in the benefits of a diet with a lower salt content, they will be more likely to engage in preventive health care behaviour such as reading food labels to gain knowledge about the salt content of processed foods, to ultimately, limit dietary salt intake from discretionary and non-discretionary sources.

2.8 Conclusion

In this chapter, an overview was provided regarding the global and national burden of CVDs, and how HT is related. Various risk factors for the development of CVDs and HT (socio-demographic, behaviour- and metabolic risk factors) were discussed. The role of salt in the diet, the sources of salt and the relation to the development of HT were indicated. Food labels as source of salt information were discussed, followed by the tri-component model of attitudes and its relation to salt information on food labels. Lastly, the theoretical perspective, namely the SCA, from which this study is approached were discussed, and the relation to consumers' health as well as the tri-component model of attitudes were explained.

Globally and nationally, people are experiencing high levels of CVDs, which accounted for 44% global and 16% of national deaths, and one of the main causes leading to CVDs is HT. In comparison with global figures, SA is experiencing one of the highest levels of HT, and mostly among people 50 years and older, but HT is also evident in younger people. Risk factors for the development of CVDs are socio-demographic-, behaviour-, and metabolic-related. Socio-demographic risk factors include urbanisation, income, education and ageing, whereas behavioural risk factors entail dietary changes. These factors lead to HT, a metabolic risk factor for the development of CVDs. Hypertension is also evident among people living in rural areas, therefore also considering rurality as a risk factor for the development of CVDs. Nutrition transition took place, and in both urban and rural areas, people are inclined to a more Westernised diet, high in energy dense, refined, and processed foods. These foods usually also have a high salt content. One of the main reasons for developing HT, is the excess intake of dietary salt. Dietary sources of salt are from discretionary- (salt added during cooking or added at the table) and non-discretionary sources (salt included in snacks and processed, restaurant, and fast foods). Foods that contribute mostly to non-discretionary salt intake in SA are bread, cereals, processed meats,

block margarine, gravy and soup powders. Although the SA government has a strategy in place to reduce the salt content of processed foods, it remains challenging for consumers to determine their daily salt intake.

Food labels are recognised as sources of nutrition information and in SA presented in typical nutritional information panels, % guideline daily amounts and health logo's, such as the Heart Mark symbol. A health symbol, namely the Salt Watch symbol is proposed as symbol to present the salt contents of food. Nutrition information in typical nutritional information panels is scientifically presented, but difficult to understand. It was therefore important to investigate consumers' attitudes regarding the salt information on food labels. In this review, attitudes were viewed from the tri-component model of attitudes that include the cognitive (knowledge and beliefs about salt, and the information on labels), affective (liking and trust of food labels), and conative components (behaviour-related apects of food purchases and salt intake) of attitudes. This study was approached from the SCA, and specifically applying Bandura's five core determinants which entailed knowledge, outcome expectations, perceived self-efficacy, goals and perceived facilitators and barriers (Bandura, 2004). The relation of consumers' health to these core determinants, as well as the tri-component model of attitudes was explained.

The relation between HT and high intake of salt as well as consumers' attitudes towards food label information are well-researched areas. However, these studies mostly addressed literate consumers living in urban areas, and often focussed on specific components of attitudes. In this study, the focus is placed on rural consumers, who often experience low literacy and adopted a Westernised type of diet. Attitudes regarding salt information is investigated further, incorporating the SCA, focussing on the tri-component model of attitudes, including the cognitive-, affective- and conative components, and not focussing selectively. The empirical investigation and results obtained in this study are described in Chapter 4, in the format of an academic article, submitted to the journal "Appetite".

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CHAPTER 3
RESEARCH METHODOLOGY

In this chapter, the methodology and the research design applied for the present study will be described. A cross-sectional descriptive survey design was employed in order to accomplish the aim and objectives of this study. Further the sample, data collection, data analysis, validity and reliability, role of the researcher, operationalisation of data and ethical considerations applicable to this study will be discussed.

3.1 Research design

This study is focused on the cognitive, affective and conative attitudes of female consumers regarding the salt information on food labels, and it is necessary to obtain objective explanations of the collected data in order to answer the research questions. The purpose and objectives of a study (Chapter 1) determines the research design that will be applied (Babbie & Mouton, 2001:149), and therefore this study was grounded in a positivistic research paradigm by applying a cross-sectional descriptive survey design (Creswell, 2014:7, 19). With this type of research design, quantifiable data were collected from a specific sample of a population once (Creswell, 2014:13; Malhotra, 2010:108), and will allow quantifying the attitudes of the described sample (3.2.1). The approach to this study was explorative and descriptive, which provided insight into a problem not previously investigated (Babbie & Mouton, 2001:80, 92), namely, rural female consumers' attitudes regarding salt information on food labels. Various studies, to name a few, Feunekes *et al.* (2008); Grimes *et al.* (2009); Grunert *et al.* (2011); Misra (2007); Newson *et al.* (2013); Papadakis *et al.* (2010); Sarmugam *et al.* (2013a); Sarmugam *et al.* (2013b); and Wong *et al.* (2013b), investigated consumers' attitudes towards information on food labels. However, none of these studies, applying this research approach, was conducted in a rural, South African setting. Data for this study were collected by means of surveys, which will be described in 3.3.

3.2 Sampling

This section will describe all related aspects regarding the sampling process.

3.2.1 Research setting and study population

The research setting for this study was within the Phokwane Municipality in the Frances Baard district in the NCP. The Phokwane Municipality incorporates the areas of Hartswater, Jan Kempdorp, Ganspan and Pampierstad (Statistics South Africa [Stats SA], 2012:iv). This municipal area in particular, as well as the communities for data selection, namely

Hartswater and Pampierstad, were purposively selected as there is an existing collaborative partnership between the NWU and the rural community, which is included in the WIN research project that is managed by the Africa Unit for Transdisciplinary Health Research (AUTHeR), NWU. To fulfil the aim of this study, it was necessary to collect data from rural consumers, as previous studies of this nature have not been conducted amongst rural consumers in a South African setting, and further there is also a high prevalence of HT in this particular area (Burger, 2015). Permission to conduct this study as part of the WIN project was obtained from the community by the project coordinator of the WIN project.

The inclusion criteria for respondents to be able to participate in this study were:

- Respondents had been 18 years and older, in order for them to be able to give informed consent to participate in the study;
- Respondents had been female, as they are regarded as the primary care takers of households and the gatekeepers of the family's meals (De Brito-Ashurst *et al.*, 2010:91);
- Respondents had to be permanent residents within the rural area; and
- Respondents had to at least have an education level of Grade 5 and higher. It was required from consumers that participated in this study, to have had at least low literacy levels, in order for them to be able to read some information about salt on food labels. In research by Van Staden *et al.* (2017) and Viswanathan *et al.* (2009), consumers with low literacy levels have been identified as those with education levels of at least Grade 5 therefore the reason for including Grade 5 in the inclusion criteria.

3.2.2 Sample selection and sample size

The goal of a quantitative survey is to learn about a specific phenomenon that is prevalent in a population, and a large number of respondents is required to be able to draw meaningful conclusions from the statistical results (Leedy & Ormrod, 2014:195; Malhotra, 2010:211). It is not possible to include all the female rural consumers in South Africa in this study, but in order to be able to generalise the results from this research to the female population of the Phokwane municipality, a probability sampling method that is based on randomness was applied (Leedy & Ormrod, 2014:213, 219; Malhotra, 2015:280, 281). Therefore, in this study, a systematic sampling technique was applied to select a sample from the population of this rural area in the Phokwane municipality, which means that the sample was systematically selected (Creswell, 2014:158; Malhotra, 2015:281). According to the latest census of 2011 (Stats SA, 2012) the female population of the Phokwane municipality, older than 18 years of age, counted to almost 20 000, and therefore a sample (n=300) was drawn from the population, based on a power calculation up to 5% accuracy. Data collection in Hartswater

and Pampierstad started at specific points in each of these areas, during which every fourth house (respondent) was approached to participate in this research. Only one consumer per house was allowed to participate, and to accommodate consumers that refused to participate or did not comply with the inclusion criteria, fieldworkers had to skip houses and approached the adjacent house for participation.

3.3 Data collection

The attitudes of respondents in the Phokwane Municipality regarding salt information on food labels were measured. A suitable method to collect data for this exploratory, descriptive survey was by means of questionnaires (Babbie & Mouton, 2001:239; Leedy & Ormrod, 2014:213).

3.3.1 Development of measuring instrument

After studying relevant literature about the topic of interest, namely attitudes of consumers and salt information on food labels, the researcher designed a questionnaire for this study (Annexure A). The consulted literature for the purpose of designing this questionnaire is indicated in Table 3-1. The school qualification of 65.6% of the women (20 years of age and older) in the Frances Baard district municipality in 2011, ranged from no schooling to completion of some secondary school (Stats SA, 2012:70), which indicates a low-literate female population. Low-literate consumers have a tendency towards concrete and pictographic thinking (Viswanathan *et al.*, 2009:136), and this cognitive predilection as well as the female respondents' fairly low school qualification, were considered in the development of questions and scales for the questionnaire. The research of Van Staden (2012) and Viswanathan *et al.* (2009) were consulted in this regard. To accommodate respondents' literacy levels, ordinary words were used and questions were asked concretely, and where applicable, demonstrated by means of realistic and colourful show cards (Annexure B) (Malhotra, 2015:249; Van Staden, 2012:77). It is important to include accurate and colourful visual representations to explain questions to the low-literate respondents (Townsend *et al.*, 2008:181, 182, 185). To accommodate literate levels of respondents, and as advised by Viswanathan *et al.* (2009), three-point Likert scales were used for questions that could be ordinally measured. An example is presented in Figure 3-1.

OFTEN (1) **SOMETIMES (2)** **NEVER (3)**

Figure 3-1 Likert Scale presentation in questionnaires

The most dominant languages in the Phokwane Municipality rural area are Setswana, Afrikaans and Isixhosa, and are spoken by 70%, 25% and 5% residents respectively (Stats SA, 2012). For the purpose of the research process, the questionnaire was designed in English, but also translated into Setswana and Afrikaans (Annexures A, C and D). The translation of the questionnaire (and consent form – 3.8.1.4) into Setswana was done by an accredited translator (Annexure H), and back translated by a person fluent in these three languages. After consultation with the fieldworkers (3.3.3), the researcher combined the English and Setswana questionnaires into one questionnaire, and kept the Afrikaans one separate. The constructs under investigation for this study were (Table 3-1):

- Section A: demographic characteristics of respondents, self-reported experience of HT of the respondent and household member, the purchasing of food for the household and consultation of food labels;
- Section B: cognitive components of attitudes including objective and subjective knowledge and beliefs regarding salt, salt information on food labels and salt content of food;
- Section C: affective components of attitudes in terms of liking and trust of food labels as well as concern about salt in the diet; and
- Section D: conative components of attitudes regarding food purchase behaviour, discretionary and non-discretionary intake of salt, and importance of behaviour related to salt intake.

Table 3-1: Questionnaire constructs, sub-sections and consulted literature

	Construct	Sub-section	Literature source
1	Cognitive component	Dietary recommendations	Sarmugam *et al.* (2013a); Sarmugam *et al.* (2013b).
		Diet–disease relationship	Grimes *et al.* (2009); Lubman *et al.* (2012); Sarmugam *et al.* (2013a); Sarmugam *et al.* (2013b).
		Salt content of commonly eaten food	Charlton *et al.* (2005); Papadakis *et al.* (2010); Sarmugam *et al.* (2013a); Sarmugam *et al.* (2013b).
		Label reading	Feunekes *et al.* (2008); Sarmugam *et al.* (2013a); Sarmugam *et al.* (2013b).
		Perceived healthiness of food labels	Feunekes *et al.* (2008); Lubman *et al.* (2012).
		Beliefs and misconceptions about salt	Grimes *et al.* (2009); Papadakis *et al.* (2010); Sarmugam *et al.* (2013a); Sarmugam *et al.* (2013b).
2	Affective component	Feelings, liking and trust of food labels	Abbott (1997); Feunekes *et al.* (2008); Grimes *et al.* (2009); Grunert *et al.* (2011); Lubman *et al.* (2012); Misra (2007); Wills *et al.* (2012); Wong *et al.* (2013a).
3	Conative component	Purchase behaviour	Grimes *et al.* (2009); Sarmugam *et al.* (2013a); Sarmugam *et al.* (2013b); Wong *et al.* (2013a).
		Behaviour associated with higher salt intake	Grunert *et al.* (2011); Webster *et al.* (2011).
		Discretionary salt use Non-discretionary salt use	Charlton *et al.* (2005); Wentzel-Viljoen *et al.* (2013).
		Use of food label information (Front and back of food label)	Abbott (1997); Lubman *et al.* (2012).

3.3.2 Pilot testing of the questionnaire

Before data collection took place, the questionnaire was pilot tested by means of cognitive interviews to establish whether the methodology, instrument, and interpretation of the questions were satisfactory. It gave the researcher the opportunity to adapt any ambiguity and uncertainties regarding the questionnaire. It is important to conduct the pilot test among respondents who possess the same characteristics as the large target population (Babbie & Mouton, 2001:244; Malhotra, 2015:255). The cognitive interviews were conducted with 2 participants in Potchefstroom, as well as with the fieldworkers (3.3.3) that collected the data for this study, as both these groups hold the same characteristics as the target population.

No changes regarding the type of, and the wording of the questions took place after cognitive interviews. It was decided, and suggested by the Statistical Consultation Services (SCS) of the NWU, Potchefstroom Campus, for the purpose of data analysis, to separate the question regarding “Knowledge of labels” into two divisions, namely “Objective knowledge of salt/sodium relationship” and “Objective knowledge of labels”. This also applied for the question regarding “Perceived healthiness of food on the labels”; which was divided into two

separate divisions, namely “Subjective understanding of labels” and “Perceived healthiness of food on the labels”. These adaptions are indicated in Table 3-2.

Table 3-2: Adaptions to questionnaire after the pilot study

SEC-TION	CONSTRUCT	ORIGINAL QUESTIONNAIRE	QUESTION	ADAPTED QUESTIONNAIRE	QUEST. NUMBER	Reason for adaption
A	**DEMOGRAPHIC INFORMATION**		**A.1-A.8**		**A.1-A.8**	No change
B	**COGNITIVE COMPONENT**	B.1 Knowledge of salt intake	B.1.1-1.2	B.1 Knowledge of salt intake	B.1.1-1.2	No change
		B.2 Diet-disease relationship	B.2.1-2.8	B.2 Diet-disease relationship	B.2.1-2.8	No change
		B.3 Knowledge of salt content of food	B.3.1-3.26	B.3 Objective Knowledge of salt content of food	B.3.1-3.26	No change
		B.4 Knowledge of labels	B. 4.1-4.10	B.4 Objective Knowledge of salt/sodium relationship	B.4.1-4.3	Separated questions. Distinguish between: • knowledge of salt/sodium relationship; • objective knowledge of labels; • subjective understanding of labels; and • perceived healthiness
				B.5 Objective Knowledge of labels	B.5.1-5.3	
		B.5 Perceived healthiness of food on the labels	B.5.1-5.5	B.6 Subjective understanding of labels	B.6.1- 6.4	
				B.7 Perceived healthiness of food on the labels	B.7.1- 7.5	
		B.6 Beliefs about salt	B.6.1-B.6.10	B.8 Beliefs about salt	B.8.1-B.810	No change
C	**AFFECTIVE COMPONENT**	C.1 Feelings	C.1.1-C.1.12	C.1 Feelings	C.1.1-C.1.11	No change
D	**CONATIVE COMPONENT**	D.1 Purchase behaviour	D.1.1-D.1.7	D.1 Purchase behaviour	D.1.1-D.1.7	No change
		D.3-D.4 Discretionary and non-discretionary salt intake	D.3.1-D.3.15 D.4.1 - D.4.26	D.2 Discretionary salt intake	D.2.1-D.2.5 D.2.6-D.2.12	No change
				D.3 Non-discretionary salt intake	D.3.1 - D.3.26	No change
		D.2 Importance of behaviour with salt intake	D.2.1 - D.2.6	D.4 Importance of behaviour with salt intake	D.4.1 - D.4.6	No change
		D.5 Learn about the salt on food labels	D.5.1-D.5.14	D.5 Learn about the salt on food labels	D.5.1-D.5.14	No change
		D.6 Salt watch symbol	D.6	D.6 Salt watch symbol	D.6.1-D.6.3	No change

However, it was found that the questionnaire in the original format took longer than 20 minutes to conduct. After consultation with SCS, it was suggested to re-arrange the order of the questions only for interviewing purposes to shorten the time of interviewing. These changes are indicated in Table 3-3 and questions, for the combined use of show cards, are also indicated. It was also decided, for interviewing purposes, to combine the English and

Setswana questionnaires, to ease the logistical process for the fieldworkers during interviewing. It was also decided to remove all headings related to the sections and constructs under investigation, to simplify the process of interviewing for the fieldworkers, but it is indicated in the combined English and Setswana questionnaire (Annexure C).

Table 3-3 Changes in the order of questions for interviewing purposes

Question changes in the order	Reasons
B.1.1-1.2 (Knowledge of salt intake) were directly followed by **D.2.1-D.2.5** (discretionary use of salt during cooking)	The same show card was used to assist with the questions
B.3.1-B.3.26 (Objective knowledge of salt content of food) were directly followed by **D.3.1-D.3.26** (Non-discretionary salt intake)	The same show cards were used to assist with the questions
B.6.1- B.6.4 (Subjective knowledge of labels) were directly followed by **B.7.1- B.7.5 (**Perceived healthiness of food on the labels)	• Labels on the same show cards were used to assist with the questions • The same nominal scale were used for both questions
D.5 (salt watch) now placed before **D.6** (need to learn about HT and use of salt)	Ask question **D.5** before **D.6** so as to finish questions that needed a show card

3.3.3 Fieldworkers and fieldworker training

Data collection is one of the most important stages in the research process, and fieldworkers are playing an important role in reliable data collection (Babbie & Mouton, 2001:249). The relative low-literacy levels of the population of the Phokwane Municipality (Stats SA, 2012), necessitates the involvement of fieldworkers in data collection (Babbie & Mouton, 2001:249).

3.3.3.1 Selection of fieldworkers

For this study, the community health care workers of the Agang Aids Service Organisation (AASO) were selected to assist with data collection. AASO is a non-profit organisation assisting people in the Phokwane Municipality with health-related matters, with offices situated in Pampierstad. Health care workers of AASO were selected to act as fieldworkers because they are familiar with the research setting, known to potential respondents, are well-trained to enter households, obtain consent and fill out the questionnaires, and can speak English, Afrikaans and Setswana. Interviewer-administered questionnaires hold several advantages. This method of data collection assists in obtaining a high response rate, the clarification of unclear questions and accommodate respondents with low literacy levels (reading and writing skills) (Babbie & Mouton, 2001:249; Malhotra, 2015:154), as well as overcoming the possible language barrier between respondents and the researcher.

3.3.3.2 Training of fieldworkers

The researcher was responsible for the training of the fieldworkers regarding all practical aspects of this research. Interviewer-administration of questionnaires requires social interaction between the respondent and interviewer, therefore fieldworkers had to be trained and properly controlled (Babbie & Mouton, 2001:249; Malhotra, 2015:296). The following aspects, as suggested by the African Unit for Transdiciplinary Health Research (AUTHeR) (2016) were considered when training fieldworkers for interviewer-administration of questionnaires:

- The researcher visited the fieldworkers (community health care workers of AASO) at their office in Pampierstad, and took time for proper training of them and selected a group leader for every five fieldworkers;
- The reason and necessity for the research were explained to fieldworkers, in order for them to understand its purpose;
- The data collection process was explained in terms of:
  - time for consideration and obtaining of consent;
  - respectful treatment of respondents;
  - respect for respondents' rights of voluntary participation of, and withdrawal from, the study;
  - confidentiality of responses; and
  - necessity of and positive attitude towards respondents, as they are the "experts" with information needed;
- Importance of honesty and accountability of fieldworkers, as it contributed to the reliability of the research;
- Storage of consent forms and completed questionnaire with group leaders;
- Remuneration of field workers were discussed and it was emphasised that only valid completed questionnaires were to be paid for; and
- They were thanked for their contribution and appreciation for their contribution towards the study was emphasised.

3.4 Data analysis

In order to solve the research problem regarding the barriers and attitudes of female rural consumers regarding the use of salt information of food labels, statistical analysis was conducted on the collected data by the SCS of NWU (Potchefstroom Campus), using the Statistical Package for the Social Sciences programme (IBM SPSS Statistics Version 23). The following analyses were performed:

- Frequencies and descriptive statistics for all sections of the questionnaire; and

- Inferential statistics included exploratory factor analysis, cluster analysis, Cronbach's alpha, T-tests, ANOVA's and 2-way frequency tables. Effect sizes were considered for all statistics.

3.5 Validity and Reliability

3.5.1 Validity

Validity refers to the extent to which an empirical instrument reflects the real meaning of the concept under investigation, and measures what it intends to measure (Babbie & Mouton, 2001:122; Leedy & Ormrod, 2014:91). For the purpose of this study, validity indicates how successful the questionnaire was able to measure consumers' attitudes regarding salt information on food labels in order to conclude what the possible barriers are inhibiting consumers' use of these labels.

3.5.1.1 Face Validity

To ensure face validity, which refers to the degree to which the instrument looks valid (Babbie & Mouton, 2001:123; Leedy & Ormrod, 2014:91), SCS of the NWU was consulted to assess the analyseablity of the questionnaire. The questionnaire was also reviewed by experts is nutrition and consumer sciences, as well as a researcher in trans-disciplinery health research form AUTHeR. In addition, previous questionnaires used in research on consumers' knowledge and attitudes of salt and related aspects were consulted in the designing of the questionnaire for this study (Table 3-1).

3.5.1.2 Content validity

Content validity refers to how valid the research is with regard to the construct covering the content it is set out to measure (Huck, 2014:88; Malhotra, 2010:320). For this study, the measuring instrument measuring all aspects regarding the cognitive, affective and conative components of attitude related to the use of salt information on food labels was obtained by conducting a thorough literature review and consulting questionnaires form previous research on this topic (3.3.1). The questionnaire for this study was designed and reviewed by experts within the field of nutrition, consumer science, SCS and trans-disciplinery health research of the NWU.

3.5.1.3 Construct validity

Construct validity refers to what construct the scale is measuring, in other words, the relatedness of different items to the specific construct (Malhotra, 2010:321). Construct validity of Sections B (cognitive component), C (affective component) and D (conative

component) of the questionnaire was assessed by means of an exploratory factor and cluster analysis to ensure construct validity of these sections and to determine if the variables being investigated are interrelated (Malhotra, 2010:636, 661).

- **Exploratory factor analysis** was applied to individual scales due to differences in the used scales. Some scales tested knowledge (right and wrong answers), whereas others investigated behavioural patterns of the respondents. The principle axis factor analysis was used to place items in different factors by using Oblimin with Kaiser Normalisation as a rotation method (Field, 2009:644). The FACTOR procedure of SPSS Inc. (2016), IBM SPSS Statistics Version 23, was used for this analysis. For subtracted factors to be regarded as statistically important, it was suggested that all factors with an Eigenvalue > 1 should be retained (Kaiser, 1960). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was used to determine the relevance of the factor analysis, and values between 0.5 and 1.0 were regarded as high (Malhotra, 2010:638). Factors with values > 0.5 were retained, and in this study, factors had values between 0.60 and 0.83. The exploratory factor analysis performed for each scale also assisted the researcher in reducing the data in the different sections.
- Hierarchical variance **cluster analysis**, using Ward's method (Malhotra, 2010:667) was performed on those sections of the questionnaire that revealed factors in which the grouping of items was not logic, or had low factor loadings.

3.5.2 Reliability

Reliability refers to whether consistency exists among summed scales of items in constructs of the questionnaire, and whether the same results will be obtained when the study is repeated (Malhotra, 2010:319). Cronbach's alpha coefficient is a suitable measure to determine internal consistency for questions with multiple-scored items and alpha coefficients with a value ≥ 0.6 indicates satisfactory internal consistency reliability (Huck, 2014:77; Malhotra, 2010:319). Another measure to increase reliability is that data were collected by means of interviewer-administered questionnaires with the aid of well-trained and experienced fieldworkers (Babbie & Mouton, 2001:122; Malhotra, 2015:296) within the WIN project. Care was taken in the proper training of field workers (3.3.3). Internal reliability of clusters was determined with the Kuder–Richardson 20 reliability coefficient, and clusters yielding values ≥0.5 were retained, although low values were cautiously interpreted. When testing psychological constructs (such as knowledge), lower values are acceptable due to variety of constructs tested (Kline, 2000).

3.6 Role of the researcher

The researcher was not actively involved in data collection for this quantitative study, but collaborated with fieldworkers that gathered data. The researcher was involved in data analysis (Botma *et al.*, 2010:82) in order to obtain a better understanding of rural consumer's attitudes regarding salt information on food labels. Other responsibilities of the researcher regarding the planning of the research project included:

- Performing a thorough literature review regarding the mentioned topic under investigation;
- Generating a research question and study specific objectives;
- Writing the research methodology and develop the questionnaire with assistance from study leaders, statistician and experts in the field;
- Assisting in the training of the field workers used in the study;
- Monitoring data collection. The researcher contacted the group leaders of fieldworkers on a weekly basis to solve any potential problems;
- Assisting in data analysis. The researcher examined every completed questionnaire in order to code items, as well as to verify the usability of each questionnaire;
- Collaborating with other researchers to collect data under the WIN project; and
- Conducting research in an ethical manner.

It was the researcher's responsibility to fulfil these tasks effectively in order for a meaningful dissertation regarding rural consumers' attitudes when using salt information on food labels could be written.

3.7 Operationalisation of data

An operationalisation table for the data collection and analysis was compiled, and is indicated in Table 3-4.

