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# THE POPULATION HEALTH STATE IN THE UPPER BAZIN OF MOLDOVIAN BISTRITA AND ITS LIFESTYLE

Case study

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## Keywords

Lifestyle  
Residential area  
Declared health status  
Perceived health status

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## Abstract

*It is an unanimously accepted fact that the communities' health state in general and of the individual's in particular is determined and influenced by a cumulus of physico-geographical factors (natural and human), factors more difficult to quantify as a society's structure and functionality is more complex.*

*The starting hypothesis of our study focused on identifying the existence/absence of a causality connection between the lifestyle of the communities in the upper basin of the Moldavian Bistrita (Vatra Dornei town and other ten rural areas) and their health state.*

*If we can't control the release of a storm, drought, landslide, volcano eruption, tsunami, etc., we can't say the same thing about our decisions regarding nutrition, weight control and maintenance, physical and psychical hygiene, the quality of interpersonal relationships, continuous self-development, the attitude towards stressful events, etc., aspects upon which we can fortunately interfere.*

*Our case study confirms once again that the healthy persons' lifestyle is significantly different from that of a person suffering from different medical affections.*

## 1. Introduction

The starting hypothesis of our study focused on identifying the existence/ absence of a causality connection between the lifestyle of the communities in the upper basin of the Moldavian Bistrita (Vatra Dornei town and other ten rural areas) (Figure No. 1) and their health state.

If the hydrologic and climatic factors have been conferred, in time, a great significance in explaining the epidemiology of different medical affections, the attention focuses nowadays more and more on the human factors, more precisely on the lifestyle specific to an area or another. Does it mean that humidity, precipitations atmospheric concentration, solar radiation or wind's speed don't influence any more our health state or "psychical comfort"? No way! The problem is related to the capacity, degree and manner in which the present society may affect them. Would it be easier and more efficient "the transfer" of some human communities from less favorable areas to those with a high degree of favorability or trying to adapt to the existing conditions through a lifestyle and behavior meant to counterbalance the phenomena and processes upon which society can't have full control.

In other words, if we can't control (at least not at the moment) the release of a storm, drought, landslide, volcano eruption, tsunami, etc., we may not say the same thing about our decisions regarding lifestyle.

All these can be studied in the field of medical/ health geography, which, as Bailly et al. (1984) well stated, it implies the spacial analysis of the population's health quality in relation to their physical, biological, economical, behavioural and cultural environment, without which the phenomenon's comprehension is practically unattainable.

The specialty literature is abundant in research realised on the causality relations existent between the individual's lifestyle and his health state. Moreover, there have been attempts in evaluating the individuals' perception on their health state, according to a series of physiological, social, economical, psychological and behavioural factors, evaluation generally realized through transversal and longitudinal studies and which, with the help of questionnaires, interviews, sample surveys, the access to the national and international data basis, etc., have managed to offer us a more vivid image of the phenomenon in study.

One of the most used questionnaires in the research, evaluation and explanation of the factors that influence health state is KIDSCREEN. This is a measuring instrument of teenagers' life quality (children and teenagers between 8 and 18 years), in three versions: with 52 questions, 27 and 10 items. The 52 questions version covers ten dimensions of

life quality: physical wellness, psychical well-being, mood and emotions; self-perception; autonomy; the relation with the parents and family life; social support and the peer relations; educational environment; social integration; financial resources (how does the child/teenager feel under the conditions of being or not financially dependent). Between 2005 and 2012 this questionnaire were used in 49 clinical and epidemiological studies, most of them in European countries, but also in Korea, Columbia, Uganda or Kenia, among which Romania-the 10 and 27 items version (Ravens-Sieberer et al., 2013).

Another research instrument of health state is BRFSS (The Behavioral Risk Factor Surveillance System), which, through the 4HLCs index (a healthy lifestyle indicator) the following indicators are evaluated: smoking, weight index, fruits and vegetables consumption and physical activity. The sum of the values of the parameters evaluated, led to a numbering from 0 to 4 and the prevalence of each index' parameter is also estimated according to the individual's age, gender, nationality, education, income and self-perception of health state (Reeves & Rafferty, 2005).

