

## PSYCHOSOCIAL DETERMINANTS OF USING VITAMIN AND MINERAL SUPPLEMENTS AMONG STUDENTS

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The aim of the study was to describe the role of psychosocial determinants of using vitamin and mineral supplements among students. Through using the theory of planned behaviour, a more detailed approach to assess the psychosocial factors influencing dietary supplement use among students was created. Attitude toward behaviour was the statistically significant factor influencing both intention and behaviour concerning use of vitamin and mineral supplements among the population. Subjective norm and perceived behavioural control was not a good predictor of using supplements among the population.

### INTRODUCTION

Reasons for consuming dietary supplements are likely to be complex by combining social, psychological, and economic factors [Conner *et al.*, 2001; Cox *et al.*, 2004; Warnick *et al.*, 2004; Reedy *et al.*, 2005].

The theory of planned behaviour (TPB) has been used in various nutrition behaviour researches [Backman *et al.*, 2002; Robinson & Smith, 2002; Rah *et al.*, 2004; Verbeke & Vackier, 2005; Patch *et al.*, 2005]. The TPB originated from the earlier theory of reasoned action (TRA). According to this theory, behaviour is mainly determined by a related intention. Behavioural intention is established based on behavioural attitude, subjective norms, and perceived behavioural control. The attitude towards the behaviour refers to the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour. Subjective norms refer to the perceived social pressure to perform or not to perform the behaviour [Ajzen & Fishbein, 1980]. In order to extend the scope of TRA, the perceived behavioural control was introduced as a third predictor of behavioural intention [Ajzen, 1985]. Perceived behavioural control reflects past experiences as well as anticipated difficulties or facilitating conditions. In a meta-analysis including 185 independent studies on the predictive potential of the TPB for a variety of health-related behaviours, the TPB explained 27 and 39% of the variance in behaviour and intention, respectively [Armitage & Conner, 2001].

The TPB's constructs can help to understand the attitude toward the supplement use and, the subjective norms (how the students feel they need to comply with their surroundings to feel accepted), and perceived behavioural control (how difficult or easy is to use supplements for students), and the

behavioural intention with regard to vitamin and mineral supplement use. The earlier theory (TRA) was used for assessing influences of dietary supplement use among adolescent athletes by Perko *et al.* [2000].

The aim of the study was to describe the role of psychosocial determinants of using vitamin and mineral supplements among students, *i.e.* intention, attitude, subjective norms and perceived behavioural control.

### MATERIALS AND METHODS

Survey data were collected through questionnaires during January and February 2006. Psychosocial variables related to vitamin and mineral supplementation were identified through elicitation interviews with 32 students. As a result nutrition experts, physicians, peers and family were recognized as four important referent individuals and groups. Facilitating or barriers factors regarding use of vitamin and mineral supplements, including nutritional habits, financial situation, health status, availability, physical activity, knowledge on supplementation, anxiety about consequences of overdosing, neatness and advertising, were derived from the open-ended questions.

All TPB constructs were measured directly on seven-point bipolar scales (-3 to +3 with all points on the scale described with words) [Ajzen & Fishbein, 1980]. The final survey contained 3 items for behavioural attitudes; 4 items concerning subjective norms, 9 items pertaining to the perceived behavioural control and 3 items for intention. The mean of the score was accounted for each construct. A high score means a positive attitude, a high subjective norm and a high perceived behavioural control. For measuring the using

of supplements one item was used. A pre-test was performed with 28 students in order to control the clarity of questions. The final questionnaire was completed by 169 students.

Data were analysed using SPSS 12.0 Pl for Windows. Cronbach's  $\alpha$ 's were calculated to determine the internal consistency of the subscales for the TPB constructs. Path diagram was constructed by performing linear regression analysis.

## RESULTS AND DISCUSSION

The mean age of the survey participants was 22.1 years (SD  $\pm 0.9$ ; range 21-25). Twenty percent were 21 years old, 57% were 22 years old and 23% were 23 years old or older. The majority of population were women (93%). Almost two thirds of the population (65.6%) used vitamin and minerals supplements during the survey.

Descriptive statistics for the TPB constructs are shown in

norm showed much weaker correlation with intention than attitude. These correlations were similar in relation to users and non users of supplements. The correlations between use of supplements and other constructs were lower than in the case of intention, but attitude towards behaviour was stronger predictor than subjective norm. There was quite strong a correlation between nowadays behaviour and intention, more persons using supplements declared higher intention to use supplements in the nearest future in comparison with those who did not use supplements.

Attitude, subjective norm and perceived behavioural control explained in the total population 46% of the variance in the intention to use supplements in the future. Explained variance in the intention was higher in users ( $R^2 = 43\%$ ) than in non users ( $R^2 = 36\%$ ), (Figure 1).

Attitude toward behaviour was the strongest predictor of intention (Figure 1). The same results were obtained in

TABLE 1. Descriptive statistics of the TPB constructs.