Table 3-4: Operationalisation table for data collection and analysis

SEC-TION	CONSTRUCT	ADAPTED QUESTIONNAIRE	VARIABLE NUMBER	DATA ANALYSIS
A	**DEMOGRAPHIC INFORMATION**		**A.1-A.8**	• Descriptive statistics: Percentages and means
B	**COGNITIVE COMPONENT**	Knowledge of salt intake	B.1.1-1.2	• Descriptive statistics: Percentages and means • Inferential statistics: o factor analysis o cluster analysis o Cronbach's alpha/ Kuder–Richardson 20 o T-tests o ANOVA's o 2-way frequency tables
		Diet-disease relationship	B.2.1-2.8	
		Objective Knowledge of salt content of food	B.3.1-3.26	
		Objective Knowledge of salt/sodium relationship	B.4.1-4.3	
		Objective Knowledge of labels	B.5.1-5.3	
		Subj. Knowledge of labels	B.6.1- 6.4	
		Perceived healthiness of food on the labels	B.7.1- 7.5	
		Beliefs about salt	B.8.1-B.810	
C	**AFFECTIVE COMPONENT**	Feelings about the information on food labels	C.1.1-C.1.3	• Descriptive statistics: Percentages and means • Inferential statistics: o factor analysis o Cronbach's alpha o T-tests o ANOVA's o 2-way frequency tables
		Liking of salt information on food labels	C.1.4-C.1.5	
		Trust of salt information on food labels	C.1.6-C.1.11	
D	**CONATIVE COMPONENT**	Purchase behaviour	D.1.1- D.1.7	• Descriptive statistics: Percentages and means • Inferential statistics: o factor analysis o Cronbach's alpha o T-tests o ANOVA's o 2-way frequency tables
		Discretionary salt intake	D.2.1-D.2.5 D.2.6- D.2.12	
		Non-discretionary salt intake	D.3.1 - D.3.26	
		Importance of behaviour with salt intake	D.4.1 - D.4.6	
		Learn about the salt on food labels	D.5.1-D.5.14	
		Salt watch symbol	D.6.1-D.6.3	

3.8 Ethical considerations

An overview of related ethical considerations for this study are provided. Trained fieldworkers were involved in data collection.

3.8.1 Ethical approval

3.8.1.1 Legal permission

Before recruitment and data collection for this study could take place, an ethical application was submitted to the Health Research Ethics Committee (HREC) of the Faculty of Health Sciences of the NWU, Potchefstroom Campus. Ethical approval was obtained from the Health Research Ethics Committee (HREC) for research with humans of the Faculty of Health Sciences of the North-West University, Potchefstroom Campus (NWU-00340-15-A1).

3.8.1.2 Goodwill permission

A memorandum of understanding was signed between AUTHeR (NWU) and the Phokwane Municipality in the NCP regarding the WIN-project that includes multi-disciplinary research projects form various schools in the Faculty Health Sciences. Permission for research in this area was obtained from the community by Ms EL Barratt (also explained in 3.2.1), who acted as the gatekeeper between AUTHeR and the Phokwane Municipality.

3.8.1.3 Recruitment of respondents

Members of the community of this rural area were informed about the study, prior to the onset of data collection. Advertisements about the study were posted and leaflets distributed at suitable places, for example the shopping centre, clinic and community centre. Trained fieldworkers (community members familiar to this rural area – 3.3.3.2) were involved in the launch of this research project. In this situation, the fieldworkers acted as mediators between the researcher and the community. Considering the systematic sampling procedure for this study (5.2.3), members of the community were approached at their houses by the fieldworkers in a respectful way, and no intrusion of their privacy took place. The purpose of, and consent for the study were explained, and respondents were given time to consider participation, seeing that participation was voluntary. The consent form covered all procedures regarding this study, and was left with those community members who were interested to take part in the study. Confidentiality, anonymity, privacy and voluntary participation in this study were emphasised. The importance to conduct this study in this particular area is explained in 3.2.1.

3.8.1.4 Informed consent

Before the onset of data collection, written informed consent were obtained from community members to participate in this study, and the purpose of, as well as the method of data collection for the study were explained in advance (6.1.3). Considering that there may be community members who have low reading and writing skills, the consent form was read to those consumers that did not feel confident enough to read it on their own. An independent person (for example another household member or neighbour) was present at all times for the process of obtaining consent. It was emphasised to the respondents that participation is voluntary and that they could withdraw from the study at any point before data analyses. If they decided to withdraw from the study they could do so without any consequences. The following aspects were included in the consent form:

- Any possible risks (3.8.2) the study may pose;
- The researcher's personal details and contact information as well as that of the HREC, Faculty of Health Sciences, NWU;
- The purpose and benefits of the study to both the NWU and this rural community;
- The time that the questionnaire would take to complete;
- Voluntary participation;
- Confidentiality and anonymity of the completed questionnaire, as no personal details were required;
- Right to withdraw from the study at any stage;
- The inclusion and exclusion criteria of the study;
- Number of respondents that would participate in the study, and that it has been ethically approved; and
- Emphasising that the information respondents provided, would not be judged as poor or insufficient, but that it contributed to the purpose of the study.

(Babbie & Mouton, 2001:528-531; Creswell, 2014:95-100; Malhotra, 2010:442).

The consent form was also translated and supplied in English (Annexure E), Setswana (Annexure F) and Afrikaans (Annexure G).

3.8.2 Risks and benefits analysis

3.8.2.1 Risk analysis

The following were anticipated risks, relating to respondents and fieldworkers:

3.8.2.1.1 Physical risks

- Fieldworkers: Data were collected over a period (two months), which allowed them to collect only a few questionnaires per day. Therefore, limited physical risk, such as fatigue was anticipated, seeing that fieldworkers were only involved in data collection for a few hours per day. They were briefed about precautionary measures regarding safety, to prevent fatigue and muscle tension, such as a comfortable dress code.
- Respondents: Limited physical risk was anticipated, considering that the questionnaire was interviewer-administered, and did not take longer than 20 minutes to complete. Data were gathered in the comfort of the houses of respondents; therefore it was not necessary to walk or travel to be able to participate in this study.

3.8.2.1.2 Psychological risks

- Fieldworkers: Fieldworkers from the WIN-project are residents from this rural area, and are familiar with this area, so no psychological risk was anticipated.
- Respondents: Limited psychological risk was anticipated. They might however, have felt uncomfortable if there were questions that they might not be able to answer, but fieldworkers reassured them about voluntary participation, confidential and anonymous information, no correct or wrong answers, and their valuable contribution to this study. Fieldworkers were trained to act sensitively and with respect towards the respondents.

3.8.2.1.3 Social risks

No social risks to fieldworkers and repsondents were anticipated.

3.8.2.1.4 Legal risks

No legal risks to fieldworkers and respondents were anticipated.

3.8.2.1.5 Economic risks

This study did not impose any economic risks to the fieldworkers as all expenses regarding the study were covered. The fieldworkers from this rural area were remunerated for every valid questionnaire completed. There was no economic risk for repondents, as it was not be expected from them for example, travel or to stay away from work to complete the questionnaire.

3.8.2.1.6 Dignity risks

No dignitary harm to fieldworkers and respondents was anticipated. Fieldworkers were, before the onset of data collection, well-trained by the researcher who is experienced in conducting research among low-literate consumers.

3.8.2.2 Benefits of the study

The results obtained from this study contribute to new knowledge which will be published in an academic journal, thereby contributing to the research mission of the NWU. Ample research related to salt intake and consumers' attitudes was conducted, but is limited concerning black consumers in rural areas. This study is also relevant and will contribute to existing research, as an in-depth knowledge of consumer behaviour in the highly relevant global problem of HT is necessary. Initiatives in South Africa such as "Salt Watch" can benefit from the study. The information will also be given to the National Department of Health, Directorate: Food Control who are responsible for all Regulations pertaining to food labels in South Africa.

3.8.2.2.1 Benefits to the community

This project served as a platform to the community of this rural area to voice their attitudes towards salt information on food labels. The outcomes of this study will be applied in a module of the honours Consumer Sciences students (VVOO 671) that concerns adult education. These students can educate rural consumers in order for them to better utilise salt information on food labels, and make more informed food purchases that can ultimately contribute to lower the prevalance of HT.

3.8.2.2.2 Benefits to NWU

By conducting research within a resource-poor community, knowledge and skills were gained on how to interact with people from a previously unfamiliar population, as well as to create social awareness. Academic publications and research outputs as a result from this research, will be a financial benefit to NWU.

3.8.3 Competence of researchers

The researcher has knowledge and experience in the field of study, as well as in data collection, but act under supervision of Prof E Wentzel-Viljoen (Nutrition) and Prof D Van der Merwe (Consumer behaviour). Prof S Ellis (SCS, NWU) assisted with statistical procedures and analysis.

3.8.4 Confidentiality, anonymity and storage of data and feedback

Participation in this study was voluntary, confidential and anonymous, and the data for this study were handled in this manner. The researcher ensured that the personal information of the participants was protected. With this in mind, the following considerations applied:

- A numbering system was used on questionnaires; and
- The researcher instructed translators to take the necessary steps to ensure confidentiality.

Personal data will not be revealed when articles from this research is published in an academic journal and may only be accessible to researchers with permission from the NWU. The raw data are stored, secured and locked in the office of the co-supervisor in Building F15 (Consumer Sciences), NWU (Potchefstroom Campus) for five years. The reason for storing data with the co-supervisor, is that the supervisor for this study, Prof Edelweiss Wentzel-Viljoen does no longer hold a permanent position at NWU. Electronic data will also be secured by a security password and kept by the principle researcher. The data will be destroyed after the completed storage period (five years) according to the regulations of the NWU. Feedback regarding the results of this study will be provided to the community of this rural area in the format of a community meeting, as well as posters that highlight the main results of this study. It is important that these consumers must be educated regarding the use of salt in daily diets, in order for them to benefit from this study.

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CHAPTER 4
RESEARCH ARTICLE

TITLE

Consumers' attitudes regarding the use of salt information on food labels
(Manuscript to be submitted for publication in the Journal: Appetite)

This article has been written according to the author guidelines for the Journal: Appetite, which is provided in Annexure I

Abstract

Objective: To determine rural consumers' attitudes regarding salt information on food labels.

Design: A cross-sectional exploratory, descriptive design, applying a face-to-face interviewer-administered structured questionnaire focussing on respondents' cognitive-, affective-, and conative components of attitudes.
Setting: A rural setting in the Northern Cape Province (NCP), South Africa.
Subjects: Female consumers (*n* 268) living in the NCP, ≥18 years; ≥ Grade 5 level of education were recruited through systematic sampling.
Results: Objective knowledge regarding salt intake, salt content of food, salt/sodium relationship, and knowledge of salt information on food labels were low to average. Knowledge of *'Cardiovascular diseases'* was good, and respondents' subjective knowledge of food labels was high. Beliefs and misconceptions about salt possibly contributed to the high use of salt. Results indicated low affective feelings about limiting salt intake, the benefits of it and also the liking and trust of food labels. Respondents indicated that they use labels, but were not able to infer sodium/salt information from it. Sources of salt intake were discretionary and non-discretionary, and mainly from bread and stock and soup powders. They also indicated to purchase takeaway foods. Although salt intake was a concern for respondents, the importance to lower intake was not a priority. Respondents understood the Salt Watch symbol, presented in traffic light colours well.
Conclusion: Although some positive results were found, results in general, examining the cognitive, affective, and conative components of attitudes regarding food labels, indicated that rural consumers had negative attitudes regarding the salt information on food labels.

Keywords
Attitudes, cardiovascular diseases, food labels, rural consumers, salt behaviour.

Abbreviations

- Back of food packaging: BOP
- Cardiovascular disease(s): CVD(s)
- Front of food packaging: FOP
- Hypertension: HT
- Need for cognition: NFC
- Northern Cape Province: NCP
- Socio-cognitive approach: SCA
- South Africa: SA
- Standard deviation: SD

1. Introduction

Globally and nationally, cardiovascular diseases (CVDs) (including stroke, ischaemic, and hypertensive heart disease) are a leading cause of deaths, with hypertension (HT) a primary risk factor for CVDs (World Health Organization [WHO], 2014). South Africa experiences the

highest prevalence of hypertension (HT) (Lloyd-Sherlock, Beard, Minicuci, Ebrahim, & Chatterji, 2014), with more than 40% in adults above 25 years being hypertensive in 2010 (Day, et al., 2014). One of the leading risk factors for HT is excess intake of salt, and the global daily intake varies between 9-12g (WHO, 2014), with levels in South Africa (SA) calculated at 7.2g/day (Swanepoel *et al.*, 2016). Globally, and in SA, the recommended daily sodium intake is 2000mg (5g salt) (Seedat & Rayner, 2012; WHO, 2012b). However, studies indicated that almost 60% of South Africans were unaware of the recommended daily salt intake (Newson, et al., 2013), and that 77% of participants in a study exceeded the recommended daily intake (Swanepoel, et al., 2016). The high intake of salt among South African consumers is of concern, since salt is identified as one of the leading risk factors for HT (WHO, 2014).

1.1. Risk factors for the development of cardio vascular diseases

1.1.1. Metabolic risk factor

Various metabolic risk factors, namely obesity, diabetes, raised blood lipids and HT are known to contribute to the development of CVDs (WHO, 2013). Only HT will be discussed for the purpose of this study. A person is regarded as hypertensive when his/her blood pressure is ≥140/90 mg Hg (WHO, 2013).

1.1.2. Socio-demographic risk factors

South Africa experienced urbanisation of the black population group (Alberts, et al., 2005; Sliwa, 2017), who now increasingly follow a diet high in sugar, saturated and trans fats, and salt (Bourne, Lambert, & Steyn, 2002; World Heart Federation, 2012), resulting in CVDs (Statistics South Africa, 2006). HT contributes to stroke more in the black than the white population groups, as well as in older consumers (≥50 years) (Alberts, et al., 2005; Joubert & Bradshaw, 2006). South Africans have of the highest global HT rates (78%) in this age group (Lloyd-Sherlock, et al., 2014). High undiagnosed HT rates and low treatment levels, evident in SA is a further concern (Alberts, et al., 2005; Joubert & Bradshaw, 2006; Ware, et al., 2016), also among rural populations that experience almost half of the stroke burden in SA (Maredza, Bertram, & Tollman, 2015), hence including rurality as socio-demographic risk factor for HT. Consumers experiencing low socio-economic circumstances are subjected to low-cost, hunger satisfying foods such as bread and maize meal porridge (Schönfeldt, Hall, & Bester, 2013), but also inexpensive, unhealthy, processed and packaged foods, high in fat, sugar and salt (Feeley, Musenge, Pettifor, & Norris, 2012; Temple, Steyn, Fourie, & De Villiers, 2011). Low income is associated with low education levels and basic literacy skills (reading, writing and numeracy) may be lacking (Viswanathan 2009). In the context of this study, health literacy is important in the understanding of illnesses (e.g. HT), nutrition-related

information on food products (e.g. salt information on food labels) (Alspach, 2015; Rothman, et al., 2006), and the association between diet (salt intake) and the incidence of HT (Dolman, Stonehouse, van't Riet, Badham, & Jerling, 2007).

1.1.3. Diet as behavioural risk factor

The food-based dietary guidelines of particular importance to HT, are to enjoy a variety of foods, daily intake of fruits and vegetables, and to use salt sparingly (Vorster, Badham, & Venter, 2013). However, due to low income levels and food availability, rural consumers often experience poor diet diversity, which mostly includes cereals (maize), bread, and added sugar only, and limited fruits and vegetables (Shisana, Labadarios, Rehle, Simbayi, & Zuma, 2013). Furthermore, the traditional African diet (mostly unrefined cereals, leafy green vegetables and legumes) was replaced with a more Westernised diet (energy dense, refined grains, processed foods and high in salt content) (Vorster, Jerling, Oosthuizen, Becker, & Wolmarans, 1995). This nutrition transition is associated with an increase in HT and CVDs (Bourne, et al., 2002; Stupar, et al., 2012; Vorster, Kruger, & Margetts, 2011).

1.2. The role of salt in diet

Salt comprises of sodium and chloride, with sodium affecting blood pressure (He, Campbell, & MacGregor, 2012). Dietary sources of salt include natural (fruit, vegetables, meat and milk), discretionary (salt added during cooking or at the table) and non-discretionary sources (processed- and fast foods, spices and snacks) (He & MacGregor, 2010; Wentzel-Viljoen, Steyn, Ketterer, & Charlton, 2013). The main source of salt for consumers from lower socio-economic status is often discretionary, due to adding salt and flavouring products to inexpensive foods such as maize and rice, and can contribute as much as 17% of salt intake in ethnic groups (Wentzel-Viljoen, et al., 2013). The main source of non-discretionary salt intake in all population groups is bread, contributing up to 4g salt per day (Bertram, Steyn, Wentzel-Viljoen, Tollman, & Hofman, 2012). Bread contributes as much as 70% of black rural consumers' daily salt intake (Charlton, et al., 2005), although processed meats, block margarine, gravy and soup powders also contribute significantly to non-discretionary salt intake (Charlton, et al., 2005; Wentzel-Viljoen, et al., 2013). Global targets have been set to reduce salt intake, and by 2025 it should not exceed 5g/day (2g/day sodium) (WHO, 2014). The South African government has also set targets for 2016 and 2019 to reduce the salt content of processed foods (South Africa, 2013), specifically bread, breakfast cereals, margarines and butter, salty snacks, potato crisps, processed meats, soup and gravy powders, instant noodles and stock cubes (Heart and Stroke Foundation South Africa, 2016).

1.3. Food labels as source of food-related information

At the point of purchase, food labels are sources of nutrition-related information, including sodium content (Grunert & Wills, 2007; Lubman, Doak, & Jasti, 2012; Rothman, et al., 2006). Sodium and salt are used interchangeably in this article where applicable. This information, on the back and front of food packaging (BOP, FOP), is presented in scientific, numerical information in the typical nutritional information panels (BOP) and % Guideline Daily Amounts (GDA) (FOP) (Feunekes, Gortemaker, Willems, Lion, & Van Den Kommer, 2008; Rothman, et al., 2006). Low-literate consumers display concrete (difficulty to engage in abstract thinking regarding salt/sodium relation; mg sodium content of food) and pictographic thinking (prefer information presented as graphic images such as traffic light symbols, health ticks, health logo's or health claims) (Viswanathan, Hastak, & Gau, 2009). In a South African context, the Heart mark symbol of the Heart and Stroke Foundation of South Africa is a logo related to healthy food, including food with a lower salt content (Byrne, Eksteen, & Crickmore, 2014; Heart Foundation of South Africa, 2003). The intention of the proposed Salt Watch symbol, as part of a label, is to create awareness among consumers of the salt content of food, but is not yet implemented in South Africa. It is currently only applied in educational material. (Figure 1).

THE HEART AND STROKE FOUNDATION SOUTH AFRICA	SALT WATCH
Heart mark symbol	Salt Watch symbol

Figure 1. Heart mark symbol; Salt Watch symbol (Heart and stroke foundation South Africa, 2014).

1.4. Consumer attitudes regarding salt information on food labels

Attitudes have a triadic structure and include cognitive, affective and conative components (Mpinganjira, 2013). Applicable to this research, the **cognitive component** concerns objective knowledge (actual knowledge) and subjective knowledge and understanding (perceived knowledge and understanding). Consumers can display high need for cognition

(NFC) (textual and numerical information) or low NFC (information from brand logos and pictures) (Hoyer, MacInnis, & Pieters, 2013), but those with low literacy levels tend to display low NFC as textual and numerical product information may be too difficult to understand (Viswanathan, et al., 2009). These consumers buy products habitually and are often brand loyal. Consumer **beliefs**, also cognitive related, are formed through the perceptions and knowledge about an object (Mpinganjira, 2013), and beliefs about salt in the diet are not always objective, possibly influenced by culture, dietary customs and familial habits. The **affective component** of attitude is related to consumers' feelings and emotions about product attributes (Hoyer, et al., 2013; Mpinganjira, 2013) (salt information on food labels) and is described in terms such as "like/dislike" and "trust/distrust" (Asiegbu, Powei, & Iruka, 2012; Mpinganjira, 2013). The **conative component** refers to consumers' behaviour towards the attitude object (Mpinganjira, 2013), in the present study related to salt. A holistic view of these components is necessary to be able to draw conclusions about consumers' attitudes regarding salt information on food labels.

1.5. A socio-cognitive approach (SCA) to consumers' use of salt information on food labels

Health is a social phenomenon and consumers' lifestyle behaviour influences their health (Bandura, 2004; WHO, 2014). The socio-cognitive theory involves five core determinants (Bandura, 2004), and the relevance to the cognitive, affective and conative components of attitude is indicated:

- **Knowledge:** Consumers' interest in their health and the healthiness of their diet (Ellison, Lusk, & Davis, 2013), is related to their knowledge of all aspects related to dietary salt and the risk for the development of illnesses (HT if salt intake is too high) (Schwarzer & Renner, 2000). Consumers' health knowledge (cognitive component) is a precondition for behaviour change (Bandura, A., 2004);
- **Perceived self-efficacy:** Describes consumers' confidence in their abilities to accomplish a specific behaviour regarding health-related tasks (Bandura, A., 2004; Schwarzer & Renner, 2000), and relates to their perceived or subjective understanding (cognitive component) of reducing salt intake (Papadakis, et al., 2010), and using information on food labels (Sun, Huang, & Chu, 2015);
- **Outcome expectations:** Changes in consumers' health-related behaviour (conative component), such as reducing salt intake, are influenced by the expected outcomes, and the belief (cognitive component) in the benefits of such changes (Schwarzer & Renner, 2000). These outcomes are: physical (lowering HT) (Wentzel-Viljoen, et al., 2013); social approval/disapproval (adopting a Westernised diet) (Stupar, et al., 2012);

and self-evaluative outcomes (self-satisfaction when adapting to a diet lower in salt) (Bandura, A., 2004);

- **Goals**: Consumers must set short term goals with relation to the importance of using less salt daily, and obtaining salt information from food labels that can lead to long term goals in personal change (conative component) (Bandura, A., 2004). These long-term goals imply a sustainable diet low in salt (Charlton, et al., 2008; Wentzel-Viljoen, et al., 2013); and
- **Perceived facilitators and barriers**: Facilitators of consumers' health imply positive attitudes towards health (Bandura, A., 2004), requiring sufficient knowledge (cognitive component), positive feelings (affective component) and behaviour change (conative component) regarding the use of salt information on food labels in order to make informed purchase decisions. However, consumers can experience barriers that may influence attitudes towards their health, such as low literacy levels, distrust and dislike of salt information on food labels (Misra, 2007; Wong, et al., 2013), beliefs about dietary salt (Asiegbu, et al., 2012; Eksteen & Mungal-Singh, 2015; Grimes, Riddell, & Nowson, 2009), and cultural influences about the use of dietary salt (De Brito-Ashurst, et al., 2011; Eksteen & Mungal-Singh, 2015; Pretorius & Sliwa, 2011).

Considering the high prevalence of HT, low income- and literacy levels, dietary habits and sources of salt intake among rural consumers, it was deemed necessary to conduct this research. Rural consumers are under-researched considering their attitudes regarding salt information on food labels, as previous research was mostly conducted on literate, urban consumers. The aim of this research was therefore to explore and describe, from a social cognitive perspective as well as the tri-component model of attitudes, black consumers' attitudes regarding the use of salt information on food labels in a rural, South African context. The objectives were to investigate rural consumers' attitudes regarding the use of salt information on food labels in terms of the:

- cognitive component- (knowledge, perceptions and beliefs of salt information);
- affective component- (liking and trust of salt information on food labels; concern about salt intake); and
- conative component (behaviour regarding food purchases; discretionary and non-discretionary salt intake) of attitudes.

2. Methods

2.1. Design and study population

A cross-sectional descriptive survey design was applied, using a structured questionnaire. A face-to-face interviewer administered survey was conducted to ensure a good response rate and to clarify uncertainties among respondents. This research was executed in a rural setting in the Northern Cape Province (NCP), South Africa. A systematic sampling procedure was applied to collect data between July and September 2016 from 268 females, 18 years and older, with an educational attainment of Grade 5 and higher.

2.2. Development of questionnaire

A structured questionnaire was developed in English, and was translated, as well as back translated into Setswana and Afrikaans, and were administered with interviews by trained fieldworkers. The questionnaire included sections concerning: demographical (age, occupation, education and income) and biographical information (experiencing HT, household purchases. Sections on attitude were constructed from previous research (as indicated in brackets) and included the cognitive component (knowledge of salt intake, diet-disease relationship, salt content of food, label knowledge and beliefs about salt) (Charlton, et al., 2005; Feunekes, et al., 2008; Grimes, et al., 2009; Papadakis, et al., 2010; Sarmugam, Worsley, & Flood, 2013); affective component (liking and trust of food labels) (Feunekes, et al., 2008; Grimes, et al., 2009; Grunert, Scholderer, & Rogeaux, 2011; Misra, 2007); and conative component (purchase behaviour, discretionary and non-discretionary salt intake and importance of salt intake behaviour) (Charlton, et al., 2005; Grimes, et al., 2009; Grunert, et al., 2011; Wentzel-Viljoen, et al., 2013). Considering the low levels of education of respondents in the study area, and to accommodate concrete and pictographic thinking of respondents, research on low-literate consumers (Van Staden, 2012; Viswanathan, et al., 2009) were consulted in the development of the questionnaire. All items, binary questions and scales were presented graphically (Figure 2) and by means of show cards.

OFTEN (1) **SOMETIMES (2)** **NEVER (3)**

Figure 2 Likert Scale presentations in questionnaires (Van Staden, 2012)

2.3. Statistical analysis

Data for this study were analysed using IBM SPSS® Statistics Version 23. Descriptive statistics were conducted for all sections of the questionnaire, including factors and clusters, and data are provided as frequencies and mean±standard deviation (SD). Exploratory factor analysis using Principle Axis Factoring with Oblimin rotation was applied to scales testing respondents' subjective knowledge, affective feelings of food labels, purchase behaviour, discretionary and non-discretionary salt intake. Factors yielded acceptable to good Kaiser-Meyer-Olkin values (0.60–0.83). Cronbach alpha coefficients ≥ 0.6 were regarded as reliable (Malhotra, 2010). Hierarchical variance cluster analysis using Ward's method was applied to scales yielding unreliable alpha coefficients (<0.6), and tested respondents' objective knowledge of the salt content of food and diet-disease relationships. Internal reliability was indicated by the Kuder–Richardson 20 (KR-20) reliability coefficient, and clusters yielding values ≥0.5 were retained, but cautiously interpreted. When testing psychological constructs (such as knowledge), lower values (KR-20 ≥0.5) are acceptable due to the variety of constructs tested (Kline, 2000). Factors and clusters are described in Table 1, and items in factors and clusters that obtain Cronbach alpha coefficients <0.6 and KR-20 < 0.5 were regarded as individual items (Table 3).

Statistically significant differences in means between demographical data and consumers' attitudes were determined with ANOVA and Tukey's test. Independent sample T-tests were applied to determine statistically significant differences in means between biographical data with two groups and consumers' attitudes. Cohen's effect sizes (*d*-values) indicate statistically significant differences in practice, where $d = 0.5$ indicates a medium (tendencies) and $d = 0.8$ a large (practically significant) effect. Spearman's correlation coefficients were used to determine correlations between nominal and ordinal variables for all parts of the questionnaire, and only $r = 0.3$ (medium effect size) and $r = 0.5$ (large effect size) will be discussed. *P*-values ≤ 0.05 indicate statistically significant differences and correlations, but were not reported, since practical significance was considered.

