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Consumer Understanding and Preferences for Different Nutrition Information Panel Formats

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ABSTRACT

The study was conducted to assess the level of understanding and the ability to extract information from a nutrition information panel (NIP) among women (n = 232, 20-59 years) in the Klang Valley, an urban area in Malaysia. The study involved the currently used format in Malaysia and three other formats, namely (i) based on Guideline Daily Amount (GDA), (ii) Multiple Traffic Light (MTL) and (iii) combination of GDA/MTL. Four hypermarkets were chosen for the face-to-face interview using a questionnaire. Subjects were selected using a convenient sampling method. The mean score for level of understanding was the highest for the current format (3.46 ± 1.12) compared to the other three tested formats (GDA = 3.09 ± 1.03, MTL = 2.72 ± 0.97, GDA/MTL combination 3.09 ± 1.36). However, most of the respondents (68.1%) would prefer the current NIP format to be changed due to difficulty in understanding (43.1%) and perceived the nutrition information to be insufficient (23.3%) and over simplified (21.6%). When other NIP formats were introduced, GDA format was the most preferred (mean score 3.52 ± 0.84) compared to the other formats (MTL = 3.41 ± 0.98; GDA/MTL combination = 3.29 ± 0.91), including the current format used in Malaysia (3.16 ± 0.85). These findings suggest that the preferred NIP format does not necessarily lead to correct interpretation of the nutrition information. The current format should be further promoted and explained to the public to improve its usage and consumer understanding.

Keywords: Label, nutrition labelling, nutrition information panel

INTRODUCTION

Traditional dietary patterns have undergone marked changes as consumers increasingly rely on pre-packaged processed foods. If inappropriate food choices are made, diets may become higher in calories, fat, saturated fat, refined carbohydrates and sodium. These dietary changes have been associated with increased prevalence of chronic disease (Joint WHO/FAO, 2003). Therefore, one of the major health challenges today is to find ways to help consumers make the appropriate food choices (Buttriss *et al*., 2004). The World Health Organization (WHO) has recommended nutrition labelling as one of the strategies to assist the public to make healthier food choices (WHO, 2004).

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Malaysia has made nutritional labelling mandatory for selected foods since 2003 (MOH, 2007). It is one of the strategies adopted to assist consumers adopt healthy dietary practices by making wise food choices at the point of purchase. However, a review of the literature indicates that there is a lack of published data on whether Malaysian consumer can really understand the nutritional qualities of a food product factually and informatively. Research conducted in Europe, US and Australia/ New Zealand suggests that the consumers may give different interpretations, especially the numerical information and the terminology used in nutrition labels (Byrd-Bredbenner, Wong & Cotte, 2000; Cowburn & Stockley, 2005; Scott & Worsley, 1997; Shine, O'Reilly & O'Sullivan, 1997).

In the mean time, different formats are used in different countries depending on the country's policies (Hawkes, 2004). These formats vary from complex detailed nutrition labels to simple symbols. Consumers have been reported to give different reactions regarding the various formats (Grunert & Wills, 2007). There has been an increasing focus in the literature on the search for the most effective format. The two formats most favoured in consumer research to date appear to be Multiple Traffic Light labels and colour-coded Guideline Daily Amount (GDA) labels (Clinical Trials Research Unit, 2007; Synovate, 2005).

Therefore, this study aimed to gather information on the level of consumer understanding and preference for nutrition information panel formats in the context of the Malaysian scenario. It is hoped that information gathered will help the relevant authorities in improving nutritional labelling format as well as strengthen consumer understanding of nutrition information displayed on food labels. Furthermore, the findings revealed from this study can identify directions for future research in conducting an appropriate population-specific evaluation.

METHODOLOGY

Subjects

A total of 232 women between the ages 20-59 years were recruited using a convenient sampling method from four hypermarkets in the Klang Valley for the face-to-face interviews. In this survey, there were 43.1% Malays, 37.5% Indians, 16.4% Chinese and 3.0% other races (such as Punjabi, Kadazan, Bajau and Murut). About 35.8% of the respondents were in the 20-29 years age group, followed by 30-39 years (41.4%), 40-49 years (17.6%) and 50-59 years (5.2%). More than half (60.4%) had achieved secondary level of education and the percentage who had completed primary school, diploma/certificate, degree holders were 5.6%, 15.5% and 14.7% respectively; about 3.9% did not receive any formal education. An attempt was made to recruit subjects to avoid biases as well as to represent the Malaysian population structure. However, this could not be achieved due to poor cooperation from the public as well as numerator limitations.

