Development of menu board media for information on sugar, salt and fat related health messages at a senior high school cafeteria in Depok City, Indonesia

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Abstract

Purpose – The purpose of this paper is to produce informative menu board media to show sugar, salt and fat (SSF) related health messages in a Senior High School canteen.

Design/methodology/approach – The research model included stages of needs analysis, design, product development and product evaluation. The data were collected from material experts, media experts and 186 high school students. Data were analyzed by descriptive qualitative and statistical analysis.

Findings – The C and D menu boards were selected for their content information and health messages that received higher scores.

Originality/value – There are four stages required in the development of menu board media: needs analysis, menu board design, product development and product evaluation. Further research would be needed to develop the menu boards into a simpler model.

Keywords Indonesia, Menu board media, Nutrition surveys, Health message

Paper type Short report

Background

Indonesia is experiencing a dramatic escalation of non-contagious diseases (NCDs). Basic Health Research Results from 2007 to 2013 show a significant increase in NCDs, including which, stroke cases increased from 8.3 per mile in 2007 to 12.1 per mile in 2013. Furthermore, 61 percent of total deaths are caused by NCDS with cardiovascular disease as the highest cause of death by 37 percent[1]. The main causes of NCDS can be grouped into modifiable factors, such as environmental and behavioral factors and non-modifiable risk factors, including poor diet high in sugar, salt and fat (SSF)[2].

In an effort to protect the community from NCDS and increase consumer knowledge of SSF content in processed and ready-to-eat foods, the Ministry of Health issued Regulation No. 63 of 2015 as an Amendment to Regulation of the Ministry of Health No. 30 of 2013, on the obligation of the inclusion of SSF information as well as obligatory Health Messages on Processed and Ready Food[3].

Nevertheless, previous studies found that health related information on food products were of little concern to shoppers[4]. Research confirms that less than 10 percent of people
review nutritional information before purchasing food[5]. Furthermore, most societies have
problems understanding and assessing nutritional information labels[6].

A solution is the inclusion of SSF information and health messages on media boards owned
by ready-to-eat food providers, such as school cafeterias. Menu boards are a helpful means
of communicating health messages where the effectiveness of the message relies on the ability of
the media source to influence the target group who should be able to easily read and understand
the relevance of the information detailed[7]. The aims of this study are to provide examples of
menu board design to convey SSF information and health messages in school cafeterias.

Methods
This study used a research and development model.

The development model used a modification of the research and development steps
proposed by Borg and Gall[8]. Based on the development model, the development procedure in
this research was divided into five stages: needs analysis; media design; media production;
formative evaluation; and summative evaluation. This study only reached stage 4. Formative
evaluation was comprised of one to one evaluation, small group evaluation and field evaluation.
Summative evaluation was completed after the program was formatively evaluated and revised.

The needs analysis was assessed by studying government policy to control NCDs. Further
research was conducted on conditions of school cafeterias, types of snack food available and
types of media information in the school canteen. Needs analysis can be seen in Figure 1.

The media content was based on the Regulation of the Minister of Health of the Republic
of Indonesia No. 30 of 2013 on inclusion of SSF content information and Health Message for
Processed and Ready Food.

Production of menu board media that lists SSF information as well as health messages
with steps are shown in Figure 2.

Formative evaluation was made up of validation, testing and product revision. Validation by material experts included aspects of content whilst media experts reviewed
technical and appearance aspects. The trials were conducted through one to one evaluation,
small group evaluation and field trials followed by data analysis and product revisions
based on the results of the trial. More details can be seen in Figure 3.

Subjects in the media validation stage consisted of one material expert and one media
expert. The product trial stage consisted of 196 high school students divided as follows: ten
respondents for focus group discussion (FGD) with media board menu A; 55 respondents for
site test on menu board media design B (based on FGD results); 71 respondents for site test

Figure 1.
The first stage of menu
boards development
procedures for inclusion
of SSF information as
well as health message

Figure 2.
Menu development
procedures for inclusion of SSF
information as well as a third health message

Source: [9]
on menu board media design C (based on site test results on menu board with design B); and; 60 respondents for site test on menu board media design D (based on the results of site tests of the design menu board C).

A questionnaire was developed to evaluate menu boards B, C and D. Descriptive statistical analysis techniques used to process data obtained through questionnaires in the form of scores were converted into values or categories, as presented in Table I[10].

**Results and discussion**

The resulting media products consist of menu boards A, B, C and D. The health message on SSF content for the menu boards was agreed as follows: “Consumption of sugar more than 50 grams, Sodium over 2,000 milligrams or total Fat more than 67 grams per person per day risk of hypertension, stroke, diabetes, and heart attack.”

