

THE IMPACT OF WARNING LABELS ON SUGARY BEVERAGES ON RISK PERCEPTION, ATTENTION, AND PURCHASE INTENTIONS

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Abstract

A study of Warning labels on sweet beverage products packaging needs to be tested to determine their effect in reducing product consumption. This study aims to fill the research gap regarding the effectiveness of health warning labels on sweet beverage products, to examine the impact of each label on attention, perceived risk, and purchase intention. The research methodology employed in this study is an experiment involving 120 participants. Two stimuli, sugar content labels and visual warning labels, were used after a pilot study. Data analysis in this research used univariate analysis of variance to assess the significance of each label stimulus interaction. Furthermore, this research employed t-tests to test the significance of comparisons between cells. The findings reveal that the influence of visual warning labels on attention, perceived risk, and purchase intention is more significant than sugar content labels. This research holds significant value for the development of social marketing science, particularly in the realm of health warning labels. The study recommends alternative health warning labels that can be applied to sugary beverage products. These findings can serve as a set of innovative policies to support the success of demarketing strategies for sweet beverage products by governments and social marketing activists.

Keywords: Social Marketing, Warning Label, Purchase Intention, Perceived Risk, Attention.
JEL Classification Codes: M31, M38, L120

1. Introduction

Through marketing activities, civilization can continue progressing, improving quality of life and overall well-being. However, on the flip side, marketing activities not only have a positive impact but can also threaten society. Marketers, both individuals and companies, as well as government policymakers, are currently facing various pressures in addressing issues in marketing activities. These issues encompass relationships with the community, conflicts of interest, the reciprocal impact of marketing activities on society, and the pressures exerted by society on marketing (Halim and Muttaqin, 2014; Halim, 2019). There are several pressures on marketing activities and practices. First, marketing encourages individuals to purchase goods/services they do not need. Second, marketers often excessively promote potentially "deceptive" products/services. A demarketing campaign is required to control and prevent consumers from choosing a risky product. Health Warning Labels are one of the tools to achieve the objectives of such demarketing strategies. Literature on warning labels has developed quite well in the past ten years, with research findings such as those conducted by Kees et al (2010), Halim and Muttaqin (2014), Effertz et al (2014), and Gallopel-Morvan et al (2012). Additionally, recent research results show that the effectiveness of visual labels has also been proven effective in studies conducted by Taillie et al (2020), Hall et al (2022), Hall et al (2023), Kroker-Lobos et al (2023), López-Olmedo et al (2023), and Singh et al (2022).

Tobacco products still dominate research on warning labels' effectiveness and are relatively rare for sugar-sweetened beverages. Health academics consider the consumption of sugar-sweetened beverages as a contributor to several health issues for the global population. Therefore, the role of marketing academics is crucial in reducing or even preventing, people

from consuming these products. Several studies have specifically examined the effectiveness of health warning labels on sugar-sweetened beverages products, such as those conducted by Halim (2019), Roberto et al (2016), Ruopeng et al (2021) and D'Angelo Campos (2023). The findings vary, but most agree that warning labels influence purchase intention, attention, and health risk perception. To get consumers' attention, warning labels need to be made attractively so that the health risk message can be well received by consumers. By attracting attention and conveying good message content, it will have an impact on consumers' purchasing intentions. We believe that it is important to examine the impact of warning labels on risk perception and ultimately reducing consumer purchase intentions. Although some previous research findings are very convincing regarding the effectiveness of warning labels, research on this topic is still very limited. This is a research gap that requires more testing on this topic. So it is relevant for us to research and become a solution to existing scientific problems on this topic.

2. Literature Review

Warning labels are a tool for conveying health message information about a product. The use of warning labels on product packaging has been around for a long time, for example on products that are dangerous to health such as cigarettes and alcoholic drinks. This research will examine health warning labels on sugar-sweetened beverage products. The literature review on this topic has provided deep insight for the author regarding the effectiveness of health warning labels on products. In detail, the relationship of warning labels to several important variables will be discussed in the next subchapter.

2.1 Warning Labels on Purchase Intention

As academics become increasingly aware of their role in supporting anti-junk food campaigns, research on visual warning labels on beverage and junk food packaging has proliferated in several countries, particularly Australia, Canada, and the United States. Empirical testing of warning labels on unhealthy beverage products remains limited. Starting with the research conducted by Effertz et al (2014) it was shown that warning labels on beverage product packaging can influence purchase intention. This means that the progress of research findings on health warning labels on product packaging has been specific and in-depth. Consumer purchase intention is something that marketers must be able to achieve. With its influence on purchase intentions, health warning labels occupy an important position in the consumer decision-making process.