Questionnaire

The questionnaire was designed to be administered by interview on a one-to-one basis. To establish content validity, the questionnaire had been pre-tested and improved for intended purpose and usefulness. The questionnaire consisted of four main sections. Section A collected demographic data (i.e age, race, education level). Sections B and C contained NIP reading knowledge designed based on principles used in previous research (Byrd-Bredbenner 2000; IGD 2005). Section B contained the current NIP format that involved all respondents. Respondents were assessed based on only one of the tested NIP formats in Section C to avoid greater drop out cases due to the longer time spending during the interview. A rotation system was employed to ensure that an equal number of respondents looked at each concept of the

Nutrition Information Panel

Serving size **250 ml (1 glass)**
Servings per package **4**

	Per serving (250 ml)	Per 100 ml
Energy	305 kcal (1281 kJ)	122 kcal (512 kJ)
Carbohydrate	24.0 g	9.6 g
Total sugar	8.0 g	3.2 g
Protein	16.0 g	6.4 g
Fat	19.0 g	7.6 g
Calcium	150 mg	60 mg

a) Current NIP format

Nutrition Information Panel

Serving size **250 ml (1 glass)**
Servings per package **4**

Nutrient	Per serving (250 ml)		Per 100 ml
		% daily nutrient (RNI)	
Energy	165 kcal (693 kJ)	8.3 %	66 kcal (277 kJ)
Protein	8.0 g	14.5 %	3.2 g
Carbohydrate	12.0 g	4.0 %	4.8 g
Total sugar	4.0 g		1.6 g
Fat	9.5 g	14.6 %	3.8 g
Calcium	300 mg	37.5 %	120 mg

b) Tested format
(i): Guideline Daily Amount (GDA)

Nutrition Information Panel

Serving size **250 ml (1 glass)**
Servings per package **4**

	Nutrient	Per serving (250 ml)	Per 100 ml
MED	**Energy**	133 kcal (559 kJ)	53 kcal (223 kJ)
HIGH	**Protein**	12.5 g	5.0 g
MED	**Carbohydrate**	12.0 g	4.8 g
	Total sugar	5.0 g	2.0 g
LOW	**Fat**	3.8 g	1.5 g
HIGH	**Calcium**	300 mg	120 mg

c) Tested format
(ii): Multiple Traffic Light (MTL)

Nutrition Information Panel

Serving size **200 ml (1 glass)**
Servings per package **5**

Nutrient	Per serving (200 ml)		Per 100 ml
		% daily nutrient (RNI)	
Energy	106 kcal (445 kJ)	5.3 %	53 kcal (223 kJ)
Protein	10.0 g	18.2 %	5.0 g
Carbohydrate	9.6 g	3.2 %	4.8 g
Total sugar	4.0 g		2.0 g
Fat	3.0 g	4.6 %	1.5 g
Calcium	240 mg	30.0 %	120 mg

LOW MED HIGH

d) Tested format
(iii): GDA/MTL combination

Figure 1. The Nutrition Information Panel (NIP) formats used in the study

tested NIP formats. The visuals of the NIP formats were used during the interview to show the different colours involved in selected NIP formats. Respondents were required to give 'true' or 'false' answers. A score was calculated by summing the number of correct responses which could range from 0 to 5, with higher scores indicating a greater ability to extract label information.

Respondents were also asked to give their opinion on the current NIP format-whether it should be retained or changed (including the reasons for change). Section D required respondents to indicate their liking for the NIP formats and to grade it using 5-point scale with answers ranging from 1 (the least preferred) to 5 (the most preferred).

Types of NIP formats

There were four different types of NIP formats used in this study (Figure 1), the current format used in Malaysia and the other

Table 1. Mean understanding and preference for NIP formats

NIP Format	*No (n)*	*Mean understanding ± s.d.*	*Mean preference ± s.d.*
GDA	81	3.09 ± 1.03	3.52 ± 0.84
MTL	76	2.72 ± 0.97	3.41 ± 0.98
GDA/MTL	75	3.09 ± 1.36	3.29 ± 0.91
Current format	232	3.46 ± 1.12	3.16 ± 0.85

formats tested. The other NIP formats tested were chosen based on the studies conducted by Synovate (2005) with some amendments to suit the current national food regulation on nutritional labelling.

The Guideline Daily Amount (GDA) format (Figure 1b) shows the amount of a range of nutrients provided by one serving of that food, expressed as amount (in gram) and percentage of recommended nutrient intake (RNI). The % RNI was the additional column compared to the current format. The label also has the nutrients that are declared in per 100g or per 100 ml which was not included in the original formats of the Synovate(2005) studies.