Table 1 Constructs, questionnaire items and names of factors and clusters

	Construct	Name of **factor/*cluster	Items	Cronbach / KR-20
Cognitive	Objective knowledge: Diet/disease relationship	*Cardiovascular diseases	High blood pressure; Stroke; and Heart disease	KR = 0.5
		*Other diseases	Kidney disease; Cancer; and Osteoporosis	KR = 0.7
	Objective knowledge food salt content	*Less known high salt food	Margarine; Breakfast cereal; Cheese; Atchar and chakalaka; and Two-minute noodles	KR = 0.6
		*Better known high salt food	Savoury snacks and crisps; Biltong; Bovril; Stock block; Polony; Soup powder; Takeaway; Pizza; and Gravy	KR = 0.8
		*Low salt food	Fresh fruit; Fresh vegetables; Milk; Raw meat; and Boiled egg	KR = 0.6
	Subjective understanding	**Subjective understanding of labels	Easy to understand words; and numbers typical nutritional fact panel; % GDA; and Heart symbol	α = 0.9
	Perceived healthiness	**Perceived healthiness symbol	Healthiness of Heart symbol; and Healthiness of Salt Watch symbol.	α = 0.8
		**Perceived helpful labels	Food labels help to choose healthy food; and tell what is in food	α = 0.8
Affective	Affective feelings	**Trust Heart symbol and label information	Trust Heart symbol; Trust healthiness of heart symbol; Trust food label information; and Trust label for healthy food selection	α = 0.7
		**Concern about healthy food	Worry about healthiness of food about; and Worry healthy food cost	α = 0.6
		**Like and trust BOP and FOP Labels	Like information on FOP; Like information on BOP; Trust information on FOP; and Trust information on BOP	α = 0.8
Conative	Purchase behaviour	**Consulting food labels	Look for salt information on BOP; Look for salt information on % GDA; Look for the Heart symbol; and Buy food marked “low in salt”	α = 0.8
		**Buy take away and cheap food	Buy take away food because taste good; Buy the cheap food; and Buy take away food but know it is bad for health,	α = 0.8
	Discretionary salt use	**Discretionary salt use in food preparation	Porridge; rice; vegetables; and stew	α = 0.9
		**Discretionary use of salt and condiments	Add salt when cooking food; add salt at the table; combine added salt with stock cubes; soup powder; and Bisto	α = 0.8
		**Use margarine and sauces	Use hard margarine and Worcester sauce / chutney / chakalaka	α = 0.6
	Non-discretionary salt use	**High salt convenience foods	Meat pies; Bovril; Pizza; Takeaway; two-minute noodles; Gravy; and Biltong / dry sausage	α = 0.8
		**Fruit and vegetables	Fresh Vegetables: raw, cooked, canned vegetables; and fresh fruit	α = 0.6
		**Fish, sauce and starches	Savoury snacks and crisps; Atchar / chutney / chakalaka; Potato chips; and Canned fish	α = 0.6
		**Bread and toppings	Bread; Margarine (hard block); Polony; Cheddar cheese; and Breakfast cereals	α = 0.7
		**Stock and soup powder	Soup powder; stock block	α = 0.6
	Importance of low salt intake of healthy dietary behaviour	**Importance of low salt intake	Important to: eat less salt; put less salt in food; eat less takeaway; check the label; buy food marked” low-salt”; and use herbs to replace salt	α = 0.8

* Clusters; **Factors

GDA = Guideline Daily Amounts; BOP = Back of Panel; FOP = Front of Panel; KR-20 = Kuder–Richardson 20 reliability coefficient
Factors with Cronbach alpha coefficients ≥ 0.6 were regarded as reliable and were retained

2.4. Ethics

Ethical approval for the study was obtained from the Health Research Ethics Committee (HREC) for research with humans of the Faculty of Health Sciences of the North-West University, Potchefstroom Campus (NWU-00340-15-A1).

3. Results

3.1. Characteristics of sample population

The demographic characteristics of the respondents (Table 2) showed that the majority were younger than 40 years. Corresponding to the general characteristics of rural areas (Hasumi & Jacobsen, 2012), respondents had low-income occupations or in this case were mostly unemployed, confirmed by their low income levels of almost all respondents earning R3000/month or less. Education levels were also fairly low, and just more than half of respondents (51%) obtained Grade 9 and lower levels of education. Self-reported biographical data indicated that 51% of respondents had HT, which is consisted with previous data for this area (Burger, 2015), and 88% of respondents were responsible for food purchases. Only 56% reported that they “look” at food labels during food purchases.

Table 2 Socio-demographic and biographic information of female respondents

Demographic characteristics	n	Percentage
Sample size	268	
Age		
18-29 years	59	22
30-39	91	34
40-49	51	19
50-59	29	11
60 years and older	37	14
Occupation		
Unemployed	133	50
Cleaner	21	8
Domestic worker	15	5
Salesperson	18	7
Clerical	9	3
Pensioner	45	17
Other	26	10
Education		
Grade 5	46	17
Grade 6	20	8
Grade 7	23	9
Grade 8	23	9
Grade 9	22	8
Grade 10	30	11
Grade 11	36	13
Grade 12	58	22
Other	10	3
Monthly income		
<R500 - R3000 (<US$ 34-206)	238	91
R3001- R5000 (US$206-342)	22	9
Biographic information		
Respondents with HT	136	51
Household members with HT	98	37
Purchase food for the house	231	88
Consult food labels	146	56

3.2. Results of empirical investigation

The results and discussion will be presented in accordance with Bandura's (Bandura, 2004) five core determinants of the socio-cognitive approach (SCA). Results will be reported per construct, sequentially presented as descriptive statistics, correlations and differences. Descriptive results of individual items, as well as factors and clusters are presented in Tables 3 and 4 respectively.

Table 3 Frequencies responses of individual items regarding objective knowledge, beliefs and concern about salt intake (n = 268)

Construct	Items	N	% Correct
Knowledge of salt intake	How much salt may you eat in total in your food in one day?	71	27
	5g of salt is the same as half a teaspoon, teaspoon, table spoon	97	38
Objective knowledge of food with medium salt content	Salt content of bread	89	34
	Salt content of white rice cooked	103	40
	Salt content of fresh vegetables cooked	88	33
	Salt content of canned vegetables	114	44
	Salt content of potato chips	114	44
	Salt content of canned fish	144	55
	Salt content of meat pies	99	38
Objective knowledge Salt/sodium relationship	Is sodium and salt the same?	46	17
	Is there sodium in salt?	136	51
	Is there salt in sodium?	52	20
Objective knowledge Salt information on food labels	Which product has the highest salt? Label A or B	164	64
	How much sodium is in Label A?	135	53
	How much salt is in Label A?	0	0
		N	**% Yes**
Beliefs about salt	I eat too much salt	88	33
	My health will be better if I eat less salt	88	33
	Food with little salt tastes bad	124	46
	Food taste better if I cook it with salt	198	74
	If I eat less salt, I will get cramps in my legs	62	23
	If I drink a lot of water, the salt will disappear	121	45
	Salt from the sea is better than table salt	57	21
	Food without salt is unhealthy	90	34
Affective feelings	Concern about salt intake	177	66

Table 4 Descriptive results of constructs, factors and clusters, measurement scales and mean factor scores

	Construct	Name of factor/cluster	Measurement scale	Mean±Standard deviation (SD)
Cognitive	Objective knowledge: Diet/disease	*Cardiovascular diseases	%Correct	78±0.29
		*Other diseases		48±0.39
	Objective knowledge: Food salt content	*Less known high salt food	%Correct	23±0.26
		*Better known high salt food		51±0.30
		*Low salt food		60±0.31
	Subjective understanding	**Subjective understanding of labels	%Yes	86±0.29
	Perceived healthiness	**Perceived healthiness symbol	%Yes	81±0.32
		**Perceived helpful labels		85±0.34
Affective	Affective feelings	**Trust Heart symbol and label information	%Yes	65±0.48
		**Concern about healthy food		51±0.50
		**Like and trust BOP and FOP labels		52±0.60
Conative	Purchase behaviour	**Consulting food labels	Often = 1; Sometimes = 2; Never = 3	1.78±0.65
		**Buy take away and cheap food		1.95±0.43
	Discretionary salt use	**Discretionary salt use in food preparation	Half teaspoon = 1; Teaspoon = 2; Tablespoon = 3	1.51±0.41
		**Discretionary use of salt and condiments	Often = 1; Sometimes = 2; Never = 3	1.91±0.57
		**Use margarine and sauces		1.95±0.54
	Non-discretionary salt use	**High salt convenience foods	Daily = 4; 2-3 times a week = 3; Once a week = 2; <Once a month = 1	2.00±0.61
		**Fruit and vegetables		2.80±0.74
		**Fish, sauce and starches		2.51±0.51
		**Bread and toppings		2.70±0.63
		**Stock and soup powder		3.00±0.70
	Importance of low salt intake in healthy dietary behaviour	**Importance of low salt intake	Very important = 1 Little important =2 Not important =3	1.35± 0.41

* Clusters; ** Factors

BOP = Back of Panel; FOP = Front of Panel

3.3. Objective knowledge

Results of individual objective salt knowledge items (percentages correct responses) are presented in Table 3.

Less than 40% of respondents knew what the allowed daily salt intake is, and that 5g salt equals a teaspoon. Regarding the knowledge of food with medium salt content, namely bread and fresh cooked vegetables, only about a third of respondents were correct. Respondents' objective knowledge of '*Less known high salt food'* (23%) was lower than for '*Better known high salt food'* (51%), and for '*Low salt food'* (59%) (Table 4). Regarding the typical nutritional fact panel on the BOP, 64% of respondents were able to identify the product with the highest sodium content, 53% could tell the amount of sodium in the product, and 51% knew that there is sodium in salt (Table 3). However, the majority of respondents

incorrectly regarded salt and sodium as the same, and that there is salt in sodium (83% and 80% respectively) and none were able to convert sodium to salt.
According to the results of T-tests, respondents with self-reported HT (51% confirmed HT), as well as those with household members experiencing HT (49% confirmed HT), tended to be less knowledgeable about '*Low salt food'* than respondents (71% correct; *d* = 0.67) or household members (66% correct; *d* = 0.51) not experiencing HT. ANOVA revealed that older respondents (50-59 years and ≥60 years) were practically significant less knowledgeable of '*Low salt food'* than 18-29 years old respondents (*d* = 0.83 and *d* = 0.72 respectively), and tended to be less knowledgeable than respondents 30-39 years old (*d* = 0.58 and *d* = 0.46 respectively); and 40-49 years old (*d* = 0.59 and *d* = 0.47 respectively).

Regarding respondents' knowledge of diet-disease relationship, they had a good knowledge of '*Cardiovascular diseases'* (78% correct) (Table 4), which tended to correlate with respondents' knowledge of '*Better known high salt food'* (*r* = 0.32). Respondents (33%) who believed that they 'eat too much salt' (Table 3) tended to correlate with 'concerned about salt intake' (*r* = 0.30), but tended to correlate negatively with *'Concerned about healthiness of food'* (*r* = -0.35) and '*Consult food labels*' (*r* = -0.44).

3.4. Perceived self-efficacy

Consumers' subjective belief in their abilities to perform health-related tasks, is regarded as perceived self-efficacy (Bandura, 2004). Regarding '*Subjective understanding of labels'*, 86% of respondents regarded labels (that includes typical nutritional fact panels, % GDAs and the Heart symbol) easy to understand (Table 4), but contradicting results of objective knowledge of salt/sodium relationship and salt information on food labels were found.

ANOVA revealed that older respondents (≥60 years) (68% yes) tended to display lower levels of self-efficacy ('*Subjective understanding of labels')* than younger age groups (18-29 years: 93%, *d* = 0.62; 30-39 years: 90%, *d* = 0.54; 40-49 years: 89%, *d* = 0.53), which can possibly be attributed to consumers' age that tended to correlate negatively with their school qualification (*r* = -0.35).

It must be noted that although the Salt Watch symbol is currently in SA only available on educational material, both the Heart and Salt Watch symbols were regarded as '*Perceived healthiness symbols'* and 81% of respondents acknowledged these two symbols as such. '*Perceived helpful labels'* (Food labels help to choose healthy food; and tell what is in food) were considered by 85% of respondents, when selecting food (Table 4). Respondents' '*Subjective understanding of labels'* tended to correlate with their knowledge of

'*Cardiovascular diseases'* (*r* = 0.39), and '*Perceived helpful labels'* (*r* = 0.31), but negatively with '*Like and trust BOP and FOP labels'* (*r* = -0.31), *'Trust Heart symbol and label information'* (*r* = -0.37) and concern about their salt intake (*r* = -0.35).

3.5. Outcome expectations

3.5.1. Physical

It is important for consumers to realise the physical health benefits (lowering blood pressure) from lowering daily salt intake, and although 66% of respondents were concerned about their salt intake (Table 3) only 51% of respondents were '*Concerned about healthy food'* (Table 4). A third of respondents believed that their health would improve if they ate less salt (Table 3), which tended to correlate with knowledge of '*Cardiovascular diseases'* (*r* = 0.35), '*Subjective understanding of labels'* (*r* = 0.32), and beliefs that their salt intake was too high (*r* = 0.55). However, it tended to correlate negatively with '*Importance of low salt intake'* (*r* = -0.30) and '*Like and trust BOP and FOP labels'* (*r* = -0.30).

3.5.2. Social approval/disapproval

A Westernised diet was likely to be part of the rural respondents' diet in striving towards social approval because '*High salt convenience foods'* was consumed on a weekly basis (mean = 2.00), and '*Bread and toppings'* almost 2-3 times a week (mean = 2.7) (4 = every day; 3 = 2-3 times per week; 2 = once a week; 1 = once a month or less) Concerning bread alone (not reported), 42% of respondents indicated that they eat bread on a daily basis, and another 42% ate it 2-3 times per week (mean = 3.2).

Preparation of tasteful food is socially important, and 74% of respondents regarded food prepared with salt as tasting better. For almost half of respondents (46%), food with less added salt tasted bad (Table 3), and it tended to correlate with the misconception that food with less salt is unhealthy (*r* = 0.32). For both these groups of respondents (food with salt taste better and food with less salt taste bad), '*Importance of low salt intake'* tended to correlate negatively with these beliefs (*r* = -0.37; *r* = -0.34 respectively).

3.5.3. Self-evaluative

Health behaviour is affected by consumers' self-evaluative reactions, in this instance, their self-reported salt intake behaviour. Concerning respondents' *'Discretionary use of salt in food preparation'*, they added almost a teaspoon in each type of food prepared (mean = 1.51) (Half teaspoon = 1; Teaspoon = 2; Tablespoon = 3). This behaviour, to sometimes combine '*Discretionary use of salt and condiments'* (mean = 1.91) and/or the '*Use margarine and sauces'* (mean = 1.95) with the use of salt (Table 4) is of concern. By combining the use

of these different sources of salt, it is evident that respondents were not able to self-evaluate their salt intake. These condiments (stock block, soup and sauce powder), as well as hard block margarine and sauces have a high salt content, namely ≥600mg Na/100g (South Africa, 2010). Respondents' non-discretionary salt intake of 2-3 times a week involving *'Stock and soup powder*' (mean = 3.00), '*Bread and toppings'* (mean = 2.70), '*Fish, sauce and starches'* (mean = 2.51), and *'High salt convenience foods'* (mean = 2.00), was another cause for concern.

Poor self-evaluation of respondents' salt intake is also illustrated, considering that *'takeaway and cheap food'* was sometimes bought (mean = 2.23) (Table 4), which practically significantly correlated with *'Discretionary salt use in food preparation'* (*r* = 0.50) and *'Discretionary use of salt and condiments'* (*r* = 0.50) while tending to correlate with *'Use of margarine and sauces'* (*r* = 0.34). Regarding non-discretionary salt intake, the use of '*High salt convenience foods'* tended to correlate with the intake of *'Bread and toppings'* (*r* = 0.44), and *"Fish, sauce and starches"* (*r* = 0.34).

Age is negatively associated with school qualifications (*r* = -0.348), possibly counteracting older respondents' ability to self-evaluate the quantity and sources of salt intake. As previously mentioned, they were also less knowledgeable of '*Low salt food'.* According to ANOVA, older respondents (≥60 years) (mean = 1.65) tended to less frequently eat '*High salt convenience foods'* than younger age groups: 18-29 years (mean = 1.97, *d* = 0.58); 30-39 years (mean = 1.97, *d* = 0.51); 40-49 years (mean = 2.13, *d* = 0.75); and 50-59 years (mean = 2.00, *d* = 0.50). Also, older respondents (mean = 1.22) tended to less frequently engage in '*Discretionary use of salt and condiments'* than younger age groups: 18-29 years (mean =1.88, *d* = 0.60); 30-39 years (mean =1.85, *d* = 0.66); and 40-49 years (mean = 1.81, *d* = 0.68). The age groups 50-59 years (mean = 1.73) and ≥60 years (mean = 1.69) tended to use salt alone (*'Discretionary salt use in food preparation'*) more than younger respondents: 18-29 years (mean =1.43, *d* = 0.71 and *d* = 0.61 respectively); 30-39 years (mean =1.41, *d* = 0.75 and *d* = 0.64 respectively); and 40-49 years (mean =1.51, *d* = 0.55 and *d* = 0.44 respectively).

Respondents' self-satisfaction concerning the importance of the intake of *'Fruit and vegetables'* is in doubt, as their intake of *'Fruit and vegetables'* was less than 2-3 times per week (mean = 2.80) (Table 4). The youngest group of respondents (18-29 years) (mean = 2.58) tended to eat less *'Fruit and vegetables'* than the older respondents: 50- 59 years (mean = 3.03, *d* = 0.55) and ≥60 years (mean = 2.96, *d* = 0.46). They also tended to be less

concerned (mean = 1.49) than older consumers: 50- 59 years (mean = 1.17, *d* = 0.56); and ≥60 years (mean = 1.22, *d* = 0.48) about their salt intake.

3.6 Goals

Assisting in goal setting to lower salt intake may involve consumers' objective understanding of salt information on food labels, and the importance to lower salt intake on a daily basis. Although respondents reported that they '*Consult food labels'* often to sometimes (mean = 1.78) (Table 4), it is clear from results that their objective knowledge of salt information on food labels was average, because as previously reported, only 53% of respondents were able to calculate the amount of sodium on a label correctly (Table 3). Concerning '*Importance of low salt intake'*, respondents, did regard adopting a healthier lifestyle concerning salt intake as somewhat important (mean = 1.35) (Table 4), and it tended to correlate with 'Concerned about their salt intake' (*r* = 0.36); *'Liked and trusted BOP and FOP labels'* (*r* = 0.32); and '*Trusted Heart symbol and label information'* (*r* = 0.42). However, respondents' knowledge of '*Cardiovascular diseases'* tended to correlate negatively with '*Importance of low salt intake'* (*r* = -0.31), and the belief that their health will improve with lower salt intake (r = -0.30). This poor intentional behaviour, may be attributed to various barriers discussed in the following section.

3.7. Facilitators and barriers

There are various facilitators and barriers that can contribute to, or hinder consumers' attitudes regarding salt information on food labels, and subsequent salt intake behaviour.

3.7.1. Facilitators

Facilitators of using salt information on food labels and behaviour change, in this study can mainly be attributed to respondents' previously reported high values for 'S*ubjective understanding of labels*' (86%), and *'Perceived healthiness symbol'* (81%) and *'Perceived helpful labels'* (85%) (Table 4). Most respondents (78%) could associate traffic light colours (green = low-; yellow = medium-; and red = high salt content), with the salt content of food as presented with the Salt Watch symbol. A further facilitator entailed that, 95% of respondents indicated that they would like to learn about the use of salt and its association with HT, and the most preferred sources to learn from were via health care workers (57%), television (57%), clinics (56%) and radio (55%) (data not shown in a table).

3.7.2. Barriers

Barriers in using salt information on food labels and changing behaviour, can mainly be attributed to three factors considering the results of the study:

1. Socio-demographic factors: Low-literacy levels (51% ≤ Grade 9) can according to literature, contribute to higher subjective knowledge, but lower levels of objective knowledge (Liu, Hoefkens, & Verbeke, 2015). Respondents had low to average objective knowledge of salt content of all foods (23-60% correct; Table 4) and the salt/sodium relationship (17-51% correct; Table 3). Although just more than half of the respondents (53%) were able to identify the product with the highest sodium content, none of them were able to convert sodium to salt (Table 3), resulting in the inability to use sodium information in the typical nutritional fact panel (BOP) and GDAs (FOP). Although dietary diversity scores were not determined in this study, respondents consumed fresh cooked vegetables, fresh fruit and fresh raw vegetables infrequently as 76.5%, 62% and 79.4% of respondents respectively (not reported), ate these foods less than 2-3 times a week, whereas 84% consumed bread more than 2-3 times per week to daily.

2. Affective feelings regarding label information: More than half of the respondents (51%-65%) had positive affective feelings regarding like and trust of salt information on food labels (Table 4). However, '*Trust Heart symbol and label information'* tended to correlate negatively with *'Cardiovascular diseases'* (r = -0.34), '*Subjective understanding of labels*' (r = -0.30), *'Perceived healthiness symbol*' (r = -0.33), *'Perceived helpful labels'* (r = -0.37) and '*Food taste better if cooked with salt*' (r = -0.37). Similarly, '*Like and trust BOP and FOP'* tended to correlate negatively with '*Cardiovascular diseases'* (r = -0.32), *'Other diseases'* (r = -0.32), '*Perceived helpful labels'* (r = -0.30), 'Food with little salt tastes bad' (r = -0.32), 'Food without salt is unhealthy' (r = -0.38) and 'My health will be better if 'I eat less salt' (r = -0.30). '*Like and trust BOP and FOP'* practically significantly correlated negatively with '*Subjective understanding of labels*' (r = -0.50). T-tests revealed that respondents who made household food purchases (36% yes), tended to '*Trust Heart symbol and label information'* less than those that did not make household food purchases (71% yes; d = 0.56).

3. Misconceptions about salt: Respondents' contradictory intended behaviour regarding salt intake (see Goals), can possibly be attributed to misconceptions that they hold regarding salt. Of concern is the large proportion of respondents believing that: 'if they drink a lot of water', the negative effect of too high salt intake will be neutralised (67%); food without salt is unhealthy (72%); they would get cramps in their legs if salt intake were reduced (45%); and the misconception that sea salt is better than table salt (38%) (Table 3). Although 48% of respondents had knowledge of *'Other diseases',* it tended to correlate with the belief that drinking water will solve the problem of high salt intake (r = 0.44). Respondents with household members experiencing HT (mean = 0.69; yes), believed practically significantly

more than those with household members not experiencing HT (mean = 0.27; no) (*d* = 0.89) that they would get cramps in their legs if salt intake were reduced.

4. Discussion

This study investigated rural consumers' attitude regarding the salt information on food labels, and was interpreted by applying the five core-determinants of the SCA. These determinants included knowledge, perceived self-efficacy, outcome expectations, goals and facilitators, and barriers.

Objective knowledge of all aspects related to salt is a precondition for respondents to change behaviour regarding salt intake. Respondents' low knowledge of daily salt intake, salt content of food and the salt/sodium relationship, may contribute to excess salt intake (Charlton, et al., 2005; Papadakis, et al., 2010) and poor use of salt information on food labels (Kim, Lopetcharat, Gerard, & Drake, 2012; Newson, et al., 2013). Age is negatively related to school qualifications, possibly causative of lower objective knowledge regarding aspects of salt, which in turn, can contribute to a higher prevalence of HT among older consumers (Lloyd-Sherlock, et al., 2014). Low levels of apprehension regarding salt intake and the healthiness of the food among respondents are of concern, since knowledge of health risks (for example high intake of salt in relation to CVDs) is a pre-condition for behaviour change (Bandura, 2004). However, results from the present study confirm respondents' poor objective knowledge of salt intake as well as the salt content of food, which can be a barrier for changing behaviour. Respondents displayed high levels of subjective understanding of food labels, and perceived themselves as **self-efficient** to understand the salt information on BOP and FOP, although contradicting results regarding objective knowledge were found. Nutritional information in BOPs are difficult to interpret (Grunert & Wills, 2007; Hersey, Wohlgenant, Arsenault, Kosa, & Muth, 2013), as displayed by respondents' poor objective knowledge in these respects. People with low-literacy levels, also evident among respondents of the present study, are often not objective about their abilities to fulfil tasks like reading a label, which can be regarded as a coping strategy to hide poor reading skills (Van Staden, Van der Merwe, Van Aardt, & Ellis, 2017; Viswanathan, et al., 2009). However, FOP labels, like the proposed Salt Watch symbol, provide salt information in pictographic format, and can be regarded as more useful than BOP for people with lower literacy levels (Viswanathan, et al., 2009) to determine food's salt content and to make informed purchases. Providing labels that can be objectively understood, will empower consumers, considering that consumers with high subjective understanding of food labels are more likely to consult food labels than those with only objective knowledge (Grunert, Wills, & Fernandez-Celemin, 2010). Regardless of respondent's high subjective

understanding of food labels, their dislike and distrust of labels is of concern, and may have implications for their actual label use (Grunert & Wills, 2007; Misra, 2007; Wong, et al., 2013). Consumers' health-related behaviour is influenced by the **expected outcomes**, and the belief in the benefits of such changes (Schwarzer & Renner, 2000). Regarding ***physical outcomes***, respondents had good knowledge about "*Cardiovascular diseases*", and displayed some concern about their salt intake. However, this concern was not convincing, as only a third of them believed that health can improve with lowering daily salt intake, and it was also not important to them. Possible reasons for these conflicting results and low importance attributed to the physical outcomes and benefits of a diet lower in salt may be consumers' beliefs and misconceptions about salt (Eksteen & Mungal-Singh, 2015), which were evidenced by the results as barriers in lowering salt intake. Diet played an important role in consumers' social life (***Social approval or disapproval***), and expected outcomes from a diet lower in salt can be negatively influenced by consumers' need to follow a diet that is socially acceptable by a population, which in this case is the adoption of a Westernised diet that is high in refined and processed foods (Stupar, et al., 2012). Cultural habits can also influence the use of salt during food preparation (Eksteen & Mungal-Singh, 2015), in which food's taste is very important (Liem, Toraman Aydin, & Zandstra, 2012). Almost half of the respondents stated that food without salt tastes bad, which can be highly influential in consumers' decision to lower salt intake. Concerning respondents' ***self-evaluative outcomes***, it was evident that they in general displayed poor objective knowledge regarding salt, and it was clear that they were not able to objectively evaluate their daily salt intake (Newson, et al., 2013). Considering correlations between respondents' discretionary and non-discretionary salt intake, their salt intake came from various sources, but the contribution of these sources was not always known and understood by them which confirm previous studies in this regard (Eksteen & Mungal-Singh, 2015; Newson, et al., 2013). Respondents from younger age groups' salt intake tended to be more from non-discretionary sources, but also from a combination of '*Discretionary use of salt and condiments'*, whereas older respondents' intake was more from discretionary sources. As in former research, bread as non-discretionary source of salt, did not reveal any differences between age groups (Charlton, et al., 2005). Although bread is of medium salt content, the intake of high quantities by respondents is of concern, especially if considered that bread is a staple food among low-income consumers and is consumed almost daily (Bertram, et al., 2012; Wentzel-Viljoen, et al., 2013). In general, respondents' *'Fruit and vegetables'* intake was rather low, with younger respondents' intake lower than older age groups. This is an alarming finding, considering younger age groups being more prone to HT (Kumar, et al., 2017; Thompson, et al., 2016), because *'Fruit and vegetables'* contribute to potassium intake, which is beneficial for consumers suffering from HT (Shisana, et al., 2013; Vorster, et

al., 2013). Of importance, is also to note that poor dietary behaviours related to diseases such as CVDs, often begin in younger people and continue into adulthood (Bandura, 2004). Consumers' self-efficacy beliefs are related to health behaviour by **setting goals** to lower salt intake, and they must be motivated to realise the benefits of lowering salt intake to reduce HT. It is questionable if respondents could use salt information on food labels, considering their poor objective knowledge of such information (Kim, et al., 2012; Newson, et al., 2013), and goal setting will be challenging for these respondents. Although they know about the association between high salt intake and '*Cardiovascular diseases',* changing behaviour to lower salt intake was not important to them, and such changes may be difficult to promote (Eksteen & Mungal-Singh, 2015). Various **facilitators and barriers** can influence consumers' health behaviour. Respondents' relative high subjective understanding of food labels in this study can be regarded as a ***facilitator*** of behaviour change, because consumers with high subjective understanding, due to confidence in their own abilities of understanding labels, are more inclined to use food label information than those with high objective knowledge (Liu, et al., 2015; Pieniak, Aertsens, & Verbeke, 2010; Sun, et al., 2015). Complimentary to respondents' subjective understanding of food labels, is the Heart- and Salt Watch symbols that were perceived as healthy and helpful labels. Low literate consumers are inclined to concrete and pictographic thinking and the Salt Watch symbol can facilitate understanding of salt information on food labels.