By using the data of the adults between 1987 and 2000, through BRFSS, Christopher J. Ruhm (2005) discovered that smoking and excessive weight/overweight get lower in economic recession, while the physical activity gets higher in leisure time.

QoL-HALex can also be mentioned (Instrument for measuring the relation health-life quality-QoL, through the scores obtained after evaluating the index Activity-HALex, used, for example by P. Erikson (1998).

One's perception on health state according to certain parameters, has been studied, in time, by several researchers, with more or less unitary results, thus: Kaplan et al. (1976) by establishing some correlations between health state self-perception and wellness Index; Miilunpalo et al., (1997) realized a sample survey study in Finland, resulting a reversed correlation between health state self-perception and the number of medical check-ups per year; Kennedy et al., (1998) noticed statistical connections between health state autoevaluation and income level, as well as the respondent's socio-economical status; Kawachi et al., (1999) proved that individual factors (such as income, lower education level and smoking) are strongly correlated to a poor/ unfavourable health state self-perception; or Dunn et al., (1998, 1999) about lifestyle and long-term effects.

Moreover, it is a true fact that those who live in areas with a high social level tend to autoevaluate their health state as good or even very good, comparatively to those living in areas or neighbourhoods with a low social security and who

autoevaluate health state as poor or bad (Kawachi et al., 1999).

The phenomenon is also studied by Eriksson et al.(2001) who brings into discussion the use of more types of questionnaires and analysis instruments for the evaluation of subjective health state perception, according to the type of the study (for example longitudinal); Contoyannis & Jones (2004), whose researches showed that the rest period and sleep quality, physical activity and not being a smoker, have a great positive impact on the later health state autoevaluation; DeSalvo et al.(2006) regarding the unfavourable health state autoevaluation and the high risk of mortality or Molarius et al.(2007) who showed that an unfavourable health state autoevaluation is specific to socially excluded persons, who faced economic difficulties, lacking social support or who retired earlier, with a low education level (only men's case), to obese people or with little physical activity, those accusing unsatisfactory working conditions or the fear of losing one's job.

As for the potential risk factors implied in the evolution of health state, these were brought into discussion and studied by several specialists, among who we mention: King (1990) on the demographic transition with direct implications regarding the population's health state; Vita et al. (1998) illustrated the fact that the persons exposed to a lower number of risk factors, not only do they live longer, but also with disabilities appear towards the end of life; Mozaffarian et al. (2009) who state that lifestyle must be considered the main risk factor for heart disease; Simmonds et al.(2014), about cancer incidence and prevalence (estimating a rise of 22 millions at international level until 2030), but a percentage of 25-30% of the most common types of cancer can be prevented, it seems, through nutrition, food and physical activity.

The physical activity characterizing a sedentary or active lifestyle has been one of the most studied factors for the evaluation and prediction of health state. We mention thus the studies realized by Tudor-Locke et al. (2012), in which the question was how many steps should we take every day, showing that less than 5000 steps a day is associated to a sedentary lifestyle.

Also, Tremblay et al. (2010), demonstrated the high degree of association between the prevalence of a lot of major health problems and sedentary behavior; LeBlanc et al. (2012) analyzed the relation between the time spent watching TV and health indicators in the early years; Sigmundova et al., (2013) studied the obesity trend in Czech Republic; or the studies of Laditka & Laditka (2014) which concluded that education is also associated to a long life and a low number of medical affections.

But most of the studies (the case of our study too), focus on the identification and analysis

of several factors implied in the evolution of health state, thus: Pender et al. (1990) noticed that the employees with a healthy lifestyle proved to be more competent in solving problems; Fried et al. (1998) illustrated numerous correlations between mortality and physical functionality; Glanz et al. (1998) on choosing the type of food, influenced, apparently, at first, by taste and secondly by its cost, the nutritive value, etc.; Wilkinson (2006) on the social insecurities, the big differences in incomes, the poor social support and the precarious health state or Adler & Ostrove (1999) about socioeconomic status and health.

