

## The Relation between Quality of Life, Body Image and Anxiety among Dietary Supplements Consumers

Manuela Răscol

*National Research & Development Institute for Food Bioresources, IBA Bucharest, Romania*

### **Abstract**

*Research suggest that insatisfaction regarding body image and anxiety can often be associated with a negative perception of one's quality of life. The present study tried to investigate the quality of life, body image and anxiety variables on a sample of 30 participants who consume dietary supplements by self-administration.*

*The assessment tools for quality of life (QOLS, Burckhardt & Anderson, 2003), body image dimensions (MBSQR, Cash, 2000) and anxiety (HAM –A, Hamilton, 1959) were administered in two stages: one initial stage (pre-test) and a three months follow-up (post-test). Results suggest that people who report a low level of quality of life are less content with their body images. Also scores obtained for the anxiety variable are higher among these subjects in the initial stage compared to the three months follow-up. The selection criteria for these participants were related to the presence of self-administered food supplements with calming effects. We consider that additional research is necessary in order to clarify the relation between the quality of life, body image and anxiety among people who consume food supplements.*

**Keywords:** *dietary supplements, quality of life, body image, anxiety*

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**Corresponding author:** Manuela Răscol

**Phone number:** -

**E-mail address:** manuela.rascol@bioresurse.ro

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## I. INTRODUCTION

During the past years, the dietary supplements market has faced an impressive development thanks to the increasing number of people interested in maintaining and improving their health. Empirical studies which focus on the influence of such products upon the population's quality of life, the benefits consumers may take advantage of are more and more present in the research field, reflecting the need of reliable scientific proof of the efficiency of dietary supplements upon the health status.

In the European Union these products have started to gain attention after the recognition of the diet's role in maintaining a proper health status; a part of the recent studies have shown that pollution and daily stress, specific to the modern life, lead to major health disturbance (Karasek, & Theorell, 1992). In this context, the rises of general body resistance and maintaining high immunity have become absolute priorities in every state. The high availability and use of dietary supplements made them become part of the daily food regime, thus generating a significant level of exposure of the consumer from the point of view of public health.

There is a significant body of proof in poll results showing that dietary supplements consumers adopt more frequently healthy habits and responsible attitudes, compared to those who do not consume dietary supplements (Nestle, 2013). These include maintaining an optimal body weight, avoiding high processed food; consuming alcohol and tobacco, investing sustained efforts in order to maintain a food body functioning and increasing quality of life. Studies made by researchers which included categories of people who frequently consume dietary supplements, have shown positive correlations between age, income and education and quantity of utilized dietary supplements; in the case of each age group, it was noticed that female subjects utilized more supplements compared to men (Bailey et al., 2011; Radimer et al., 2004; Bailey et al., 2013; Foote et al., 2003). Regarding results registered in the past years in the domain of medical and aromatic plants and analyzing statistic data presented on diverse channels, we may remark an increased interest of consumers for natural products, for dietary supplements made of medicinal plants or the "green pharmacy" in general.

In 2013, results of a study conducted by researchers at the "Lucian Blaga" University in Sibiu were published, regarding the consumption of vegetable dietary supplements in Romania.

The conclusions of this study have shown the evolution of the plant-made dietary supplements market, showing a top of sales of 200 million Euros in 2010. Researches state that the consumer's preference for dietary supplements made of plants show significant changes in consumption habits and implicitly of life style which will lead to an increased request of such products (Stoia & Oancea, 2013).

People in the present society pay high attention to health and even accept, sometimes voluntarily, a series of lifestyle restrictions in order to maintain a good physical state and a general good health.

At the present moment, research regarding quality of life represents an activity domain which reunites specialists' in interdisciplinary areas. Quality of life is defined by the World Health Organization as "the total of individual perceptions upon social situations in the context of cultural value systems in which they live in and depending on their own necessities, standards and aspirations" (WHOQOL Group, 1998).

The multitude of definitions given to the quality of life concept show that it shouldn't be reduced to merely assessing the health state but a series of other dimensions frequently studied in the past years should be taken into account such as physical, psychological and social function. Being a multidimensional concept, we may assert that its assessment traces an individual's quality of life at a given moment, being influenced by past experiences, by the actual context and future aspirations.

Another aspect which is given more and more attention at the moment consists in body image. The development of body image is marked on one hand by the changes which intervene in the physical body and on the other hand by the manner in which significant people and the social group react to such changes.

