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CONSUMER KNOWLEDGE AND UNDERSTANDING OF FOOD LABELLING INFORMATION IN KLIPGAT REGION, OF SOUTH AFRICA

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ABSTRACT

Food labels are the first source of information customers come across when sourcing a food product. Labels provide information about the ingredients, nutritional content, allergens, as well as the origin and advice on the food's processing and preservation conditions. This information allows the consumer to make informed food choices. Although food labels are provided to help consumers choose healthy foods, it is not established whether they know and understand the information to use to their advantage. The need to comprehend consumer knowledge, understand food labelling information, and whether it could influence consumer choices are vital to researchers, policymakers, and the food industry. The study investigated the knowledge and understanding of food labelling information among Klipgat consumers. In a cross-sectional community-based study with a structured questionnaire, 400 participants were conveniently interviewed on consumer knowledge, understanding of information, and utilization of labelling information. A chi-square for the association of variables compared differences in the districts, and p-value <0.05 was regarded as significantly different. Overall, 79.9% of the study group from all three regions knew that processed food must have a label. Most respondents in the three regions were males (64%). There was a general lack of knowledge about food labelling information (x^2=10.726; p=0.03), especially with terms such as trans-fatty acids (23.1%), monounsaturated fat (5.3%), Recommended Dietary Allowances (RDA) (15.3%) and Genetically Modified Organism (GMO), (14.7%). Socio-demographic characteristics including gender (p=0.030), age (p=0.030), language (p=0.030) and educational level (p=0.030) were significantly associated with consumers' knowledge and understanding of the labels. The results from this study are useful for the development of communication and awareness strategies of food labelling information, with special emphasis on the use of simpler terminologies. This paper advocates for the development of a "food labelling forum," consisting of relevant stakeholders with a mandate to; establish, implement, and maintain food labeling strategies, community engagement and general food labeling awareness programs especially in typical communities of South Africa.

Key words: communities, food labelling information, labelling terminology, consumer label understanding

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INTRODUCTION

It is the right of the consumer to expect that food sourced and consumed will be safe, nutritious, and of high quality [1]. The primary means to ensure that consumers make healthy and safe food choices is by means of a food label [2]. Food labels are aimed at giving consumers access to comprehensive information on the nature and composition of food, to assist them in making informed food choices, and safeguard their health [3]. In South Africa, the food labelling regulation (R146 of March 2010) defines food labelling as “any written, printed or graphic matter that is present on the label, accompanies the food, or is displayed near the food, including that for the purpose of promoting its sale or disposal” [4]. Similarly, in many developing countries the responsibility to administer food labelling legislation lies with multiple departments [2]. The Department of Health published the “Regulations relating to the labelling and advertising of foodstuffs” (R146/2010) under the Foodstuffs, Cosmetics, and Disinfectants Act of 54 of 1972. This regulation includes labelling foodstuffs and additives such as sweeteners, flavourants, colourants, among others.

Given that food labels affect consumers' preferences when they purchase food, it is important for consumers to have the necessary knowledge and understanding regarding the information to make informed food choices [5]. Knowledge could be interpreted as the information, facts, awareness, skills, and familiarity acquired through experience or education [6]. However, understanding is the one’s actual ability to comprehend a concept [7]. In illustrating how knowledge could support food label use, food researchers presumed that food label use relies on a set of interlinked processes converged on attention, comprehension, memory, and decision-making. This indicates that, consumers pay attention to food label information, understand it, and memorise it to apply it during food purchasing [8]. Food labelling knowledge is powerful as it improves understanding and makes the decision process by consumers more precise and dynamic [9]. In addition, consumer understanding of food label information establishes how, and whether, the information on food labels is used when choosing the food product to purchase [10]. Therefore, for food labels to make an impact, consumers must be exposed, informed, and understand label information correctly. Consumer understanding of food labels helps to ensure that the brand reaches its full knowledge provision potential. Consumer knowledge has an impact on all facets of consumer purchasing behaviour [11]. In another study conducted in South Africa, it was indicated that not utilizing food labels may not be the reason why consumers were not making informed food choices when purchasing food. It was noted that it may have been the cause of individual knowledge processing and lack of understanding of the information provided on food labels [12].

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Growing evidence from international and local studies shows that food labels encourage healthy eating. Increasing results from research suggest that the mere display of food labels cannot assist consumers in making informed choices [13]. Findings from other studies noted that the nutrient information displayed on the tags could be technical for consumers to understand [2, 8]. It was also pointed out in a survey conducted in Belgium that taste and price are the key factors that influence food purchasing decisions [14]. Furthermore, some studies indicated that knowledge and understanding of food labelling is affected by socio-demographic characteristics such as gender, age, and education [15].

The paucity of food label understanding in a typical neighbourhood with all the dynamics that existed in a traditional peri-urban region of South Africa, led to the identification of Klipgat as a good area to conduct this research. The aim of this paper was to determine the actual knowledge that consumers with the same demographic composition as Klipgat could have about labelling information. The findings of this study can assist policymakers, law enforcers, and the food industry in identifying areas that need improvements concerning food labels, to ensure that consumers are able to understand and use them.

