

HEALTH PERCEPTION AND FOOD CHOICE FACTORS IN PREDICTING HEALTHY CONSUMPTION AMONG ELDERLY

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Abstract

The main objective of the paper is to explore the impact of health perception and food choice factors on healthy food consumption among elderly and to indicate how different food choice motives influence the eating behaviour of elderly population. In our research we explore six food choice factors and their manifestation in attitudes towards healthy consumption. The purpose of the exploration of health perception is to identify seniors beliefs about food and health-related aspects. Empirical research was conducted on a random sample of 400 elderly participants aged above 65 years and living in their own flats. Non-probability sampling in the form of convenience sampling was employed. The relationship between health beliefs and attitudes towards healthy eating behaviour was confirmed with employing multiple regression analysis. We conclude that both health beliefs and food choice factors investigated in the research are important determinants of seniors' healthy consumption, however with different effect on healthy eating behaviour.

Keywords: health beliefs, food choice motives, healthy eating behaviour, seniors

INTRODUCTION

Older people represent an increasing proportion of the population. Health or its absence in this rapidly increasing population not only affects the seniors themselves, but also has serious implications on health care and other social resources. There has recently been a move away from considering old age to be a problem in itself and the focus has shifted towards older people's possibilities to improve quality of their life (Luca and Suggs, 2013; Moschis *et al.*, 2011). Successful ageing is described as decreasing the risk of diseases while maintaining physical and mental functioning and active engagement in societal participation. The World Health Organization's (2002) active ageing policy framework identified the key concepts of productive ageing (i.e. The ability to

contribute directly and indirectly in older age) and healthy ageing (i.e. The ability to remain physically and mentally fit). The recognition to focus on personal health goals and individual perceptions of the "well-being" calls also for the research in the area of food and nutrition in relation to older people's quality of life (Stremersch, 2008).

Nutrition is recognized as one of the major determinants of successful ageing, defined as the ability to maintain three key qualities: low risk of disease and disease related disability, high mental and physical function, and active engagement in life (Kraft and Goodell, 1993). Good and proper nutrition can significantly reduce the likelihood of developing a number of common chronic diseases and slow down their progression (Drolet *et al.*, 2010).

It is thus important to understand what influence older people's food-related behaviour.

The meaning of health in the process of ageing has been investigated in a number of studies (Divine and Lepisto, 2005; Luomala *et al.*, 2015) supporting the concept of health as a multidimensional construct, comprising a state of complete physical, mental and social well-being and not merely the absence of disease. We adopt this multidimensional perspective on health by considering the impact of several economic, psychological and social health motive dimensions.

As people age their living circumstances may alter. For example, as people retire, their income falls down and their social network may reduce. As health changes for worse, access to shops may become a problem (Darian and Tucci, 2011). Further, loss of the partner due to death of spouse or children leaving home, may change cooking and eating circumstances (Kraft and Goodell, 1993). All these factors with becoming older affect older people's behaviour towards food and their satisfaction with food-related life (Kritchevsky, 2016).

By identifying older people's health-related beliefs, their food-choice motives and the relevance of these motives in achieving health goals we can investigate the relationships between health-related beliefs, motives and healthy food consumption. A scientific unity exists for a strong association between diet and risk of various diseases, particularly cardiovascular disease, obesity and certain types of cancer. Hence, need to adopt healthier diets are important in seniors' eating behaviour (Keane and Willetts, 1994; Dean *et al.*, 2008). Several previous studies explored the relationship between demographic characteristics and health consciousness, food choice motives, attitudes towards healthy eating and eating behaviour (Sparks *et al.*, 2001; Bower *et al.*, 2003), however, the investigation of the interrelationships among these variables was rather neglected. Furthermore, previous research about healthy eating behaviour was mostly descriptive, with little attention to

the explanation of health-related beliefs and food choice motives.