Morimoto (2000) also talks about the lifestyle that can increase the risk of cancer occurrence and circulatory affections; Toda & Morimoto (2000) about the Ramadan holiday and the growing number of illnesses in this period among the Muslim population; Pronk et al. (2004) have studied the relation between health state and numerous lifestyle factors; Balia & Jones (2007) whose results show that the individual's lifestyle has a greater role in increasing mortality rate than the socio-economical status does.

Darmon & Drewnowski (2008) are worth mentioning, too. They noticed that a high quality diet is associated to a high socio-economical status and vice versa; Schutte et al.(2013) studied the correlation between health state perception and the socio-demographical, psychosocial, material and occupational factors or Greenwood's studies (2014) in which he discusses the Placebo effect of vaccines and the fact that medicines/ vaccines orally administrated are generally less efficient in the countries with a precarious hygiene, than in the more economically developed countries.

At national level, the studies regarding the influence of geographical factors (physical and especially human) on the population's health state, as well as the identification and explanation of the disparities occurring from one geographical area to another, tend to increase more and more lately.

We mention thus the important theoretical and methodological approaches realized by Teodoreanu (2004) and Ionac (2000) on the relation between environment factors and the person's health state, Burlea & Muntele (2013, 2012) on the influence of economic development on the disparities connected to health state; or the studies of Dumitrache & Armas (1998) on lifestyle as a health state determinant and health state in Romania in the transition period.

## 2. Materials and methods

The approach method of the analysed concept-lifestyle is both transdisciplinary (medical, social geography, of the population and communities) and interdisciplinary (psychology, social psychology, sociology) with the desire to capture as many of the "constitutive" and explanatory elements of the phenomenon in study,

without taking the rights to get to know it in its completion and complexity (“in corpore”).

The main research instrument used in this approach is “The Questionnaire for the geographical study of the population”, which contains 53 items and was applied during the period October 2013-January 2014 on a sample of about 600 persons from the upper basin of the Moldavian Bistrita.

Considering the great number of variables in research, the dissemination of the results has been realized in stages, in order not to “overcharge” the contents of the articles and presentations with too many information, following, however, a continuity in exposing the results.

The materials, methods and techniques used were presented in detail in the first article (Cruceanu et al., 2014), therefore we will make just a short review. Thus, the sampling was realized according to Cochran formula with an assumed error of under 5% (about 4% for the number of 600 respondents from a total population of about 40000 inhabitants) and after pretesting the questionnaire, a value of the Alpha Cronbach coefficient of 0,604 was obtained (the test can be, therefore, reproduced by anybody else in similar conditions).

The analysis and interpretation of the data was realized through parametrical and non-parametrical tests and methods of the descriptive and inferential statistics, more precisely the statistical correlation obtained through the software application of the statistical programme SPSS14.

The research hypotheses focused especially on the establishing/identification of some statistical correlations between the individual’s health state (real or perceived) and different socio-economical, physiological, psychological determinants and of lifestyle (predominantly), specific to the communities in study.

Therefore, for the present approach we focused on the following aspects/elements:

**Research hypothesis 1. Which are the lifestyle’s variables which correlate with the person’s health state and health state perception?**

**Research hypothesis 2. Does the residential area (urban/rural) impose a different lifestyle, susceptible of influencing the appearance of certain medical affections?**

### 3. Results and discussions

**Research hypothesis 2. Which are the lifestyle’s variables in correlation with the person’s health state and health state perception?**

Our research results showed both similarities and differences regarding the variables determining health state and its perception. More precisely, if variables such as gender, height and

weight, practicing sport, the satisfaction degree with the present job and one’s life, the optimism level etc., are, apparently common elements to the two dependent variables (declared and perceived health state), this doesn’t apply to variables like age, marital status, education level, alcohol and tobacco consumption, the relationship with the family and peers, the resting period etc., variables differently correlated with health state (see the following Table No. 1).

There is an obvious externalization of the factors which determine the individual’s health state (phenomenon used in psycho-analysis under the term of projection).

That is, if the variables in the first situation (for the declared health state) show us that the presence or absence of disease is more connected to the socio-economical characteristics and the individual’s behavior, the variables in the second category indicate that we tend to perceive/evaluate our health state as being better when our personal, family, professional relations etc., are the same and vice versa.