MATERIAL AND METHODS

The study was conducted at Klipgat (25.4609° S: 27.9659° E) in the Bojanala Platinum District Municipality of the Northwest Province of South Africa. The basis for this area selection was that Klipgat was undergoing rapid urbanization, had a diverse population with different cultural backgrounds, and income inequality affecting needs, consumption, and behavior. This is a typical representation of communities in a semi-rural context of South Africa.

A cross-sectional community-based study was conducted between December 2021 and January 2022 across the three regions of Klipgat, which are Klipgat A (170), Klipgat B (170), and Klipgat C (60). Data was gathered through a structured questionnaire, which comprised of open and closed-ended questions developed based on current scientific knowledge, South African labelling legislation (mainly R146/2010), and information that typically appeared on processed food labels in South Africa. The questionnaire was in three parts: socio-demographics (age, gender, language, level of education, income), participants' knowledge and understanding (labelling requirements and information, for example, claims, symbols, terminology used on labels), and reading and utilization (frequency of reading, when reading, the focus of lesson, challenges experience).

Due to the access challenges caused by the COVID-19 pandemic, the study utilized a convenience sampling approach in which available and willing participants representing each household were included. All respondents signed a

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consent form before participating in the study. The information leaflet used to inform participants about the study and questionnaire data were available in English and Setswana (the predominant languages spoken in the study area) to accommodate respondents unfamiliar with English. In South Africa, persons under 18 are minors; therefore, no such person was interviewed during the study. The research assistant, who helped with the gathering of data, was briefed about the study, and signed a confidentiality agreement document with the university.
The questionnaires were uniquely numbered (1-400) to ensure quality data entry, and collected data was captured and analysed using the IBM SPSS statistics program for Windows version 20.0 [16]. Data were validated and explored to check for inconsistencies in the captured data. Frequencies observed within the categories of each question and between regions were tested by constructing row x column frequency tables of meaningful associations and a Chi-square (c^2) test for independence (association) of variables ($p \leq 0.05$ at 95% CL was regarded as significantly different) [17, 18].

RESULTS AND DISCUSSIONS

The results of this study provide information on consumers' levels of knowledge and understanding of food labelling information, and whether it influences their food choices or not.

Knowledge and understanding of food labelling information in relation to demographics

In total, there were 400 questionnaires completed, consisting of 42.5% (n=170) for Klipgat A, 42.5% (n=170) for Klipgat B, and 15% (n=60) for Klipgat C. The results provide inferences related to knowledge and understanding of food labels amongst consumers in Klipgat A, B, and C. Table 1 summarizes the socio-demographic information for the three regions. Most respondents in the three areas were males (64%). A large proportion of respondents were in the age group 18-35 (47.6%), followed by the individuals between the age 36-60 (37.4%), and the lowest percentage (14, 9%) were above 61. On average, the three most spoken home languages across the regions were Setswana (37.4%), Xitsonga (16.4%), and SePedi (11.9%). Regarding Setswana competency (n=156), 50% indicated they were very good to outstanding in speaking, and 53.2% had a reading and writing competency between poor and good, respectively. Of all respondents, only 48.4% (n=194) indicated English as their preferred second language, with a competency of poor to good speaking. The other (n=199), 51.6% said they were poor in speaking and reading English, a language used in all food labels. This could have been caused by the reported low level of Grade 12 (matric) completion (53.6%).

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This study found variables that affect consumer knowledge and understanding of the information on food labels. Aryee *et al.* [19] suggested that demographic factors, particularly gender, age, and educational attainment, are related to knowledge and understanding of the information on food labels. This study observed significant differences among gender, age, language, and education with respect to knowledge and understanding of food labelling information (Table 2). The predominance of males in this study, was similar to a survey conducted by Adesina *et al.* [5] where majority of respondents were males. These results were not surprising as males comprise 53% of Madibeng's population, where Klipgat is located [20]. Changes in gender roles and family duties have also been noted, with some males being stay-at-home husbands and managing households [21]. This is an intriguing illustration of how urbanization has affected traditional practices in Africa, where women were frequently responsible for purchasing and preparing meals for the family [22]. Women were traditionally known to be more involved in household cooking and grocery shopping than men [19], and they also tend to be more careful of their weight than men [5]. These factors may explain why women are slightly more knowledgeable about food labelling than men. The rise in Grade 12 qualification attainment over the past few decades, emphasises the impact of education on general knowledge and contribution to the society [19]. This may be contributing to the trend (2010-2020) where consumers between the ages of 19 and 35 were found to know more about food labelling information than other age categories [23]. According to Miller *et al.* [24], older persons (>60) have trouble understanding the information on food labels, possibly because of the technical terms used. The assumption is that understanding food labelling information is related to prior knowledge, which is poor in older people than younger people because their educational attainment is frequently lower [25]. The fact that languages such as Setswana were the most spoken home languages, with English being the least spoken language across the regions, was in line with the National Statistics of South Africa [26]. Even though English is the most preferred second language, it is the sixth most spoken language in the country, with only 8.1% of South African households speaking English at home [27]. As a result, most people may need help understanding the food labels, which are primarily written in English [28]. Notably, persons speaking English as their preferred second language had better knowledge of food labelling information than those speaking Setswana. Considering the preceding information, customers may benefit from research that makes food labelling information available in multiple languages, such as using QR codes. Consumers' knowledge of the information on food labels is influenced by their level of educational attainment [29]. In South Africa, Grade 9 is the desired minimum level of education; and is believed adequate for a person at this level to process and understand basic knowledge [30]. In this study, 21.5% of respondents