The objectives of our research are threefold. First, the existence of two subgroups will be explored within elderly population for whom health goals and health beliefs have different distinct meaning (personal well-being vs preventing diseases). Second, these two resulting segments will be compared with respect to several food choice motives. The third objective lies in the analysis of the role which the food choice motives play in the intersection between health beliefs and healthy eating behaviour.

MATERIALS AND METHODS

The sample consisted of 400 seniors, aged 65 +. Seniors were interviewed in 12 randomly chosen daily senior centres in five towns of Western and Middle Slovakia. Gathering the sample from daily senior centres provided us with the additional advantage that the senior citizens will be both living in their own flats and be mobile, and thus they could be in the position to choose to buy their foods individually. We included in the total sample at each of the chosen centres those individuals who agreed to participate in the survey. Empirical research was carried out between October 2017 and December 2017. The majority of the respondents were female (58%), which is similar to the female proportion in this age-population (60%), hence providing some confidence for the representativeness of the sample to the studied population. About sixty-six percent of the respondents were aged between 65 and 75 years, while the remaining thirty-four percent were older than 75 years.

The questionnaire consisted of questions exploring three areas: health beliefs, food choice motives and healthy eating behaviour. For the purpose of analysing the health beliefs, we used a modified scheme proposed by Kähkönen *et al.* (1996) and used 10 items linked to health. The purpose of the health beliefs scale was to reveal seniors' beliefs about

I: Demographic profile of respondents

Variable	Frequency	Valid percentage
Sex		
Male	171	42.7
Female	229	57.3
Age group		
65–70	109	27.3
71–75	158	39.5
76–80	107	26.8
81+	26	6.5
Location size (population)		
> 100 Thousand	168	42.0
50–100 Thousand	140	35.0
25–50 Thousand	92	23.0

health and food related aspects (Iely *et al.*, 2001). Subjects were asked: "When thinking about health, how important are following aspects for you?" The degree of importance was rated on a 5-point Likert scale (1 = very unimportant; 5 = very important). The score of individual health belief items is presented in Tab. II.

In order to simplify the initial items, factor analysis was conducted on the belief items. Two factors were extracted and the total variance explained by this solution was 69,16%. Factor loading of greater than 0.40 was the criterion for accepting a statement into a factor. The results of this factor analysis determined two types of health beliefs, which were: personal

II: *Health belief items (HBI) scale*

	Belief items	Loading	Cronbach's α
	Personal well-being		0.85
HBI1	Content of cholesterol in foods	0.764	
HBI2	Content of fat in foods	0.802	
HBI3	Content of salt in foods	0.821	
HBI4	Content of sugar in foods	0.865	
HBI5	Nutrition information	0.793	
HBI6	Gaining weight	0.782	
	Preventing diseases		0.801
HBI7	Physical activities, walking, exercise	0.766	
HBI8	Active participation in community life	0.793	
HBI9	Avoiding stressful situations	0.810	
HBI10	Foods choice on taste, smell and appearance	0.821	

Source: own calculation

III: *Food choice motives by elderly*

It is important for me that the food I consume:	Loading	Cronbach's α
Factor 1 – Health		0.872
Is nutritious	0.801	
Is healthy	0.749	
Contains lots of vitamins and minerals	0.622	
Contains natural ingredients	0.602	
Contains no artificial ingredients	0.511	
Factor 2 – Price		0.901
Is cheap	0.828	
Is not expensive	0.816	
Is good value for money	0.788	
Factor 3 – Mood		0.839
Helps me feel good	0.740	
Keeps me awake/alert	0.686	
Helps me to cope with life	0.653	
Factor 4 – Familiarity		0.790
Is what I usually eat	0.722	
Is familiar to me	0.704	
Is like the food I consumed when I was younger	0.670	
Factor 5 – Sensory appeal		0.801
Has a pleasant taste	0.766	
Has a pleasant smell	0.695	
Has a pleasant appearance	0.655	
Factor 6 – Weight control		0.745
Is low in fat	0.682	
Is low in calories	0.654	

Source: own calculation

well-being (HBI7-HBI10) and preventing diseases (HBI1-HBI6) with alpha coefficients of 0.85 and 0.81 respectively.

