

## **Nutritional Menu of Eatery Make Consumer Able to Select Healthy Food**

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### **ABSTRACT**

The present study has investigated consumers' intention towards the selection of healthy food with nutritional information menu. Traffic lights symbols and health claims were used to inform consumer regarding nutritional information. With these two variables consumer attitude was taken as mediator to develop relation with consumer intention for healthy food selection. Big five personality traits were involved because likes and dislikes of food most often reflect individual's personality characteristics. The sample size was 948. For analysis structural equation modeling was used. Result revealed that health claims better impact on the respondent to consult nutritional menu at the time of placing an order in restaurants. Whereas traffic lights symbols though have a positive and significant effect but less than the influence of health claims. There were only two personality traits which were moderated, conscientiousness and agreeableness. The outcome of the study indicated that full-service restaurants should focus on designing precise, effective and informative nutritional menu for nutritional awareness of consumers.

*Keywords:* Attitude towards nutritional menu, health claims, personality traits and intention, traffic lights label

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### **INTRODUCTION**

The restaurant nutrition labeling has globally received extensive legislative, industry and media attention (Roseman et al., 2013). In contrary to that there is a lack of proper enactment of Act in Pakistan for nutritional awareness of consumers (Saleem et al., 2013). Moreover, in Pakistan, while purchasing packaged food items a consumer ignores consulting nutritional

information except for expiry date, price and manufacturing date (Qasmi et al., 2014). The unhealthy diet in Pakistan is increasing the chronic diseases such as hypertension, cardiovascular issues and cancer (Bhanji et al., 2011). The statistics of one province of Pakistan disclosed that due to avoidance of nutritional food consumption the registered complaints pertaining to chronic diseases have increased (Fazal et al., 2013). Individuals' behavior towards imbalance food consumption should modify with informed food purchase decisions (Ludwig, 2011). Aforementioned studies suggested that there was a need to develop various symbols for the demonstration of technical food label information (Swahn et al., 2012) which could be easily interpreted by consumers at the time of healthy food selection. Past literature witnessed that researchers also examined the effect of regional and geographical food labels on consumers' purchase decisions (Chrysoschoydis et al., 2007; Fotopoulos et al., 2009; Lockie et al., 2002).

The objective of nutrition labeling menu is to guide consumers in making healthier dining decisions in restaurants (Auchincloss et al., 2013). Studies have witnessed that New York City Board of Health has implemented the regulations mandating that restaurants include the information pertaining to calories in their menus (Farley et al., 2009). Aforementioned studies had indicated that a widespread support was observed towards the nutritional labeling on restaurant menus (Swartz et al., 2011). Moreover, mixed or uncertain results for the efficacy of nutritional labeling menu

for full-service restaurants have also been reported in past studies (Dumanovsky et al., 2011; Elbel et al., 2009). Previous studies suggest that sometimes consumers overstate their use of information printed on restaurant nutritional menu (Grunert & Wills, 2007) whereas some consumer behavior studies reported that no difference was observed before and after implementing the nutrition labeling menu (Elbel et al., 2011; Finkelstein et al., 2011). On the other hand, a few studies witnessed the reduction of calories between pre- and post-treatment phases (Chu et al., 2009; Harnack et al., 2008; Vadiveloo et al., 2011). Worldwide huge consumption of unhealthy food outside the home is encumbering diet-related diseases cost which is around \$ 1.4 Trillion.

Previous studies suggested some factors which positively affected consumers' food choices in restaurants such as nutritional knowledge (Dickson-Spillmann & Siegrist, 2011), availability of healthful food menu (Longacre et al., 2012), prices of healthful menu items (Wall et al., 2006) and eating habits of consumers (de Bruijna, 2013). Moreover, food eaten outside the home is linked to higher calories and fat intake as well as excess weight gain (Ludwig, 2011; Nguyen & Powell, 2014; Pereira et al., 2005). Likewise, the food served in a restaurant setting the primary challenge is that consumer is not well aware of the nutritional quality of menu items (Block & Roberto, 2014; Scourboutakos, & L'Abbe, 2012) because even for similar items nutritional quality varies across different establishment. There is no standard pattern for the presentation of nutritional

information on restaurant's menu except to make amendments in existing food menus. Numerous researchers have supported that food label is an essential component to display relevant information for the convenience of consumers (Kobayashi & Benassi, 2015; Labbe et al., 2013; Spence, 2016) and a cradle of promoting healthy food selection (Werle et al., 2013). Hartmann et al. (2008) had indicated that the correctness and truthfulness of health claims directed the economic benefits because it increased the purchasing efficiency of individual consumers. An extensive study conducted in four European countries implied that traffic lights symbols were very effective for healthy food choices (Feunekes et al., 2008).