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had not completed Grade 9 or had no schooling, 24.9% had completed Grade 9, 35.5% had Grade 12 and 18.1% had attained higher education level (post Grade 12). These results reflect the low level of education generally found in developing countries [31]. Compared to other developing countries, South Africa has lower levels of educational attainment [32]. This circumstance exacerbates the detrimental impact on public health initiatives intended to increase consumer knowledge [33]. Consumers with a grade 12 or higher education are expected to find labels easier to read and understand compared to those who are not so highly educated [10, 29]. Adesina *et al.* [5] also found that consumers with higher education learn and understand more about food labels [5]. In this study, post-matriculated respondents had marginally more understanding of food labelling than other respondents (5.7%). It could be that those who were not well informed were unwilling to invest their time in understanding the information [34], or perhaps the presentation of data on food labels makes it challenging to comprehend [19]. However, both scenarios present an opportunity to create more suitable education programs targeted at a particular population, such as the lower levels of education to improve knowledge and understanding of food labels.

Knowledge and understanding of food labelling information

In general, 79.9% of respondents across the three regions (p=0.357) understood that processed food must be labelled. Figure 1 reflects the answers of respondents related to the question "How well informed are you about food labelling in general?"

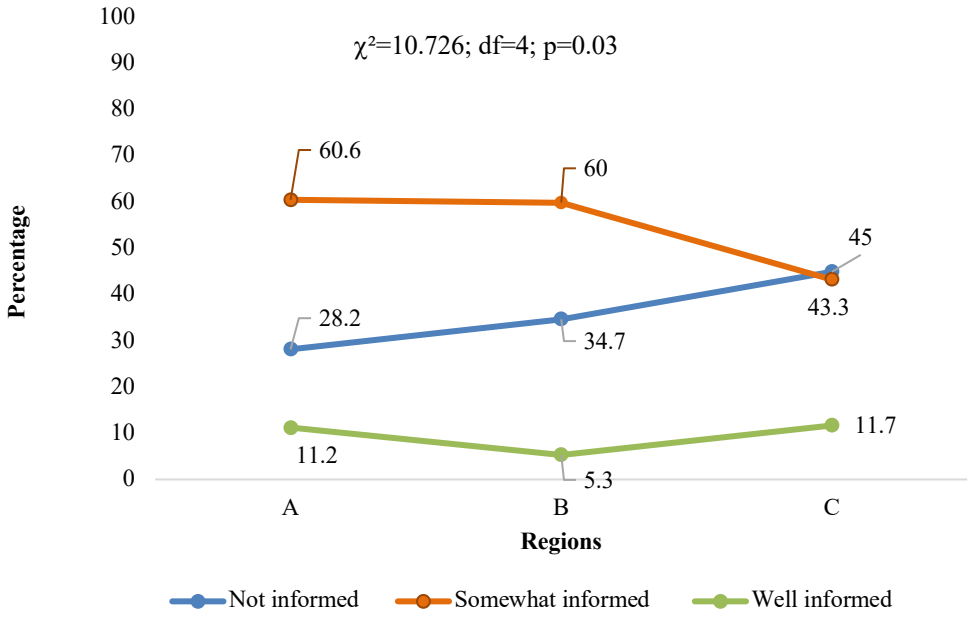

Figure 1: Answers to "How well informed are you about food labelling in general?"

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Figure 1 shows that most respondents needed to be sufficiently informed on most of the information appearing on food labels. Koen *et al.* [35] discovered that consumer food and nutritional label knowledge scores needed to be higher. When participants were asked to provide examples of what information appears on food labels, the aspects mainly mentioned (n=218) were allergens, expiry dates, instruction for use, and storage instructions. These aspects were followed by nutritional information (n=38), ingredients (n=6), dietary fibre content (n=1), symbols (n=1), and food that can cause diseases, such as ulcers (n=1).