Body image is conceptualized as an information set adapted to one's own individuality, vulnerability to distortions and permanent change due to social and cultural pressure, resulting in a mental model materialized in the representation of one's own body. Risk behaviors occur when an imbalance is developed between individual needs and social pressure.

One of the unanimously accepted definitions of body image is the following: "a mental representation of information related to the physical aspect, information resulting based on perceiving one's own body" (Schilder, 1950, in Grogan, 2008).

Another scientific approach explains body image as a construct formed by two components. The first consist in evaluating one's body image which encompasses thoughts and beliefs regarding one's own physical appearance. A second component is represented by activities which individuals practice in order to manage their appearance (Morrison et al., 2004).

Cash & Szymanski (1995) state that body image is seen at the moment as a set of personal attitudes toward one's own body, which particularly refers to the physical appearance. Attitudes are made of personal perceptions, cognitions, affects and behaviors towards individual's physical attributes. One quality of the model consists in taking in the multidimensionality of the body image construct from the point of view of factors involved in its development (Cash & Pruzinsky, 2002).

It has been demonstrated that the sensitivity and predisposition to several disorders and diseases are strongly conditioned by life style, alimentary behavior, approaching individual's consume, these factors being structured according to the specific of a social-cultural matrix or another (Van Zyl et al., 2012; Segasothy & Phillips, 1999).

Anxiety disorders are the health problems most frequently met on a global level. Studies conducted both with teenagers (Merikangas, 2010), and adults (Kessler, 2005) show that the prevalence of anxiety disorders during a lifetime is around 30%.

The evolution of anxiety disorders is chronic and in the lack of proper treatment people suffer from major costs on a long term such as: increased risk for somatic disorders and high comorbidity with other mental health issues (such as depression, alcohol and other substances abuse), increased rate of disability, academic failure, unemployment or low work performance.

The present study investigated the quality of life, body image and anxiety variables in a sample of 30 participants, namely self-administered dietary supplements under diverse versions – caps, pills or medicinal plants tea.

The participants to this research continued to consume self-administered dietary supplements during the study with the role of decreasing anxious or nervous states, feelings of tiredness or being agitated, according to product descriptions corresponding to each supplement type. Also, teas and pills utilized by the participants address both body relaxation and improving sleeps quality.

One first proposed hypothesis is that there are differences in scores of quality of life *prior* to and *post* regular consumption of dietary supplements among participants. The following hypothesis stated that values of body image, prior dietary supplements consumption are lower than the ones registered after three months of supplements administration. The third hypothesis addressed the existence of a diminished level of anxiety in the three months of dietary supplements administration compared to the initial moment of the investigation.

## II. METHOD

### 1. Participants

The study included a number of 30 Romanian participants, self-administered dietary supplements consumers. The group includes people aged between 22 and 38 years old ( $Mean = 28.93$  years;  $SD = 4.118$ ) 24 females and 6 males. As for the type of self-administered dietary supplements, 23 of the participants consumed medicine plant-based supplements, combined with vitamins and minerals, as caps or pills while seven consumed the medicine plant tea version of the supplements.

## **2. Instruments**

Instruments to assess quality of life (QOLS, Burckhardt & Anderson, 2003), body image (MBSQR, Cash, 2000) and anxiety (HAM –A, Hamilton, 1959) were administered in two stages, namely in one initial stage and after a three months follow-up.

2.1. The Quality of Life Scale (QOLS, Burckhardt & Anderson, 2003) – 16 items version was adapted by Carol S. Burkhardt based on the Scale proposed by Flanagan in 1978/1982. The instrument is made of 16 items rated on a Likert scale from 1 = terrible to 7 = delighted, divided into 5 subscales: a) Material and Physical Well-being: items 1, 2, 16; b) Relationships with other People: items 3, 4, 5, 6; c) Social, Community, and Civic Activities: items 7, 8; d) Personal Development and Fulfillment: items 9, 10, 11, 12; e) Recreation: items 13, 14, 15.

2.2. The Multidimensional Body-Self Relations Questionnaire (MBSRQ, Cash, 2000) includes 69 items. The instrument was built to measure aspects of personal attitude regarding one's own body (with the self-body dyad).