The findings on the effectiveness of warning labels have continued to improve, as evidenced in recent research conducted by Clarke et al (2023) The increased effectiveness of warning labels has been proven in test results, supported by recent research conducted by Clarke et al (2023). The results of Clarke et al (2023:10) indicate that : “warning labels are effective in influencing purchase intentions and decisions for high-calorie sweet drink products but are less effective for alcoholic drinks”. These findings provide a strong reason for the use of warning labels on high-calorie sweetened beverage products. Maybe health warning labels can be a tool for consumers to find out clear information before making purchasing decisions. This is different from alcoholic beverage products which are generally known by consumers to have health effects after they consume. We believe that products that can be said to be questionable and whose health risk information is vague or lacking really need a health warning label on the product packaging.

Furthermore, White-Barrow et al (2023:9) in their research said that "the influence of nutrition labels on understanding and intention to purchase sweet drink products has proven to be effective". These findings have strengthened previous findings, although little evidence was found, we believe that this evidence is sufficient to state that there is a relationship between

health warning labels and product purchase intentions, especially on sugary drink product packaging.

Testing on food products and cigarettes has also been shown to influence consumer purchase intentions, supported by research conducted by Bopape et al (2022) on food products and the findings of Delnevo et al (2021) on the effectiveness of cigarette products. In research Bopape et al (2022:7) stated that " Warning Labels, due to their single attribute nature, present concise and easy to interpret information and may therefore be more effective in informing consumers". This statement is very much in line with several previous research findings. A warning label is information that firmly and clearly conveys a warning message that consumers must pay attention to, so it has a high tendency to be read before consumers make a purchasing decision. The complete history of the development of studies regarding health warning labels can be seen in this research in the table in the attachment.

Regarding the calorie content of products, findings from VanEpps et al (2016:8) indicate that warning labels displaying the calorie content of products also influence the level of purchase of health-detrimental products. Important information conveyed in health warning labels on sugar-sweetened beverage product packaging is easier for consumers to understand when compared to not using warning labels. By influencing purchasing decisions, it tends to influence consumption patterns and can increase public awareness of the dangers of products. The history of warning label literature has shown that visual warning labels have proven effective in reducing and eliminating purchase intentions. Currently, warning labels mostly use images depicting health hazards, as seen in studies conducted by Kees et al (2010), Halim and Muttaqin (2014), Effertz (2014), and Gallopel-Morvan et al (2012). Recent results indicate that the effectiveness of visual labels has also been proven in research conducted by Taillie (2020), Hall et al (2022), Hall et al (2023), Kroker-Lobos et al (2023), López-Olmedo et al (2023), and Singh et al (2022). In recent years, research on warning labels has been divided into four categories: Sugar-sweetened beverage products, junk food, cigarettes, and alcoholic beverages. Within the scope of testing sugar-sweetened beverage products, earlier research findings showed that warning labels, especially visual ones, have been proven effective in influencing consumer understanding, health risk perception, purchase intent, and actual purchases. These findings are consistent with studies conducted by Taillie (2020), Hall et al (2022), Hall et al (2023), Clarke et al (2023), and White-Barrow et al (2023).

Visual warning label content will have a different effect on purchase intention. In prior research conducted by Murdock & Rajagopal (2017), Kroker-Lobos et al (2023), and López-Olmedo et al (2023), they used social consequence content as a tool to influence purchasing behavior. Therefore, our study will examine the effectiveness of warning labels that use health hazard content. This research emphasizes that visually appealing warning labels will influence consumer purchase intent. This our argument s is supported by findings in studies by Kees et al (2010), Halim and Muttaqin (2014), Halim (2019), (Murdock & Rajagopal (2017), Kroker-Lobos et al (2023), and López-Olmedo et al (2023).