Food choice motives were measured by 19 items, adapted from Kraft and Goodell (1993), and Jayanti and Burns (1998). Respondents were asked to express the importance of their motives in the choice of foods on a 5-point Likert scale, where 1 = very unimportant and 5 = very important (Tab. III). Six factors resulted from the 19-item food choice motives and they were: health, price, mood, familiarity, sensory appeal and weight control. The calculated alpha coefficients for the food choice motive factors ranged from 0,745 to 0,901.

To measure the attitudes towards healthy eating behaviour, we applied a modified 3-item scale from Kearney *et al.* (2001). The items were: "I make conscious effort to eat a healthy diet"; "I eat to a healthy amount"; and "I don't need to make changes to my diet as it is healthy enough" (Tab. IV). Respondents were asked to select the most appropriate response using a 5-point Likert scale ranging from "most of the time" to "hardly ever" for the first two statements and ranging from "strongly agree" to "strongly disagree" for the third statement (Ajzen and Fishbein, 1989).

The research confirmed uni-dimensionality for attitudes towards healthy eating behaviour, with Cronbach's alpha 0,796.

Internal consistency of the scales regarding the measures of health beliefs, food choice motives and of healthy eating behaviour was assessed on Cronbach's alphas and inter-correlations. Factor analyses served as the basis for validity examinations. Three separate principal component analyses were performed: one for health beliefs, one for food-choice motives and one for eating behaviour. To analyse the effect of the food choice motives as the mediating variables between health beliefs and healthy eating behaviour, mediation analysis requires the regression of the dependent variable on the independent variable, the regression of the mediator on the independent variable, and finally regression of the dependent variable on both the independent variable and mediating variable. In this context hierarchical regression analyses included: first, regression of food-choice motives (dependent variable) on health beliefs (independent variable); second, regression of healthy eating behaviour (dependent variable) on health beliefs (independent variable); and finally, regression of healthy eating behaviour (dependent variable) on both the health beliefs and food choice motives

(independent variables). At this final regression step, only the effects of the mediators (food choice motives) should be significant for full mediating effect.

RESULTS AND DISCUSSION

As mentioned in previous paragraphs, a PCFA (Principal Component Factor Analysis) was applied to the 19 items of the food choice motives in order to group the motives. As a result of this process, six factors were obtained (Tab. III), which together explain 63.49% of the variance.

The first factor "Health" contains 5 items that are associated with health and the natural content of the foods. This combination is due to the fact that people usually consider "natural ingredients" with something healthy. The second factor "Price" includes 3 items linked to the economic value of the food. The third factor "Mood" is related to physical and emotional well-being resulting from foods consumption. Items of "Familiarity" factor reflect their distinct relevance and applicability to older consumers. The fifth factor "Sensory appeal" comprised three items related to the principal senses related to taste and smell. Finally, the last sixth factor "Weight control" refers to two items and it did not seem to be as important aspect as it may be in younger consumers' population. The reason can be that even if the seniors eat everything, they eat it in moderation, in smaller portions.

In order to indicate the importance that each factor has in the choice of food, the average score for each of the six identified factors was calculated (mean and standard deviation). As shown in Tab. V, the most important factor for elderly people in choosing their food is Price (achieving the score of 4.33), followed by health (4.19) and mood (3.92). The least valued factor was Weight control, which scores 2.95 (out of 5), suggesting that elderly (in contrast to younger people) do not seem to be very concerned about putting on weight, even though their knowledge about foods nutritional content is relatively high. This is an interesting result, which was found similar in research of Brown *et al.* (2000), confirming that consumers' high levels of nutrition awareness may not be reflected in their food behaviour. The mean value of factor Mood (3.92) indicates that the mood plays an important role in eating behaviour of elderly. The Sensory appeal is valued (3.80) slightly below the average value of Mood, suggesting that seniors may identify good mood with tasty food. The Familiarity associated with the previous knowledge of the food seems to be

IV: Attitudes towards healthy eating behaviour

I agree with the following statement:	Loading	Cronbach's α
Factor 1: Healthy eating behaviour		0,796
I make conscious effort to eat a healthy diet	0,812	
I eat to a healthy amount	0,704	
I don't need to make changes to my diet as it is healthy enough	0,493	

important in the choice of a food, perhaps because seniors do not like to try new products and to taste new foods. Factor Health obtained very similar results (4.19) to the results of factor Price, which shows that seniors are aware of the importance of taking care of their health with adequate nutrition, however they are also concerned and limited with their financial possibilities.