Sutin et al. (2015) had reported that the role of personality traits was very powerful in designing individuals' dietary habit either increasing poor dietary intake or increasing quality of diet. Gohary and Heidarzadeh (2014) had noted that human personality played a vital role in his/her decision-making. Kakizaki et al. (2008) had indicated that extraversion personality trait was associated with overweight; however, neuroticism had positive significant relation with underweight. Furthermore, researchers have established the positive and significant relation between personality traits and healthy behaviors (Brummett et al., 2008; Rhodes, 2006; Terracciano & Costa, 2004; Yasunaga & Yaguchi, 2014).

The objective of the current study was to investigate the direct and indirect effect of traffic lights symbols and health claims on consumers' intention towards

nutritional food selection in a restaurant setting. In the indirect effect attitude towards restaurant menu was the mediator. Ajzen (1991) demonstrated in the theory of planned behavior that attitude was a significant predictor of behavioral intention. Owing to the association of individuals' liking and disliking in food selection big five personality traits were involved as a moderator. Furthermore, it was also suggested by some studies to involve self-concept for the investigation of individuals' healthy behavior (Jun et al., 2014) therefore personality traits were taken in replace of self-concept in the current study. Personality traits have helped researchers to identify the effect of each personality traits on intention to consume nutritional food selection in full-service restaurants.

## METHODS

### Respondents and Sample Size

There is no full-service restaurant in Pakistan that is following the nutritional label menu. It was difficult to motivate any commercial restaurant to permit researchers for the accomplishment of the intended task. Therefore, researchers had selected a cafeteria of Mayo Hospital which is located in Punjab province. This is the biggest government hospital of Pakistan which deals with patients from all corner of Pakistan. The sample of Mayo Hospital cafeteria covers maximum population of Pakistan and results can be generalized. A convenience sampling technique was used for data collection. In addition to, the sample of the study was 384 which were selected by using

Uma Sekaran table method. Furthermore, Mayo Hospital was a government hospital therefore a formal permission was taken from the hospital management for data collection. While taking permission it was also mentioned that authors would make amendments in their menu. After permission, nutritional information was added to the existing menu for the convenience of the customers. No specific font size or color was used for nutritional information on the regular menu. A similar method was adopted in the past studies because it was considered that specific font size or color make things prominent which led towards over or underutilization of menu information (Roseman et al., 2013). For the validation of both menus, 30 random respondents were selected out of main respondents. Few amendments were made before the final distribution of menu and questionnaire.

### **Piloting of Questionnaires**

For content validity purposes, piloting a study is very important; a pilot study is a small-scale trial that determines the degree of clarity of survey and interview questions (Borg & Gall 1979; Neuman, 1997). Various researchers have suggested different criteria for a pilot study, including having a 'small set of respondents' (Neuman, 1997) and more specifically 20 respondents (Monette et al., 2002). Therefore, the researchers of the present study selected 10 medical doctors and 10 hospital administration staff for pilot purposes. After the analysis of the pilot study results, a questionnaire was formally distributed.

### **Instruments and Data Collection**

Cross-sectional data were collected with adapted questionnaires. All the questionnaires were self-administered for the convenience of respondents. To measure each construct aforementioned studies' scale was used such as six items on five point Likert scale for traffic lights symbols (Sonnenberg et al., 2013), seven items on five point Likert scale for health claims (Cavaliere et al., 2015), eight items on five point Likert scale for attitude towards restaurant nutritional men (Van der Merwe et al., 2014), thirty-five items on five point Likert scale for five personality traits (Goldberg et al., 1992).