Identified ***barriers of change*** in this study are threefold. Firstly, *socio-demographic factors* such as literacy and income can be regarded as barriers in behaviour change. Low literacy levels can contribute to ineffective use of food label information, and the present study, illustrates a lower NFC among respondents, and the probability to rely more on symbols and graphic presentations for information (Viswanathan, et al., 2009). Furthermore, low-income levels (91% earn ≤R3000/month) contributed to respondents' inability to purchase a variety of foods, resulting in the consumption of unhealthy, low cost foods that are often high in salt (Feeley, et al., 2012; Temple, et al., 2011), thus contributing to HT. The second barrier is respondents' negative *affective feelings* regarding the liking and trust of food labels, as well as the helpfulness of labels. These feelings can be regarded as a barrier in the use of food labels, possibly due to low literacy levels, difficult terminology, accuracy and truthfulness of label information and health claims (Asiegbu, et al., 2012; Grunert & Wills, 2007; Misra, 2007; Wong, et al., 2013). Finally, the *misconceptions about salt* that respondents have is the third barrier. Although respondents were aware of the role of salt in HT, they held various misconceptions, cultural and social beliefs about salt (De Brito-Ashurst, et al., 2011; Eksteen & Mungal-Singh, 2015). In this study aspects such as: drinking of water can neutralise the

effect of too much salt; food without salt is unhealthy; and lower salt intake causes cramps, was influential in salt intake behaviour.

5. Conclusion

Consumers are susceptible to high salt intake due to socio-demographic and behavioural risk factors that could contribute to the development of HT, and ultimately CVDs. By applying Bandura's five core determinants of the SCA, the researchers gained insight into rural consumers' attitudes towards salt information on food labels. Concerning the cognitive components, respondents' objective knowledge of all aspects regarding salt was low to average. A matter of concern is that respondents with HT, as well as those with household members with HT had low knowledge of the salt content of food, and older respondents' knowledge was lower than younger respondents'. Regarding the use of food labels, all respondent age groups, except for those 60 years and older, regarded themselves as self-efficient since subjective knowledge of food labels was high. Although respondents were concerned about salt intake, they did not believe that their own intake was high and that limiting salt intake will improve their health. Respondents indicated that they use food labels, but from investigating the affective component, it was found that they tended to dislike and distrust labels as a source of information. Taste of food was an important determinant for the use of salt, and probably outplayed the health benefit of lowering salt intake. Concerning the conative component, it was found that older respondents' source of salt intake was more discretionary (from added salt alone during cooking or at table), while younger respondents tended to use condiments in combination with salt. It was also younger respondents that consumed more salt from non-discretionary sources. Rural respondents are also subjected to the Westernised diet, and the main sources of salt were from bread and stock and soup powder. Respondents related better to FOP labels, and understood the Salt Watch Symbol, but the actual use of labels is doubtful.

In view of the tri-component model of attitudes, respondents must have objective and subjective knowledge (cognitive); positive affective feelings (affective) and display affirmative behaviour (conative) regarding salt information on food labels to have a positive attitude towards this information on food labels. If all results are considered, it can be concluded that the rural respondents who participated in this study did not hold a positive attitude regarding salt information on food labels. A limitation of this study is the self-reported, and not measured responses, but the value of this exploratory study lies in confirming respondents' inability to obtain salt information from food labels, as well as establishing their main sources of salt intake.

The South African government's strategy (South Africa, 2016) to lower the salt content of certain categories of processed foods is commendable. However, considering Bandura's argument that behaviour is mediated by cognitive processes, it is important and recommended to empower consumers by providing salt information in a format that they will be able to understand, to make informed purchase decisions. It is necessary to educate low-literate consumers in a concrete manner regarding the salt content of food, and how to improve their food choices to reduce their daily salt intake. Although not implemented yet, the Salt Watch symbol, with its concrete and pictographic properties presented in traffic light colours, can be regarded as a suitable FOP label to inform consumers. It is also important to consider that respondents are part of a social environment, and group efficacy can be created with shared goals (Bandura, 2004) to lower salt intake.

6. Acknowledgements

Sources of funding: The study was partially funded by the National Research Foundation. Disclaimer: "'Any findings included in this material are the opinion of the authors and therefore the NRF does not accept any liability in regard thereto." Funding supplied by the Centre of Excellence for Nutrition (NWU) is acknowledged with gratitude.
Conflict of interest: There has been no conflict of interest.
Authors' contributions: H.v.S: Was principal investigator of the study, organized the literature collection and application, adapting and refining of the questionnaire, data interpretation and writing of the manuscript. E. W-V: initialised the study, acted as main supervisor of the study; co-responsible for literature application, adapting and refining the questionnaire, data interpretation and critically review the manuscript. D.v.d.M.: acted as co-supervisor to the study, and partially funded the study; co-responsible for literature application, adapting and refining the questionnaire, data interpretation and critically review the manuscript. S.E.: was responsible for statistical analysis and interpretation.

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CHAPTER 5
CONCLUDING DISCUSSION

5.1 Introduction

The purpose of this cross-sectional descriptive survey was to explore and describe, from a social cognitive perspective as well as the tri-component model of attitudes, black rural consumers' cognitive, affective, and conative attitudes regarding the use of salt information on food labels in a rural area in the NCP. Barriers preventing rural consumers to use salt information on food labels were deducted from the results of the study. Therefore, the broad research question of this study was: What are black rural consumers' attitudes toward the use of salt information on food labels?

5.2 Conclusion

Hypertension is a metabolic risk factor of CVD, and high levels of HT is evident is South Africa, also among rural consumers. One of the main risk factors for HT is the excess intake of dietary salt, from discretionary as well as non-discretionary sources. Food labels are important sources of information of the salt content of food, and it is important that consumers must be able to consult these labels in order to make informed purchase decisions. It was therefore important to investigate rural consumers' attitudes regarding the salt information on food labels. This concluding chapter is presented in accordance with the purpose and objectives of this study, in order to answer the research question, namely: What are black rural consumers' attitudes toward the use of salt information on food labels?

5.2.1 Literature-related objective

A literature review concerning consumers' attitudes regarding the use of salt information on food labels is presented in Chapter 2. In order to fulfil this objective, various scientific databases (for example: Ebscohost, Science Direct and Google Scholar) were consulted to obtain the relevant background knowledge regarding CVDs, HT, the role of salt in blood pressure and salt information on food labels. By obtaining sufficient background knowledge on the topic, the researcher was able to formulate the empirical objectives, and develop a questionnaire in order to answer the research question.

5.2.2 Empirically related objectives

The following specific objectives of this study were stated and investigated by means of interviewer administered questionnaires. A summary of the results, to fulfil the objectives is presented.

5.2.2.1 Demographic characteristics of the respondents

The respondents of this study were residents of a rural setting in the NCP South Africa, and the majority of them were younger than 40 years. They experienced low-income levels, as 91.2% earned ZAR 3000.00 or less. Most of respondents had a school qualification of Grade 9 or lower. Self-reported HT was evident amongst 51% of respondents and 37% had household members that experienced HT. Ninety per cent of respondents were responsible for household purchases, and 56% indicated that they consult food labels.

5.2.2.2 Respondents' attitudes regarding the use of salt information on food labels

Respondents' attitudes were investigated, applying the tri-component model of attitudes, and will be reported accordingly.

- The **cognitive component of attitudes** addressed respondents' objective knowledge, perceptions (subjective knowledge), and beliefs of salt information on food labels. Respondents had poor **objective knowledge** about the allowed quantity of daily salt intake and that 5g salt equals a teaspoon. Their knowledge of food with medium salt content such as bread and fresh cooked vegetables as well as '*Less known high salt food'* were also poor. Knowledge of '*Better known high salt food'* and '*Low salt food'* was average. Regarding the typical nutritional fact panel on BOP (ability to identify the product with the highest sodium content, the amount of sodium in the product, and knowledge that there is sodium in salt) knowledge was average, but they displayed poor knowledge regarding the salt/sodium relationship, and were not able to convert sodium to salt. Respondents' knowledge regarding diet/disease relationship was also investigated and knowledge of '*Cardiovascular diseases'* was good, but poor for "*Other diseases".* Regarding respondents' **subjective knowledge**, they had positive perceptions of their own abilities to understand salt information on food labels. Respondents also acknowledged *"Perceived healthiness symbol"* (Heart and Salt Watch symbols) and *"Perceived helpful labels"*. It was evident that respondents had various **beliefs** about salt. Low numbers of respondents believed that they eat too much salt, and that their health will improve with lower salt intake. Taste was important to respondents, and they believed that food with limited quantities of salt taste bad and that salt improves the taste of food. They also had misconceptions about salt, namely that less salt causes cramps in legs, drinking water will let salt disappear, and that sea-salt is better than table salt.
- The **affective component of attitudes** related to respondents' liking, trust, and feelings about salt information on food labels, and respondents had slightly positive to neutral

feelings about *"Trust Heart symbol and label", "Concern about healthy food"* and "*Like and trust BOP and FOP labels".*

- The **conative component of attitudes** concerned respondents' purchase behaviour of food, their behaviour associated with salt intake, and the discretionary- and non-discretionary sources of salt intake. Respondents indicated that they sometimes *"Consult food labels"* and "*Buy take-away and cheap food".* Regarding *"Discretionary salt use in food*

  Preparation", they indicated to use between a half teaspoon and a teaspoon salt when preparing food, but also sometimes *"Discretionary use of salt and condiments"* and "*Use margarine and sauces"*. Concerning non-discretionary salt use, respondents consumed "*High salt convenience foods*" once a week, but "*Fruit and vegetables*", "*Fish, sauce and starches", "Bread and toppings"*, and "*Stock and soup powder"* almost 2-3 times a week. Respondents also acknowledged the *"Importance of low salt intake"*.

5.2.2.3 Interpretation of respondents' attitudes regarding salt information on food labels considering the five core-determinants of the socio-cognitive approach

The five core-determinants of the SCA include knowledge, perceived self-efficacy, outcome expectations, goals, and facilitators and barriers of behaviour change.

- **Objective knowledge**

Objective knowledge of salt intake, diet/disease relationship, salt content of food, salt/sodium relationship, and salt information is a requirement for respondents to change behaviour regarding salt intake. Respondents displayed low knowledge of daily salt intake, salt content of food and the salt/sodium relationship, and poor ability to use salt information on food labels. Older respondents, those experiencing HT, as well as those with household members with HT tended to be less knowledgeable of '*Low salt food'*. Respondents that had knowledge of '*Cardiovascular diseases',* also had knowledge of '*Better known high salt food'*. Only a third of respondents believed that they consumed too much salt and displayed concern about their salt intake, but were not concerned about the healthiness of the food, and did not consult food labels. This is alarming, considering that knowledge of health risks (high intake of salt in relation to HT and CVDs) is a pre-condition for behaviour change. Poor objective knowledge of aspects related to salt can be a barrier for changing behaviour.

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- **Perceived self-efficacy**

Perceived self-efficacy is related to respondents' belief in their abilities to understand food labels, and they displayed high subjective understanding of food labels, and therefore

perceived themselves as able to understand the salt information on BOP and FOP. Older consumers displayed lower levels of subjective understanding. However, respondents' objective knowledge of aspects related to salt, is contradicting their perceived self-efficacy, which can possibly be contributed to low-literacy levels, as evident in the respondents. Although respondents regarded themselves as self-effective when reading food labels, their neutral feelings of food labels is of concern, with implications for the actual use of labels.

- **Outcome expectations**

Consumers' expected outcomes of health-related behaviour change is related to the physical, social approval/disapproval and self-evaluative outcomes of such change.

- Physical outcomes

Respondents had good knowledge about "*Cardiovascular diseases*", and displayed some concern about their salt intake. However, this concern is in doubt, as only a third of them believed in the health benefits of lowering daily salt intake, and changing their behaviour regarding salt intake was also not important.

- Social approval/disapproval outcomes

Diet is important in consumers' social life, and it manifested in respondents' adoption of the socially acceptable, Westernised diet that is high in refined and processed foods. This was evident in their susceptibility to non-discretionary salt intake. The taste of food during food preparation was also very important, as respondents believed that food with little salt taste bad, which can be influential in their decision to lower salt intake.

- Self-evaluative outcomes

Respondents were not able to objectively evaluate their daily salt intake, and considering the correlation between discretionary and non-discretionary salt intake, respondents' salt intake came from various sources. However, younger respondents' salt intake was more non-discretionary, than that of older respondents. During food preparation, younger respondents' salt intake came from a combination of '*Discretionary use of salt and condiments'*, while older respondents' intake was more from discretionary sources, namely salt only. Bread as non-discretionary source of salt was consumed almost daily, and did not reveal any differences between age groups. Respondents' *'Fruit and vegetables'* intake was rather low, with younger respondents' intake lower than older age groups.

- **Goals**

Consumers' self-efficacy beliefs are related to health behaviour (setting goals to lower salt intake), but it is uncertain if respondents can use salt information on food labels, considering their poor objective knowledge of such information. Respondents had good knowledge of the

relation between '*Cardiovascular diseases'* and high salt intake, but goal setting, to change salt intake behaviour, will be challenging because lower salt intake was not important to these respondents.

5.2.2.4 Facilitators and barriers to behaviour change

- **Facilitators of behaviour change**

With reference to this study, respondents' relative high subjective knowledge of food labels can be regarded as a facilitator of behaviour change. Consumers with high subjective knowledge, due to confidence in their own abilities of understanding labels, are more inclined to use food label information than those with only high objective knowledge. Another possible facilitator of behaviour change is respondents' perception that the Heart and Salt Watch symbols are healthy and helpful labels. By providing information that consumers can understand, as with the pictographic format of the Heart and Salt Watch symbols, use of such information could be influential in consumers' purchase decision of food with a lower salt content.

- **Barriers of behaviour change**

Three types of barriers to behaviour change were identified in this study, namely socio-demographic factors, affective feelings and misconceptions about salt.

- Socio-demographic factors

Low literacy levels can contribute to poor objective knowledge of all related aspects regarding salt intake, resulting in ineffective use of salt information on food labels. Results from this study (poor objective knowledge and slightly more trust of the Heart- and Salt Watch symbols) indicate respondents' possible lower NFC, due to low-literate consumers' likelihood to rely more on symbols and graphic presentations for information than scientific and numerical information. Further, respondents' low-incomes inhibited them to purchase a variety of foods, resulting in the consumption of low cost foods, often unhealthy and high in salt, thus contributing to HT.

- Affective feelings regarding label information

Respondents indicated slightly positive affective feelings concerning the liking, trust and helpfulness of food labels on an individual basis. However, the relation between '*Trust Heart symbol and label information*' and factors such as *'Cardiovascular diseases', 'Subjective understanding of labels', 'Perceived healthiness symbol', 'Perceived helpful labels'* and 'Food taste better if cooked with salt', tended to be negative. Furthermore, *'Like and trust BOP and FOP'* tend to correlate negatively with '*Cardiovascular diseases,* '*Other diseases', 'Perceived helpful labels'*, and various beliefs regarding salt. Also of concern is that

respondents, who made household food purchases, tended not to correlate with '*Trust Heart symbol and label information'.* These negative relations can be regarded as barriers in the use of food labels. Low literacy levels, difficult terminology, accuracy and truthfulness of label information and health claims can contribute to respondents' scepticism regarding food label information.

- Misconceptions about salt

Although respondents were aware of the role of salt in HT, they hold various misconceptions and beliefs about salt, which can be due to cultural- or social habits. These include aspects such as drinking water will neutralise the effect of too much salt, food without salt is unhealthy and lower salt intake causes cramps. These misconceptions can hinder behavioural changes in salt intake.

5.2.3 Implication-related objectives

Implications of this study are related to rural consumers, stakeholders and government.

5.2.3.1 Implications for rural consumers

Globally, hypertension is soaring, and it is also evident among rural consumers who are also subjected to a Westernised diet due to the nutrition transition. They are often not knowledgeable about the sources of salt intake, contributing to their HT. Low socio-economic standards are unmistakeably part of rural consumers. Low-incomes influence the quality of their dietary intake, and low-literacy levels affect their ability to read and understand salt information on food labels. It is evident from the results of this study that respondents had negative attitudes regarding the salt information on food labels, and for consumers to change behaviour to improve their health, knowledge (cognitive component) is very important. Knowledge in this study concerns all aspects about salt and its relation to HT, and a lack of knowledge can also be influential on the affective and conative components of attitudes. The implication-related objectives of this study were to make recommendations to stakeholders relevant to research about dietary salt intake and HT, as well as the South African government responsible for the regulations regarding salt information on food labels. It is necessary that rural consumers must be educated to read and understand salt information on food labels that it is provided in a format that is easy to read and understand. Beliefs and misconceptions regarding salt must be addressed, in order to promote effective reduction of salt intake.

5.2.3.2 Implications for stakeholders

This study showed that respondents had better understanding of FOP labels due to possible pictographic thinking (Heart and Salt Watch symbols), and should be important that

stakeholders' initiatives, such as the Salt Watch symbol must be promoted and integrated on current food labels. Traffic robot colour FOP labels are internationally in use, but not in SA. Respondents showed good understanding of the Salt Watch symbol presented in traffic robot colours in the questionnaire. If the Salt Watch symbol can be implemented on food labels in SA, it will empower consumers to make informed purchase decisions regard the salt content of foods.

5.2.3.3 Implications for government

The South African government's strategy to reduce the salt content of processed foods is admirable, but it is imperative for them to realise the importance to provide salt information on food labels in such a format that consumers from all literacy levels will be able to understand it. Scientific terminology and numeric information on food labels is difficult for low-literate consumers to understand, and although respondents could identify the sodium content on a food label (BOP), they were not able to use this information and convert it to salt. Their poor knowledge of the salt content of food is another factor that can be motivational for providing a symbol such as the Salt Watch symbol in traffic robot colours in order for consumers to derive the salt content of food.

5.3 Limitations of this study and recommendations for future research

Insight was gained regarding rural consumers' attitudes regarding the salt information of food labels. However, considering the systematic sample selection, results of this study can be generalised to this particular rural community only, but not to other rural communities in South Africa, as this rural area was purposively selected. Nevertheless, this study may serve as a basis for broader research projects, including more broad-based rural communities.
Possible further research may include focus groups to gain understanding of why consumers choose or act the way they do regarding salt intake and food label behaviour.

Another limitation to this study was that respondents' household size was not determined. This could possibly have influenced respondents' report about discretionary salt intake, although a scenario of the quantity of salt usage during food preparation for 3-4 people was sketched. Further, respondents were only requested to report the frequency of discretionary salt intake, but not the quantities of these specific sources of salt intake. An additional limitation is that food intake was self-reported, and not measured, as the accuracy of the self-reported intake can be questioned.

ANNEXURES

Annexure A

English questionnaire

SECTION A

DEMOGRAPHIC and BIOGRAPHIC INFORMATION

A.1	**What is your age?**		
	18-29 years		1
	30-39		2
	40-49		3
	50-59		4
	60 years and older		5

A.2	**What is your job?**		
	Unemployed		1
	Cleaner		2
	Domestic worker		3
	Salesperson		4
	Clerical		5
	Pensioner		6
	Other, please specify:		7

A.3	**What is your highest level in school that you passed? (Formal education)**		
	Grade 5 / Standard 3		1
	Grade 6 / Standard 4		2
	Grade 7 / Standard 5		3
	Grade 8 / Standard 6		4
	Grade 9 / Standard 7		5
	Grade 10 / Standard 8		6
	Grade 12 / Standard 10		7
	Other, please specify:		8

A.4	**What is your marital status?**		
	Never married		1
	Married		2
	Cohabitation / Living together		3
	Divorced / Separated		4
	Widow		5

A.5	**What is your monthly household income?**		
	<R500		1
	R501-R1000		2
	R1001- R2000		3
	R2001- R3000		4
	R3001- R4000		5
	R4001- R5000		6
	More than R5000		7

A.6	**High blood pressure**			
		No	Don't know	Yes
A.6.1	Do you suffer from high blood pressure?			
A.6.2	Do anyone in the house suffer from high blood pressure?			
A.7	Do you buy food for the house?			
A.8	Do you look at the label on the box/packet/ bottle when you buy food?			

SECTION B COGNITIVE COMPONENT

B.1 OBJECTIVE KNOWLEDGE OF SALT INTAKE

Please look at Picture A, and tell me the following:		**Half a teaspoon**	**Teaspoon**	**Tablespoon**
B.1.1	How much salt may you eat in all your food together in one day?			
B.1.2	5g of salt is equal to?			

B.2 OBJECTIVE KNOWLEDGE OF DIET-DISEASE RELATIONSHIP

Can the following happen to you if you eat a lot of salt?		**Yes**	**No**	**Don't know**
B.2.1	High blood pressure			
B.2.2	Better health			
B.2.3	Stroke			
B.2.4	Kidney disease			
B.2.5	High sugar in blood			
B.2.6	Cancer			
B.2.7	Osteoporosis (Bones can break easy)			
B.2.8	Heart disease / Heart attack			

B.3 OBJECTIVE KNOWLEDGE OF THE SALT CONTENT OF FOOD

Can you tell me if the following foods are high, medium or low in salt?		**High**	**Medium**	**Low**
B.3.1	Bread			
B.3.2	Margarine (hard block) (for example Rama)			
B.3.3	Polony, Bacon			
B.3.4	White rice – cooked			
B.3.5	Soup powder (for example Knorr)			
B.3.6	Fresh Vegetables - cooked			
B.3.7	Breakfast cereal (for example Corn flakes)			
B.3.8	Bovril / Marmite			
B.3.9	Milk			
B.3.10	Cheddar cheese			
B.3.11	Fast food (KFC, Chicken Licken)			
B.3.12	Raw meat			
B.3.13	Gravy/Soup powder (for example Bisto)			
B.3.14	Stock block (for example Knorrox)			
B.3.15	Canned vegetables			
B.3.16	Savoury snacks and crisps (Simba chips, Nik-naks)			
B.3.17	Atchar / chutney / chakalaka / Worcester sauce			
B.3.18	Potato chips ("slap" chips)			

B.3.19	Fresh fruit			
B.3.20	Biltong / dry sausage (“droëwors”)			
B.3.21	Canned fish (pilchards)			
B.3.22	Boiled egg			
B.3.23	Pizza			
B.3.24	Meat pies			
B.3.25	Two-minute noodles			
B.3.26	Fresh Vegetables - raw			

B.4 and B.5 OBJECTIVE KNOWLEDGE OF LABEL INFORMATION

		Yes	**No**	**Don’t know**
B.4.1	Is sodium and salt the same?			
B.4.2	Is there sodium in salt			
B.4.3	Is there salt in sodium?			

Please read Labels A, B, C and D, and then answer the questions		**Label A**	**Label B**	**Don’t know**
B.5.1	Which food has the highest salt? Label A or B			
B.5.2	What is the sodium content of Label A?			
B.5.3	What is the salt content of Label A?			