2.2 Warning Labels on Attention

Labels serve as a tool to increase awareness of hidden aspects of products or consumption that ordinary consumers may not readily recognize. Labels serve two general purposes: (1) providing consumers with the information they need before using a product and (2) helping manufacturers avoid potential legal claims. How effective the use of visual warning labels is remains an important question. Many academics measure the effectiveness of visual labels by assessing how well labels influence the intent to cease purchasing or to avoid starting to purchase a product. In the research results, Argo and Main (2004:204) stated that “ warnings

influence the effectiveness dimensions of attention, reading and comprehension, recall, and behavioral compliance”. Since 2003, marketing and health academics have collaborated to answer these questions. For instance, findings by Hammond et al (2006) suggest that visual labels are more effective than textual labels. Visual warning labels with superior design and more expressiveness can be an effective tool compared to textual labels. However, not all warning labels require the use of visual warning labels, because we realize that marketers make products to be attractive so that consumers buy, not focus on providing warning information on the product packaging. Effectiveness of visual warning labels is supported by several other research findings, such as those conducted in Canada (Kees et al., 2010) and Indonesia (Halim and Muttaqin, 2014; Halim 2019). The current state of warning label research further emphasizes the pivotal role of warning labels in influencing consumer behavior, as evidenced in recent studies by Taillie et al (2020), Hall et al (2022), Hall et al (2023), Kroker-Lobos et al (2023), López-Olmedo et al (2023) and Singh et al (2022). As explained in the previous section, warning labels have been widely used to measure intentions and purchasing decisions for products such as cigarettes, junk food, sugary drinks, and other products. However, there needs to be more research exploring the effectiveness of labels on other variables.

Consumer purchase decisions involve several decision-making processes, starting with attention to a product before purchasing. Some studies have delved into the effects of health warning labels on consumer attention. For instance, a study by Kim & Chua (2022:7) found differences in the effectiveness of Health Content Pictorial Warning Labels, moderated by the level of threat and gender, on personal relevance, attention, and intentions to purchase or avoid smoking. This means that the effectiveness of warning labels can also be influenced by several variables that strengthen their influence on purchasing decisions. The latest findings provide further insight for the authors that many factors can moderate the effectiveness of warning labels. Saavedra-Garcia et al (2022) also found that warning labels only affect identifying healthier products among adolescent consumers and do not extend to their purchasing decisions. As explained in the previous section, warning labels significantly influence a person's level of attention to a product, especially products with health or other risks. The author believes this influence can vary depending on several factors, according to Halim (2019:8) research, such as label design, text, context, and the characteristics of individuals exposed to the warning label. Some of the main effects of warning labels on attention include increased awareness. This means that health warning labels can be effective by paying attention to each warning label design used on product packaging.

Warning labels can increase an individual's awareness of an action or product's potential dangers or negative consequences. Striking and attention-grabbing warning labels can trigger greater attention toward the product consumers' view. Secondly, warning labels can enhance the reader's focus. Therefore, researchers suggest governments create attention-grabbing warning labels using bright colors, large text, or prominent symbols. This condition can increase a person's focus on the warning message. Lastly, health warning labels can increase risk awareness when consuming a product. Influential warning labels can help individuals better understand the risks associated with the product, particularly in the case of sugar-sweetened beverages products, as found in research conducted by Grummon (2022) and Caruso et al (2023). The caution triggered by exposure to health warning labels creates a reflective behavior among consumers regarding consuming a particular product. Furthermore, the author argues that attention to the message content on warning labels displayed on product packaging depends on the attractiveness of the message conveyed. The attention given by message readers will influence the effectiveness of warning labels. Therefore, marketers should pay attention to the level of attractiveness of the warning label message displayed. Building on the thread of

previous research, the author contends that visual labels are more attention-grabbing than simply listing the sugar content on product packaging.

2.3 Warning Labels on Perceived Risk

Creating attractive warning labels with the right message is essential to reduce or control consumer behavior in consuming unhealthy beverage products. Belief in the health risks associated with their products can influence consumers' purchasing choices. Research on the effect of health warning labels on consumer perceptions was conducted by Berry et al (2017) in their study, stating that consumer belief in the health risks associated with a product is one of the factors that influence consumers in reducing their intent to purchase the product. Some products may not be considered dangerous by potential consumers if they do not have a health warning label on the product packaging. This means that it is very important to provide information that can influence consumers' risk perceptions. This statement is also strengthened by the results of research conducted by Aktan (2018) and Davis & Burton (2019). These findings are crucial for demarketing academics. As these findings begin to increase, they are able to provide new insights into the study of health warning labels on product packaging.