MBSRQ contains a number of subscales based on the factor analysis: Appearance Evaluation (AE: items 5, 11, 21, 30, 39, 42, 48), Appearance Orientation (AO: items 1, 2, 12, 13, 22, 23, 31, 32, 40, 41, 49, 50), Fitness Evaluation (FE: items 24, 33, 51), Fitness Orientation (FO: items 3, 4, 6, 14, 15, 16, 35, 36, 43, 35, 43 53), Health Evaluation (HE – items 7, 17, 27, 30, 45, 54), Health Orientation (HO: items 8, 9, 18, 19, 28\*, 29, 38\*, 52), Illness Orientation (IO: 37\*, 46, 47\*, 55, 56), Body Areas Satisfaction (BAS: items 61 – 68), Subjective Weight (items 59, 60), Weight Preoccupation (WP: items 10, 28, 57, 58). MBSRQ offers a large area of information which can be useful in assessing a number of specific dimensions of body image.

2.3. The Hamilton Anxiety Rating Scale (HAM-A, Hamilton, 1959) represents one of the first scales destined to assess anxiety symptomatology severity. The scale contains 14 items which assess anxious disposition, fear, insomnia, cognitive symptoms, depression, behavior and gastrointestinal, cardiovascular, genital, vegetative symptoms and muscular tension. The factor analysis of these items shows that they describe a general factor of anxiety and bipolar cognition factors and somatic symptoms referring to anxiety (Hamilton, 1959).

The assessment of symptom severity is made via Likert scale ranging from 0 = no symptom, to 4 = severe symptom. The total score may vary from 0 to 56, as scores higher than 14 indicate clinical anxiety, and healthy subjects usually obtain scores around 5. There is a consensus that 14 – 17 scores indicate low anxiety, 18 – 24 indicate mild anxiety and scores higher than 25 indicate severe anxiety.

The first administered questionnaire was the Quality of Life Scale (QOLS, Burckhardt & Anderson, 2003), followed by the Multidimensional Body-Self Relations Questionnaire Cash,

2000), while the former applied questionnaire was The Hamilton Anxiety Rating Scale (HAM-A, Hamilton, 1959).

### 3. Research procedure

All participants to the study, selected voluntarily, were initially informed through an announcement regarding the purpose of the study and were requested to sign informed consent forms. The selection procedure had the main criteria of signaling self-administered dietary supplements consumption with duration of at least 15 to 30 days prior to the beginning of the study.

Researchers interviewed each participant in order to identify the types of dietary supplements which were usually consumed. As a result of this assessment it was concluded that 11 of the participants consume self-administered dietary supplements as a result of TV advertisements, 10 of the participants consumed based on a pharmacists' indication while 9 of them consumed dietary supplements on the family doctor's prescription as adjuvant in diminishing stress and sleep-related problems which they complained of.

None of the participants suffered from chronic or acute health issues according to what they reported during the interview. The participants stated that they will consume dietary supplements with the role of stress reduction and relaxation according to the daily doses recommended by the producer during the whole three months period of the study.

The pre and post evaluation procedure under the pen/paper version took place in a conference room at the National Research & Development Institute for Food Bioresources - IBA Bucharest in the presence of the examiner who maintained a proper environment.

## III. RESULTS

The results self-assessed by the participants in the pre-test stage regarding their quality of life reflected values between a minimum of 61.0 (indecision regarding the satisfaction about quality of life) and a maximum of 101.0 (very high satisfaction regarding the quality of life), with ( $M_{qol}=84.8$ ;  $SD=9.21$ ). In the case of post-test the results for quality of life showed values between 75.00 and 105.00 with ( $M_{qol}= 92.46$ ;  $SD=8.17$ ) (table 1).

Table 1. Descriptive indicators of pre-test / post – test Quality of Life (N = 30)

	Minimum	Maximum	Mean	Standard Deviation	Skewness	Kurtosis
QL_PreT	61,00	101,00	84,8000	9,21917	-,451	,140
QL_PostT	75,00	105,00	92,4667	8,17791	-,285	-,957

Participants obtained for the pre-test MBSRQ questionnaire a mean of ( $M_{body}=34.8$ ;  $SD=4.73$ ) score which shows a high preoccupation of the subjects regarding body image in general. Participants gave answers between 23 minimum score (the subject acts and is interested by their body image, being somewhat satisfied by it) and 43.17 maximum score (the subject acts and is very interested by their body image, being extremely satisfied by it).

In the post-test self-assessment for body image, participants registered values between a minimum of 30.71 and a maximum of 44.98, with a ( $M_{body} = 36.839$ ;  $SD= 3.52$ ) (table 2).