B6 SUBJECTIVE KNOWLEDGE OF LABEL INFORMATION

Please answer the following		**Yes**	**No**	**Don’t know**
B.6.1	It is easy to know what the words on LABEL A mean			
B.6.2	It is easy to **understand** the numbers on LABEL A			
B.6.3	It is easy to **understand** the food label on LABEL C			
B.6.4	It is easy to **understand** the meaning of LABEL D			

B.7 PERCEIVED HEALTHINESS OF FOOD ON THE LABELS

Please answer the following		**Yes**	**No**	**Don’t know**
B.7.1	Label D say the food is healthy			
B.7.2	The food with **LABEL D** will be good for my blood pressure			
B.7.3	**LABEL E** say there is too much salt in the food			
B.7.4	Food labels can help me to choose healthy food			
B.7.5	Food labels tell me what is in the food			

B.8 BELIEFS ABOUT SALT

Can you tell me what you belief about salt?		**Yes**	**No**	**Don't know**
B.8.1	I eat too much salt			
B.8.2	My health will be better if I eat less salt			
B.8.3	Food with little salt tastes bad			
B.8.4	Food will taste better if I cook it with salt			
B.8.5	If I eat less salt, I will get cramps in my legs			
B.8.6	If I drink a lot of water, then the salt will disappear			
B.8.7	Salt from the sea is better than table salt			
B.8.8	Food without salt is unhealthy			

SECTION C AFFECTIVE COMPONENT

Please tell me how you feel about the following		**Yes**	**No**	**Don't know**
C.1.1	I worry about the amount of salt that I eat			
C.1.2	I worry that healthy food is expensive			
C.1.3	I worry about how healthy the food is			
C.1.4	I **like** how the information is written on LABEL A			
C.1.5	I **like** how the information is written on LABEL C			
C.1.6	I **trust** the information on LABEL A			
C.1.7	I **trust** the information on LABEL C			
C.1.8	I **trust** the information on LABEL D			
C.1.9	If the heart symbol is on food, I **trust** that it is healthy			
C.1.10	The information on the food label is true			
C.1.11	I **trust** that the food label can help me to choose healthy food			

SECTION D CONATIVE COMPONENT (Behaviour)

D.1 PURCHASE BEHAVIOUR

Please tell me how often do you do the following things when you buy food		**Never**	**Sometimes**	**Often**
D.1.1	Look for the salt information on the food label when shopping for food (Label A)			
D.1.2	Look for salt information on the food label when shopping (Label C)			
D.1.3	Look for the heart symbol (Label D) before I buy food			
D.1.4	Buy take-away food because it taste good			

D.1.5	Buy food that is marked “low in salt”			
D.1.6	Buy the cheapest food (even if it is not healthy)			
D.1.7	Buy take-away food even if I know it is bad for my health			

D.2 DISCRETIONARY SALT INTAKE

Please look at Picture A and tell me how much salt do you put in the following food when cooking it, when say for example, you are cooking food for 3-4 people?		**Half spoon**	**Teaspoon**	**Tablespoon**
D.2.1	Meat			
D.2.2	Porridge			
D.2.3	Rice			
D.2.4	Vegetables			
D.2.5	Stew			

D.2 DISCRETIONARY AND NON-DISCRETIONARY SALT INTAKE

Please tell me how often do you do the following things or use the following products?		**Often**	**Sometimes**	**Never**
D.2.6	Add salt to the food when cooking it			
D.2.7	Add salt to the food at the table when you eat			
D.2.8	Use salt **and** stock cubes in one pot of food when cooking			
D.2.9	Use salt **and** soup powder in one pot of food when cooking			
D.2.10	Use salt **and** Bisto in one pot of food when cooking			
D.2.11	Use hard margarine (for example Rama) when cooking			
D.2.12	Use Worcester sauce / chutney / chakalaka / atchar/ Maggi Fondor / Aromat			

D.3 NON-DISCRETIONARY SALT INTAKE

Please tell me how often do you EAT the following food products?		**Every day**	**2-3 times a week**	**Once a month or less**
D.3.1	Bread			
D.3.2	Margarine (for example Rama)			
D.3.3	Polony, Bacon (for example Eskort)			
D.3.4	White rice – cooked			
D.3.5	Soup powder (for example Knorr)			
D.3.6	Vegetables - cooked			
D.3.7	Breakfast cereal (for example Corn flakes)			

Please tell me how often do you EAT the following food products?		Every day	2-3 times a week	Once a month or less
D.3.8	Bovril / Marmite			
D.3.9	Milk			
D.3.10	Cheddar cheese			
D.3.11	Fast food / take-aways (for example KFC, Chicken Licken)			
D.3.12	Raw meat			
D.3.13	Gravy/soup powder (for example Bisto)			
D.3.14	Stock block (for example Knorrox)			
D.3.15	Canned vegetables (for example All Gold)			
D.3.16	Savoury snacks and crisps (for example Simba chips, Nik-naks)			
D.3.17	Atchar / chutney / chakalaka / Worcester sauce			
D.3.18	Potato chips (“slap” chips)			
D.3.19	Fresh fruit			
D.3.20	Biltong / dry sausage (“droë wors”)			
D.3.21	Tinned fish (pilchards)			
D.3.22	Boiled egg			
D.3.23	Pizza			
D.3.24	Meat pies			
D.3.25	Two-minute noodles			
B.3.26	Fresh Vegetables - raw			

D.4 BEHAVIOUR ASSOCIATED WITH SALT INTAKE

Do you think it is important to do the following?		Not important	Little important	Very important
D.4.1	It is important to eat less salt			
D.4.2	It is important to put less salt in the food when you cook it			
D.4.3	It is important to eat less take-aways			
D.4.4	It is important to check the food label for salt			
D.4.5	It is important to buy food with “low-salt”			
D.4.6	It is important to use herbs in the place of salt			

D.5 LEARN ABOUT THE SALT ON FOOD LABELS

Please answer the following questions		Yes	No
D.5.1	**Would you like to learn more about the use of salt and high blood pressure?**		

If Yes, where would you like to learn about high blood pressure and the use of salt? (Must be read out by interviewer and mark each one)		**Yes**	**No**
D.5.2	TV		
D.5.3	Radio		
D.5.4	Friends or family		
D.5.5	Magazines		
D.5.6	Newspaper		
D.5.7	Community centre		
D.5.8	Doctor		
D.5.9	Pharmacist		
D.5.10	Clinic		
D.5.11	In the shop		
D.5.12	Health care worker		
D.5.13	Sister at the clinic		
D.5.14	Food labels		

D.6 If the following picture (A, B or C) appear on food, what will it tell you about how much salt is in the food?

		High	**Medium**	**Low**
D.6.1				
D.6.2				
D.6.3				

Annexure B

SHOW CARDS (English, Setswana, Afrikaans)

Yes	No	Don't know
		

High	Medium	Low
		

Often	Sometimes	Never
		

PICTURE A /SETSHWANTSHO A / PRENT A		
		
• Half a teaspoon • Halofo ya leswana la tee • Halwe teelepel	• Teaspoon • Leswana la tee • Teelepel	• Tablespoon • Leswana • Eetlepel

Question B.3 Salt content of food (B.3.1-B.3.26); Question Section D: D.3 Eat behaviour (D.3.1- D.3.26)

B.3.1 **D.3.1**	• **Bread** • **Borotho** • **Brood**	

B.3.2 **D.3.2**	• **Margarine (for example Rama)** • **Botoro e thata (Sekao Rama)** • **Margarien (bv Rama)**	

B.3.3 **D.3.3**	• **Polony, Bacon, Viennas** • **Paloni, Sepeke, Viennas** • **Polonie, Spek, Viennas**	

B.3.4 **D.3.4**	• **White rice – cooked** • **Reisi e tshweu e apeilweng** • **Wit rys - gekook**	

B.3.5 **D.3.5**	• **Soup powder (for example Royco)** • **Sopo ya poere (for example Royco)** • **Soppoeier (bv Royco)**	

B.3.6 **D.3.6**	• **Vegetables – cooked** • **Merogo e apeilweng** • **Gekookte groente**	

B.3.7 **D.3.7**	• **Breakfast cereal (for example Corn flakes)** • **Dijo tsa go fitlholal (Sekao "Corn flakes")** • **Ontbytgraan (bv Corn flakes)**	

B.3.8 **D.3.8**	**Bovril / Marmite**	

B.3.9 **D.3.9**	• **Milk** • **Mashwi** • **Melk**	

B.3.10 **D.3.10**	• **Cheddar cheese** • **Kase (Cheddar)** • **Kaas (Cheddar)**	

B.3.11 **D.3.11**	**Fast food / Takeaway / Kitskos (KFC, Chicken Licken)**	

B.3.12 **D.3.12**	• **Raw meat** • **Nama e tala** • **Rou vleis**	

B.3.13 **D.3.13**	• **Gravy powder (for example Bisto)** • **Poere ya sopo kampo moro (Sekao Bisto)** • **Souspoeier (Bv Bisto)**	

B.3.14 **D.3.14**	• **Stock block (for example Knorrox)** • **Moro wa boloko (Sekao Knorrox)** • **Biefblokkie (bv Knorrox)**	 

B.3.15 **D.3.15**	• **Canned vegetables** • **Merogo e e mo thining** • **Geblikte groente**	

B.3.16 **D.3.16**	• **Savoury snacks and crisps (Simba chips, Nik-naks)** • **Diseneke (“Simba” ditshipise le di,”Nik-naks”)** • **Harde chips (bv Simba, Nik-naks)**	 

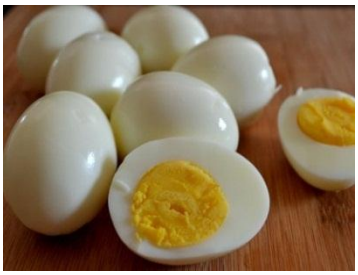
B.3.17 **D.3.17**	**Atchar / chutney / chakalaka / Worcester sauce**	   

B.3.18 **D.3.18**	• **Potato chips (“slap” chips)** • **Ditshipise** • **Slap chips - aartappelskyfies**	

B.3.19 **D.3.19**	• **Fresh fruit** • **Maungo** • **Vars vrugte**	

B.3.20 **D.3.20**	• **Biltong / dry sausage** • **Segwapa / boroso e omisitsweng** • **Biltong / droëwors**	

B.3.21 **D.3.21**	• **Canned fish (pilchards)** • **Tlhapi e mo thining** • **Geblikte vis**	

B.3.22 **D.3.22**	• **Boiled egg** • **Lee le le apeilweng mo metsing a bidisitsweng** • **Gekookte eier**	

B.3.23 **D.3.23**	**Pizza**	

B.3.24 **D.3.24**	• **Meat pies** • **Vleispastei**	

B.3.25 **D.3.25**	**Two-minute noodles**	

B.3.26 **D.3.26**	• Fresh Vegetables – raw • Merogo e e sa apeiwang • Vars groente - rou	

LABEL A
PAMPITSHANA A

KNORROX®

TYPICAL NUTRITIONAL INFORMATION

Typical Nutritional information(as packet)	Per 100g Dry Product	Per 2 cubes(20g)
Energy (kJ)	822	164
Protein (g)	2.8	0.6
Carbohydrate (g)	9	2
of which Total Sugars (g)	0.5	0.1
Total Fat (g)	16.7	3.3
of which Saturated Fat (g)	12.3	2.5
Dietary Fiber (g)	0.2	<0.1
Total Sodium (mg)	24473	4895

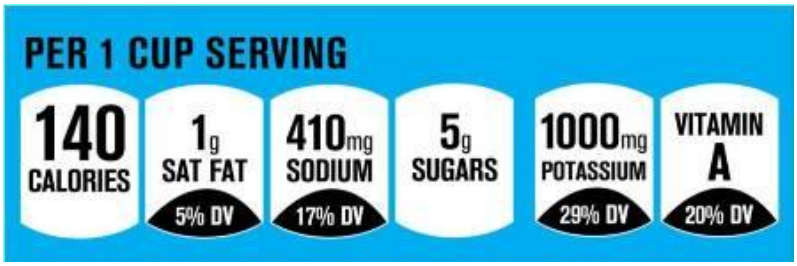
LABEL B
PAMPITSHANA B

Royco®

TYPICAL NUTRITIONAL INFORMATION

Nutrient	Per 100g Dry Product	Per 14g dry serving
Energy (kJ)	1229	169
Protein (g)	4.3	0.6
Carbohydrate (g)	67.6	9.3
of which Total Sugars (g)	6.3	0.9
Total Fat (g)	2.0	0.3
of which Saturated Fat (g)	0.8	0.1
Dietary Fiber (g)	0.7	0.1
Total Sodium (mg)	5326	732

LABEL C
PAMPITSHANA C



LABEL D
PAMPITSHANA D

LABEL E
PAMPITSHANA E

Annexure C

Combined English and Setswana questionnaire

A.1	**What is your age? / *Dingwaga tsa gago di di kae?***		
	18-29 years / *dingwaga*		1
	30-39 years / *dingwaga*		2
	40-49 years / *dingwaga*		3
	50-59 years / dingwaga		4
	60 years and older / *dingwaga le go fets*		5
A.2	**What is your job? / *Tiro ya gago ke eng?***		
	Unemployed / *Ga ke dire*		1
	Cleaner / *Mophaphafatsi*		2
	Domestic worker		3
	Salesperson / *Morekisi*		4
	Clerical / *Mokwaledi*		5
	Pensioner / *Motsofadi*		6
	Other, please specify: / ***Tse dingwe, tlhalosa ka kopo**:*		7
A.3	**What is your highest level in school that you passed? (Formal education) / *Letlha le le golo le o le falotseng kwa sekolong? (Thuto e e kwadilweng)***		
	Grade 5 / Standard 3 / *Seka-mophato 5 / Mophato 3*		1
	Grade 6 / Standard 4 / *Seka-mophato 6 / Mophato 4*		2
	Grade 7 / Standard 5 / *Seka-mophato 7 / Mophato 5*		3
	Grade 8 / Standard 6 / *Seka-mophato 8 / Mophato 6*		4
	Grade 9 / Standard 7 / *Seka-mophato 9 / Mophato 7*		5
	Grade 10 / Standard 8 / *Seka-mophato 10 / Mophato 8*		6
	Grade 10 / Standard 8 / *Seka-mophato 11 / Mophato 9*		7
	Grade 12 / Standard 10 / *Seka-mophato 12 / Mophato 10*		8
	Other, please specify: / *Tse dingwe, tlhalosa ka kopo:***		9

A.4	**What is your marital status? / Maemo a gago a nyalo?**		
	Never married / *Ga ke ise ke nyalwe*		1
	Married / *Ke nyetswe*		2
	Cohabitation / *Living together* / *Ke nna mmogo le molekane*		3
	Divorced / Separated / *Tlhalano / Aroganye*		4
	Widow / *Motlholagadi/Moswagadi*		5
A.5	**What is your monthly household income? / *Letseno la madi la lapa ka kgwedi?***		
	<R500		1
	R501-R1000		2
	R1001- R2000		3
	R2001- R3000		4
	R3001- R4000		5
	R4001- R5000		6
	More than / *Go feta* R5000		7

A.6	**High blood pressure / Kgatelelo ya madi e e kwa godimo**			
		Yes / *Ee*	**No / *Nyaa***	**Don't know / *Ga ke itse***
A.6.1	Do you suffer from high blood pressure? / *A o nale bolwetse ba kgatelelo ya madi e ekwa godimo?*			
A.6.2	Do anyone in the house suffer from high blood pressure? / *A mongwe mo lapng o na le bolwetse ba kgatelelo ya madi e e kwa godimo?*			
A.7	Do you buy food for the house? / *A ke wena o rekang dijo tsa ka f alapeng?*			
A.8	Do you look at the label on the box/packet/ bottle when you buy food? / *A o lebelela pampitshana ya tshedimodetso mo lepokising kana botlolo ya dijo fa o reka dijo?*			

Please look at <u>PICTURE A,</u> and tell me the following: / <u>LEBELE A</u> setshwnatsho a, o be o araba tse di latelang:

		Half teaspoon / *Halofo ya leswana la tee*	**Teaspoon / *Leswana la tee***	**Tablespoon / *Leswana***
B.1.1	How much salt may you eat in total in your food in one day? / *Takanyetse ya letswai le o ka le jang mo dijong tsa letsatsi lotlhe ke?*			
B.1.2	5g of salt is the same as? / *5g ya letswai e kalekanngwa le ?*			

Please look at <u>PICTURE A</u> and tell me how much salt do you put in the following food when cooking it, when say for example, you are cooking food for 3-4 people? / *<u>LEBELE SETSHWANTSHO A</u> o be o mpolelela gore o tshela letswai lele kae fa o apaya dijo tse dilatelang, fa o apeela batho bale bararo(3) go ya go ba le bane(4)?*

		Half teaspoon / *Halofo ya leswana la tee*	**Teaspoon / *Leswana la tee***	**Tablespoon / *Leswana***
D.2.1	Meat / *Nama*			
D.2.2	Porridge / *Bogobe*			
D.2.3	Rice / *Reisi*			
D.2.4	Vegetables / *Merogo*			
D.2.5	Stew / *Setshu sa nama*			

Can you get the following illness if you eat too much salt? / Aa tse di latelang di ka diragala fa o ja letswai le le ntsi?

		Yes / *Ee*	**No / *Nyaa***	**Don't know / *Ga ke itse***
B.2.1	High blood pressure / *Kgatelelo ya madi*			
B.2.2	Better health / *Pholo e e botoka*			
B.2.3	Stroke / *Strouku*			
B.2.4	Kidney disease / *Bolwetse ba diphilo*			
B.2.5	High sugar in blood / *Bolwetse ba sukiri*			
B.2.6	Cancer / *Kankere*			
B.2.7	Osteoporosis (Bones can break easy) / *Bolwetse ba marapo aa bokoa (Marapo a ka robega bonolo)*			
B.2.8	Heart disease / Heart attack / *Bolwetse ba pelo*			

Please tell me if the following foods are high, medium or low in salt? Also tell me how often you eat this food. /

A o ka bolela gore dijo tse di latelang di na le lestwai le lentsi kampo lelel kwa tlase?

		High / ***Go dimo***	**Medium /** ***Maga reng***	**Low /** ***Kwa tlase***		**Everyday /** ***Letsatsilen gwe le lengwe***	**2 or 3x a week /** ***Gabedi (2) go ya go gararo (3) mo bekeng***	**Once a week /** ***Gangwe mo bekeng***	**Once a month or less /** ***Gangwe kampo go le gonnye mokgweding***
B.3.1/ D.3.1	Bread / *Borotho*								
B.3.2/ D.3.2	Margarine (hard block) (for example Rama) / *Botoro (e thata) (Sekao Rama)*								
B.3.3/ D.3.3	Polony, Bacon, Viennas / *Paloni, sepeke, Viennas*								
B.3.4/ D.3.4	White rice – cooked / *Reisi e tshweu e apeilweng*								
B.3.5/ D.3.5	Soup powder (for example Royco) / *Sopo ya poere (Sekao Royco)*								
B.3.6/ D.3.6	Fresh Vegetables – cooked / *Merogo e apeilweng*								
B.3.7/ D.3.7	Breakfast cereal (for example Corn flakes) / *Dijo tsa go fitlholal (Sekao "Corn flakes")*								
B.3.8/ D.3.8	Bovril / Marmite								
B.3.9/ D.3.9	Milk / *Mashwi*								
B.3.10/ D.3.10	Cheddar cheese / *Kase ya "Cheddar"*								
B.3.11/ D.3.11	Take away/Fast food (for example KFC)								
B.3.12/ D.3.12	Raw meat / *Nama e tala*								

		High / *Go dimo*	Medium / *Maga reng*	Low / *Kwa tlase*		Everyday / *Letsatsilen gwe le lengwe*	2 or 3x a week / *Gabedi (2) go ya go gararo (3) mo bekeng*	Once a week / *Gangwe mo bekeng*	Once a month or less / *Gangwe kampo go le gonnye mokgweding*
B.3.13/ D.3.13	Gravy (for example Bisto) / *Poere ya sopo kampo moro (Sekao Bisto)*								
B.3.14/ D.3.14	Stock block (for example Knorrox) / *Moro wa boloko (Sekao Knorrox)*								
B.3.15/ D.3.15	Canned vegetables / *Merogo e e mo thining*								
B.3.16/ D.3.16	Savoury snacks and crisps (for example Simba chips, Nik-naks) / *Diseneke ("Simba" ditshipise le di,"Nik-naks")*								
B.3.17/ D.3.17	Atchar / chutney / chakalaka / Worcester sauce								
B.3.18/ D.3.18	Potato chips ("slap" chips) / *Ditshipise*								
B.3.19/ D.3.19	Fresh fruit / *Maungo*								
B.3.20/ D.3.20	Biltong / dry sausage ("droëwors") / *Segwapa / boroso e omisitsweng*								
B.3.21/ D.3.21	Canned fish (pilchards) / *Tlhapi e mothining*								
B.3.22/ D.3.22	Boiled egg (Just boiled; nothing added) / *Lee le le apeilweng mo metsing a bidisitsweng fela*								
B.3.23/ D.3.23	Pizza								
B.3.24/ D.3.24	Meat pies								
B.3.25/ D.3.25	Two-minute noodles								
B.3.26/ D.3.26	Fresh Vegetables – raw / *Merogo e e sa apeiwang*								

Please answer the following questions / ***Ka Kopo araba dipotso tse di latelang***

		Yes / ***Ee***	**No /** ***Nyaa***	**Don't know /** ***Ga ke itse***
B.4.1	Is sodium and salt the same? / *A sodiamo lel etswai ke selo se le sengwe?*			
B.4.2	Is there sodium in salt? / *A go nale sodiamo mo letswaing?*			
B.4.3	Is there salt in sodium? / *A go nale letswai mo sodiamong?*			

Please look at Labels A and B, and then answer the questions / ***Buisa dipampitshana A le B o be o araba dipotso tse di latelang***

		Label A / ***Pampitshana A***	**Label B /** ***Pampitshana B***	**Don't know /** ***Ga ke itse***
B.5.1	Which product has the highest salt? Label A or B / *Ke sejo se feng se nang le letswai le le kwa godimo? Pampitshana A kgotsa B*			
B.5.2	How much sodium is in Label A? / *Boleng ba sodiamo la Pampitshana A ke eng?*			
B.5.3	How much salt is in Label A? / *Boleng ba letswai la Pampitshana A ke eng?*			

Please look at Labels A, B, C, D and E, and then answer the questions / ***Buisa dipampitshana A, B, C, D le E o be o araba dipotso tse di latelang***

		Yes / ***Ee***	**No /** ***Nyaa***	**Don't know /** ***Ga ke itse***
B.6.1	It is easy to understand the **WORDS** on **LABEL A** / *A go bonolo go itse bokao ba mafokok a mo* ***Pampitshaneng ya A****?*			
B.6.2	It is easy to understand the **NUMBERS** on **LABEL A** / *A go bonolo go tlhaloganya di palo mo* ***Pampitshaneng ya A****?*			
B.6.3	It is easy to **understand LABEL C /** *A go bonolo go tlhaloganyabokao ba mafokok a mo* ***Pampitshaneng ya C****?*			
B.6.4	I **understand** the meaning of **LABEL D /** *A go bonolo go tlhaloganyabokao ba mafokok a mo* ***Pampitshaneng ya D****?*			
B.7.1	**LABEL D** say the food is healthy / *A* ***pampitshana D*** *e kaya fa sejo se itekanetse? / A pampitshana D e kaya fa sejo se itekanetse?*			
B.7.2	The food with **LABEL D** will be good for my blood pressure / Sejo sa pampitshana D se siametse kgatelelo ya madi?			
B.7.3	**LABEL E** say there is too much salt in the food / A pampitshana E e tsibosa ka letswai lelel ntsi mo sejong?			
B.7.4	Food labels can help me to choose healthy food / Dipampitshana de nthusa go tlhopa dijo tse di itekanetseng			
B.7.5	Food labels tell me what is in the food / Dipampitshana di nthusa go tlhaloganya se se mo teng ga dijo			

Please answer the following: / ***Kakopo araba sese latelang:***

		Yes / ***Ee***	**No /** ***Nyaa***	**Don't know /** ***Ga ke itse***
B.8.1	I eat too much salt / *Ke ja letswai le le ntsi*			
B.8.2	My health will be better if I eat less salt / *Pholo ya me e botoka fa ke ja letswai le le kwa tlase*			
B.8.3	Food with little salt tastes bad / *Dijo tsa letswai lele kwa tlase di nale tatso e e bosula*			
B.8.4	Food taste better if I cook it with salt / *Dijo di tla nna le tatso e e botoka fa ke di apaya ka letswai*			
B.8.5	If I eat less salt, I will get cramps in my legs / *Fa ke ja letswai lelel nnye, ke tla nna le bogatsu mo maotong*			
B.8.6	If I drink a lot of water, the salt will disappear / *Fa ke nwa metsi a mantsi, letswai le tla nyelela*			
B.8.7	Salt from the sea is better than table salt / *Letswai la kwa lewatleng le botoka go nale la mo tafoleng*			
B.8.8	Food without salt is unhealthy / *Dijo tse di se nang lestwai ga di a itekanela*			

		Yes / ***Ee***	**No /** ***Nyaa***	**Don't know /** ***Ga ke itse***
C.1.1	I worry about the amount of salt that I eat / *Ke tshwenyega ka palo ya letswai le ke le jang*			
C.1.2	I worry that healthy food is expensive / *Ke tshwenyega bo tlhwatlhwa-godimo ba dijo tse di itekanetseng*			
C.1.3	I worry about how healthy the food is / *Ke tshwenyega ka boitekanelo ba dijo*			
C.1.4	I **like** how the information is written on **LABEL A** / *Ke rata ka fa tshedimosetso ya* ***Pampitshana A*** *e kwadilweng*			
C.1.5	I **like** how the information is written on **LABEL C** / *Ke rata ka fa tshedimosetso ya* ***Pampitshana C*** *e kwadilweng*			
C.1.6	I **trust** the information **on LABEL A /** *Ke tshepa tshedimosetso ya* ***Pampitshana A***			
C.1.7	I **trust** the information on **LABEL C** / *Ke tshepa tshedimosetso ya* ***Pampitshana C***			
C.1.8	I **trust** the information on **LABEL D** / Ke tshepa tshedimosetso ya **Pampitshana D**			
C.1.9	If the heart symbol is on food, I **trust** that it is healthy / *Fa ke bona letshwao la pelo mo pampitshaneng ya sejo, ke* tshepa gore ke se se itekanetseng			
C.1.10	I **trust** the information on the food label / *Tshedimosetso e e leng mo dipampitshaneng tsa dijo ke ya nnete*			
C.1.11	I **trust** that the food label can help me to choose healthy food / *Ke tshepa gore tshedimosetso e e mo pampitshaneng ya dijo e ka nthusa go tlhopha dijo tse di itekanetseng*			

Please tell me how often do you do the following things:

		Often / *Ka metlha*	**Sometimes / *Nakongwe***	**Never / *Ga ke dire jalo***
D.1.1	Look for the salt information on the food label when shopping for food (**Label A**) / *Ke lebelela tshedimosetso ka letswai mo **pampitshaneng (A**) fa* ke reka dijo			
D.1.2	Look for salt information on the food label when shopping (**Label C**) / *Ke lebelela tshedimosetso ka letswai mo **pampitshaneng (C)** fa ke reka dijo*			
D.1.3	Look for the heart symbol (**Label D**) before I buy food / *Ke lebelela letshwao la pelo (**Pampitshana D**) mo dijong pele ke di reka*			
D.1.4	Buy take-away food because it taste good / **Ke reka dijo tsa ptlako gonne di na le tatso e monate**			
D.1.5	Buy food that is marked "low in salt" / *Ke reka dijo tse di kwadilweng "letswai le le kwa tlase" ("low in salt")*			
D.1.6	Buy the cheapest food (even if it is not healthy)/ *Ke reka dijo tse di tlhwatlhwa tlase le fa di sa itekanela*			
D.1.7	Buy take-away food even if I know it is bad for my health / *K ereka dijo tsa potlako le fa ke itse gore ga di a siamela pholo ya me*			