### **Data Analysis**

Frequencies were calculated for demographics explanation and to assess the measurement reliability Cronbach alpha was conducted. A two steps approach was suggested to explore the research hypotheses (Anderson & Gerbing, 1988). First, to ensure the validity of the measurement model confirmatory factor analysis was used. Second, to examine the hypothesized relationship among variables structural equation modeling analysis was used. For these two steps, AMOS 21 was used.

### **THEORETICAL FRAMEWORK**

Figure 1 presents the graphical relationship among all the variables taken in the intended study. There was a total of nine variables with the status of independent, mediator, moderator and as a dependent variable.

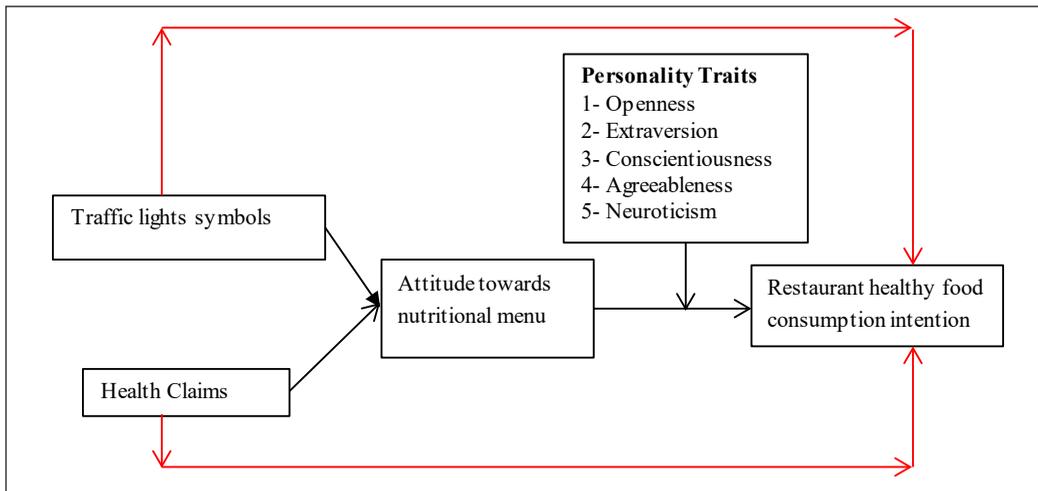


Figure 1. Nutritional food selection in full-service restaurant

## HYPOTHESIS

- H1 : Traffic lights symbols have a positive effect in making consumer's attitude towards nutritional menu
- H2 : Health claims have a positive effect in making consumer's attitude towards nutritional menu
- H3 : The attitude towards nutritional menu has a positive effect on consumer's intention towards restaurant healthy food selection
- H4 : Traffic lights symbols have a positive effect on consumer's intention towards the restaurant healthy food selection
- H5 : Health claims have a positive effect on consumer's intention towards restaurant healthy food selection
- H6a : The attitude towards nutritional menu mediates in establishing a relationship between traffic lights symbols and consumer's intention towards restaurant healthy food selection
- H6b : The attitude towards nutritional menu mediates in establishing a relationship of between health claims and consumer's intention towards restaurant healthy food selection
- H7a : Openness to experience moderate between the attitude towards nutritional menu and consumer's intention towards restaurant healthy food selection
- H7b : Extraversion moderate between the attitude towards nutritional menu and consumer's intention towards restaurant healthy food selection
- H7c : Conscientiousness moderate between the attitude towards nutritional menu and consumer's intention towards restaurant healthy food selection
- H7d : Agreeableness moderate between the attitude towards nutritional menu and consumer's intention towards restaurant healthy food selection

H7e : Neuroticism moderate between the attitude towards nutritional menu and consumer's intention towards restaurant healthy food selection

## RESULTS

### Sample Profile

A total of 948 questionnaires was distributed to achieve the required sample size. Authors received 889 questionnaires, out of which 256 questionnaires were excluded being incomplete and incorrect while the remaining 692 were used for analysis. The response rate was 72%. It was observed in past study that paper-based questionnaire response rate was almost 75% (Dommeyer et al., 2002). Therefore, authors collected data with paper base questionnaire. No extensive demographical data was required for present study, therefore, basic data pertaining to gender, age and income were collected. The age bracket of participants was 24 to 52 and income was between Rupees 45000/- to Rupees 100000/- Moreover, the females' participation were 47% (325) and that of males were 53% (367). The average age of male was 31 and female was 29.