	No. of items	$\alpha^a$	Total (n=169)		User (n=111)		Non-user (n=58)	
			Mean	SD	Mean	SD	Mean	SD
Attitude <sup>b</sup> (IS) <sup>c</sup>	3	0.85	0.85	$\pm 0.90$	1.04	$\pm 0.87$	0.48	$\pm 0.83$
Subjective norm <sup>b</sup> (IS)	4	0.62	0.94	$\pm 0.80$	1.03	$\pm 0.77$	0.78	$\pm 0.82$
Perceived behavioural control <sup>b</sup>	9	0.70	0.40	$\pm 0.81$	0.47	$\pm 0.76$	0.26	$\pm 0.88$
Intention <sup>b</sup> (IS)	3	0.83	0.73	$\pm 1.36$	1.08	$\pm 1.31$	0.52	$\pm 1.20$

<sup>a</sup> – Cronbach's alpha; <sup>b</sup> – measured on scales from -3 to +3; <sup>c</sup> (IS) – statistically significant differences between users and non users of vitamin and mineral supplements

Table 1. The distributions of attitude, subjective norm, perceived behavioural control and intention were skewed to the right, indicating that most participants had positive scores for these variables. All scores were lower for non users of vitamin and mineral supplements than for the users. The differences in mean scores were statistically significant with one exception, namely perceived behavioural control.

Table 2 shows the correlations between TPB components for total population, and for users and non users separately. All constructs were significantly correlated, except perceived behavioural control and subjective norms in the case of users of vitamin and mineral supplements. Subjective

the study on determinants of using novel foods enriched with omega-3 fatty acids [Patch *et al.*, 2005]. Subjective norm and perceived behavioural control did not indicate the significant correlations with intention. Perko *et al.* [2000] stated that subjective norm was the predictor of declared intentions among student athletes aged 14 to 19 years. The study indicated that coaches, parents, athletic trainers, physicians and team mates were all recognized as influences of supplement use and non use in adolescent athletes. In this study nutritionists, physicians, peers and family were not important for students taking into account their beliefs and students' motivation to adopt these beliefs

TABLE 2. Spearman's correlation coefficients between the constructs of the theory of planned behaviour.

		Attitude	Subjective norm	Perceived behavioural control	Intention
Subjective norm	Total	0.275**			
	User	0.345**			
	Non-user	0.329**			
Perceived behavioural control	Total	0.261**	0.176**		
	User	0.218**	0.064		
	Non-user	0.309**	0.346**		
Intention	Total	0.639**	0.267**	0.090	
	User	0.652**	0.265**	0.089	
	Non-user	0.586**	0.293**	0.119	
Use of vitamin and mineral supplements		0.299**	0.156*	0.126	0.359**

\*, \*\* Correlation coefficients significantly different from zero at \* $p < 0.05$ ; \*\*  $p < 0.01$

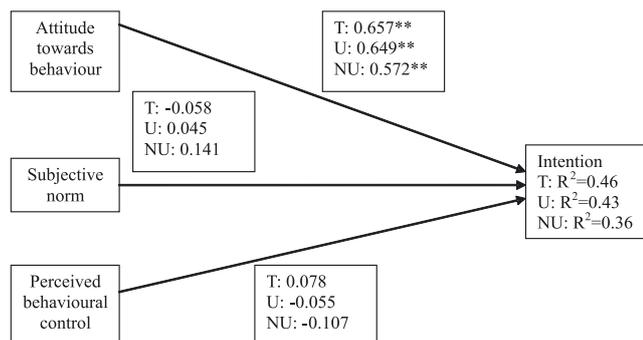


FIGURE 1. Path analyses for intention of vitamin and mineral supplement using for total population, users and non users of supplements. \*\* Regression coefficients significantly different from zero at  $p < 0.01$ ; \* at  $p < 0.05$ ; T – total population, U – users and NU – non users of supplements; R<sup>2</sup> – percentage of variance.

in using supplements. The possible explanation of this result is the specificity of the population. There are students with good knowledge on nutritional issues and more than three fourth of them (76.7%) used supplements without consulting it with physicians. A lack of a significant correlation between perceived behavioural control and intention to use supplements can be treated as a fact which increases the probability of predicting behaviours on the basis of declared intentions. It means that environmental conditions (*i.e.* access, price) do not have any impact on the use of supplements when knowledge on nutritional issues is high. Having a high motivation to perform the behaviour may be the most important reason to perform the behaviour, which was indicated in path analyses.

## CONCLUSIONS

The results of the survey indicated that:

1. Through using the theory of planned behaviour, a more detailed approach was created to assess the psychosocial factors influencing dietary supplement use among students.
2. Attitude toward behaviour was the statistically significant factor influencing both intention and behaviour concerning use of vitamin and mineral supplements among the population.
3. Subjective norm and perceived behavioural control was a not good predictor of using vitamin and mineral supplements among the population.

It can be stated that among the survey population, characterized by a relatively high level of knowledge on food, nutrition and health, the impact of social environment is restricted by the attitude toward supplementation.

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## **WPLYW CZYNNIKÓW PSYCHOSPOŁECZNYCH NA STOSOWANIE PREPARATÓW ZAWIERAJĄCYCH WITAMINY I SKŁADNIKI MINERALNE WŚRÓD STUDENTÓW**

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Celem pracy było określenie roli czynników psychospołecznych w warunkowaniu stosowania preparatów zawierających witaminy i składniki mineralne wśród studentów. Zastosowanie teorii planowych zachowań w badaniu zachowań związanych z suplementacją diety pozwala na bardziej szczegółową diagnozę przyczyn zachowań reprezentowanych przez studentów. Zarówno deklarowane intencje, jak i obecne zachowania w największym stopniu są warunkowane deklarowaną postawą względem zachowania. Pozostałe czynniki, czyli normy subiektywne i postrzegana kontrola zachowania w niewielkim stopniu warunkują zachowania badanych studentów związane z suplementacją diety.