Table 2. Descriptive indicators of pre-test/post-test Body Image (N = 30)

	Minimum	Maximum	Mean	Standard Deviation	Skewness	Kurtosis
BI_PreT	23,00	43,17	34,8727	4,73726	-,385	,025
BI_PostT	30,71	44,98	36,8397	3,52791	,165	-,129

Results registered by the participants included in the study, in the case of assessing anxiety at the pre-test moment, registered values between a minimum of 30.0 and a maximum of 56.0 (severe anxiety), with the mean value of ( $M_{anx}=45.63$ ;  $SD=4.71$ ). In the case of assessing post-test anxiety, values between a minimum of 10.0 (no clinical symptoms of anxiety) and a maximum of 32.0 (high clinical anxiety) were obtained, with a mean value of ( $M_{anx}=19.3$ ;  $SD=4.99$ ) (table 3).

Table 3. Descriptive indicators for pre/post-test Anxiety (N = 30)

	Minimum	Maximum	Mean	Standard Deviation	Skewness	Kurtosis
Anx_PreT	30,00	56,00	45,6333	4,71595	-,857	3,419
Anx_PostT	10,00	32,00	19,3000	4,99068	,317	,400

In the case of the Pearson correlation analysis, it has been noticed that the score for the quality of life in the case of pre-test presents a weak positive correlation with body image ( $r=0,216$ ) and a weak negative correlation with anxiety ( $r=-0,381$ ).

Table 4. Pre-test correlation coefficients (N = 30)

	Qol_PreT	BI_PreT	Anx_PreT
CV_PreT	1	,216	-,381
IC_PreT	,216	1	-,025
Anx_PreT	-,381	-,025	1

In the case of post-test the obtained statistically significant correlation ( $r=.482^{**}$ ;  $p<.01$ ) for quality of life and the score for body image are consistent with the hypotheses.

In the post-test case the participants declare a better quality of life, and a body image self-satisfaction which is higher and vice-versa, so we can discuss about a bidirectional correlation. In the case of assessing the participants three months after the dietary supplements consumption, no correlations were identified between anxiety and quality of life or between body image and anxiety (table 5).

Table 5. Post-test correlation coefficients (N = 30)

	QoL_PostT	BI_PostT	Anx_PostT
QL_PostT	1	,482**	-,064
BI_PostT	,482**	1	,096
Anx_PostT	-,064	,096	1

Note. \*  $p<.05$ ; \*\*  $p<.01$ .

#### IV. DISCUSSION

One first hypothesis according to which there are differences of quality of life scores pre and post regular dietary supplements consumption among participants was supported by results revealed. The second hypothesis is also supported by results of the present study, the fact that body image values before dietary supplements intake are lower compared to the ones registered three months after the consumption of the supplements represents a tendency which may show the preoccupation of the participants to improve their body image and the relation they establish with the dietary supplements.

The third hypothesis was also confirmed by the results obtained in our study, in the sense that the anxiety level was reduced during the three months of dietary supplements consumption compared to the initial moment of the study.

Last but not least, we assumed the existence of statistic correlations between values obtained on quality of life, body image and anxiety scales among consumers of dietary supplements. We have studied the way these correlations are modified, along with administrating psycho-emotional regulating dietary supplements.

The only statistically significant correlation was found between the score of quality of life and body image in the post-test situation on a level of  $r=.48$  ( $p<.01$ ), which indicates a high correlation between the two measured constructs.



The results obtained in this study are concordant with those reported by the study conducted at the University Faculty of Medicine Süleyman Demirel, Public Health Department, in 2014. They suggest that an increased attention should be given to body image as it appears to be a strong predictor of quality of life improvement on all sub domains. A good perception upon health, higher incomes than expenses, regular exercising are predictors of higher quality of life (Nayir et al., 2016).

The present study also has a series of limits such as the reduced number of participants, the necessity of investigating other consumers' age groups, following a variety of self-administered supplements (tea, caps, pills) with a different composition which does not allow showing the efficiency of one type of supplement or another, the lack of strict monitoring of dietary supplements administration, data being collected only based on participants' reports.

We may suggest with high precaution that our study concludes that dietary supplements may play a role in psycho-emotional regulation but we may not yet specify a certain product, quantity or period of time which should be administered.

We consider that additional research should be conducted with the purpose of detailing the relationship between quality of life, body image and anxiety among Romanian consumers of dietary supplements based on medicinal plants.

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