### Measurement Model

A preliminary test was conducted to detect the outlier. For outlier detection, Mahalanobies (Hair et al., 2006) test was used. Mahalanobies test has identified 156 outliers. These outliers were deleted and the data of 536 respondents were used for measurement and structural model.

Confirmatory factor analysis was utilized for the identification of items not representing the constructs. The standardized regression weighted values ranged from 0.023 to 0.923 was suggested as cutoff minimum and maximum values. The items having factor loading less than 0.60 were deleted (Hair et al., 2006). The measurement properties are shown in Table 1. The inter-item reliability and composite reliability indicated that data is at an acceptable level. The cutoff value for reliability is 0.70 (Hair et al., 2006) which suggests that for measuring each construct the items are reliable. The convergent and discriminant validity was used to estimate whether the measurement items are appropriately representing the latent construct (Hair et al., 2006). Standardized factor loading and average variance extracted was conducted for the evaluation of convergent validity. The factor loading results were satisfactory at 0.01 level (Anderson & Gerbing, 1988) and average variance extracted values have met the cutoff value which is 0.50 (Hair et la., 2009). According to the rule of thumb to evaluate the discriminant validity of a construct the AVE value should be higher than the squared correlation between each pair of the construct (Fornell & Larcker, 1981). The data of the current study fulfills the discriminant validity requirement. The results of convergent validity and discriminant validity demonstrated acceptable construct validity. The overall model fit was acceptable.

Table 1  
Cronbach alpha, composite reliability, average variance extracted and discriminant validity

Variables	Cronbach Alpha	Composite Reliability	AVE	TLS	HC	ICHRF	ATNM	EXT	AGB	CONS	NET	OTE
TLS	0.77	0.765	0.521	<b>0.721</b>								
HC	0.81	0.755	0.510	0.184	<b>0.714</b>							
ICHRF	0.88	0.813	0.525	0.125	0.348	<b>0.724</b>						
ATNM	0.83	0.831	0.621	0.263	0.552	0.346	<b>0.788</b>					
EXT	0.72	0.766	0.525	0.172	0.230	0.328	0.553	<b>0.724</b>				
AGB	0.75	0.763	0.518	0.296	0.180	0.279	0.623	0.702	<b>0.719</b>			
CONS	0.76	0.744	0.592	0.654	0.211	0.243	0.505	0.518	0.609	<b>0.769</b>		
NET	0.71	0.818	0.600	0.534	0.169	0.436	0.271	0.204	0.232	0.236	<b>0.774</b>	
OTE	0.84	0.714	0.556	0.699	0.440	0.503	0.206	0.174	0.176	0.192	0.713	<b>0.745</b>

Note: Traffic lights symbols (TLS), Health Claim (HL), Intention to consumer healthy restaurant food (ICHRF), attitude towards nutritional menu (ATNM), Extraversion (EXT), Agreeableness (AGB), Conscientiousness (CONS), Neuroticism (NET), openness to experience (OTE)

**Structural Model**

To explore the relationship among constructs and to assure the validity of proposed hypotheses structural equation modeling was conducted. The results of structural equation modeling validated the proposed model;  $\chi^2 = 30.55$  (df = 29), RFI = 0.942, NFI = 0.958, TLI = 0.995, CFI = 0.997 and RMSEA = 0.012. The standard path model was used to check the relationship between the constructs. The empirical test of SEM showed that the impact of traffic lights symbols on attitude towards nutritional menu is significant but weak ( $\beta = 0.12$ ,  $p = 0.009$ ) whereas the influence of health claims on attitude towards nutritional menu is significant and strong ( $\beta = 0.34$ ,  $p = 0.001$ ). In a direct relationship, the impact of traffic lights symbols and health claims on restaurants' healthy food intention were

insignificant. The result indicated that traffic lights symbols were less effective towards the consultation of restaurant's nutritional menu for the selection of healthy food whereas health claims positively, strongly and significantly effect on developing consumers' attitude to reading the nutritional menu and leads towards the selection of healthy food in a restaurant. In an indirect relationship full mediation was found with the attitude towards nutritional menu by both constructs. The results of the moderating effect of personality traits indicated that two personality traits positively and significantly effect on restaurants healthy food selection intention, conscientiousness, and agreeableness. Rest of the three personality traits were insignificant in their moderating effect. Table 2 shows the direct, indirect and moderation results.