Table 3 shows that there were no significant differences ($p>0.05$) for most of the responses concerning the meaning of terminology in nutritional tables, except for "sell by or display until date" ($p=0.000$), "Total fat (g) of which trans-fatty acids" ($p=0.001$), "total fat (g) of which monounsaturated fat" ($p=0.009$), "recommended daily allowance" ($p=0.034$) and "genetically modified food" ($p=0.010$). When analysing marking-related information, it was clear that "Use by date" was best known (93.6%) across the three regions; but respondents were less familiar with the meaning of "Sell by or display until" (54.8%) and "Sell by retail date" (42.0%). About nutritional information, the three most known aspects were energy (61.0%), protein (58.4%), and total fat (53.8%). In comparison, the four least known aspects were polyunsaturated fat (95.8%), monounsaturated fat (94.7%), genetically modified (85.3%), and recommended daily allowance (84.7%). Terminology within a particular nutrition group was also not known, such as Total fat (g) about the meaning of "saturated fat" (22.7%), fatty acids (23.1%), monounsaturated fat (5.3%) and polyunsaturated fat (4.2%); and Glycaemic carbohydrate (g) about the meaning of "Total sugar" (48.5%). On average, the minority of respondents knew the importance of cholesterol (32.8%), fiber (31.1%), total sodium (23.9%), RDA (15.3%), and GMO (14.7%).

Most of the respondents who took part in this study were aware of the date markings. The date markings included use by date, sell by or display till, and sell by retail date, which are the three date markings that are distinguished in the labelling regulation in the South African context [4]. The term "Use by date" (also known as "the date that signifies the end of the estimated period under the stated storage conditions, after which the product probably will not have the quality attributes normally expected by the consumers, and after which date the food should not be regarded as marketable") is used interchangeably with the terms "Best Consumed Before" and "Recommended Last Consumption Date" [4]. The latest day of offer for sale to the consumer after which there is still a fair amount of time for storage at home is referred to as the "sell-by date" or "display till date" [4]. Sell by retail is defined as "to sell to a person buying other than for resale; it excludes selling to a caterer for the purposes of his catering business or to a

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manufacturer for the purposes of his manufacturing business" [4]. However, the results (Table 3) show respondents had unequal information about the meaning of the different date markings. Respondents were primarily aware of the “use by date” appearing on food labels to avoid consuming food that had expired. According to researchers like Jacobs *et al.* [10] and Madilo *et al.* [36], customers prioritize "expiry date" and "date of manufacture" over other information. Even though respondents claimed to understand the concept of "use by date," they were unable to define it in the way that the law intended. The terms "use-by" and "best before" were also misunderstood by customers, according to Newsome *et al.* [37]. Figure 2 reflects respondents' answers to the question, “How well informed are you about the following terms used on food labelling?

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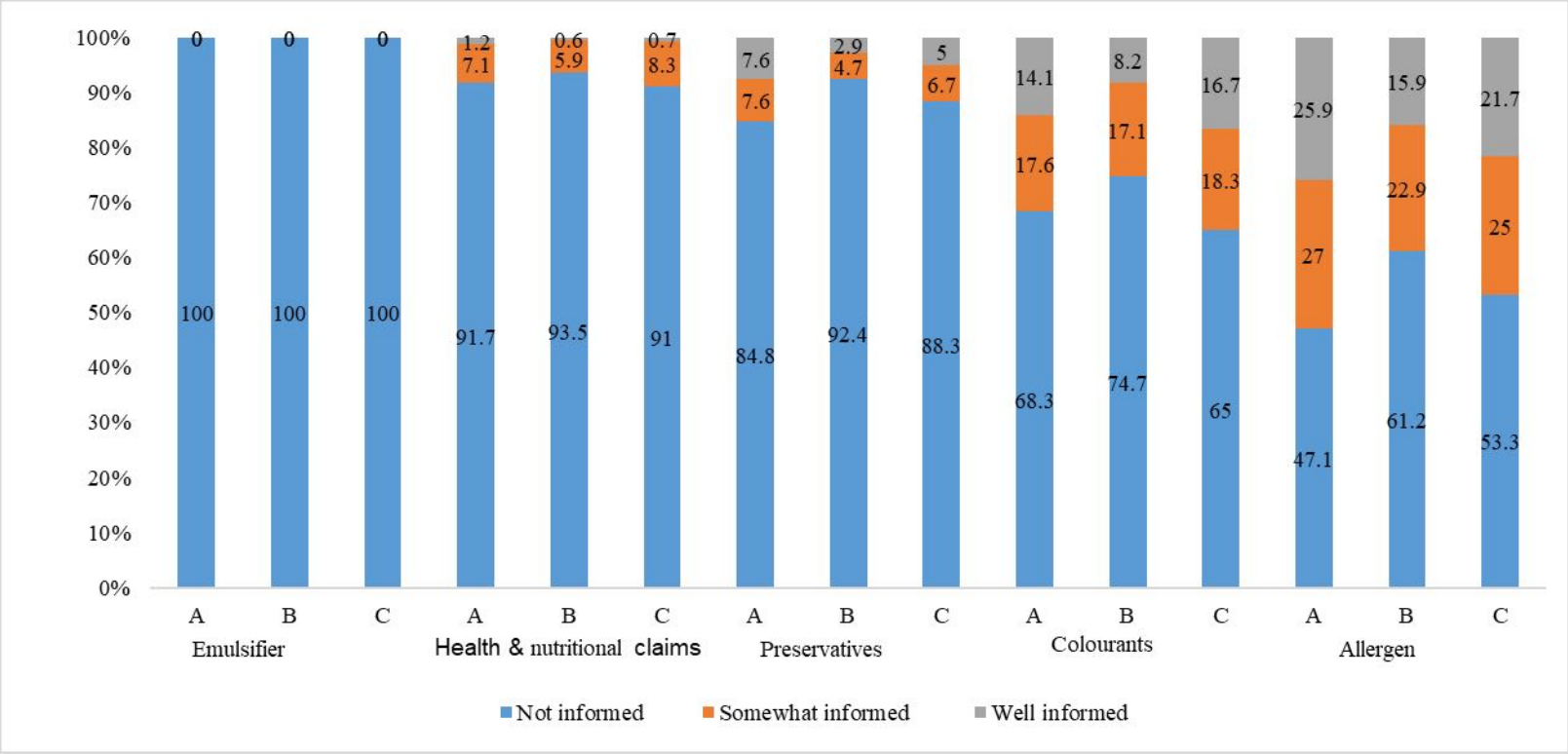