Therefore, the researchers in this study will investigate their impact on beverage products to fill the research gap in social marketing regarding warning labels and campaigns against unhealthy food and beverages. Recent research findings indicate that there still needs to be more research examining the impact of warning consumer labels perceived risk. This gap in research is evident in studies conducted by Prates et al (2022), Chudech and Janmaimool (2021), Czaplicki et al (2022), Nakkash et al (2021), Zhang et al (2023), Uribe et al (2020), and Thrasher et al (2022), which tend to focus on testing cigarette products. Research on sugar-sweetened beverages products is more limited, with studies conducted by (Roberto et al (2016), Ruopeng et al (2021) and (D'Angelo Campos et al (2023). The message content is an essential component that can either strengthen or diminish the effectiveness of warning messages (Pechmann and Catlin 2016). Most research on messages focuses on the effectiveness of using adverse health outcomes such as cancer, diseases, and even death (Kees et al., 2010). The effectiveness of warning labels in the studies conducted by Murdock & Rajagopal (2017), Aktan (2018), Davis & Burton (2019), and D'Angelo Campos et al (2023) has been proven to influence perceived risk effectively.

2.4 AIM and Hypothesis

To fill the research gap in the realm of social marketing studies, specifically on the research topic of warning labels on beverage product packaging, this study aims to assess the effectiveness of warning labels on sugar-sweetened beverage packaging in terms of attention, risk perception, and even purchase intention. Our research has 3 hypotheses that will test the level of effectiveness of warning labels against attention, risk perception, and even purchase intention. Clearly and separately our research hypothesis is as follows:

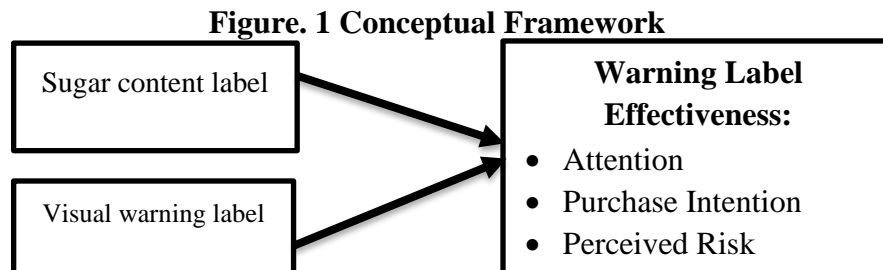
H1; Visual Warning Labels significantly impact Purchase Intent when compared to sugar content labels (textual labels).

H2: Visual Warning Labels significantly impact attention compared to sugar content labels (textual labels).

H3: Visual Warning Labels significantly impact Perceived Risk compared to sugar content labels (Textual Labels).

3. Method

After conducting a literature review and analyzing data from previous research, many assumptions need confirmation through the research model we have structured as follows:



The method used for this research is an experiment. The experimental method is a causal research method used to establish evidence of cause-and-effect relationships (Malhotra 2010). In this study, the target subjects were adolescents and adults. The research was conducted at three locations: sports facilities, schools, and playgrounds in three major cities in Indonesia. These locations were chosen because they are places where participants commonly gather to engage in various activities, and there is potential for an increase in the consumption of sugar-sweetened beverages at these locations. The total number of participants is 120 (2 cells x 60), as required for the study. Participants were randomly assigned to two cells formed in the experimental design. Each cell group received different stimuli to observe varying effects on each participant. The study used two stimuli: sugar content labels and visual warning labels, as presented in the appendix. This research employed univariate analysis of variance to determine the significance of the interaction of each stimulus label. Subsequently, t-tests were used to assess the significance of comparisons between cells. The experimental design can be illustrated in the following table:

Table 1. Design Experiment

Visual Health Warning Label	Textual Sugar Content Warning Label
60 participants	60 participants

This study consists of three dependent variables: Purchase Intention, Attention, and Perceived Risk. The purchase intention variable in this research uses questions defined by Baker & Churchill (1977). Purchase intention towards a product is the level of desire or determination of an individual to purchase a specific product or service within a defined future timeframe. The indicators to be measured through warning labels on beverage products, as in the research by Halim (2019:196), include whether participants are willing to try, purchase, intend to seek, and like the product. The perceived risk variable is akin to the research conducted by Murdock & Rajagopal (2017) and Nilsen et al (2020). Perceived Risk in Product Consumption is an individual's perception of the potential risks or uncertainties associated with consuming a particular product. This perception includes subjective evaluations of various types of risks, such as health, financial, quality, or social risks that may arise from consuming the product. For the Attention variable, use question items in the research of Kim & Chua (2022). Attention towards product consumption refers to the focus or attention individuals give to a specific product or brand in consumption decision-making. This perception includes the level of awareness, attention, and concentration individuals direct toward the product. The questions asked are designed to assess whether the warning label is easy to see and remember, attracts attention when viewed, and effectively contains warning information.