Table 2  
Hypotheses standardized results (direct, mediation, and moderation)

Endo		Exogenous	Estimate	S.E.	C.R.	P	Status
Attitude	<---	HC	0.338	0.057	5.883	0.001	Significant
Attitude	<---	TLS	0.121	0.047	2.600	0.009	Significant
Intention	<---	ATFL	0.58	0.113	5.117	0.002	Significant
Intention	<---	TLS	0.136	0.076	1.788	0.074	Insignificant
Intention	<---	HC	0.156	0.096	1.621	0.105	Insignificant
Endo	Mediator	Exogenous	Estimate	S.E.	C.R.	P	Status
Intention	Attitude	HC	0.131	0.046	2.822	0.005	Full Mediation
Intention	Attitude	TLS	0.347	0.057	6.065	***	Full Mediation
Endo	Moderator	Predictor	Estimate	S.E.	C.R.	P	Status
Inti	<---	Attitude	0.397	0.152	3.586	***	Significant
Inti	Extraversion	Attitude	0.045	0.019	0.399	0.69	No Moderation
Inti	Agreeableness	Attitude	0.104	0.014	1.982	0.048	Moderation
Inti	Conscientiousness	Attitude	0.137	0.015	2.406	0.016	Moderation
Inti	Neuroticism	Attitude	0.003	0.015	0.052	0.959	No Moderation
Inti	Openness	Attitude	0.084	0.017	1.379	0.168	No Moderation

## DISCUSSION

The results unveiled that traffic lights symbols and health claims positively and significantly affected consumers' attitude towards nutritional menu of restaurants. The presentation of nutritional information such as saturated fat, fat, fiber, sodium and salt with traffic lights symbols and health claims made it easy to identify the nutritional level of food items available at the hospital cafeteria. Past studies examined the efficacy of traffic lights symbols (TLS) to display nutritional information at a packaged food label and found effective. Aforementioned studies indicated that the effectiveness of TLS method was accepted in several countries and observed that sign post colors such as traffic lights symbols at food labels were very effective in understanding nutritional information (Olstad et al., 2015). Studies witnessed that introduction of calories at restaurants menu using traffic lights system increased the noticing and use of nutritional information (Hammond et al., 2015). The interpretation of red, yellow and green colors in traffic control system bring similar effects when red color presents the high (saturated fat, fat, sodium and salt), yellow presents medium level of nutrients in food items and green represents the low (saturated fat, fat, sodium and salt) food items. The analysis of the present study demonstrated that the display of nutritional information with traffic lights symbols (TLS) did influence Pakistani consumers' intention towards the selection of healthy food at full-service hospital cafeteria. The empirical results of the current study explained that

although traffic lights symbols significantly influenced the consumer's attitude to consult nutritional menu before placing an order in the hospital cafeteria the effect was very weak. The reason was the familiarity, understanding, and association of traffic lights colors for nutritional information on the nutritional menu. Likewise, the weak effect is better than no effect because the further investigation of traffic lights symbols' efficacy in proper full service restaurants can better explain individuals' opinion towards the usefulness of this method for the representation of nutritional information at traditional restaurants' menu.

The decisiveness of health claim for the presentation of nutritional information at the hospital cafeteria menu was more than traffic lights symbols. The reason behind the strong effect of health claim was that the information about nutrients was clearer because of the proper words used like "low fat food", "high saturated fat food", "low/high/medium fiber food" and "low/high/medium salt/sodium food". The health claims format for the display of nutritional information was also rendered from packaged food labeling. Studies have witnessed that nutritional benefits statements have the ability to convert credence of individuals into search attributes to read food labels for healthy food choices (Muth et al., 2013). Health claims are beneficial for all kind of nutrients such as fat, saturated fat, salt and sodium (Kim et al., 2000). Similar results are found in the present study. But the current study added in existing literature that health claims had capacity and strength to

utilize in displaying nutritional information at restaurants' menu for the selection of healthy food at full-service restaurants.