Two concepts were identified to be important for senior consumers, i.e. health is about personal well-being (life is enjoyable) and health is about preventing diseases (energy and autonomy). This outcome is also in line with previous research by other authors (Kähkönen *et al.*, 1997; Moorman and Matulich, 1993; Papies *et al.*, 2007). It was found that respondents had stronger health belief for personal well-being than they had for preventing of diseases. Although the two health belief factors affected the food choice motive of health, as it was expected, they both also effected the food choice motive of familiarity. This suggests that seniors with more health beliefs not only place more importance on choosing food that make them physically healthier, but also prefer familiar food and habits from the past.

Tab. V shows the correlations among health beliefs variables, food choice motives factors, and attitudes toward healthy eating behaviour. As expected, health belief of personal well-being had the greatest effect on the mood motive followed by the health motive, familiarity and sensory appeal; while health belief of preventing diseases had the greatest effect on food choice motives of health, weight control, price and familiarity. Although the two health beliefs factors affected the food choice motive of health, as expected, they both also affected the food choice motive of familiarity. The findings suggest that individuals with higher health beliefs not only place more importance on choosing food that make them healthier, but also prefer familiar food.

The analysis of interrelationships among variables was performed using seven hierarchical regression equations. In the first six equations, the health beliefs factors were considered as the independent variable and regressed on the six food choice

motives. These six equations test the relationships between health beliefs factors and six food choice motive factors. In the seventh equation, all eight of these factors (two health beliefs factors plus six food choice motives) were treated as independent variables and regressed on healthy eating behaviour. This last equation tests the link between the beliefs and food choice motives as independent variables to healthy eating behaviour. Tab. VI summarizes the results of these seven hierarchical regression equations.

It was found that health beliefs did not affect all food choice motives and not all food choice motives were statistically associated with healthy eating behaviour.

In each of the first six equations, health belief of preventing diseases was statistically significant with all food choice motive factors, except of sensory appeal and mood. However, only three food choice factors were statistically associated with healthy eating behaviour, namely, the health motive, the price motive, and the mood motive. Hence, we can conclude that seniors exhibiting belief of preventing diseases would place higher importance on health and price in food-related decisions and attitudes toward healthy eating.

On the other hand, seniors exhibiting higher belief for personal well-being put more emphasis on health, mood, sensory appeal and familiarity in their food-related decisions. However, among these food choice motives, only health and mood were significantly associated with healthy eating behaviour. It means, that seniors' belief for personal well-being would both directly influence their healthy eating behaviour and indirectly influence this behaviour via the food choice motives of health and mood. Among all six food choice motives factors the best predictability from health belief factors had the motive health followed by mood and familiarity. Sensory appeal and price had the least predictability from health concern factors. The seventh equation, regressing healthy eating behaviour as a function of two health beliefs factors and six food choice motives contained no multicollinearity.