Figure 2: Answers to "How well informed are you about the followings terms?"

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From Figure 2, it was evident that there was no significant difference ($p>0.05$) between answers of respondents between the regions. Although participants seemed to be better informed of the term "allergen" (21.2% well informed), they had less knowledge of words such as "colourants" (13% well informed), "preservative" (5.2% well informed) and "Health & nutritional claims" (2.5% well informed), and no knowledge of the term "emulsifier." Primarily, technical words like emulsifier, preservative, and the use of nutritional claims as well as saturated fat, trans-fatty acids, monounsaturated fat, and polyunsaturated fat were not well understood by the respondents. Given the low educational levels within the regions, it was expected that respondents would have less understanding of technical terms. This aligns with research by Roberto & Khandpur [38], which revealed that consumers have trouble understanding nutritional information. A study by Koen *et al.* [34] also discovered that the average consumer food and healthy label knowledge score was below average. Moreover, Xazela *et al.* [12] reported that consumers consistently struggle to make informed food decisions. These difficulties are mainly brought on by their attempts to interpret information on product labels.

Reflecting on Figure 2, respondents who indicated they were "somewhat" or 'well informed" were asked to provide the meaning of various terminologies, as depicted in Table 4. All respondents who indicated they were "somewhat" or "well informed" about labelling terminology, attempted to interpret the meaning of the terms on food products. Each respondent provided only one interpretation for each term, which were distinctly varied. Even though the answers were vague, the respondents appeared to have a general idea of the meaning of the food label terminologies. In addition to terminology, there is also the use of various symbols. There are various symbols used on labels to inform consumers of specific characteristics of the product (including packaging). Figure 3 answers, "How well informed are you about symbols on food labels?"

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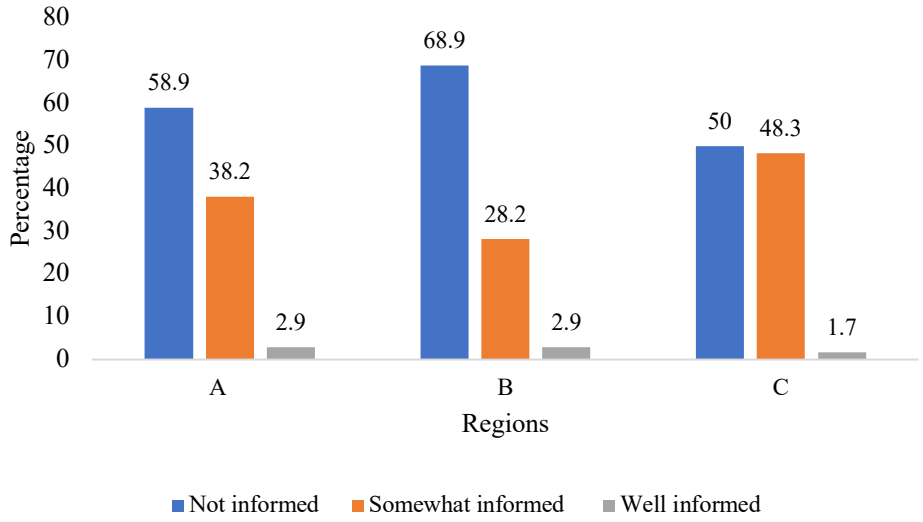

Figure 3: Answers to "How well informed are you about symbols on food labels?"

As indicated in Figure 3, it was evident that respondents were not well-informed about symbols. On average, 59.3% of the respondents across all the regions reported they were "not informed at all" about characters, while 38.2% indicated they were "somewhat informed." Only 2.5% said they were "well informed" about symbols on food labels. Despite using characters as examples, only a few respondents correctly identified what those symbols meant (Table 5). None of the respondents knew the signs of the salt watch, radura (ionizing radiation), and kosher symbols. Only a few attempted to interpret the meaning of recycling (26.5%), halal (22.8%), and heart foundation (9.5%). The result of this study differs from another study conducted in Potchefstroom, South Africa, where most respondents (97%) could correctly identify food label symbols [9].