		Often / *Ka metlha*	**Sometimes / *Nakongwe***	**Never / *Ga ke dire jalo***
D.2.6	Add salt to the food when cooking it / *Ke tshela letswai mo dijong fa ke apaya*			
D.2.7	Add salt to the food at the table when you eat / *Ke tshela letswai lele tala modijong fa ke ja mo tafoleng*			
D.2.8	Use both salt **and** stock cubes when cooking / *Ke dirisa **letswai le diboloko** tsa moro mo pitseng e le nngwe ka ke apaya*			
D.2.9	Use both salt **and** soup powder together when cooking / *Ke dirisa **letswai le sopo ya poere** mo pitseng e le nngwe ka ke apaya*			
D.2.10	Use both salt **and** Bisto together when cooking / *Ke dirisa **letswai le "Bisto"** mo pitseng e le nngwe ka ke apaya*			
D.2.11	Use hard margarine (for example Rama) when cooking / *Ke dirisa mafura a a thata (Sekao Rama) fa ke apaya*			
D.2.12	Use / Ke dirisa Worcester sauce / chutney / chakalaka / atchar/ Maggi Fondor / Aromat			

How important are the following things to you? / *A o nagana gore go botlhokwa go dira tse di latelang:*

		Very important / *Botlhokwa thata*	**Little important / *Botlhokwa nyana***	**Not important / *Ga go botlhokwa***
D.4.1	It is important to eat less salt / *Ja letswai lele kwa tlase*			
D.4.2	It is important to put less salt in the food when you cook it / *Tshela letswai le le nnye mo dijong f ao apaya*			
D.4.3	It is important to eat less take-aways / *Dijo tsa potlako o di je ka bonnye*			
D.4.4	It is important to check the food label for salt / *Sekaseka Pampitshana ya dijo go bona boleng ba letswai*			
D.4.5	It is important to buy food with "low-salt" / *Reka dijo tse di nang le letswai lele nnye*			
D.4.6	It is important to use herbs in the place of salt / *Dirisa dinoko tsa tlhago mo boemong ba letswai*			

If the following picture (A, B or C) appear on food, what will it tell you about how much salt is in the food? / *Mo setshwantsong sese latelang (A, B kampo C) kesefe sese bontshang gore letswai gale leintsi mo dijong*

		High / *Go dimo*	**Medium / *Magareng***	**Low / *Kwa tlase***
D.6.1				
D.6.2				
D.6.3				

Please answer the following questions / *Ka kopo, araba dipotso tse di latelang*

		Yes / *Ee*	**No / *Nyaa***
D.5.1	**Would you like to learn more about the use of salt and high blood pressure? / *A o ka batla go ithuta go le gontsi ka ga tiriso ya letswai le bolwetse nba kgatello ya madi e e kwa godimo?***		

If Yes, where would you like to learn about high blood pressure and the use of salt? / ***Fa karabo e le Ee, o karata go ithuta ka letswai le bolwetse nba kgatello ya madi e e kwa godimo kwa kae?***

(Must be read out by interviewer and mark each one / ***i balwa ke motsamaisi a be a tshwaa e le nngwe)***		**Yes /** ***Ee***	**No /** ***Nyaa***
D.5.2	TV / *Telebishene*		
D.5.3	Radio / *Seromamowa*		
D.5.4	Friends or family / *Ditsala le balosika*		
D.5.5	Magazines / *Dibuka*		
D.5.6	Newspaper / *Lokwalo-dikgang*		
D.5.7	Community centre		
D.5.8	Doctor / *Ngaka*		
D.5.9	Pharmacist / Chemist		
D.5.10	Clinic		
D.5.11	In the shop / *Lebenkeleng*		
D.5.12	Health care worker / *Modiredi-pholo*		
D.5.13	Sister at the clinic / *Mooki kwa clinic*		
D.5.14	Food labels / *Dipampitshana tsa dijo*		

Annexure D

Afrikaanse Vraelys

A.1	**Wat is jou ouderdom?**		
	18-29 jaar		1
	30-39		2
	40-49		3
	50-59		4
	60 jaar en ouer		5

A.2	**Wat se tipe werk doen jy?**		
	Werkloos		1
	Skoonmaker		2
	Huishulp		3
	Verkoopskonsultant		4
	Klerikale werk		5
	Pensionaris		6
	Ander, sê asseblief:		7

A.3	**Wat is u hoogste vlak in die skool wat jy geslaag het? (formele onderwys)**		
	Graad 5 / Standerd 3		1
	Graad 6 / Standerd 4		2
	Graad 7 / Standerd 5		3
	Graad 8 / Standerd 6		4
	Graad 9 / Standerd 7		5
	Graad10 / Standerd 8		6
	Graad 11 / Standerd 9		7
	Graad 12 / Standerd 10		8
	Ander, spesifiseer asseblief:		9

A.4	**Wat is jou huwelikstatus?**		
	Nooit getroud		1
	Getroud		2
	Samewoon/ saamleef		3
	Geskei		4
	Weduwee		5

A.5	**Wat is jou maandelikse huishoudelike inkomste?**		
	<R500		1
	R501-R1000		2
	R1001- R2000		3
	R2001- R3000		4
	R3001- R4000		5
	R4001- R5000		6
	More than R5000		7

A.6	**Hoë bloeddruk**	**Ja**	**Nee**	**Weet nie**
A.6.1	Het jy hoë bloeddruk?			
A.6.2	Ly enige iemand in die huis aan hoë bloeddruk?			
A.7	Koop jy die kos vir die huis?			
A.8	Kyk jy na die etiket op die boks / pakkie / bottel wanneer jy kos koop?			

Kyk asseblief na <u>Prent A</u>, en sê vir my die volgende:		**'n Halwe teelepel**	**Teelepel**	**Eetlepel**
B.1.1	Hoeveel sout mag jy alles tesaam in al jou kos eet in een dag?			
B.1.2	5g sout is gelyk aan?			

Kyk asseblief na <u>Prent A</u>, en sê vir my hoeveel sout gooi jy in die kos as jy vir 3-4 mense koskook		**'n Halwe teelepel**	**Teelepel**	**Eetlepel**
D.2.1	Vleis			
D.2.2	Pap			
D.2.3	Rys			
D.2.4	Groente			
D.2.5	Bredie			

Kan jy die volgende siektes kry as jy te veel sout eet?		**Ja**	**Nee**	**Weet nie**
B.2.1	Hoë bloeddruk			
B.2.2	Beter gesondheid			
B.2.3	Beroerte			
B.2.4	Siekte van die niere			
B.2.5	Hoë bloedsuiker			
B.2.6	Kanker			
B.2.7	Osteoporose (Bene breek maklik)			
B.2.8	Hartsiekte / Hartaanval			

	Kan jy vir my sê of die volgende kos hoog, medium of laag is in sout? Kan jy ook vir my sê hoe gereeld eet jy die kos?	**Hoog**	**Med**	**Laag**		**Elke dag**	**2 - 3x 'n week**	**Een keer 'n week**	**Een keer 'n maand of minder**
B.3.1/ D.3.1	Brood								
B.3.2/ D.3.2	Margarien (harde blok) (byvoorbeeld Rama)								
B.3.3/ D.3.3	Polony, Bacon								
B.3.4/ D.3.4	Wit rys – gaar gekook								
B.3.5/ D.3.5	Soppoeier (byvoorbeeld Royco)								
B.3.6/ D.3.6	Vars groente - gaar gekook								
B.3.7/ D.3.7	Ontbytgraan (byvoorbeeld Corn flakes)								
B.3.8/ D.3.8	Bovril / Marmite								
B.3.9/ D.3.9	Melk								
B.3.10/ D.3.10	Cheddar kaas								
B.3.11/ D.3.11	Take away/Kitskos (byvoorbeeld KFC)								
B.3.12/ D.3.12	Rou vleis								
B.3.13/ D.3.13	Sous/Soppoeier (byvoorbeeld Bisto)								
B.3.14/ D.3.14	Hoender- of Biefblokkies (byvoorbeeld Knorrox)								
B.3.15/ D.3.15	Blikkies groente								
B.3.16/ D.3.16	Sout koekies en harde chips (Simba chips, Nik-naks)								
B.3.17/ D.3.17	Atchar / chutney / chakalaka / Worcestersous								
B.3.18/ D.3.18	Slaptjips								
B.3.19/ D.3.19	Vars vrugte								
B.3.20/ D.3.20	Biltong / droëwors								
B.3.21/ D.3.21	Blikkies vis (pilchards)								
B.3.22/ D.3.22	Gekookte eier (niks bygesit nie)								
B.3.23/ D.3.23	Pizza								
B.3.24/ D.3.24	Vleispastei (Meat pies)								
B.3.25/ D.3.25	Two-minute noodles								
B.3.26/ D.3.26	Vars groente - rou								

Antwoord asseblief die vrae		Ja	Nee	Weet nie
B.4.1	Is natrium en sout dieselfde?			
B.4.2	Is daar natrium in sout?			
B.4.3	Is daar sout in natrium?			

Lees asseblief Labels A en B en antwoord dan die vrae		Label A	Label B	Weet nie
B.5.1	Watter produk het die meeste sout? Label A or B			
B.5.2	Hoeveel natrium is in Label A?			
B.5.3	Hoeveel sout is in Label A?			

Lees asseblief Labels A, B, C, D en E en antwoord dan die vrae		Ja	Nee	Weet nie
B.6.1	Is die **woorde** op LABEL A maklik om te verstaan?			
B.6.2	Die **syfers/ nommers** op LABEL A is maklik om te verstaan			
B.6.3	Dit is maklik om LABEL C te **verstaan**			
B.6.4	Dit is maklik om die betekenis van LABEL D te **verstaan**			
B.7.1	LABEL D sê die kos is gesond			
B.7.2	Die kos met LABEL D is goed vir my bloeddruk			
B.7.3	LABEL E sê dat daar te veel sout in die kos is			
B.7.4	Kos labels help my om gesonde kos te kies			
B.7.5	Kos labels help my om beter te verstaan wat in die kos is			

Antwoord asseblief die volgende:		Ja	Nee	Weet nie
B.8.1	Ek eet te veel sout			
B.8.2	My gesondheid sal beter wees as ek minder sout eet			
B.8.3	Kos met min sout smaak nie lekker nie			
B.8.4	Kos sal beter smaak as ek dit met sout kook			
B.8.5	As ek minder sout eet, gaan ek krampe in my bene kry			
B.8.6	As ek baie water drink, verdwyn die sout			
B.8.7	Sout van die see is beter as gewone sout			
B.8.8	Kos sonder sout is ongesond			

Antwoord asseblief die volgende:		**Ja**	**Nee**	**Weet nie**
C.1.1	Ek is **bekommerd** oor hoeveel sout ek eet			
C.1.2	Ek is **bekommerd** omdat gesonde kos duur is			
C.1.3	Ek is **bekommerd** oor hoe gesond die kos is			
C.1.4	Ek **hou daarvan** oor hoe die inligting op LABEL A geskryf is			
C.1.5	Ek **hou daarvan** oor hoe die inligting op LABEL C geskryf is			
C.1.6	Ek **vertrou** die inligting op LABEL A			
C.1.7	Ek **vertrou** die inligting op LABEL C			
C.1.8	Ek **vertrou** die inligting op LABEL D			
C.1.9	As die hartsimbool op kos is, **vertrou** ek dat die kos gesond is.			
C.1.10	Ek **vertou** die inligting op kos labels			
C.1.11	Ek **vertrou** dat die kos label my kan help om gesonde kos te kies			

Sê asseblief hoe gereeld doen jy die volgende dinge:		**Altyd**	**Somstyds**	**Nooit**
D.1.1	Ek kyk na die soutinligting op die kosetiket as ek kos koop (Label A)			
D.1.2	Ek kyk na die soutinligting op die kosetiket as ek kos koop (Label C)			
D.1.3	Ek soek die hartsimbool op kos voordat ek dit koop (Label D)			
D.1.4	Ek koop kitskos (take-away) omdat dit lekker smaak			
D.1.5	Ek koop kos wat gemerk is “laag in sout”			
D.1.6	Ek koop die goedkoopste kos, al is dit nie gesond nie.			
D.1.7	Ek sal kitskos (take-away) koop al weet ek dit is sleg vir my gesondheid			

Sê asseblief hoe gereeld doen jy die volgende dinge:		**Altyd**	**Somstyds**	**Nooit**
D.2.6	Gooi sout by die kos wanneer jy dit kook			
D.2.7	Gooi sout by die kos by die tafel as jy eet			
D.2.8	Gebruik **altwee** sout **en** bief/hoenderblokkies in een pot kos as jy dit kook			
D.2.9	Gebruik **altwee** sout **en** soppoeier in een pot kos as jy dit kook			
D.2.10	Gebruik **altwee** sout **en** Bisto in een pot kos as jy dit kook			
D.2.11	Gebruik harde margarien (byvoorbeeld Rama) wanneer jy kos kook			
D.2.12	Gebruik Worcester sauce / chutney / chakalaka / atchar/ Maggi Fondor / Aromat			

Hoe belangrik is die volgende dinge vir jou?		Baie belangrik	Min belangrik	Niks belangrik
D.4.1	Eet minder sout			
D.4.2	Om minder sout in die kos te sit as dit kook			
D.4.3	Eet minde kitskos (take-aways)			
D.4.4	Kyk na die kosetiket (label) vir die sout in die kos			
D.4.5	Koop kos met “laag in sout”			
D.4.6	Gebruik kruie in plaas van sout in die kos			

D.6 As die volgende prent (A, B of C) op kos is, wat sal dit vir jou sê oor hoeveel sout in die kos is?			Hoog	Med	Laag
D.6.1	**A**				
D.6.2	**B**				
D.6.3	**C**				

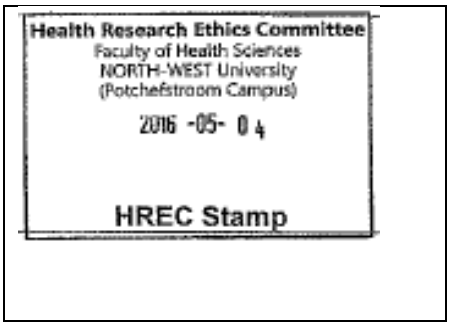
Antwoord asseblief die volgende:		Ja	Nee
D.5.1	**Sal jy graag meer wil leer van die gebruik van sout en hoë bloeddruk?**		

Indien ja, waar sal jy graag van hoë bloeddruk en sout wil leer? (Elkeen moet geantwoord word)		Ja	Nee
D.5.2	TV		
D.5.3	Radio		
D.5.4	Vriende of familie		
D.5.5	Tydskrifte		
D.5.6	Koerant		
D.5.7	Gemeenskapsentrum		
D.5.8	Dokter		
D.5.9	Apteker		
D.5.10	Kliniek		
D.5.11	In die winkel		
D.5.12	Gesondheidswerker		
D.5.13	Suster/verpleegster by die kliniek		
D.5.14	Kos etikette (labels op die kos)		

Annexure E

English Consent form

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS



PARTICIPANT INFORMATION LEAFLET AND INFORMED CONSENT FORM FOR THE RESEARCH PARTICIPANT

Consumers' attitudes and barriers regarding the use of the salt information on food labels

REFERENCE NUMBERS:

PRINCIPAL INVESTIGATOR: Prof. Edelweiss Wentzel-Viljoen

ADDRESS: North-West University, Potchefstroom Campus
Hoffman Street 11
Potchefstroom
2531

CONTACT NUMBER: 082 379 0023

You are invited to take part in this research that is part of my Master's degree about people's attitude (what they think and how they feel) about the salt information on the labels of food products. Please take some time to read this information, which will explain everything of this project. You can ask the researcher anything about this project that you do not fully understand. It is very important that you know how you can help this research, and that you are happy with everything about this research, and that you understand everything. You can decide for yourself if you want to take part in this research, and it is your free will if you don't want to take part. If you say no, this will not harm you in any way. Even if you say yes to participate, you can stop at any time if you want to if you do not want to take part any longer.

The Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU) said yes that we can do this research and the research will be done as the ethical guidelines and principles of the international Declaration of Helsinki and the ethical guidelines of the National Health Research Ethics Council say that we must do the research.

It might be necessary for the research ethics committee members or relevant authorities to inspect the research records.

What is this research all about?

- This study will be conducted in this rural area and there will be a list of questions (questionnaires) that will be asked to you with the help of people with experience to ask these questions about salt information on food labels. These questions will be asked to 300 women of this rural area.
- In this study we want to find out (objectives of this research):
    - What you know about the salt information on food labels;
    - If you like and trust the salt information on food labels;
    - How do you use the salt information on food labels; and
    - How do you use certain types of food.

Why have you been invited to take part?

- We asked you to help with this research, so that you can tell me what you do not know, like and trust about the salt information on food labels. If we see what is difficult for people, we later want to help them to read the information about salt more and better.
- We asked you to help with this research because women (the age of 18 years and older) normally buy the food, and cook the food in the house.
- You will not be able to help with this research if you are not staying in this rural area, are younger than 18 years, and reached lower than Grade 5 in school.

What will your responsibilities be?

You will be asked to answer all the questions on the list, and it will not take more than 30 minutes of your time.

Will you benefit from taking part in this research?

- When we are finished with this research, we want to help the people to read and understand the salt information on the food labels better. We also want to help you so that you can make better choices of food, then you can help somebody with high blood pressure.
- We also want to tell the people that make the food in the factories that you buy in the shop, if there is anything that people don't understand about salt on the label.

Are there risks involved in your taking part in this research?

- There is no risk for you to answer the questions, as it will not take longer than 30 minutes.
- It will cost you nothing to answer the questions.
- You don't need to worry if the answer is right or wrong, because we want to learn from your answers, and your name is not written on the paper. In the end, nobody will know which person answered the questions.
- You will help us so much if you answer the questions, then we can find out how to help the people to read the labels better, and to choose food that will not harm people with high blood pressure.

What will happen should you feel a bit uncomfortable because you are taking part in this research study?

- If you don't know your own blood pressure, or the blood pressure of somebody in your house, and you want to know more about blood pressure and the role of salt, you can ask help from the health care workers, or at the clinic.
- You can stop to take part in this study at any time if you want to.

Who will be able to get the data?

- Only the researcher and the people working with the numbers will see the answers on the questions.
- Your name is not written on the paper, but you can give you cell phone number if you want to phone to withdraw your answers from the research.
- You can also write your cell number so that we can contact you if you want to hear the results of this study.
- There will only be a number on the paper (for example 123), and only the researcher will have this number and your cell phone number.
- If we have all the answers of the questions, and write it in an article, nobody will know which woman gave the answers.
- All the papers with the questions that all the women answered will be locked away in a cupboard in the office of the co-supervisor, Prof Daleen van der Merwe. These papers will be kept for 5 years. All the answers on the papers will be typed into the computer, but it will be kept secret with a password.

What will happen with the data?

- The questions of this research will only be asked to you this one time. The results of this study can appear in a journal, or it can be told at a conference, but no names of people who took part in the study will be mentioned.

Will you be paid to take part in this study and are there any costs involved?
You will not be paid to answer the questions because the people come to your house to ask the questions, and it will cost you no money to answer the questions.

Is there anything else that you should know or do?

- You can contact Prof Edelweiss Wentzel-Viljoen at her email at edelweiss.wentzel-viljoen@nwu.ac.za if you have any further questions or have any problems about the research.
- You can also contact the Human Research Ethics Committee via Mrs Carolien van Zyl at 018 299 2089; carolien.vanzyl@nwu.ac.za if you have any problems or complaints that have not been listened to or handled by the researcher.
- You will receive a copy of this information and consent form for your own records.

How will you know about the findings?

The results of the research will be shared with you with posters, and through students that will come to this rural area at a later stage to teach you how to read the salt information on the food labels.

A) Declaration by participant

By signing below, I ……..……. agree to take part in a research study titled: Barriers and attitudes regarding consumers' use of salt information on food labels

I declare that:

- I have read / heard this information on the consent form and it is written in a language that I can understand.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher and all my questions have been answered good enough.
- I understand that I can decide to take part in this study or not, and nobody forced me to take part.
- I may choose to no longer take part in the study at any time and will not be discriminated against.
- I may be asked to leave the study at any time before it has finished.

Signed at (place) .....…..…….. on (date) ……...…….. 20....

....
Signature of participant Signature of witness

B) Declaration by person obtaining consent

I (name) ……..…… declare that:

- I explained the information in this document to ……..
- I encouraged her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did not use an interpreter.

Signed at (place) .....…..…….. on (date) ……...…….. 20....

....
Signature of person obtaining consent Signature of witness

C) Declaration by fieldworker

I (name) ……..…… declare that:

- I explained the information in this document to ……..
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (place) .....….....…….. on (date) ……...…….. 20....

....

Signature of researcher/fieldworker **Signature of witness**

Annexure F

Setswana Consent form

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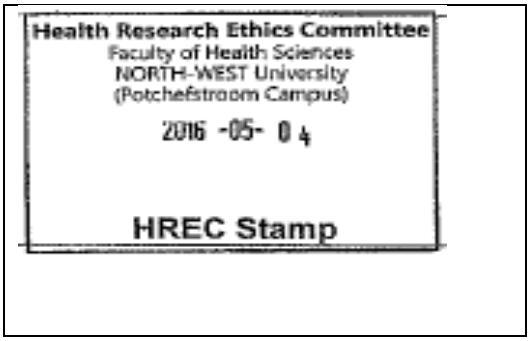

PAMPHITSHANA YA TSHEDIMOSETSO YA MOTSAYAKAROLO LE FOROMO YA GO DIRA TUMELELO KA KITSO YA MOTSAYAKAROLO MO PATLISISONG

Maikutlo a badirisi malebana le tiriso ya tshedimosetso ka letswai mo dileiboleng tsa dijo

DINOMORE-TSHUPETSO:

MMATLISISI-MOGOLO: Mop. Edelweiss Wentzel-Viljoen

ATERESE Yunibesiti ya Bokone-Bophirima, Khamphase ya Potchefstroom
Hoffman Street 11
Potchefstroom
2531

NOMORE YA GO IKGOLAGANYA LE ENE: 082 379 0023

O kopiwa go tsaya karolo mo patlisisong eno e e leng karolo ya dikirii ya me ya masetase ka maikutlo a batho (gore ba akanyang le gore Ba ikutlwa jang) ka ga tshedimosetso ka letswai mo dileiboleng tsa dijo. Tsweetswee iphe nako ya go buisa tshedimosetso eno, e e tla tlhalosang dintlha tsotlhe tsa porojeke eno. O ka botsa mmatlisisi sengwe le sengwe ka porojeke eno se o sa se tlhaloganyeng ka botlalo. Go botlhokwa thata gore o itse ka fa o ka thusang patlisiso eno ka gone, le gore o kgotsofaletse sengwe le sengwe ka patlisiso eno, le gore o tlhaloganya sengwe le sengwe. O ka nna wa itirela tshwetso ka bowena ya gore a o batla go tsaya karolo mo patlisisong eno, e bile ga o kitla o patelediwa go tsaya karolo fa o sa batle. Fa o ka gana go tsaya karolo mo go yone, seno ga se kitla se go ama ka tsela epe e e sa siamang. Le fa o dumela go tsaya karolo, o ka emisa ka nako epe fela fa o batla go emisa o sa tlhole o batla go tsaya karolo.

The Komiti ya Maitshwaro a a Siameng ya Patlisiso ka Pholo (Health Research Ethics Committee [HREC]) ya Legoro la Disaense tsa Pholo ya Yunibesiti ya Bokone-Bophirima (YBB) .....) e dumetse gore re ka nna ra dira patlisiso eno mme patlisiso, jaaka dikaelo tsa maitshwaro a a siameng le melaometheo ya dikaelo tsa maitsholo a a siameng le go ya ka melaotheo ya Maikano a Helsinki a boditšhabatšhaba a Lekgotla la Bosetšhaba la Maitshwaro la Patlisiso ka Pholo ya re re dire patlisiso eno. Go ka nna ga tlhokega gore maloko a komiti ya maitshwaro a a siameng ya patlisiso kgotsa bathati ba ba maleba ba tlhatlhobe direkoto tsa patlisiso.

Patlisiso eno e ka ga eng?

- Patlisiso eno e tla direlwa mo lefelong la metse-selegae mme go tla nna le lenaane la dipotso (dipampiri tsa dipotso tsa patlisiso) tse o tla di bodiwang ka thuso ya batho ba ba nang le maitemogelo a go botsa dipotso tseno ka tshedimosetso ka letswai mo dileiboleng tsa dijo. Dipotso tseno di tla bodiwa basadi ba le 300 ba lefelo leno la motseselegae.
- Ka tsela eno re batla go batlisisa (maikaelelo a patlisiso eno):
    - O itse eng ka tshedimosetso ka letswai mo dileiboleng tsa dijo;
    - Gore a o rata le go ikanya tshedimosetso ka letswai mo dileiboleng tsa dijo;
    - O dirisa jang tshedimosetso ka letswai mo dileiboleng tsa dijo; le gore
    - O dirisa jang mefuta e e rileng ya dijo.

Goreng ke kopilwe go tsaya karolo?

- Re go kopa go thusa ka patlisiso eno, gore mmatlisisi a ithute sengwe go tswa mo kitsong ya gago, go rata le go ikanya ga gago tshedimosetso ka letswai mo dileiboleng tsa dijo. Fa re kgona go bona gore ke eng se se thatafalelang batho, re batla gore moragonyana re ba thuse go buisa tshedimosetso ka letswai botoka go feta.
- Re go kopile go thusa ka patlisiso eno ka gonne basadi (ba dingwaga di le 18 le go feta) gantsi ba reka dijo, ba bo ba di apaya mo ntlong.
- Ga o kitla o kgona go thusa ka patlisiso eno fa o sa nne mo motse-selegaeng ono, fa o le ka fa tlae ga dingwaga di le 18, gape o sa fetsa Mophato 5 kwa sekolong.

Maikarabelo a gago e tla nna afe?

O tla kopiwa go araba dipotso tsotlhe mo lenaaneng, mme ga go kitla se tsaya metsotso e feta 30 ya nako ya gago.

A o tla solegelwa molemo ke go tsaya karolo mo patlisisong eno?

- Fa re feditse ka patlisiso eno, re batla go thusa batho go buisa le go tlhaloganya botoka tshedimosetso ka letswai mo dileiboleng tsa dijo. Gape re batla go go thusa gore o dire tlhopho e e botoka ya dijo, morago ga moo o ka nna wa thusa mongwe yo o nang le kgatelelo e e kwa godimo ya madi.
- Gape re batla go bolelela batho ba ba dirang dijo tse o di rekang mo madirelong a lebenkele fa go na le sengwe se batho ba sa se tlhaloganyeng ka letswai mo leiboleng.

A go tsaya karolo mo patlisisong eno go na le ditlamorago dipe tse di sa siamang?

- Ga go kotsi epe e e tla go tlhagelang ya go araba dipotso, ka gonne ga go kitla go tsaya metsotso e e fetang 30.