3.1 Procedure

We carefully followed the steps to ensure unbiased results in conducting the lab experiment. The first step in preparing for the experimental study was to conduct a pilot study to determine the warning labels to be used. The pilot study involved several stages, including selecting the sugar-sweetened beverages product, determining the message content, choosing message images, deciding on the message location, and specifying the color and size of the warning labels. This stage is carried out in order to obtain a stimulus that is truly tested and valid. The second step involved testing the validity and reliability of the measurement tools for the dependent variables: attention, purchase intention, and perceived risk. Validity testing used factor analysis techniques, with results showing a KMO value above 0.5, loading factors, and MSA above 0.6. Furthermore, the Cronbach's alpha values were required to be above 0.6. According to the criteria outlined by Malhotra (2010), the indicator variables used in this research were deemed valid and reliable for the actual study. The experimental procedure we implemented followed several steps and procedures from the research conducted by Halim (2019), ensuring that each step and procedure was followed meticulously to obtain trustworthy experimental results.

The stages of conducting the experimental lab in this research are as follows. Firstly, participants were invited to join the study voluntarily, without any coercion. If prospective participants were willing, the surveyors provided them with experimental tools divided into three sections: participant profile data, warning label stimuli, and statements related to dependent variables. It was estimated that the exposure to the participants lasted for 5-10 minutes, ensuring they were exposed to and observed the images more carefully. During this phase, questions were asked about the displayed images. This way, it can be ensured that participants were conditioned to be cautious and attentive in observing the images. The final part of this experiment involved providing participants with statements that measure the dependent variables. To control for stimulus effectiveness, the researchers included statements that measured participants' beliefs regarding the information provided in the stimuli.

4. Results

The results of this research play a central role in achieving the research objectives. They will explain each finding, its implications, and relevance in line with the existing literature. The following table presents the characteristics of the respondents in this study.

Table. 2 Characteristics of Research Respondents

Characteristics of Respondents	Details	Total (People)	Percentage (%)
Age	18 – 24 Years	29	24,20
	25 – 34 Years	46	38,30
	35 – 44 Years	38	31,70
	45 – 54 Years	5	4,20
	≥ 55 Years	2	1,70
	Total	120	100
Gender	Male	54	45,00
	Female	66	55,00
	Total	120	100
Last Education	≥ High School	21	17,50
	Diploma	14	11,70
	Bachelor	62	51,70
	Postgraduate	23	19,20
	Total	120	100
Job	Student/ College student	21	17,5

Entrepreneur	40	33,3
Civil Servant	30	25,0
Non-Government Employees	29	24,2
Total	120	100

Based on the table above, this study's respondents' distribution is relatively even. This data consists of four main categories that describe the characteristics of the respondents: age, gender, highest education level, and occupation. Most respondents fall within the age range of 25 to 34 years (38.30%), followed by the age group of 35 to 44 years (31.70%). There are also some participants in the younger age group, namely 18 to 24 years, accounting for 24.20% of the total respondents. Meanwhile, the number of older participants is relatively minor. Regarding the gender of the respondents, it is evident that there are more female respondents than male respondents in this study. Most respondents hold a bachelor's degree (51.70%), followed by those with a master's degree (19.20%). The number of respondents with higher education levels, such as diploma and high school graduates, is also significant. This data illustrates the primary occupations of the respondents. The majority of respondents are entrepreneurs (33.3%), followed by civil servants (25%) and private sector employees (24.2%). A small number of respondents are students or pupils (17.5%).