The presentation of information begins with SSF information for each snack food followed by the health message placed below, in a central position. This is consistent with previous research on readability[11]. Images and easy to read text were also deemed important to successfully imparting this health message[12]. Similarly, contrasting text colors against a single color background helps to facilitate readability[13].

Menu board A comprised of a white background, red and black text and included images of sugar and oil.

Students were questioned on comprehension, acceptability, attractiveness, self-involvement and persuasiveness aspects of menu board A (Figure 4). Menu board B (Figure 5) was made with Green and White writing color and included a pattern in each corner of the board, as shown in Figure 2.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Formula</th>
<th>Score</th>
<th>Calculations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>$X &gt; \mu_i + 1.8 \text{ Sbi}$</td>
<td>$X &gt; 4.3$</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>$\mu_i + 0.6 \text{ Sbi} &lt; X \leq \mu_i + 1.8 \text{ Sbi}$</td>
<td>$3.4 &lt; X \leq 4.3$</td>
<td></td>
</tr>
<tr>
<td>Enough</td>
<td>$\mu_i - 0.6 \text{ Sbi} &lt; X \leq \mu_i + 0.6 \text{ Sbi}$</td>
<td>$2.6 &lt; X \leq 3.4$</td>
<td></td>
</tr>
<tr>
<td>Bad</td>
<td>$\mu_i - 1.8 \text{ Sbi} &lt; X \leq \mu_i - 0.6 \text{ Sbi}$</td>
<td>$1.8 &lt; X \leq 2.6$</td>
<td></td>
</tr>
<tr>
<td>Very Bad</td>
<td>$X \leq \mu_i - 1.8 \text{ Sbi}$</td>
<td>$X \leq 1.8$</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Information: ideal mean ($\mu_i$) = $\frac{1}{2}$x(Max.+Min.) = 3; Sbi = $\frac{1}{6}$x (Max.–Min.) = 0.7; max. score = 5; min score = 1; $X$ = actual score

**Table I.** Score conversion became a value on a scale of five.
Menu board C was made in basic color yellow, black SSF text with health messages in red text including the source of SSF data, as shown in Figure 6.

Menu board D (Figure 7) was made with black base color, SSF information writing color is white and the health message in yellow, as shown in Figure 4.

The results were given in Table II.

As indicated on Table II, menu boards C and D contained higher “good” and “very good” scores making them most feasible for use.

In order to achieve optimum results, feedback from high school students as well as media and material experts are crucial to its development. Suggestions for improvement from the above include the following: the base color of the board should be brighter and more neutral; the menu
### Table II.
Result of board menu assessments B, C and D

<table>
<thead>
<tr>
<th>NO</th>
<th>Component</th>
<th>Menu B</th>
<th>Menu C</th>
<th>Menu D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Attraction</td>
<td>3.1</td>
<td>4.0</td>
<td>4.4</td>
</tr>
<tr>
<td>2</td>
<td>Comprehension</td>
<td>4.0</td>
<td>4.3</td>
<td>4.6</td>
</tr>
<tr>
<td>3</td>
<td>Acceptability</td>
<td>3.6</td>
<td>4.0</td>
<td>4.5</td>
</tr>
<tr>
<td>4</td>
<td>Self-involvement</td>
<td>4.0</td>
<td>4.3</td>
<td>4.6</td>
</tr>
<tr>
<td>5</td>
<td>Persuasion</td>
<td>3.8</td>
<td>4.3</td>
<td>4.5</td>
</tr>
<tr>
<td>6</td>
<td>Graphics</td>
<td>3.2</td>
<td>3.9</td>
<td>4.2</td>
</tr>
</tbody>
</table>

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**Figure 6.**
Menu board C

**Figure 7.**
Menu board D
board should not have a motive or image considering the extent of information that must be delivered; information should be presented in table form so it is easy to read the SSF content for each dish sold in the cafeteria; the selected writing color should contrast with the base color; the health message should be distinguishable by the color of the SSF information; the authorized institution responsible for producing facts should be stated to increase credibility; uncomplicated fonts adjusted to the right distant reading size should be used to aid visibility.

Conclusion
It can be summarized that menu boards in cafeterias can be used to effectively educate high school students about health and SSF content in their diet.

References
3. Health Ministry of the Republic of Indonesia Regulation of the Minister of Health of the Republic of Indonesia Number 63 of 2015 on Amendment of Minister of Health Regulation No. 30 of 2013 concerning inclusion of sugar, salt and fat content information and health message for prepared food and ready to eat food. Jakarta: Health Ministry; 2015.

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