We didn’t find in our study any significant statistical correlations between dependent variables (declared and perceived health state) and independent variables such as residential area (urban/rural), philanthropic or volunteering activities, the resting period, showing one’s feelings or the relation with spirituality.

**Research hypothesis 2. Does the residential area (urban/rural) impose a different lifestyle, susceptible of influencing the appearance of certain medical affections?**

There were no significant correlations regarding the residential area (urban/rural) between this variable and health state or its perception.

There were, though, statistical relations between the residential area and certain socio-economical characteristics and individual’s lifestyle, more precisely the items: II.3 When you have health problems, where and at what distance do you have to go?; II.4 For major medical problems (surgeries, complex investigations etc.), what hospital, in which town/city did you choose or would you choose?; III.4 What type of dwelling do you own? (reversed correlation); III.5 How many rooms does your present house have?; III.6 How many persons live in it?; III.7 How many of your family members have a paid activity?; III.8 Your present monthly income is about.; IV.3 Do you smoke?; IV.7 What kind of physical activities do you practice?; IV.8 What kind of food do you most frequently eat?; IV.9 What kind of meat do you most frequently eat?; IV.18 How lucky do you think you are?

Different graphics, through the software application SPSS 14 were realized for this working hypothesis.

**The residential area, health state and choosing the hospital, town/city, respectively for the treatment of different medical affections (Figure No.2)**

As we mentioned in the previous paper (Cruceanu et al., 2014), the results show that the order of hospitals or towns chosen for major medical problems are those in Vatra Dornei, followed by those in Cluj, Targu Mures, Iasi, Bistrita and Bucharest. A significant number of respondents declared that they would choose "more than one", depending on the type of affection. At a closer look we can observe some differences between the two residential areas, regarding their options.

Therefore, if the hospital in Vatra Dornei is the option of the inhabitants in the rural area (both the healthy ones and those with medical affections), the hospitals in Suceava, Targu Mures, Bucuresti are predominantly the option of the inhabitants in the urban area. The hospitals in Cluj are, it seems, trustworthy in the opinion of the healthy respondents in the urban area, but we can't predict exactly if, in case of a possible medical problem, the individual's option is influenced or not by other considerations, such as the distance/proximity, transport and treatment costs etc.

**The residential area, health state and the predominant type of physical activity (Figure No. 3)**

We can observe from the table that in general, a healthy person practices more physical activities, comparatively to the other category, with some differences according to the residential area and the type of activity.

Thus, the healthy respondents (especially those in the urban area) declared, in a superior proportion, that they work out at the gym, practice aerobics, fitness etc., comparatively to those less healthy.

The presence, of course, in the urban area, of the fitness clubs/gyms imposed a greater number of answers of the respondents in the urban area, but it is important to mention that, among them, those who choose to practice a regular physical activity are still those not suffering from any medical affection.

A less easier fact to explain is if the persons are healthier because they work out regularly or they work out because they are in a good physical shape?

**The residential area, health state and meat consumption (Figure No.4).**

As we stated in another article, meat consumption is, apparently, specific to the healthy persons and vegetables and fruits consumption to the less healthy persons. A combined diet (both fruits/vegetables and meat) was chosen especially by the persons who don't suffer from any medical

affection, fact that "infringes" the theories which recommend a rather vegetarian diet for a good health state.

The explanation can be, of course, the diet rich in fruits and vegetables, recommended by the doctors to some ill persons, or the behavioural "pattern" characterizing especially the inhabitants in the mountainous or cold areas.

Returning to the preferences for a certain type of meat, we can observe the respondents' preference (both healthy and with some affections) for chicken, comparatively to those in the rural area, who chose rather pork or a combined diet.

The options for beef and mutton were specific especially for the healthy respondents in the rural area and those with certain medical affections in the urban area. As for the fish, there's a reversed situation, that is, this time fish was chosen predominantly by the healthy respondents in the urban area and those less healthy in the rural area.

**The residential area, health state and the type of medication (Figure No.5).**

The sedatives or the medicines for different pains seem to be used more by the respondents in the urban area, suffering or not from any affection. The medicines for cold and flu are widely used by the respondents in the rural area.