The research instruments in this study were developed through a pilot study. Before conducting experiments in the field, the measurement tools in this research were tested for their validity and reliability. Using factor analysis and Cronbach's alpha test, as Hair et al. (2010) recommended, the results showed that all measurement tools in this study were deemed valid and reliable for further research. The results of the stimulus test indicated an interaction between the two labels being compared. Therefore, the provided stimuli successfully produced different effects corresponding to each experimental cell's stimulus. Subsequently, the results of the assessment of dependent variables will be presented in the following table:

Table 3. Mean Comparison of Dependent Variables

Stimulus	Purchase Intention			Attention			Perceived Risk		
	Mean	t-value	Sig.	Mean	t-value	Sig.	Mean	t-value	Sig.
Visual warning label	4.7903	60.483	.000	5.4083	66.015	.000	5.5217	68.064	.000
Sugar content label	4.4800	55.481	.000	4.9900	62.006	.000	3.8567	56.426	.000

The table above shows the results of the measurement of dependent variables from the data processing. The stimuli provided were credible for the participants. The table indicates that, overall, the average values for visual labels are higher than those for textual labels. This result occurs in every variable studied, including purchasing intention, attention, and perceived risk variables. The results also show that the significance values (sig.) for all three variables are 0.000 ($p < 0.05$), and the calculated T-values are more significant than the tabulated T-values. Therefore, we can conclude that the null hypothesis (H_0) is rejected. These results indicate a significant influence between the two labels being compared; thus, H_1 is accepted. Thus, H_1 is accepted. From the results, it can be inferred that Visual Warning Labels significantly influence purchase intention, attention, and perceived risk compared to sugar content labels.

5. Discussion

This study's results align with the evolving findings of previous research, confirming that Visual Health Warning Labels remain undisputedly more influential than textual warning labels. This research offers insights into the effectiveness of warning labels on sugary beverage products, particularly within the context of Indonesian consumers. These findings carry significant implications and contribute to the existing knowledge in social marketing and public health. The research results contribute to the literature on warning labels within Indonesia's

social marketing framework. The findings reinforce earlier research findings that Visual Warning Labels have proven effective in reducing and, in some cases, eliminating purchase intention. These findings align with studies by Kees et al (2010), Halim and Muttaqin (2014), Effertz et al (2014), Gallopel-Morvan et al (2012), Murdock & Rajagopal (2017), Halim (2019), Billich et al (2018), and Hall et al (2017). Our findings also underscore the effectiveness of Health Warning Labels on sugar-sweetened beverages products, as demonstrated in studies by White-Barrow et al (2023), Taillie et al (2020), Hall et al (2022), Hall et al (2023), Roberto et al (2016), Ruopeng et al (2021), D'Angelo Campos et al (2023), Grummon (2022), and Caruso et al (2023).

Specifically, the results of this study reinforce the evidence that sugary beverage products, which pose health risks, can utilize Visual Warning Labels to convey the health hazards of these products effectively. Crockett et al (2018) state that labeling consisting of energy information on menus or adjacent to products can change people's choices at the point of selection and consumption. These findings also align with research conducted by Halim (2019), Taillie et al (2020), Hall et al (2022), Hall et al (2023), Clarke et al (2023), White-Barrow et al (2023), Kroker-Lobos et al (2023), and Kroker-Lobos et al (2023), all of which found that Visual Warning Labels are effective in influencing attention and purchase intention. Specifically, for sugary beverage products, research by Bleich et al (2014) found that calorie information can reduce the selection and consumption of sugary beverages. The research conducted by the team from St. Michael's Hospital in Canada found that sweetened beverages containing fructose are more harmful due to their impact on blood sugar levels. Fructose is known to stimulate the production of fat cells. People with an excess of fructose are concerned about accumulating fat more quickly than having excess glucose. An excess of fructose has similar effects to those with a high-fat diet. Awareness of the harmful effects of sugary drinks has led some countries, such as the United States, Canada, and Europe, to consider warning labels as an effective tool in reducing the consumption of sugary beverages.

Visual warning labels can achieve the demarketing goal of reducing product consumption. Additionally, consumers are more likely to focus on depicting the diseases resulting from consuming sugary beverages. Lastly, this study also examined the belief that health risks associated with a product can influence consumer choices when purchasing the product. As Berry et al (2017) pointed out in their research, consumer belief in the health risks associated with a product is one of the factors that can influence consumers in reducing their intention to buy the product. These findings hold significant importance for demarketing academics. Thus, it can fill a research gap in social marketing related to warning labels and campaigns against unhealthy food and beverages. The research findings also strengthen the results of effectiveness testing for warning labels in studies conducted by Murdock & Rajagopal (2017), Aktan (2018), Davis & Burton (2019) and D'Angelo Campos et al (2023), which have shown their effectiveness in influencing risk perception.