V: Means, standard deviations and inter-correlations of research variables

	M	SD	1	2	3	4	5	6	7	8	9
1 Personal well-being	4.12	0.71	(0.85)								
2 Preventing diseases	4.02	0.64	0.68**	(0.81)							
3 Health	4.19	0.61	0.63**	0.58**	(0.87)						
4 Sensory appeals	3.80	0.84	0.36**	0.28**	0.29**	(0.80)					
5 Mood	3.92	0.81	0.56**	0.44**	0.58**	0.42**	(0.83)				
6 Weight control	2.95	0.86	0.16**	0.32**	0.41**	0.15**	0.31**	(0.74)			
7 Price	4.33	0.45	0.38**	0.30**	0.23**	0.21**	0.26**	0.19**	(0.90)		
8 Familiarity	3.75	0.99	0.29**	0.34**	0.29**	0.32**	0.30**	0.33**	0.38**	(0.79)	
9 Healthy eating attitudes	3.91	0.89	0.47**	0.45**	0.58**	0.32**	0.39**	0.27**	0.40**	0.32**	(0.84)

Source: own calculation

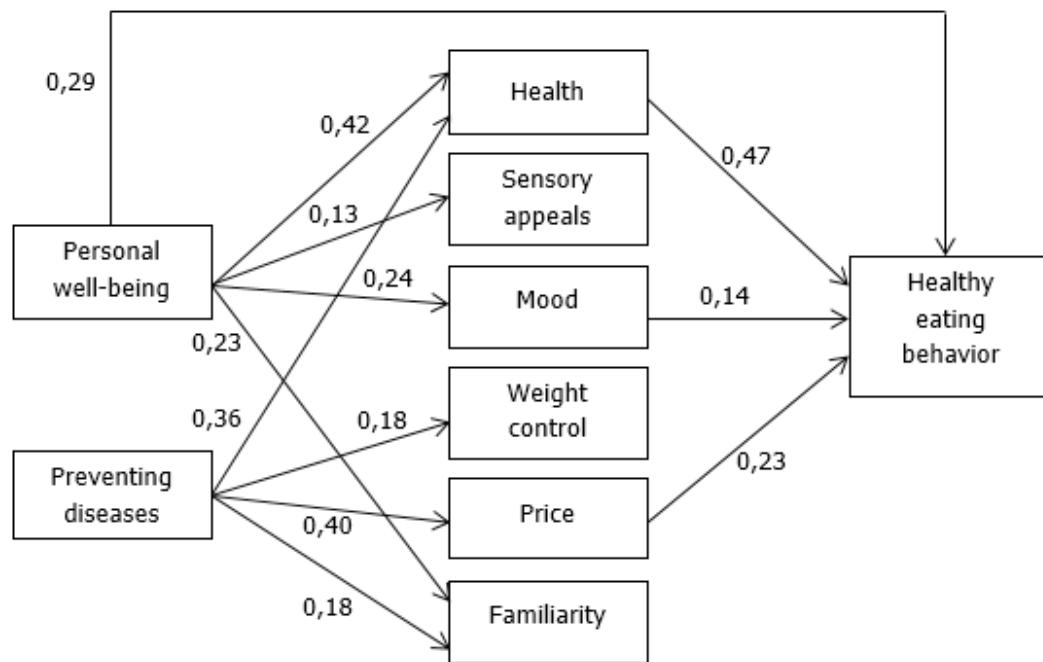
Note: The numbers on the diagonal are the coefficients alphas. M = mean value of variables.

VI: Regression analysis results (mediating effect of food-choice motives on attitudes towards healthy eating)

	Health	Sensory appeal	Mood	Weight control	Price	Familiarity	Eating attitudes	
							FB	FB+FM
I. Health beliefs								
Personal well-being	0.24***	0.13*	0.42***	0.29	0.36	0.23***	0.40***	0.29***
Preventing diseases	0.36***	0.20	0.40	0.18**	0.40*	0.18*	0.32***	0.18
II. Food choice motives								
Health								0.47***
Sensory appeal								0.09
Mood								0.14*
Weight control								−0.06
Price								0.23**
Familiarity								0.03
R2	0.45	0.09	0.21	0.19	0.15	0.10	0.28	0.41

Note: FB = Food beliefs; FM = Food choice motives;

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$



1: Diagram of interrelations among health beliefs, food choice motives and healthy food behaviour
Source: own elaboration

Both health beliefs of personal well-being and preventing diseases were statistically associated with healthy behaviour and accounted for 28% of the variance in attitudes toward healthy eating. Adding our six food choice motive factors to two health concern factors in predicting healthy eating behaviour resulted in a total of 41% of the variance in attitudes toward healthy eating behaviour. At this final stage, only health belief of personal well-being and food choice motives of health, mood, and price could significantly predict attitudes toward healthy eating behaviour. It indicates a full mediation of food choice motives between health belief of personal well-being

and healthy eating behaviour and partial mediation of food choice motives between health belief of preventing diseases and healthy eating behaviour. A final diagram of the interrelations is shown in Fig. 1.