Taking vitamins is a frequently met situation in the case of healthy persons (especially those in the urban area). There were no cases in which healthy persons (from both residential areas) declared they had taken medicine for chronic disease and in general, the frequency of the answers "I haven't taken medicines" is a lot greater in their case.

Also, the persons suffering from certain medical affections declared in a higher degree, than those not suffering from any disease, that they have taken medicines either for chronic disease or for other many affections.

#### 4. Conclusions

There is a correlation between the individual's declared health state and the way in which one perceives it.

Regarding the health state perception, there were no significant variations between the two residential areas (urban/rural), due to the access to education, food and services of the same kind, as well as the accessibility to the medical services and practices for both residential areas.

There is a correlation (with different intensity degrees) between the person's lifestyle and his/ her health state, but with similarities and differences between health state (presence or absence of disease) and lifestyle's numerous variables.

We tend to perceive/evaluate our health state as being much better when our personal,

family, professional relations are better and vice versa.

The healthy persons' lifestyle is significantly different from that of a person suffering from different medical affections.

## 5. Acknowledgements

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ANNEXES

Figure No.1: Superior Bistrita River Basin

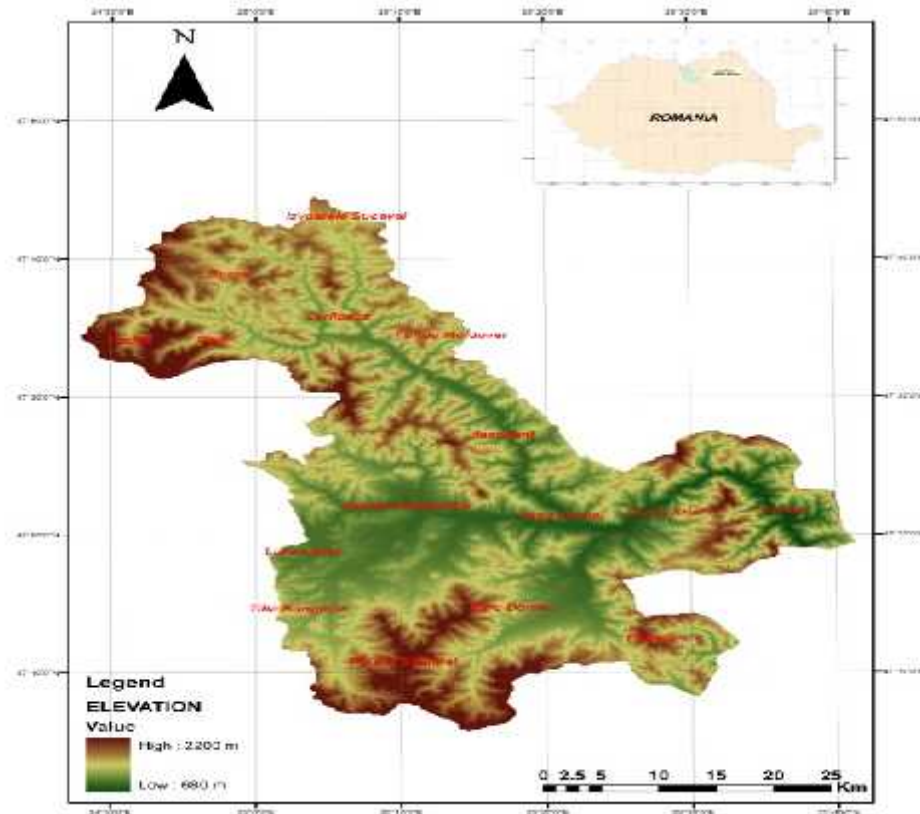


Figure No. 2 The residential area, health state and choosing the hospital

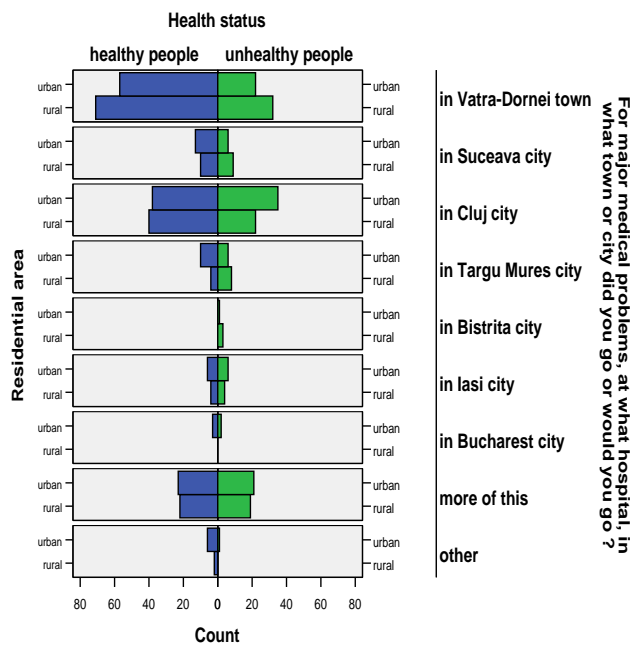




Figure No. 3 The residential area, health state and the predominant type of physical activity