This study supports previous researchers' recommendations that consumers must be educated on the technical terms used on food labels [2, 37]. According to Affram *et al.* [29], education is an internal influence, crucial in knowledge processing and understanding food labelling. Therefore, implementing educational programs to improve consumer knowledge about food labelling is vital.

The four primary sources of food-label information that respondents across the regions relied on were television (56.9%), internet (41.1%), health professionals (32.1%) (p=0.028), and radio (31.0%). The mandated stakeholders need to note that the sources respondents of this study primarily relied on for information were television, internet, radio, and health professionals (Table 6). Similar findings were also observed in a survey by Madilo *et al.* [35]. Globally, the television, internet, and radio, as part of everyday life, serve as a cost-effective source of health information and a significant influence on the attitudes and behaviour of an audience. They all

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create a perfect opportunity for mass and online labelling information sharing through focused educational programs, advertisements, and QR codes [39, 40]. Given that most participants receive their primary healthcare at public clinics in the study area, the identification of health professionals as a source of information should be considered. This is where they learn about general health, maternity matters, infant care and immunizations, diets, and others, and this could easily extend to food labelling information. Therefore, health professionals in clinics, jointly with Environmental Health Practitioners (sometimes known as health inspectors in other parts of the world) should exert more effort to improve consumer education programs about food labelling information. Furthermore, health professionals, in collaboration with radio and television journalists, should receive training to use these sources to advocate the meaning and value of labelling information.

CONCLUSION, AND RECOMMENDATIONS FOR DEVELOPMENT

In the South African context, labelling awareness programs may be encouraged by structures such as the National and Provincial Departments of Health and Agriculture, Basic and Higher education, Municipal Health Services, the food industry, and the National Consumer Commission of South Africa, who are mandated to ensure the welfare of consumers. The responsibilities of the mentioned structures may include, although not limited to; the development and implementation of relevant policies and strategies to ensure elevated knowledge and understanding of labelling information amongst consumers.

In preparation for strategies and educational programs, the aspects that should be considered are the role of gender, age, language, and levels of education. The meaning of specific terminology on labels and why they are used, the use of simplified terminology that is more understandable, and the use of mass media, such as television, internet, and radio, as a means of education. The use of points where there are primary health care services rendered, e.g., public clinics, can serve as a useful platform to educate visitors, or from where to launch education campaigns. More efforts to improve collaboration between mandated stakeholders will be best addressed if there could be an established “labelling forum” that recognizes the common purpose of food labelling. Taking into consideration that consumers (especially in vulnerable communities) do not understand the current content, mandated stakeholders could create simpler labels and policies/legislation, to educate and increase consumers’ knowledge about food labelling information.

The study inferred that consumers in Klipgat are aware that processed food needs to be labelled. However, even though they have knowledge that food products must be labelled, most consumers need to learn and understand the information provided through food labelling. The lack of knowledge and understanding regarding the information used on food labels causes a break in communication and thereby fails its

purpose, a situation typical of most semi-rural communities in South Africa. The results of this study also indicated that technical terminologies such as monounsaturated fat, polyunsaturated fat, genetically modified, and recommended daily allowance were not well understood by the respondents. On the latter, consumer knowledge and understanding of food labelling significantly differed based on gender, age, language, and education. It is, therefore, recommended that government authorities', food industries, health professionals and consumer organizations use information from this study to develop strategies, and educational programs. This will help in improving consumer knowledge and understanding of food labelling.

Notably, the study does not represent respondents from urbanized or suburban areas, as the investigation was conducted in semi-rural and rural areas. Thus, further studies must be undertaken in urbanized areas to investigate consumer knowledge and understanding of food labelling information.

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ETHICS STATEMENTS

The Tshwane University of Technology (TUT), Faculty of Science Committee for Research Ethics granted ethical approval (Reference number (FRCE 2019/10/003).

AUTHORS' CONTRIBUTIONS

EM conducted the research as part of her master's degree programme in Environmental Health. This study was supervised by JLB and DVN. All authors commented on early and final versions of the manuscript.

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AVAILABILITY OF DATA

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

COMPETING INTERESTS

The authors declare no conflict of interests with this publication.

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Table 1: Summary of the socio-demographic information for the three regions of Klipgat