Our final results show that health belief of personal well-being had a greater effect on eating behaviour than did health belief of preventing diseases. The reason could be that seniors attach to the food only a secondary role among the reasons of their diseases. Hence, seniors who represent health belief of personal well-being, exhibit eating behaviour that is more cautious than it is by seniors exhibiting belief of preventing diseases.

CONCLUSION

The principal objective of our research was to explore the effect of health beliefs on healthy eating behaviour. In particular, the question was raised, whether this effect on healthy eating behaviour could be mediated by food choice motives. Hence, the examination was focused on the affection of beliefs and motives towards eating behaviour with food choice motives playing a mediating role.

It was documented that health beliefs did not affect all food choice motives and not all food choice motives were statistically associated with healthy eating behaviour. We found that seniors with different health beliefs exhibit different food choice motives. Seniors exhibiting health belief of “preventing diseases” put more importance on food-choice motives health, mood, price and familiarity of the food. However, only 3 food-choice motives are statistically associated with healthy eating behaviour (health, price and mood). Based on this result it can be concluded that seniors with health belief of “preventing diseases” would place higher importance on health and price in their healthy eating behaviour. On the other hand, seniors representing health belief of “personal well-being” put more emphasis on food choice motives of health, mood, sensory appeal and familiarity. Among these motives only health and mood are significantly associated with healthy eating behaviour. The results of hierarchical multiple regression analysis document that health belief of personal well-being would both a) directly influence their healthy eating behaviour, and b) indirectly influence this behaviour through two of the food-choice motives, which are health and mood. The research results indicate the mediating impact of food-choice motives on healthy eating behaviour.

Against our expectations health belief of personal well-being and mood motive are better predictors than weight control in the creation of healthy eating behaviour. Among all the variables, the food choice motive health exhibited the strongest direct influence on healthy eating behaviour, followed by health belief of personal well-being and food choice motives of mood and price.

The interrelations between beliefs, motives and behaviour offer an interesting area for future research. Especially, the variables mediating or moderating the effect of health beliefs on healthy eating behaviour open areas for future research. Our results indicate for example that health belief affects the food choice motives of familiarity, however, this motive does not affect healthy eating behaviour in our study. Future research can further explore the possible effects of this motive and its manifestation in healthy eating behaviour. In addition, researchers should concentrate more to identifying the variables that mediate or moderate the effect of health belief on healthy eating behaviour.

Determining the attitudes of senior population towards their diet and to particular food may be useful in nutrition educational campaigns for identifying target groups for whom specific nutrition messages would be appropriate. Therefore, subjects promoting healthy eating could emphasize the importance of health and healthy environment in creating food-related decisions. The emphasis on mood and familiarity motive in promotional campaigns can also help in development of positive approach to healthy eating behaviour. The findings of this research could be used in improving seniors-oriented food offerings, product positioning and marketing communication towards seniors in the category of foods.

Potential limitation of the study is the range of seniors included in the research, as well as the specific senior's centres context in which the study was conducted. Further research needs to include a broader sampling method, stretching across different geographic regions, with both urban and rural population, as well as various inputs with respect to educational level and living conditions. Furthermore, the research did not consider health status when investigating the relationships among health beliefs, food choice motives and healthy eating behaviour. Future research might seek to determine the effects of various manifestations of health beliefs. For example, besides belief of preventing diseases and personal well-being, perhaps other types of health beliefs can also predict attitudes toward healthy eating.

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