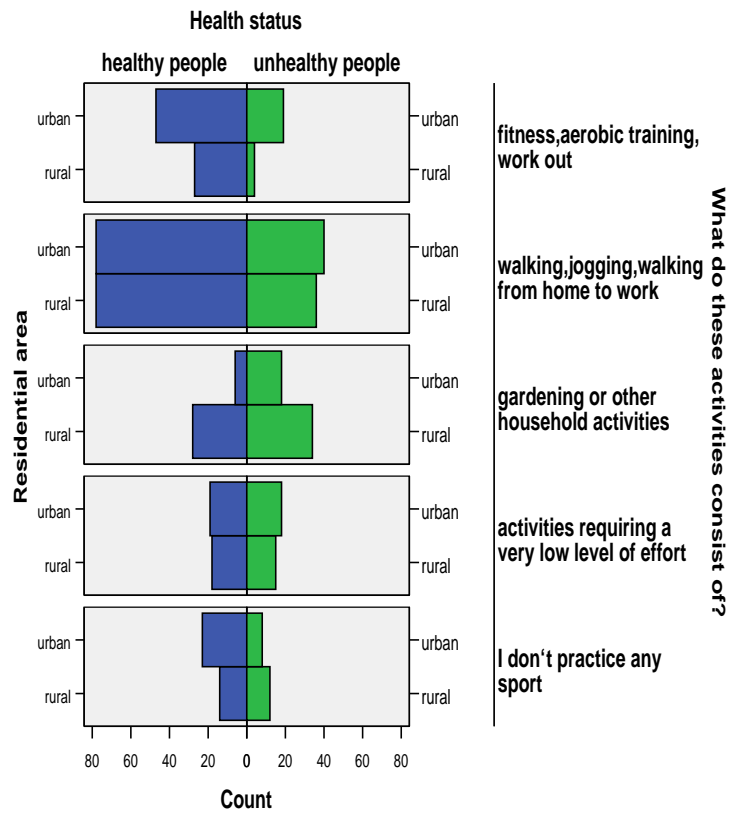


Figure No. 4 The residential area, health state and meat consumption

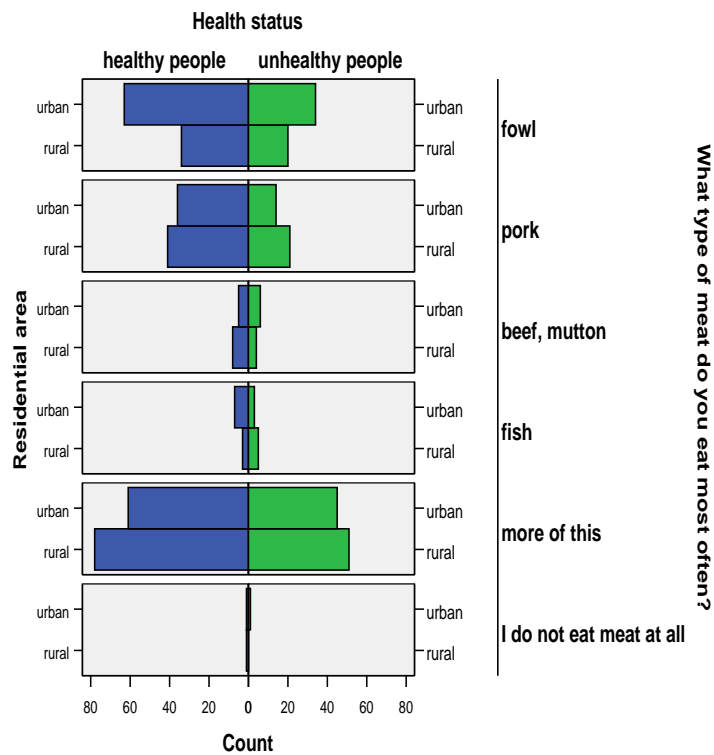


Figure No. 5 The residential area, health state and the type of medication

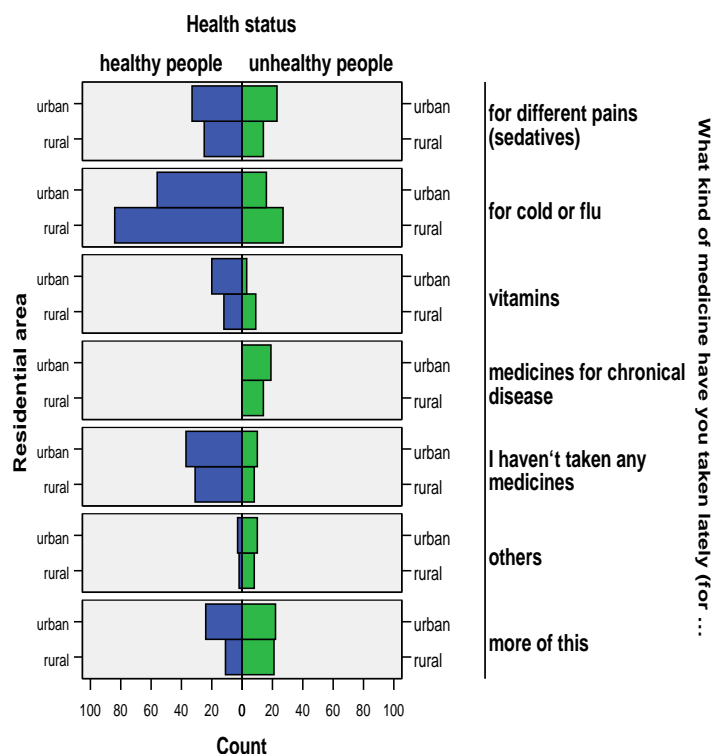


Table No.1 Which are the lifestyle's variables in correlation with the person's health state and health state perception?

Health state (presence/absence of disease)		Health state perception/autoevaluation
<b>distinct</b> correlations/statistical relations with variables such as:	correlations/statistical relations <b>in common</b> with variables such as:	<b>distinct</b> correlations/statistical relations with variables such as:
<ul style="list-style-type: none"> <li>- age</li> <li>- marital status</li> <li>- activity field</li> <li>- level of studies</li> <li>- type of residence</li> <li>- the number of persons in the house</li> <li>- present income</li> <li>- smoking</li> <li>- rest</li> </ul>	<ul style="list-style-type: none"> <li>- gender</li> <li>- height</li> <li>- weight</li> <li>- physical activity</li> <li>- type of physical activity</li> <li>- the presence of emotional problems</li> <li>- the satisfaction with the present job</li> <li>- the satisfaction with present life</li> <li>- how lucky one thinks to be</li> <li>- if one loves life</li> <li>- optimism level</li> <li>- the number of rooms/house</li> </ul>	<ul style="list-style-type: none"> <li>- alcohol drinking</li> <li>- the relationship with the family</li> <li>- the relationship with the peers</li> <li>- the relationship with the superiors</li> <li>- the relationship with the neighbours</li> <li>- intellectual activities</li> <li>- the sense of humour</li> <li>- responsibility</li> <li>- self-confidence</li> <li>- self-control</li> <li>- friends' support</li> </ul>