- Go araba dipotso ga go kitla go go ja madi ape.
- Ga o tlhoke go tshwenyega fa karabo e siame kgotsa e sa siama, ka gonne re batla go ithuta go tswa mo dikarabong tsa gago, e bile leina la gago ga le kwalwe mo pampiring. Kwa bokhutlong, ga go ope yo o tla itseng gore ke motho ofe yo o arabileng dipotso.
- O tla re thusa fela thata fa o araba dipotso, morago ga moo re tla batlisisa gore re ka thusa jang batho go buisa dileibole botoka, le go tlhopha dijo tse di se kitlang di gobatsa batho ka kgatelelo e e kwa godimo ya madi.

Go tla diregang fa o ka ikutlwa o sa phuthologa ka ntlha ya go tsaya karolo mo thutopatlisisong eno?

- Fa o sa itse kgatelelo ya madi ya gago, kgotsa kgatelelo ya madi ya mongwe mo ntlong ya gago, mme o batla go itse go le gontsi ka kgatelelo ya madi le seabe sa letswai, o ka kopa thuso go tswa go badiredi ba tlhokomelo ya pholo, kgotsa kwa tliliniking.
- O ka kgona go emisa go tsaya karolo mo patlisisong eno ka nako epe fela fa o batla.

Ke bomang ba ba tlileng go kgona go bona tshedimosetso?

- Babatlisisi le batho ba ba dirang ka dinomore ke bone fela ba ba tla bonang dikarabo tsa dipotso.
- Leina la gago ga le a kwalwa mo pampiring, mme go kwadilwe fela nomore le dipotso mo lekwalong leno, ka jalo fa o batla go letsa mogala go gogela dikarabo tsa gago morago mo patlisisong re tla bo re itse gore dikarabo tsa gago ke dife.
- Gape o ka nna wa kwala nomore ya gago ya sele gore re ikgolaganye le wena fa o batla go utlwa dipholo tsa patlisiso eno.
- Go tla kwalwa nomore fela mo pampiring (ka sekai 123) mme mmatlisisi ke ene fela a tla nnang le nomore eno le nomore ya gago ya sele.
- Fa re na le dikarabo tsotlhe tsa dipotso, re bo re di kwala mo athikeleng, ga go ope yo o tla itseng gore ke mosadi ofe yo o re fileng dikarabo.
- Dipampiri tsotlhe tse di nang le dipotso tsotlhe tse di arabilweng ke basadi di tla notlelelwa mo khabotong mo ofising ya mookamedi-mmogo, e leng Mop Daleen van der Merwe. Dipampiri tseno di tla bolokwa dingwaga di le 5. Dikarabo tsotlhe mo dipampiring di tla tlanngwa mo khomphiutheng, mme di tla bolokwa di le sephiri di na le khunololamoraba.

Go tla direga eng ka tshedimosetso?

- O tla bodiwa dipotso tsa patlisiso eno gangwe fela. Dipholo tsa patlisiso eno di ka tlhaga go lekwalopaka, kgotsa di ka begwa kwa khonferenseng, mme ga go kitla go umakiwa maina ape a ba ba tsereng karolo mo patlisisong.

A o tla duelelwa go nna le seabe mo patlisisong eno mme a o tla nna le ditshenyegelo dipe?
Ga o kitla o duelelwa go araba dipotso ka gonne batho ba tla mo ntlong ya gago go tla go botsa dipotso, e bile go araba dipotso ga go kitla go go ja madi ape.

A go na le sepe se sengwe se o tshwanetseng go se itse kgotsa go se dira?

- O ka ikgolaganya le Mop Edelweiss Wentzel-Viljoen ka imeile ya gagwe kwa atereseng ya edelweiss.wentzel-viljoen@nwu.ac.za fa o na le dipotso go ya pele kgotsa fa o na le mathata ape ka patlisiso.

- Gape o ka nna wa ikgolaganya le Komiti ya Maitshwaro a a Siameng ya Patlisiso ka Moh Carolien van Zyl mo nomoreng ya 018 299 2089; carolien.vanzyl@nwu.ac.za fa o na le mathata ape kgotsa matshwenyego a a iseng a reediwe kgotsa a a iseng a rarabololwe ke mmatlisisi.
- O tlile go amogela khopi ya tshedimosetso eno le ya foromo ya go dira tumelelo gore o di boloke mo direkotong tsa gago.

O tla itse jang ka diphitlhelelo?
O tla bolelelwa dipholo tsa patlisiso ka diphousetara, le ka baithuti ba ba tla tlang mo lefelong leno la metse-selegae moragonyana go go ruta tsela ya go buisa tshedimosetso ka letswai mo dileiboleng tsa dijo.

Maikano a motsayakarolo

Ka go saena fa tlase fano, nna ……..……. ke dumela go tsaya karolo mo thutopatlisisong eno ya setlhogo se se reng: Dikgoreletsi le maikutlo a badirisi malebana le tiriso ya tshedimosetso ka letswai mo dileiboleng tsa dijo

Ke netefatsa gore:

- Ke buisitse / utlwile tshedimosetso eno le foromo ya go dira tumelelo mme e kwadilwe ka puo e ke kgonang go e tlhaloganya.
- Ke nnile le tšhono ya go botsa motho yo o amogelang tumelelo le mmatlisisi dipotso mme dipotso tsotlhe tsa me di arabilwe ka tsela e e lekaneng.
- Ke a tlhaloganya gore ke ka dira tshwetso ya go tsaya karolo mo patlisisong eno kgotsa ke ka gana go dira jalo, le gore ga go ope yo o mpateleditseng go tsaya karolo.
- Ke ka nna ka tlhopha go se tlhole ke tsaya karolo mo patlisisong ka nako epe fela e bile ga ke kitla ke kgethololwa ka ntlha ya seo.
- Ke ka nna ka kopiwa go tlogela patlisiso ka nako epe fela pele e fela.

E saenilwe kwa (lefelo) .....…….. ka di (letlha) ……..…….. 20....

....
Mosaeno wa motsayakarolo Mosaeno wa mosupi

Annexure G

Afrikaans Consent form

VRYWARINGS VORM

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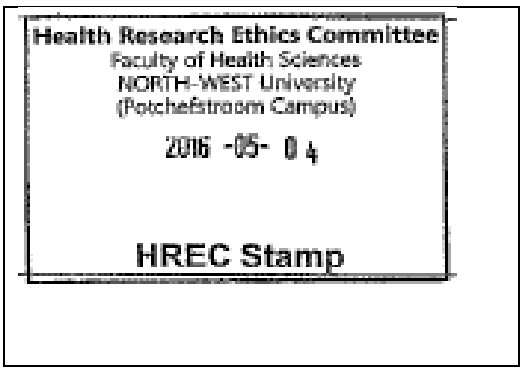

INLIGTINGSTUK EN INGELIGTE TOESTEMMING VIR DIE DEELNEMER AAN NAVORSING:

Consumers' attitudes and barriers regarding the use of the salt information on food labels

VERWYSINGSNOMMER:

HOOFNAVORSER: Prof. Edelweiss Wentzel-Viljoen

ADRES: Noordwes Universiteit, Potchefstroom Campus
Hoffmanstraat 11
Potchefstroom
2531

KONTAKNOMMER: 082 379 0023

U word uitgenooi om deel te neem aan hierdie navorsing wat deel is van my Meestersgraad oor mense se houding (wat hulle dink en hoe hulle voel) oor die soutinligting op die etikette van voedselprodukte. Neem asseblief tyd om hierdie inligting te lees, wat alles van hierdie projek sal verduidelik. Jy kan die navorser oor enige iets van hierdie projek, wat jy nie ten volle verstaan nie uitvra. Dit is baie belangrik dat jy weet hoe jy hierdie navorsing kan help, en dat jy tevrede is met alles oor hierdie navorsing, en dat jy alles verstaan. Jy kan self besluit of jy wil deelneem aan hierdie navorsing, en jy kan uit vrye wil kies om nie deel te neem nie. As jy nee sê, sal dit jou nie benadeel nie. Selfs al sê jy ja om deel te neem, kan jy te eniger tyd stop as jy wil, en nie verder wil deelneem nie.

Die "Health Research Ethics Committee" (HREC) van die Fakulteit Gesondheidswetenskappe van die Noordwes-Universiteit (NWU) het gesê ja dat ons hierdie navorsing kan doen, en ons sal die etiese riglyne en beginsels van die internasionale Verklaring van Helsinki volg, en die etiese riglyne van die Nasionale Gesondheid Etiekraad

sê dat ons die navorsing moet doen. Dit mag dalk nodig wees vir HREC of betrokke owerhede om die navorsingrekords te inspekteer

Waaroor gaan hierdie navorsing?

- Hierdie studie word in hierdie landelike gebied gedoen, en daar sal 'n lys van vrae (vraelyste) aan u gevra word. Die vrae sal gevra word, met die hulp van mense wat ondervinding het om hierdie vrae oor soutinligting op voedseletikette te vra. Hierdie vrae sal gevra word aan 300 vroue van hierdie landelike gebied.
- In hierdie studie wil ons (doelwitte van hierdie navorsing) die volgende uitvind:
    - Wat jy weet van soutinligting op voedseletikette;
    - Of jy van die soutinligting op voedseletikette hou, en of jy dit vertrou;
    - Hoe jy die soutinligting op voedseletikette gebruik; en
    - Hoe jy sekere voedselsoorte gebruik.

Hoekom word jy gevra om deel te neem?

- Ons vra jou om te help met hierdie navorsing, sodat jy my kan vertel wat jy nie weet nie, en of jy hou van- en vertroue het in die soutinligting op voedseletikette. As ons kan sien wat moeilik vir mense is, kan ons hulle later help om die inligting oor sout beter te lees en te verstaan.
- Ons vra om jou te help met hierdie navorsing omdat vroue (met die ouderdom van 18 jaar en ouer) gewoonlik die kos vir die huis koop en kook.
- Jy sal ongelukkig nie kan help met hierdie navorsing nie, as jy nie in hierdie landelike gebied bly nie, jonger as 18 jaar is, en laer as Graad 5 in die skool bereik het..

Wat is jou verantwoordelikehid?

Jy sal gevra word om al die vrae op die vraelys te beantwoord, en dit sal jou nie langer as 30 minute neem nie.

Sal jy voordeel daaruit trek om deel te neem aan hierdie navorsing?

- Wanneer ons klaar is met hierdie navorsing wil ons die mense help om die soutinligting op voedseletikette beter te lees en te verstaan. Ons wil jou ook te help om beter keuses van kos kan maak, dan kan jy iemand met 'n hoë bloeddruk help.
- Ons wil ook vir die mense wat die kos in die fabrieke maak wat jy in die winkel koop, vertel as daar iets is wat mense nie verstaan oor sout op die etiket nie.

Is daar risiko's vir jou as jy aan hierdie navorsing deelneem?

- Daar is geen risiko vir jou om die vrae te beantwoord nie, en dit sal nie langer as 30 minute neem nie.
- Dit sal jou geen geld kos om die vrae te beantwoord nie.
- Jy hoef nie te bekommerd of die antwoord reg of verkeerd is nie, want ons wil graag leer uit jou antwoorde, en jou naam word nie op die papier geskryf nie. Niemand sal weet watter persoon die vrae beantwoord het nie.
- Jy sal ons baie help as jy die vrae beantwoord, dan kan ons uitvind hoe om jou en ander mense te help om die etikette beter te lees, en om die voedsel beter te kies wat nie sleg is vir mense met hoë bloeddruk nie.

Wat sal gebeur as jy 'n bietjie ongemaklik voel, omdat jy deelneem aan hierdie navorsingstudie?

- As jy nie jou eie bloeddruk, of die bloeddruk van iemand in jou huis weet nie, en jy wil graag meer weet oor bloeddruk en die rol van sout daarin, kan jy hulp vra van die gesondheidswerkers, of by die kliniek.
- As jy wil, kan jy enige tyd stop om aan hierdie studie deel te neem

Wie sal in staat wees om die data van die studie te kry?

- Slegs die navorser en die mense wat met die syfers werk sal die antwoorde op die vrae sien.
- Jou naam word nie op die papier geskryf nie, maar jy kan jou selfoonnommer gee as jy nie meer aan die navorsing wil deelneem nie.
- Jy kan ook jou selnommer neerskryf sodat ons jou kan kontak indien jy die resultate van hierdie studie wil hê.
- Daar sal net 'n nommer op die vraelys wees (byvoorbeeld 123), en slegs die navorser sal hierdie nommer en jou selfoonnommer hê.
- As ons al die antwoorde van die vrae het, en 'n artikel daaroor skryf, sal niemand weet watter vrou die antwoorde gegee het nie.
- Al die vraelyste wat geantwoord is,sal toegesluit word in 'n kas in die kantoor van die mede-studieleier, prof Daleen van der Merwe. Hierdie vraelyste sal gehou word vir 5 jaar. Al die antwoorde op die vraelyste sal getik word in die rekenaar, maar dit sal geheim gehou word met 'n geheime kode.

Wat sal met die data gebeur?

- Die vrae van hierdie navorsing sal net hierdie eenkeer aan jou gevra word. Die resultate van hierdie studie kan in 'n joernaal verskyn, of dit kan op 'n konferensie vertel word, maar geen name van mense wat deelgeneem het aan die studie sal genoem word nie.

Sal jy betaal word om deel te neem aan hierdie studie, en is daar enige koste verbonde?

Jy sal nie betaal word om die vrae te beantwoord, want die mense kom na jou huis om die vrae te vra, en dit sal jou nie geld kos om die vrae te beantwoord nie.

Is daar enigiets anders wat jy moet weet of doen?

- Jy kan Prof Edelweiss Wentzel-Viljoen kontak by haar e-pos by edelweiss.wentzel-viljoen@nwu.ac.za as jy enige verdere vrae, of enige probleme oor die navorsing het.
- Jy kan ook HREC kontak via mev Carolien van Zyl by 018 299 2089; carolien.vanzyl@nwu.ac.za indien u enige probleme of klagtes waarna die navorser nie geluister het, of hanteer het nie.
- Jy sal 'n kopie van hierdie inligting en toestemmingsvorm ontvang vir u eie rekords.

Hoe sal jy weet van die bevindinge van die navorsing?

Die resultate van die navorsing sal met plakkate met jou gedeel word, en deur studente wat op 'n latere stadium na hierdie landelike gebied sal kom om jou te leer hoe om die soutinligting op die voedseletikette te lees.

A) Verklaring deur deelnemer

Deur hieronder te teken, gee ek .... instemming om deel te neem aan 'n navorsingstudie getiteld: Verbruikers se houdings met betrekking tot die gebruik van soutinligting op voedseletikette (Consumers' attitudes regarding the use of the salt information on food labels)
Ek verklaar dat ek:

- Hierdie inligting op die toestemmingsvorm gelees / gehoor het, en dit is geskryf in 'n taal wat ek kan verstaan.
- Kans gehad het om vrae aan beide die persoon wat toestemming verkry sowel as die navorser te vra, en dat al my vrae goed beantwoord is.
- Verstaan dat ek kan besluit om aan hierdie studie deel te neem of nie, en dat niemand my gedwing het om deel te neem nie.
- Ter enige tyd kan kies om nie meer aan hierdie studie deel te neem nie, en dat daar nie teen my gediskrimineer sal word nie.
- Enige tyd kan gevra word om die studie voor dit klaar is te verlaat.

Geteken te (plek) .....…..……. op (datum) ……...…….. 20....

....
Handtekening van deelnemer Handtekening van getuie

B) Verklaring deur die persoon wat toestemming verkry:

Ek (naam) ……..…… verklaar dat ek:

- Die inligting in hierdie dokument aan ..... verduidelik het.
- Haar aangemoedig het om vrae te vra, en dat ek genoeg tyd geneem het om dit te beantwoord.
- Tevrede is dat sy alle aspekte van die navorsing, soos hierbo bespreek voldoende verstaan
- Nie 'n tolk gebruik het nie.

Geteken te (plek).....…..……. op (datum) ……...…….. 20....

....
Handtekening van persoon wat toestemming Handtekening van getuie

C) Verklaring deur veldwerker

Ek (naam) ……..…… verklaar dat ek:

• Inligting in hierdie dokument het verduidelik aan ....

- • Haar aangemoedig het om vrae te vra en en dat ek genoeg tyd geneem het om dit te beantwoord.

• Ek is tevrede dat sy alle aspekte van die navorsing, soos hierbo bespreek voldoende verstaan
• Ek het nie gebruik nie.
Geteken te (plek).....….....…….. op (datum) ……...…….. 20....

....
Handtekening van veldwerker Handtekening van getuie

Annexure H

Accredited Setswana translator

Certificate of Translation

From: Peter T Mekgwe
Unit 12 Stellenbosch Complex
Ann Street
Robindale
Johannesburg
2194

Date: 24 April 2017

This is to Certify that: I, Peter T. Mekgwe, I am experienced and an Accredited Member of the South African Translator's Institute for the last 18 years. (Registration No. 1000281) and native to the language I translated into (Tswana).

I have to the best of my ability provided a true and accurate Translation of the source documents, namely, Setswana Questionnaire 23 Julie and Annexure F Setswana Consent Form for Hanlie Van Staden during the course of the year 2016.

Signed: _____

Date: 24 APRIL 2017

Annexure I

Author guidelines for the Journal: Appetite

APPETITE

AUTHOR INFORMATION PACK

TABLE OF CONTENTS

ISSN: 0195-6663

DESCRIPTION

Appetite is an international research journal specializing in cultural, social, psychological, sensory and physiological influences on the selection and intake of foods and drinks. It covers normal and disordered eating and drinking and welcomes studies of both human and non-human animal behaviour toward food. Appetite publishes research reports, reviews and commentaries. Thematic special issues appear regularly. From time to time the journal carries abstracts from professional meetings.

Research areas covered include:
- Psychological, social, sensory and cultural influences on appetite
- Cognitive and behavioural neuroscience of appetite
- Clinical and pre-clinical studies of disordered appetite
- Nutritional influences on appetite
- Food attitudes and consumer behaviour
- Psychology and ethnography of dietary habits
- History of food cultures

AUDIENCE

Psychology, Social Research, Neuroscience, Physiology, Nutrition, Sensory Food Science

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Annexure J

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23/04/2017

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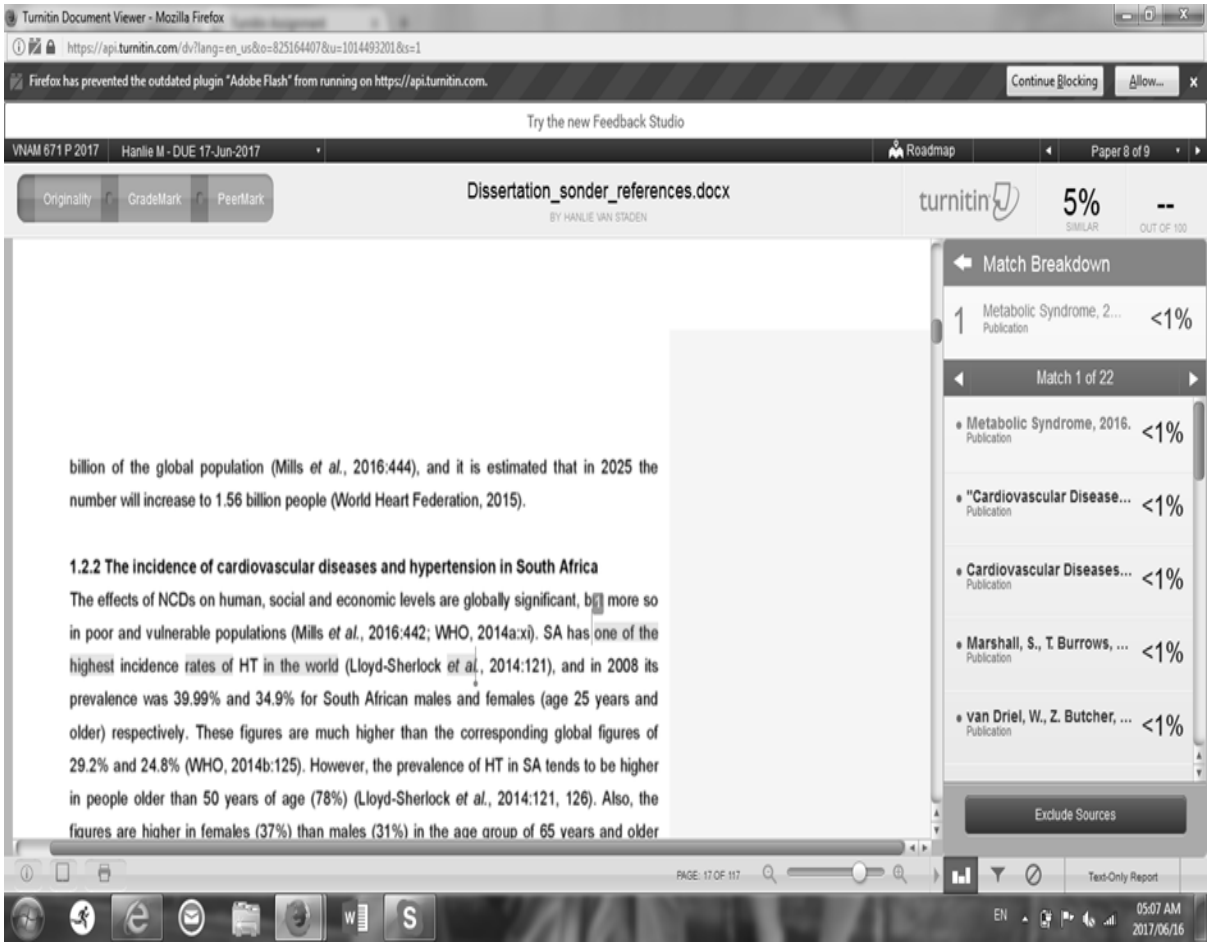

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2016-05-06

ETHICS APPROVAL CERTIFICATE OF PROJECT

Based on approval by Health Research Ethics Committee (HREC) at the meeting held on 21/10/2015, the North-West UniversityInstitutional Research Ethics Regulatory Committee (NWU-IRERC) hereby approves your project as indicated below. This implies that the NWU-IRERC grants its permission that, provided the special conditions specified below are met and pending any other authorization that may be necessary, the project may be initiated, using the ethics number below.

Project title: **Consumers' attitudes regarding the use of the salt information on food labels.**

Project Leader/Supervisor: Prof E Wentzel-Viljoen
Student: H van Staden

Ethics number:

N	W	U	-	0	0	3	4	0	-	1	5	-	A	1
Institution				Project Number							Year			Status

Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation

Application Type: Full Single Application
Commencement date: 2016-05-04 Expiry date: 2017-05-03 Risk: Minimal

Special conditions of the approval (if applicable):

- Translation of the informed consent document to the languages applicable to the study participants should be submitted to the HREC (if applicable).
- Any research at governmental or private institutions, permission must still be obtained from relevant authorities and provided to the HREC. Ethics approval is required BEFORE approval can be obtained from these authorities.

General conditions:
While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- *The project leader (principle investigator) must report in the prescribed format to the NWU-IRERC via HREC:*
  - *annually (or as otherwise requested) on the progress of the project, and upon completion of the project*
  - *without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.*
  - *Annually a number of projects may be randomly selected for an external audit.*
- *The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the HREC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.*
- *The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-IRERC via HREC and new approval received before or on the expiry date.*
- *In the interest of ethical responsibility the NWU-IRERC and HREC retains the right to:*
  - *request access to any information or data at any time during the course or after completion of the project;*
  - *- to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process.*
  - *withdraw or postpone approval if:*
  - *any unethical principles or practices of the project are revealed or suspected,*
  - *it becomes apparent that any relevant information was withheld from the HREC or that information has been false or misrepresented,*
  - *the required annual report and reporting of adverse events was not done timely and accurately,*
  - *new institutional rules, national legislation or international conventions deem it necessary.*

The IRERC would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the IRERC or HREC for any further enquiries or requests for assistance.

Yours sincerely

Prof LA Du Plessis

Digitally signed by Prof LA Du Plessis
DN: cn=Prof LA Du Plessis, o=North-West University, ou=Campus Rector, email=Linda.DuPlessis@nwu.ac.za, c=ZA
Date: 2016.05.06 15:06:06 +02'00'

Prof Linda du Plessis *Chair NWU Institutional Research Ethics Regulatory Committee (IRERC)*

Annexure M

Memorandum of understanding: Research in the Phokwane municipality

AUTHeR
African Unit for Transdisciplinary Health Research

NORTH-WEST UNIVERSITY
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NOORDWES-UNIVERSITEIT
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Web: http://www.nwu.ac.za

AUTHeR
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5 November 2015

Mr Nikani
Municipal Manager
Phokwane Municipality
Hartswater

FURTHER AMMENDMENTS FOR RESEARCH PROJECTS WITHIN THE PHOKWANE MUNICIPALITY

This letter is to serve as approval for further research that is conducted within the North- West University Potchefstroom's WIN Project.

This research entails the follwoing:

1. Programme to Support Pro-poor Policy Development PSPPD II - Addressing the Poverty and Inequality Challenge:

A partnership programme of the Presidency, Republic of South Africa and the European Union

Overall objective:

To provide empirical evidence on the potential of local food systems (LFS) to contribute to sustainable development among rural resource-poor communities by investigating six sustainability components (economic, environmental, socio-cultural, quality, governance, and health and nutrition) with emphasis on short food supply chains from producers to consumers.

Specific objectives:

1) To conduct a literature review on changing food systems in South Africa and the impact on rural development.
2) To collect empirical evidence on the role of LFS for sustainable development in Vaalharts with its specific implications for economic growth, environmental sustainability, local governance, food safety and quality, socio-cultural aspects, and health and nutrition.
3) To design sustainability indicators for monitoring and evaluating LFS towards sustainable development.
4) To design an innovative application for mobile devices that enables the interactive planning of growing sustainable diets at household level.
5) To disseminate knowledge on LFS and sustainable rural development to different actors of the local food system and rural development programs.

2. Sustainable livelihoods, health and well-being in rural communities in South Africa – a transdisciplinary multi-level approach.

Partnership programme with the Water Innovation Network.

Overall objective:

The overall aim of the WIN Project is to integrate the expertise of different disciplines to holistically promote sustainable livelihoods with emphasis on health and healthy lifestyles at community level in order to empower neglected and underserved communities to take responsibility for their own health and well-being.

Specific objectives:

1) To gain a holistic understanding of rural health and well-being by using transdisciplinary and multidimensional methods in order to support existing and design new interventions for improved rural health and well-being;
2) To reveal the multi-faceted causes of rural livelihood insecurity (including poverty, illness, food insecurity, unemployment, vulnerability) in order to identify indicators which inhibit or advance development strategies for rural health and wellbeing;
3) To assess community and households' livelihood assets (human, social, financial, physical and natural) to support asset-based community development;
4) To monitor and evaluate livelihood strategies and outcomes, the vulnerability context, and transforming structures and processes which enables appropriate adjustment and design of sustainable development programmes.
5) To evaluate the applicability of specialised psychometric measure of psychosocial health and well-being and the precautions and levels of welll-being.