The results of this study reinforce the recommendations from previous research, indicating that for potentially harmful consumer products, warnings, and package disclosures are essential communication tools for public health policies and governmental institutions, as suggested by Bettman et al (1986), Stewart et al (2001), and Goodall and Appiah (2008). Warning labels on products represent a form of consumer protection (Halim and Muttaqin, 2014; Halim 2019). Warnings and information disclosures can inform consumers about risks and potential hazards associated with product use and, in turn, counterbalance the positive consequences stemming from effective package design and other promotions. Although this research provides valuable insights, future studies can explore the long-term effects of visual warning labels and their

impact on purchasing behavior. Studying various demographic groups and their responses to such labels can further enrich our understanding. For future research, we recommend exploring the effectiveness of warning labels on sugar-sweetened beverages product packaging among participants with varying characteristics such as gender, age, economic status, education levels, and cultural differences. In conclusion, we urge stakeholders, particularly policymakers, to take heed of our research findings and use them effectively in developing and implementing appropriate policies.

6. Conclusion

Warning labels on products are one form of consumer protection. This study aims to assess the effectiveness of warning labels on sugar-sweetened beverage packaging in terms of attention, risk perception, and even purchase intention. The study's findings suggest a significant impact between the two compared labels. Visual Warning Labels significantly influence purchase intention, attention, and perceived risk compared to sugar content labels. Warnings and information disclosures can educate consumers about the risks and potential hazards associated with product use, thereby balancing the positive consequences originating from effective package design and other promotions. These findings can provide input for public health campaign strategies, academic research in policymaking, and marketing strategies aimed at reducing the consumption of sugary beverages and addressing related health issues. The results of this research hold significant value for government authorities when formulating consumer protection policies to address the health risks associated with unhealthy products. The effectiveness of visual warning labels highlights their potential as a powerful tool for demarketing and public health campaigns, specifically in reducing the consumption of sugary beverages. Such policies empower consumers to make informed choices based on information and have the potential to decrease the prevalence of sugary beverage consumption.

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Supplementary Materials



Research Developments on Health Warning Labels

Year/Author	Theme	Result
Clarke et. Al (2023)	The impact of health warnings and calorie labels on the selection and purchase of alcoholic and non-alcoholic beverages. With experimental methods	Warning labels are not effective in reducing the purchase of alcoholic drinks. Calorie label warnings are effective in reducing purchases of non-alcoholic drinks.
Barrow et al. (2023).	Effects of nutrition labels on comprehension and purchase intentions	Influential labels increase the understanding and purchasing intentions of adult consumers
Bopape et al. (2022)	Effects of front-of-package labels of food products on identification of unhealthy products and intention to purchase the product	Influential labels identify unhealthy food products and prevent the purchase of unhealthy food products.
Delnevo et. Al (2021)	Experimental Study of the Effects of Cigarette Packaging Characteristics on Youth Perceptions and Adult Intentions	Warning labels influence negative perceptions and intentions
Taillie et. Al (2020)	<i>Food labeling on purchase intention</i>	Food labeling is effective in reducing purchase intention
Taillie et. Al (2022)	Effectiveness of warning labels on snack packaging on product purchases	Effectively influences attention and purchasing behavior