The Multiple Traffic Light (MTL) label (Figure 1c) gives a green (low), amber (medium), or red (high) light to indicate the level of nutrients in a product. The lights are the addition to the current NIP format. In the Synovate studies, the format was simpler, containing only the lights and the nutrients without the numerical form expressed in per serving and per 100g or per 100ml.

The third format tested (Figure 1d) combined both MTL and GDA formats expressed in three coloured columns, namely amount of nutrients per serving, percentage RNI and nutrients per 100 gram. The label that was tested by the UK Food Standards Agency only contained the colour based on the 100 gram amount per serving next to the recommended guideline daily amount.

Data analysis

The data collected was analysed using Statistical Package for Social Sciences (SPSS) version 13.0. The paired *T*-test was used to compare the mean difference between the level of understanding on the current NIP format and the tested formats. One-way analysis of variance was used to determine the preferences of the current NIP format over the tested formats. The level of significance used for the data analysis was set at $p<0.05$.

RESULTS AND DISCUSSION

Level of understanding

On average, the study found that the consumers had a good understanding of the current NIP format with a mean of 3.46 ± 1.12 (Table 1). The level of understanding for the current NIP format was found to be better than the other NIP formats tested. The results showed that the level of understanding of the current NIP format was 58.2% ('good' and 'very good'), which means more than half of the respondents can extract the nutrition information (Figure 2). However, most of the respondents (68.1%) preferred the current NIP format to be changed due to difficulty in understanding (43.1%), and nutrition information that was perceived to be insufficient (23.3%) and over simplified (21.6%).

For the other NIP formats tested, the means ranged from 2.72 to 3.09 (Table 1). Figure 2 showed that the level of

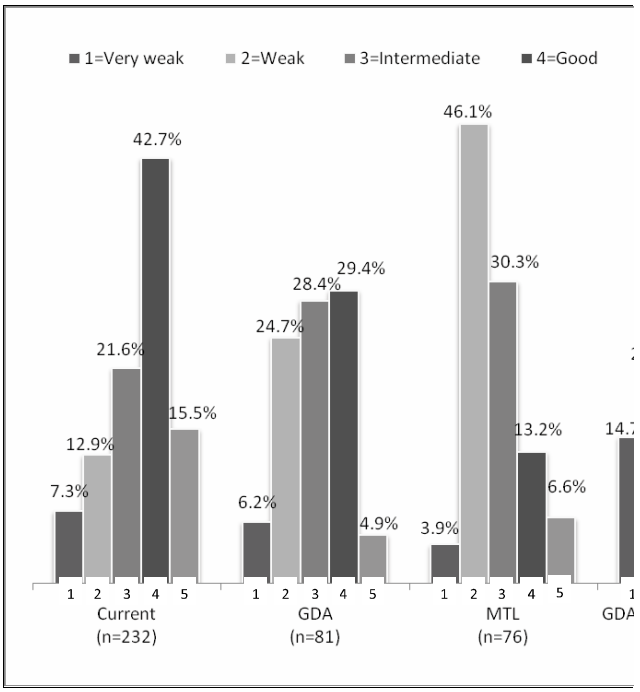

Figure 2. Level of understanding of NIP formats

understanding was about equally distributed between 'weak' (24.7%), 'intermediate' (28.4%) and 'good' (29.4%) for GDA format. The findings showed that the response for MTL format was slightly 'weak' (46.1%) while the response for GDA/MTL combination was 'intermediate' (29.3%). The paired T-test showed significant difference ($p<0.05$) in the level of understanding between the current NIP format and the tested formats of MTL and GDA/MTL combination.

There has been a lack of nutrition labelling research on consumers' interpretation of nutrition labels. Eighteen studies/reports on consumer use and understanding of nutrition labels published between August 2005 and September 2007 relied on self-reported data (Clinical Trials Research Unit, 2007). The majority of consumers claim to understand nutrition labels 'mostly' (43%) or 'in part' (52%), but actual understanding of label terms and concepts appears poor across all types of nutrition information, either NIP, claims or endorsements (Clinical Trials Research Unit, 2007).