This letter forms as an agreement that the North-West University and the Phokwane Municipality agrees upon the following:

1. This research can be conducted within the Phokwane municipality and on an annual basis be reported back to the Phokwane municipality on the findings of the various research programmes.

2. This letter also forms as an agreement that both parties (NWU and Phokwane Municipality) give consent that the Phokwane municipality, Municipal Manager will be kept up to date regarding research and interventions within these communities throughout the year.

Yours sincerely

Dr Petra Bester
Secundus to Prof Annamarie Kruger
Director AUTHeR

Mr Nkani
Municipal Manager Phokwane

Original details: (20317635) C:\Users\20317635\Documents\Liezbet\NC & NW Gov\Amendments for research projects within the Phokwane Municipality.docm
November 2015

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Annexure N

Tables for Cluster Analysis, Factor Analysis, Correlations, ANOVA and T-Tests

A) CLUSTER ANALYSIS

Table A1 Summary of cluster analysis for the 26-item Objective knowledge of salt content of foods

	Item	Kuder–Richardson 20 reliability coefficient	**Mean ±Standard deviation (SD)**
Cluster: Cardiovascular diseases	High blood pressure; Stroke; and Heart disease	0.51	0.78±0.29
Cluster: Other diseases	Kidney disease; Cancer; and Osteoporosis	0.70	0.48±0.39
Individual items	Better health	-	0.630±0.484
	Hyperglycaemia	-	0.194±0.396

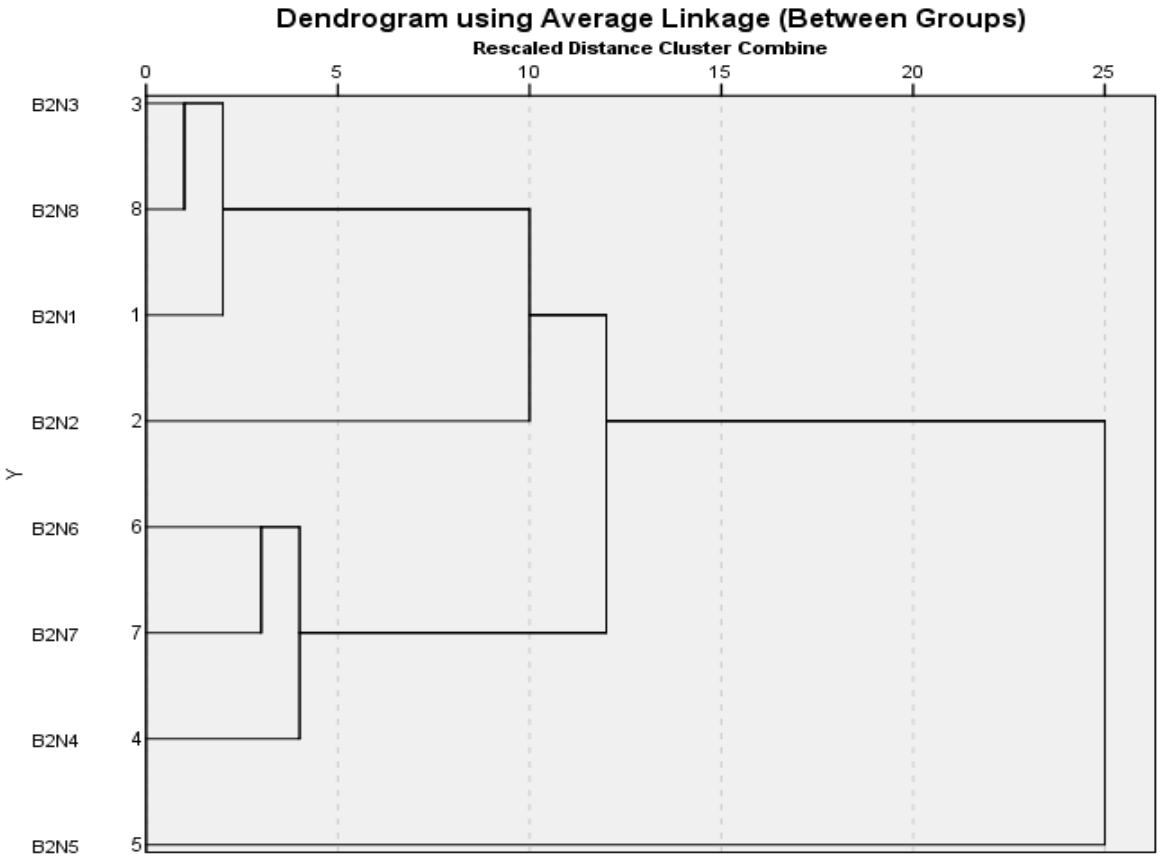
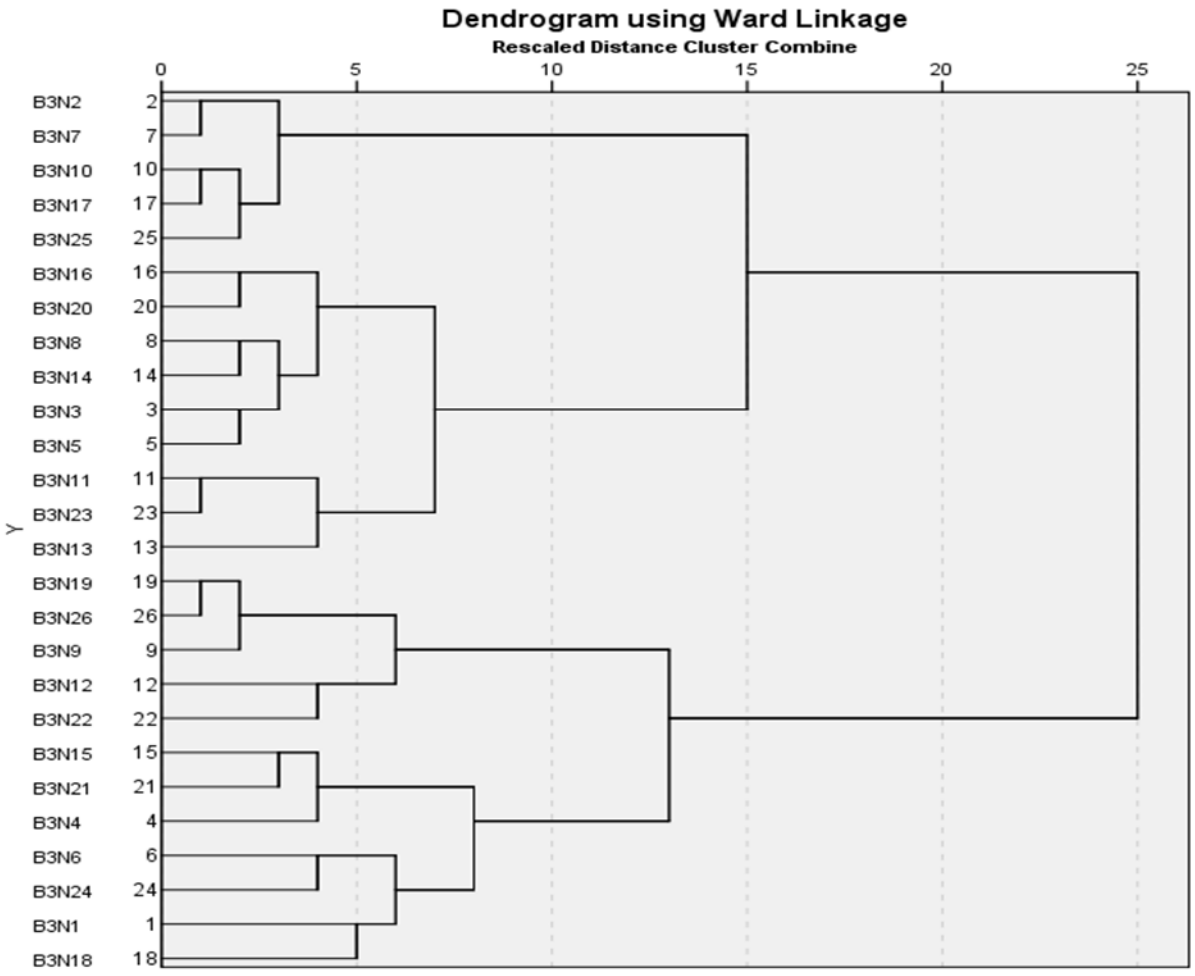


Table A2 Summary of cluster analysis for the 26-item Objective knowledge of salt content of foods

	Item	Kuder–Richardson 20 reliability coefficient	Mean ±Standard deviation (SD)
Cluster: Less known high salt food	Margarine; Breakfast cereal; Cheese; Atchar and chakalaka; and Two-minute noodles	0.559	0.229±0.256
Cluster : Better known high salt food	Savoury snacks and crisps; Biltong; Bovril; Stock block; Polony; Soup powder; Takeaway; Pizza; and Gravy	0.787	0.507±0.303
Cluster : Low salt food	Fresh fruit; Fresh vegetables; Milk; Raw meat; and Boiled egg	0.637	0.598±0.314
Individual items	Bread	-	0.34±0.474
	White rice cooked	-	0.40±0.490
	Fresh vegetables cooked	-	0.33±0.73
	Canned vegetables	-	0.44±0.497
	Potato chips	-	0.44±0.497
	Canned Fish	-	0.55±0.498
	Meat Pies	-	0.38±0.486


Dendrogram using Ward Linkage
Rescaled Distance Cluster Combine
0
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Y
B3N2 2
B3N7 7
B3N10 10
B3N17 17
B3N25 25
B3N16 16
B3N20 20
B3N8 8
B3N14 14
B3N3 3
B3N5 5
B3N11 11
B3N23 23
B3N13 13
B3N19 19
B3N26 26
B3N9 9
B3N12 12
B3N22 22
B3N15 15
B3N21 21
B3N4 4
B3N6 6
B3N24 24
B3N1 1
B3N18 18

B) FACTOR ANALYSIS

Table B1 Summary of exploratory factor analysis

of the 11-item subjective understanding of labels (N=268)

Items	**Factor Loading**
	Subjective understanding of labels
Numbers on Label A	**0.930**
Words on Label A	**0.883**
Understand Label C	**0.874**
Understand Label D	**0.698**
Total variance explained by extracted sub-factors (%)	72.35
Range of communalities	**0**.49-0.86
KMO	**0**.76
Cronbach alpha coefficient	0.94
Mean ±Standard deviation (SD)	0.86 ±0.29

Factor loadings indicated in grey shaded areas, are grouped together

Table B2 Summary of exploratory factor analysis of th

11-item Perceived healthiness of labels (N=268)

Item	**Factor Loadings**	
	Perceived healthiness symbol	**Perceived helpful labels**
Label **D** say the food is healthy	**0.87**	
Label **D:** good for blood pressure	**0.87**	
Label **E**: Too much salt in the food	**0.53**	-0.39
Food labels can help me to choose healthy food		**-0.92**
Food labels tell me what is in the food		**-0.89**
Total variance explained by extracted sub-factors (%)	72.84	
Range of communalities	0.54-0.73	0.78-0.85
KMO	0.60	
Cronbach alpha coefficient	0.80	0.81
Mean ±Standard deviation (SD)	0.81 ±0.32	0.85±0,34

Factor loadings indicated in grey shaded areas, are grouped together

Table B3 Summary of exploratory factor analysis of the 4-item affective feelings (N=268)

Item	Factor Loading			
	Trust Heart symbol and label information	**Concern about healthy food**	**Worry about salt intake (Individual item)**	**Like and trust BOP and FOP Labels**
Trust food label help	**0,77**			
Trust label D	**0,70**			
Trust information on food label	**0,67**			
Trust heart symbol is healthy	**0,61**			
Worry healthiness of food		**0,89**		
Worry costs of healthy food	0,48	**0,54**		
Worry amount of salt intake			**0,84***	
Like label A			-0,51	**0,50**
Trust label A			-0,50	**0,42**
Like label C				**0,76**
Trust label C		-0,28		**0,69**
Total variance explained by extracted sub-factors (%)	61.09			
Range of communalities	0.41-0.66	0.59-0.78	0.71	0.61-0.65
KMO	0.83			
Cronbach alpha coefficient	0.71	0.60		0.52
Mean ±Standard deviation (SD)	0.65 ±0.49	0.51 ±0.50	1.3745 ±0.56	1,48 0.60

Factor loadings indicated in grey shaded areas, are grouped together

*** Worry about salt intake is regarded as an individual item**

Table B4 Summary of exploratory factor analysis of the 7-item Purchase behaviour (N=268)

Item	Factor Loading	
	Consulting food labels	Buy take away and cheap food
Look for salt information Label C	0,89	
Look for heart symbol Label D	0,84	
Look for salt information Label A	0,80	
Buy food label "low-salt"	0,74	
Buy take-away food; bad for health		0,85
Buy cheapest food		0,81
Buy take-away food; taste good		0,78
Total variance explained by extracted sub-factors (%)	66.94	
Range of communalities	0,55-0.79	0.61-0.72
KMO	0.75	
Cronbach alpha coefficient	0.83	0.81
Mean ±Standard deviation (SD)	1.78• ±0.648	1.95• ±0.43

Factor loadings indicated in grey shaded areas, are grouped together

*__Often = 1, Sometimes = 2; Never = 3__

Table B5 Summary of exploratory factor analysis of the 5-item (N=268)

Item	**Factor Loading**
	Discretionary salt use in food preparation
Vegetables	**0.89**
Stew	**0.87**
Porridge	**0.81**
Rice	**0.74**
Meat	
Total variance explained by extracted sub-factors (%)	77.27
Range of communalities	0.68-0.94
KMO	0.77
Cronbach alpha coefficient	0.91
Mean ±Standard deviation (SD)	1.51±0.41

Factor loadings indicated in grey shaded areas, are grouped together

*** Meat is regarded as an individual item**

Table B6 Summary of exploratory factor analysis of the 7-item Discretionary combined non-discretionary salt use (N=268)

Item	**Factor Loading**	
	1	**2**
	Discretionary use of salt and condiments	Use margarine and sauces
Use salt and stock cubes	**0,837**	
Use salt and soup powder	**0,826**	
Use salt and Bisto	**0,714**	
Add salt when cooking	**0,600**	
Add salt at the table	**0,456**	0,307
Use hard margarine		**0,862**
Use sauces/atchar/spices		**0,721**
Total variance explained by extracted sub-factors (%)	57.47	
Range of communalities	0.34-0.70	0.57-0.71
KMO	0.76	
Cronbach alpha coefficient	0.80	0.61
Mean ±Standard deviation (SD)	1.91±0.57	1.95±0.54

Factor loadings indicated in grey shaded areas, are grouped together

Table B7 Summary of exploratory factor analysis of the 24-item non-discretionary salt intake scale (N=268)

Items	Factor Loading				
	High salt convenience foods	Fruit and vegetables	Fish, sauce and starches	Bread and toppings	Stock and soup powder
Meat pies	**0.71**				
Bovril	**0.70**				
Pizza	**0.69**				
Take away	**0.66**				
Two minute noodles	**0.59**				
Gravy	**0.57**				0.346
Biltong	**0.58**				-0.321
Fresh vegetables raw		**0.76**			
Fresh vegetables cooked		**0.68**			
Fresh fruit		**0.61**			
Canned vegetables		**0.60**			
Savoury snacks and crisps			**0.767**		
Potato chips			**0.643**		
Atchar/chalkalaka/chutney			**0.603**		
Canned fish			**0.532**		
Margarine				**-0.721**	
Breakfast cereal				**-0.627**	
Bread				**-0.608**	
Cheese				**-0.534**	
Polony				**-0.504**	
Soup powder					**0.733**
Stock cubes					**0.710**
Total variance explained by extracted sub-factors (%)	49.14				
Range of communalities	0.44-0.57	0.27-0.59	0.35-0.64	0.45-0.59	0.55-0.57
KMO	.760				
Cronbach alpha coefficient	0.80	0.61	0.60	0.70	0.60
Mean ±Standard deviation (SD)	2.0 ±0.61	2.80 ±0.74	2.51 ±0.51	2.70 ±0.63	3.00 ±0.70

Factor loadings indicated in grey shaded areas, are grouped together
Milk (mean = 3.39; SD±0.86), Rice (mean = 2.69; SD±0.69), Boiled egg (mean = 2.12; SD±0.827)

Table B8 Summary of exploratory factor analysis of the 6-item Importance of low salt intake of behaviour with salt-intake salt use (N=268)

Items	Factor Loading
	Importance of salt intake
Use less salt when cooking	0,77
Buy food with “low-salt”	0,77
Check food label for salt	0,75
Eat less salt	0,69
Use herbs in place of salt	0,63
Eat less take-aways	0,58
Total variance explained by extracted sub-factors (%)	49.01
Range of communalities	0.39-0.59
KMO	0.82
Cronbach alpha coefficient	0.81
Mean ±Standard deviation (SD)	1.35±0.41

Factor loadings indicated in grey shaded areas, are grouped together

C) CORRELATIONS

TableC1 Correlations between age and level of education.

		Age
Education	r	-0.35

Table C2 Cognitive component: Correlations between aspects of objective diet–disease knowledge and various aspects of consumer attitudes regarding salt information on food labels

Diet–disease knowledge \ Consumer attitudes		Better known high salt food	Other diseases	Subjective understanding of labels	Concern about healthy food	Importance of low salt intake	Trust heart symbol and label information	Like and trust BOP and FOP labels	Drinking water will solve the problem of high salt intake
Cardiovascular diseases	r	0.32	0.46	0.39	0.35	-0.31	-0.34	-0.32	0.16
Other diseases	r	0.07	1.00	0.24	0.95	-0.10	-0.17	-0.32	0.44

Table C3 Cognitive component: Correlations between aspects of objective knowledge of food salt content and objective diet–disease knowledge

Knowledge of food salt content \ Consumer attitudes		Cardiovascular diseases
Better known high salt food	r	0.32

Table C4 Cognitive component: Correlations between aspects of subjective understanding of food labels and various aspects of consumer attitudes regarding salt information on food labels

Consumer attitudes / Subjective understanding of food labels		Cardiovascular diseases	Perceived helpful labels	Like and trust BOP and FOP labels	Trust heart symbol and label information	Concern about salt intake
Subjective understanding	r	0.39	0.31	-0.50	-0.37	-0.35

Table C5 Cognitive component: Correlations between aspects of perceived healthiness of food labels and various aspects of consumer attitudes regarding salt information on food labels

Consumer attitudes / Perceived healthiness		Cardiovascular diseases	Trust heart symbol and label information	Like and trust BOP and FOP labels
Perceived healthiness symbol	r	0.14	-0.33	0.13
Perceived helpful labels	r	0.31	-0.37	-0.34

Table C6 Cognitive component: Correlations between beliefs and various aspects of consumer attitudes regarding salt information on food labels

Consumer attitudes / Beliefs about salt		Cardiovascular diseases	Other diseases	Subjective understanding of labels	Trust heart symbol and label information	Concern about salt intake	Concern about healthy food	Like and trust BOP and FOP labels	Consulting food labels	Importance of low salt intake	My health will be better if I eat less salt	Food with little salt tastes bad	Food without salt is unhealthy
I eat too much salt	r	-0.02	0.14	0.11	-0.03	0.30	-0.35	-0.17	-0.44	-0.02	0.55	0.07	-0.08
My health will be better if I eat less salt	r	0.35	0.23	0.32	-0.19	0.01	-0.17	-0.30	-0.18	-0.30	1.00	0.24	0.11
Food with little salt tastes bad	r	0.25	0.08	0.28	-0.28	-0.26	-0.02	-0.32	0-.01	-0.37	0.24	1.00	0.32
Food taste better if I cook it with salt	r	0.27	0.16	0.26	-0.37	-0.31	-0.06	-0.27	-0.04	-0.34	0.24	0.26	0.15
Drink a lot of water, the salt will disappear	r	0.16	0.44	0.29	-0.059	-0.15	0.09	-0.23	-0.26	0.08	-0.02	0.08	0.14
Food without salt is unhealthy	r	0.18	0.25	0.23	-0.22	-0.15	-0.03	-0.38	-0.15	-0.23	0.11	0.32	1.00

Table C7 Affective component: Correlations between aspects of Affective feelings of food labels and various aspects of consumer attitudes regarding salt information on food labels

Consumer attitudes / Affective feelings		**Subjective understanding of food labels**	**Cardiovascular diseases**	**Other diseases**	**Perceived helpful labels**	**Perceived healthiness labels**	**Food taste better if cooked with salt**	**Food with little salt tastes bad'**	**Food without salt is unhealthy**	**My health will be better if 'I eat less salt**	**Eat too much salt**
Trust heart symbol and label information	r	-0.37	-0.34	-0.17	-0.37	-0.33	-0.37	0.26	-0.22	-0.19	-0.13
Concern about healthy food	r	-0.16	-0.39	-0.25	-0.09	-0.35	-0.20	0.21	-0.03	-0.27	-0.35
Like and trust BOP and FOP labels	r	-0.50	-0.32	-0.34	-0.34	0.22	-0.05	-0.32	-0.38	-0.30	-0.17

Table C8 Conative component: Correlations between aspects of purchase behaviour and various aspects of consumer attitudes regarding salt information on food labels

Purchase behaviour \ Consumer attitudes		Eat too much salt	Discretionary salt food use in preparation	Discretionary use and of salt condiments	Use of margarine and sauces
Consult food labels	r	-0.44	0.17	0.07	0..07
Buy takeaway and cheap food	r	0.11	0.50	0.51	0.34

Table C9 Conative component: Correlations between aspects of Discretionary salt use and an aspects of consumer attitudes regarding salt information on food labels

Discretionary salt use \ Consumer attitudes		Buy takeaway and cheap food
Discretionary salt use in food preparation	r	0.50
Discretionary use of salt and condiments	r	0.51
Use of margarine and sauces	r	0.34

Table C10 Conative component: Correlations between aspects of Non-discretionary salt use and an aspects of consumer attitudes regarding salt information on food labels

Consumer attitudes / Non-Discretionary salt use		Bread and toppings	Fish, sauce and starches
High salt convenience food	r	0.44	0.34

Table C11 Conative component: Correlations between aspects of importance of low salt intake of healthy dietary behaviour and an aspects of consumer attitudes regarding salt information on food labels

Consumer attitudes / Importance		Cardiovascular disease	Concern about salt intake	Trust heart symbol and label information	Like and trust BOP and FOP labels	My health will be better if I eat less salt
Importance of low salt intake	r	-0.31	0.36	0.42	0.32	-0.30

D) ANOVA

Table D1 Differences between age and knowledge of 'low salt food'

	Age	% Correct	St Dev	50-59yrs	≥60yrs
Low salt food	18-29yr	68	0.285	0.83**	0.72*
	30-39yr	62	0.316	0.58*	0.46*
	40-49	64	0.339	0.59*	0.47*
	50-59	44	0.295	-	-
	≥60yrs	48	0.261	-	0.13
	Total	60	0.314	0.13	-

* = Medium effect ; ** = Large effect

Table D2 Differences between age and subjective understanding of labels

	Age	% Yes	St Dev	≥60yrs
Subjective understanding of labels	18-29yr	93	0.192	0.62*
	30-39yr	90	0.253	0.54*
	40-49	89	0.247	0.53*
	50-59	84	0.305	0.38
	≥60yrs	68	0.397	-
	Total	87	0.280	-

* = Medium effect ; ** = Large effect

Table D3Differences between age and intake of 'High salt convenience food'

	Age	Mean	St Dev	≥60yrs
High salt convenience food	18-29yr	1.97	0.571	0.58*
	30-39yr	1.97	0.631	0.51*
	40-49	2.13	0.638	0.75**
	50-59	2.00	0.707	0.50*
	≥60yrs	1.65	0.369	-
	Total	1.96	0.611	-

* = Medium effect ; ** = Large effect Every day = 4; 2/3x a week = 3;
Once a week = 2; ≤ Once a Month = 1

Table D4 Differences between age and 'Discretionary use of salt and condiments'

	Age	Mean	St Dev	≥60yrs
Discretionary use of salt and condiments	18-29yr	1.88	0.56	0.60*
	30-39yr	1.85	0.55	0.66*
	40-49	1.81	0.60	0.68*
	50-59	2.03	0.63	0.30
	≥60yrs	2.22	0.46	-
	Total	1.92	0.57	-

* = Medium effect ; ** = Large effect Often = 1; Sometimes = 2; Never = 3

Table D5 Differences between age and 'Discretionary use of salt in food preparation'

	Age	Mean	St Dev	50-59yrs	≥60yrs
Discretionary salt use in food preparation	18-29yr	1.43	0.42	0.71*	0.61*
	30-39yr	1.41	0.43	0.75*	0.64*
	40-49	1.51	0.41	0.55*	0.44*
	50-59	1.73	0.29	-	0.14
	≥60yrs	1.69	0.31	0.14	-
	Total	1.51	0.41	-	-

* = Medium effect ; ** = Large effect Half teaspoon = 1; Teaspoon = 2; Tablespoon = 3

Table D6 Differences between age and intake of 'Fruit and vegetables'

	Age	Mean	St Dev	18-29yrs
Fruit and vegetables	18-29yr	2.58	0.82	-
	30-39yr	2.81	0.75	0.28
	40-49	2.81	0.68	0.28
	50-59	3.03	0.55	0.55*
	≥60yrs	2.96	0.77	0.46*
	Total	2.81	0.74	

* = Medium effect ; ** = Large effect
Every day = 4; 2/3x a week = 3; Once a week = 2; ≤ Once a Month = 1

Table D7 Differences between age and concern about healthy food

	Age	% Yes	St Dev	18-29yrs d-value
Concern about healthy food	18-29yr	51	0.569	-
	30-39yr	56	0.521	0.09
	40-49	64	0.598	0.22
	50-59	83	0.539	0.56*
	≥60yrs	78	0.534	0.48*
	Total	62	0.558	

* = Medium effect ; ** = Large effect

E) T-TESTS

Table E1 Differences in knowledge of "low salt food" of respondents who have high blood pressure and those that do not have high blood pressure

	Respondents who suffer from high blood pressure	n	% Correct	Effect size
Low salt food **% Correct**	**Yes**	136	50	0.67
	No	115	71	

Table E2 Differences in knowledge of "low salt food" and beliefs of respondents with household member with high blood pressure and those that do not have high blood pressure

	Household members suffer from high blood pressure	n	% Correct/ Yes	Effect size
Low salt food **% Correct**	**Yes**	98	49	0.51
	No	133	66	
If I eat less salt, I will get cramps in my legs % Yes	**Yes**	58	69	0.89
	No	62	27	

Table E3 Differences in Trust hear symbol and label information of respondents that do and do not buy food for the house

	Buy food for the house	n	%Yes	Effect size
Trust heart symbol and label information %Yes	**Yes** = 1	231	43	0.56
	No = 0	26	71	