Factor	Average % N=400	Klipgat A n=170 (%)	Klipgat B n=170 (%)	Klipgat C n=60 (%)	χ^2	Df	P
Gender					5.146	2	0.076
Male	64.0	65.9	71.2	55.0			
Female	36.0	34.1	28.8	45.0			
Age					12.533	6	0.051
18 - 35	47.5	48.2	44.7	50.0			
36 – 60	37.5	35.3	45.3	31.7			
61+	15.0	16.5	10.0	18.3			
1st language					39.098	22	0.014
Tswana	37.4	50.0	30.6	31.7			
XiTsonga	16.4	15.9	18.2	15.0			
SePedi	12.0	14.1	13.5	8.3			
Ndebele	12.0	5.9	10.0	20.0			
IsiZulu	9.8	6.5	12.9	10.0			
SeSotho	4.6	2.4	6.5	5.0			
English	0.2	0.6	0.0	0.0			
Other	7.6	4.6	8.3	10.0			
2nd language					36.878	22	0.024
English	48.4	53.5	50	41.7			
Tswana	30.8	22.9	29.4	40.0			
IsiZulu	5.6	8.2	3.5	5.0			
Xitsonga	5.0	5.3	6.5	3.3			
SePedi	3.6	4.1	0.0	6.7			
Other	6.6	6.0	10.6	3.3			
Education					6.605	8	0.580
No school	5.9	2.9	6.5	8.3			
<Grade 9	15.6	14.7	17.1	15.0			
Grade 9	24.9	22.4	22.4	30.0			
Grade 12	35.5	38.8	35.9	31.7			
Post matric	18.1	21.2	18.2	15.0			
Source of income:					57.813	8	0.000
Unemployed/no income	23.4	36.5	25.3	8.3			
Government grant	40.1	21.8	35.3	63.3			
Self-employed	15.1	17.1	16.5	11.7			
Employed	17.9	15.3	21.8	16.7			
Pension	3.5	9.3	1.1	0.0			
Income per month:					10.201	4	0.037
< R3700	74.1	72.4	68.2	81.7			
R3700 - R6000	18.1	15.3	24.1	15.0			
> R6000	7.8	12.4	7.6	3.3			

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Table 2: Comparison of demographic data of the respective regions in relation to "How well informed are you about food labelling in general?"

	Klipgat average N=400 (%)			Klipgat A n=170 (%)			Klipgat B n=170 (%)			Klipgat C n=60 (%)			χ^2	df	
	Not informed	Somewhat informed	Well informed	Not informed	Somewhat informed	Well informed	Not informed	Somewhat informed	Well informed	Not informed	Somewhat informed	Well informed			P-value
Gender													10.726	4	0.030
Male	22.9	37.3	3.8	21.2	40	4.7	24.1	43.5	3.5	23.3	28.3	3.3			
Female	13.1	17.4	5.5	71.0	20.6	6.5	10.6	16.5	1.8	21.7	15.0	8.3			
Age													10.726	4	0.030
19-35	10.6	30.0	7.0	8.8	31.8	7.6	11.2	30.0	3.5	11.7	28.3	10.0			
36-60	14.2	20.9	2.3	10.6	21.2	3.5	15.3	28.2	1.8	16.7	13.3	1.7			
61+	11.2	3.7	0.0	8.8	7.6	0.0	8.2	1.8	0.0	16.7	1.7	0.0			
Home language													10.726	4	0.030
Tswana	9.1	23.4	5.0	12.4	30.6	7.1	6.5	22.9	1.2	8.3	16.7	6.7			
XiTsonga	6.0	9.4	1.0	3.5	11.2	1.2	9.4	7.1	1.8	5.0	10.0	0.0			
Sepedi	6.3	16.1	3.0	4.1	8.8	1.2	6.5	22.9	1.2	8.3	16.7	6.7			
English	0.0	0.2	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
2nd Language													10.726	4	0.030
English	10.5	30.8	7.0	8.8	36.5	8.2	9.4	37.6	2.9	13.3	18.3	10.0			
Tswana	16.8	12.7	1.4	9.4	12.4	1.2	15.9	12.4	1.2	25.0	13.3	1.7			
Education:													10.726	4	0.030
No school	5.9	0.0	0.0	2.9	0.0	0.0	6.5	0.0	0.0	8.3	0.0	0.0			

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	Klipgat average N=400 (%)			Klipgat A n=170 (%)			Klipgat B n=170 (%)			Klipgat C n=60 (%)			χ^2	df	
	Not informed	Somewhat informed	Well informed	Not informed	Somewhat informed	Well informed	Not informed	Somewhat informed	Well informed	Not informed	Somewhat informed	Well informed			P-value
<Grade 9	10.9	4.7	0.0	8.2	6.5	0.0	11.2	5.9	0.0	13.3	1.7	0.0			
Grade 9	9.0	15.0	1.0	7.1	13.5	1.8	6.5	14.7	1.2	13.3	16.7	0.0			
Grade 12	9.0	23.8	2.7	8.2	26.5	4.1	8.8	26.5	0.6	10.0	18.3	3.3			
Post matric	1.2	11.2	5.7	1.8	14.1	5.3	1.8	12.9	3.5	0.0	6.7	8.3			

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Table 3: Knowledge and understanding of typical information provided in a nutritional table