The study conducted by Synovate (2005) on consumer understanding involved 2,676 respondents aged of 16-70 years old from England, Scotland, Northern Ireland and Wales. The study involved four signposting options – simple traffic light, MTL, colour-coded GDA and monochrome GDA. The findings indicate that MTL label performed best overall, producing quick and accurate responses. In another study by Which? (2006), a representative sample of 636 shoppers in Great Britain aged 18 to 65 years of age rated one of four label formats (MTL and three monochrome or colour-coded GDA formats). The study also showed that the MTL label was best used to identify nutrient levels and correctly compare

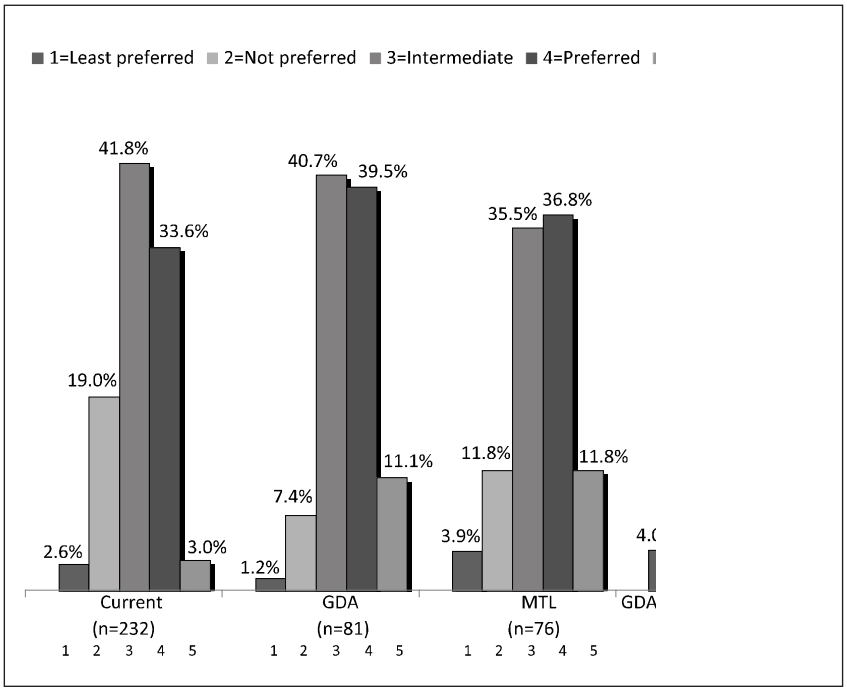

Figure 3. Level of preferences for NIP formats

products using the label. A review of European researches reported that the MTL labels appear to perform best for general ease of use and understanding, whereas GDAs perform best for people who like more detailed information (Grunert & Wills, 2007).

Preferences for NIP formats

Generally, the respondents fairly liked the four formats, with means ranging from 3.16 to 3.52 (Table 1). The current NIP format was least preferred (3.16 ± 0.85) by the respondents. They liked the GDA format the most (3.52 ± 0.84), followed by MTL (3.41 ± 0.98) and GDA/MTL combination (3.29 ± 0.91). The level of preference for all NIP formats is shown in Figure 3. Most of the respondents claimed these four formats as 'intermediate' or 'preferred'. However, there is no definite 'perfect' NIP format preferred by the respondents. ANOVA test showed that all the tested NIP formats were significantly preferred ($p<0.05$) over the current format.

A research review by Grunert & Wills (2007) suggested that consumers are most likely looking for different things from labels and have different priorities. Consumers are asking for nutrition information that is simpler and easier to use, not a format that required mathematical skill in calculating amounts when serving size are different to those listed on the pack (Clinical Trials Research Unit, 2007). A study by Lanumata *et al.* (2006) in New Zealand involving six focus group of 121 respondents indicated that the respondents preferred pictorial, simple and clear formats. Whilst non-mathematical formats are preferred by consumers, the current format indeed provides comprehensive information. The presence of numbers gives something to refer to in order to determine if a food was healthy.

CONCLUSION

This study indicates that the current NIP format was the most understood nutrition information and has the potential to assist in making wise food choices. In contrast, the format was the least preferred compared to the three other formats tested. The findings suggest that the preferred NIP format does not necessarily lead to correct interpretation of nutrition information.

As an initial step in understanding the Malaysian consumer, this study has a number of limitations. The study involved only females, which limits the generalisability of the findings. The numbers of respondents according to ethnicity also may not reflect the true features of the Malaysian population structure. Clearly, future approaches would be required to substantiate these findings in a more representative sample of respondents to enable broader generalisation across the country. Studies focusing on which aspect of nutritional information understanding that is low among consumers are also necessary. The present study did not deal with these factors as they were beyond the scope of the study. However, it is essential that future research includes these parameters while investigating their overall understanding.

It is important that any labelling format should be accompanied by effective supporting education programmes. Efforts should therefore be made to further promote the understanding and utilisation of the 'perfect' label format to improve the quality of diets and health status.

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