Hall et. Al (2022)	Effectiveness of pictorial health warnings on purchases of sugar-sweetened beverages for children	Effectively influence purchasing in children.
Hall et. Al (2023)	The effectiveness of pictorial health warnings on the purchase of sugar-sweetened beverage products among parents	They are effectively influencing purchases by parents.
Hall et. Al (2023)	Design warning labels for sugary drink products	Visual warning labels are more effective than textual warning labels
Lobos et al. (2023)	Effectiveness of front-of-pack warning labels versus guidelines for daily amounts on health perceptions, purchase intentions, and understanding of nutritional content of food products	Front-of-pack warning labels are influential compared to guidelines for daily amounts on health perceptions, purchase intentions, and understanding of the nutritional content of food products.
Olmedo et al. (2023).	Warning labels on alcoholic drinks	Warning labels on alcoholic drinks effectively increase perceptions of health risks and purchase intentions.
Singh et al. (2022).	Effectiveness of front-pack warning labels for unhealthy food products	Warning labels effectively influence consumers to identify unhealthy foods
Zhang et al. (2023)	Testing consumer perceptions regarding the design of the Warning Label on the front of the product packaging	Warning labels have been proven effective in influencing consumers to choose healthier foods.
Roberto et al. (2016)	Warning labels on sugary drink products	Warning labels effectively increase parents' understanding of the risks of consuming sugar-sweetened beverage products.
Uribe et al. (2020)	It is warning labels on food products classified as hedonic and utilitarian.	Warning labels are more effective on food products that are classified as utilitarian.
Trasher et al. (2021)	Strategies to increase the effectiveness of pictorial warning labels for cigarettes	Size, Location, and Color influence the intention to quit smoking
Ruopeng et al. (2020)	The impact of warning labels on consumer behavior	Sugar-sweetened beverage product warning labels are effective in discouraging consumers from choosing them. Warning labels containing health effects indicate the most significant impact.
Campos et.al (2023)	Examining the impact of pictorial warning labels on parental purchases and perceptions of sugar-sweetened beverage categories	Warning labels have heterogeneous effects across sugar-sweetened beverages product categories.
Davis et al. (2019).	The counter-persuasive effect of natural labels on dangerous goods	Natural labels effectively influence brand attitudes, purchase intentions, marketers' social responsibility perceptions, health misperceptions,
Bromberg et.al (2021)	Effectiveness of using facts, tables, and nutrition labels on the front of red versus green packaging.	There is a difference in effectiveness between labels on red and green packaging.
Aktan, M. (2018)	The effectiveness of health warning labels on health and social risk beliefs	This study explored the influence of HWL belief levels on individuals' perceived health and social risks associated with smoking.

Kim & Chua (2022)	Gender-Specific Health Content Illustrated Warning Labels: The Moderating Effects of Threat Level and Gender	There is a difference in the effectiveness of warning labels with health content images with the moderation of threat level and gender on personal relevance, attention, and intentions to purchase or avoid smoking.
Blomquist et.al (2022)	Warning Label Policy Solutions for Women	There are differences in the influence of effectiveness between labels and non-labels
Molina & Gonzales (2020).	Nutrition labeling on consumer beliefs and decisions	There is an influence of labels and non-labels on purchasing beliefs and decisions
Garcia et al. (2022)	An Experimental Study Evaluating the Effect of Front-of-Package Warning Labels on Adolescents' Purchase Intentions of Processed Food Products	Front-of-package WL did not influence adolescent purchase intentions or identification of healthier products.
Prates et al. (2022)	The influence of nutrition claims on various front-of-package nutrition labeling models on supposedly healthy food packaging: Impact on understanding of nutritional information, health perceptions, and consumer purchase intentions	The influence of nutrition claim labels is still unclear and varies on consumers' understanding, perception of health, and purchasing intentions.
Chudech & Janmaimool (2022)	The effectiveness of graphic warning labels on cigarette packages in increasing late adolescents' perceived fear of smoking-related dangers	Effectively increases fear of the dangers of smoking.
Czaplicki et.al (2022)	Identifying credible sources of attribution for cigarette health warning labels in China: using a cross-sectional survey of adults.	The message's source on the warning label comes from a Health organization that is proven effective and credible.
Grummon et al. (2021).	Effect of Sugary Drink Health Warning Labels on Consumer Reactions	San Francisco's 2020 sugary drink warning labels could serve as a policy solution to inform consumers and encourage healthier beverage choices across demographic groups with diverse characteristics.
Caruso et.al (2022)	An experimental study comparing perceptions of two energy drink health warning labels	Health effect warning labels are considered by consumers of energy drinks to be influential and accepted as an added benefit for them.
Nakkash et al (2021)	New Insights into the effectiveness of Tobacco-specific pictorial health warning labels in Lebanon: Implications for Tobacco Control Policy	HWL Health warning label describing oral cancer and dangers for babies was rated as the most effective by smokers and non-smokers
Nilsen et al. (2020)	The effect of cigarette packaging warning labels on health risk perceptions	There is a difference in the influence of health warning labels on the perceived risk of consumers of Swedish cigarettes (snus) and regular cigarettes.
Sawyer et al. (2022).	Differences in perceived influence of mental health warning labels	New insights into the effectiveness of mental health warning labels on cigarette packaging.