Furthermore, it has also been observed that authors involved "Health Check" technique to investigate the consumers' opinions about the restaurants, that used nutritional menu and those that didn't (Moschis et al., 2003). But it was found that very few participants noticed "Health Check" for the selection of restaurants. Consumers frequently visit full service restaurants for dining lunch and dinners but most of the time taste of food is the priority while selecting a restaurant. The nutritional information at food label menu can be a competitive edge for restaurants.

The results of the current study have unveiled that by designing of restaurants' menu with the presentation of nutritional information enables a consumer to order balanced food. The nutritional information at food menu will play the role of corporate social responsibility because consumers most often do not notice about the nutritional quality of food while placing an order in full service restaurants and when the restaurant will provide food menu with nutritional information consumer can be well aware of food nutrients. The nutritional information menu should be dealt with strategically because over crowded menu also irritates consumers. The restaurant management should design a precise, colorful and informative menu with nutritional information which can motivate consumers to read it.

In the light of a common notion pertaining to food selection, the likes and dislikes of food are based on individuals' belief. People's personality traits are linked with various health outcomes such as inflammation, diabetic and cardiovascular diseases (Deary et al., 2010; Goodwin & Friedman, 2006; Sutin et al., 2010). To figure out individuals' differences with respect to food selection present study has employed all personality traits. The moderating effect of personality traits between attitude towards nutritional menu and intention to consume healthy restaurants food was analyzed. Results have indicated that only two personality traits have positive significant moderation affect namely agreeableness and conscientiousness. In past studies, it was observed that conscientiousness and agreeableness have positive significant, direct or indirect effect while examining individuals' behavior towards healthy food selection (Chapman et al., 2009; Friedman, 2008; Goodwin & Friedman, 2006). Likewise, studies indicated that conscientiousness personality trait is associated with wellbeing behavior of individual whereas agreeableness is related with better exercise habits, self-care and healthy behavior (Booth-Kewley & Vickers, 1994; Conway et al., 1992; Leiker & Hailey, 1988). Personality traits are correlated with numerous health outcomes and personality factors influenced people's food choices (Mottus et al., 2013; Tiainen et al., 2013). The moderating personality traits have weakened the relationship between attitude

and intention. This outcome reveals that although external factors are very effective for developing consumers' intention to consume healthy restaurants food but overwhelming characteristics of some personality traits induces individuals to shun imbalanced restaurant food.

### **Limitation and Future Direction**

Furthermore, consumers' intention towards healthy restaurant food was the prime objective of the current study. It is better to involve actual behavior in future studies. Although strong intention directs towards actual behavior empirical evidence is necessary. Cross sectional study disclose an individual's existing opinion about any object but longitudinal method uncover the consistency of respondent's response and it is advised to adopt in future researches. The present study was conducted in renowned hospital cafeteria but it is suggested for future study to involve full service restaurants by making a mock nutritional menu with the permission of hotel management and investigate the opinion of respondents towards the usefulness of nutrients menu for healthy food selection in restaurants. Moreover, this study will be helpful to create awareness among individual pertaining to healthy food selection while placing order in full service restaurants. In addition to nutritional information at restaurants' menu will be a competitive edge for restaurants and restaurants can market such kind of menu as corporate social responsibility.

### **CONCLUSION**

Notwithstanding, the current study was one of its kind in Pakistani environment where the regular cooked food of a hospital cafeteria was presented with a nutritional menu by using the format of packaged food labeling. The food served in full service restaurants has more saturated fat, fat, sodium, and salt instead of packaged food, therefore, consumers' awareness towards the selection of healthy food in restaurants is a necessary and nutritional menu of restaurants can play a powerful role in resolving this matter. Restaurants management should figure out the best possible solution to display nutritional information on food menu which is easy to interpret and understand. This menu can be a competitive edge for restaurants and restaurant management can market this strategy under their corporate social responsibility strategies.

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