Do you know the meaning of?	Average (N=400)		Klipgat A (n=170)		Klipgat B (n=170)		Klipgat C (n=60)		χ^2	df	p-value
	Yes	No	Yes	No	Yes	No	Yes	No			
Use by date	93.6	6.4	95.9	4.1	96.5	3.5	88.3	11.7	5.304	2	0.071
Energy (KJ)	61.0	39.0	67.6	32.4	65.3	34.7	50.0	50.0	6.020	2	0.049
Protein (g)	58.4	41.6	62.9	37.1	60.6	39.4	51.7	48.3	2.337	2	0.311
Sell by or display until	54.8	45.2	66.5	33.5	44.7	55.3	53.3	46.7	16.554	2	0.000
Total fat (g):	53.8	46.2	57.6	42.4	58.8	41.2	45.0	55.0	3.649	2	0.161
of which saturated fat (g)	22.7	76.8	23.5	76.5	22.9	77.1	21.7	76.7	3.866	4	0.424
of which trans fatty acids (g)	23.1	76.9	34.1	65.9	25.3	74.7	10.0	90.0	15.094	2	0.001
of which monounsaturated fat (g)	5.3	94.7	8.8	91.2	7.1	92.9	0.0	100	9.477	2	0.009
of which polyunsaturated fat (g)	4.2	95.8	4.7	95.3	4.7	95.3	3.3	96.7	1.960	4	0.886
Sell by retail date	42.0	58.0	40.6	59.4	38.8	61.2	46.7	53.3	1.124	2	0.570
Glycaemic carbohydrate (g):	40.5	59.5	47.6	52.4	37.1	62.9	36.7	63.3	4.598	2	0.100
of which Total sugar (g)	48.5	51.5	55.3	44.7	51.8	48.2	38.3	61.7	6.908	4	0.141
Cholesterol (g)	32.8	67.2	40.6	59.4	32.9	67.1	25.0	75.0	5.388	2	0.068
Dietary fibre (g)	31.1	68.3	37.1	62.9	32.9	67.1	23.3	76.7	3.925	2	0.140
Total sodium (mg)	23.9	76.1	29.4	70.6	24.1	75.9	18.3	81.7	3.242	2	0.198
RDA (Recommended Daily Allowance)	15.3	84.7	21.8	78.2	15.9	84.1	8.3	91.7	6.602	2	0.034
GMO (Genetically modified)	14.7	85.3	22.4	77.6	13.5	86.5	8.3	91.7	11.174	4	0.010

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Table 4: Summary of the meaning of terminology by respondents that were somewhat/well informed (Figure 2) about food labels

Labelling information	Total somewhat / well informed (Response rate / N=400)	Responses Klipgat			Response suggested meaning of terminology
		A	B	C	
Emulsifiers	0	0	0	0	No responses as no-one knew the meaning
Health and nutritional claims	31 (7.8%)	14	11	6	Low fat (n=8); Sugar free (n=6); Less sugar (n=5); High in fibre (n=4); Return if you suspect that there is something wrong with it (n=3); High in zinc (n=1); Tartrazine free (n=1); All natural (n=1); Preferably for vegetarian (n=1); Do not microwave (n=1)
Preservative	46 (11.5%)	26	13	7	Something added to food to preserve that specific food (n=14); Life span of a food product (n=2); How to store food (n=30)
Colorant	118 (29.5%)	54	43	21	Substance that colours food (n=98); Food that has been coloured (n=19); Artificial colours (n=1).
Allergen	184 (46%)	90	66	28	Food that causes allergy (n=130); Warning against allergies (n=43); Substance added to food that can cause allergy (n=11)

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Table 5: Summary of the meaning of typical symbols used on labels

Symbols that typically appear on food labels	Total responses (N=400)	Responses Klipgat			Suggested meaning of terminology	Name of organisation
		A	B	C		
 Recycling	106 (26.5%)	42	47	17	Recycling (n=106)	Universal Recycling Symbol https://www.wwf.org.za
 Halal	91 (22.8%)	38	33	20	Halaal (n=51) Food for Muslims (n=20) No pork (n=20)	South African National Halaal Authority https://www.sanha.co.za/a/
 Heart foundation	38 (9.5%)	18	16	4	Good for the heart (n=21); Dinner/restaurant (n=17)	The Heart and Stroke Foundation South Africa https://www.heartfoundation.co.za

Table 6: sources respondents rely on to understand food labelling

Sources	Average (N=400)		Klipgat A (n=170) %		Klipgat B (n=170) %		Klipgat C (n=60) %		χ^2	Df	p-value
	Yes	No	Yes	No	Yes	No	Yes	No			
Television	56.9	43.1	53.5	46.5	58.8	41.2	58.3	41.7	1.065	2	0.587
Internet	41.1	58.9	38.2	61.8	40.0	60.0	45.0	55.0	0.839	2	0.657
Health professional	32.1	67.9	24.7	75.3	28.2	71.8	43.3	56.7	7.171	2	0.028
Radio	31.0	69.0	25.9	74.1	27.1	72.9	40.0	60.0	4.403	2	0.111
Books	29.3	70.6	28.8	71.2	27.6	72.4	31.7	68.3	0.347	2	0.841
Family members	24.2	75.8	21.2	78.8	24.7	75.3	26.7	73.3	0.984	2	0.611
Newspaper	15.0	85.0	14.7	85.3	17.1	82.9	13.3	86.7	0.614	2	0.736
Friend	11.0	89.0	9.4	90.6	13.5	86.5	10.0	90.0	1.540	2	0.463

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