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Original article

A comparative cross-cultural health survey in the Alpe-Adria region of Central Europe

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Summary

Objectives: To develop cross-culturally applicable health indicators.
Methods: An interview survey was conducted in 4 communities of Austria, Italy and Slovenia, targeting a total sample of 800 subjects aged 18 to 70 years. 19 health indicators were assessed: among them self-reported ill-health, health behaviour, personal and social resources. Descriptive statistics were used for the comparison of the communities and multiple logistic regression to analyse correlating factors to the self-reported state of health in the different communities.
Results: The study results demonstrate that the distribution of health indicators varies greatly over the 4 communities. Furthermore the correlations of health behaviour and health resources with self-reported health status are not homogenous in the different communities; in some cases they are even inverse.
Conclusion: This study illustrates the need for the development of a sound theoretical background and for careful application of cross-cultural health indicators.

Keywords: Health survey – Cross-cultural – Health indicators.

This paper reports the first analyses and results of an international health survey which was set up in four regions of Austria, Italy and Slovenia. On the one hand, the findings should contribute to a more elaborate theory and understanding of human health and health behaviour as well as of the social, ecological and economic determinants of health in different Central European cultures and regions. They would also support the development of cross-culturally applicable health indicators on the other hand, which are important for health promotion, health policies and health monitoring (Bullinger 2003).

The study thus addresses two questions: (1) Are there any differences in the four surveyed communities regarding health, health behaviour and health resources? (2) Which factors influence the self-reported state of health in the different communities?

The study relies on the basic assumption that human health depends on demands and resources of the internal and external environment. In this broad view, individuals' health and health behaviour/acting is determined by several systems such as organic, psychological, social, economic and ecological systems (Lazarus & Folkman 1984; Antonovsky 1987; Freidl et al. 2001; Freidl 1997; Freidl et al. 1999). Therefore health results from the capability of the organism to regulate its own behaviour and its physiology (Weiner 1991).

Developing and maintaining positive health requires appropriate environmental and economic conditions as well as the infrastructure of everyday life. Positive health means the product of successful interaction with the environment. A demand-resource model of health considers different levels situated in the macro-environment, micro-environment and the individual him/herself. Each level includes resources and demands as variables influencing health (Freidl 1997; Freidl et al. 1999).

Subjects and methods

Sample

An interview survey was conducted in four communities of Austria, Italy and Slovenia, targeting a sample of subjects

aged 18 to 70 years. These were Gleisdorf/Graz (Austria), Udine and Bolzano (Italy) and Domžale/Ljubljana (Slovenia). A quota sample was set up which mirrors the distribution of gender (female/male) × age (18–39/40–59/60+ years) of the population in each region: Styria (Austria)/Friuli-Venezia-Giulia (Italy)/Ljubljana (Slovenia)/Alto Adige (Italy). The quota sampling procedure fulfils two conditions: (1) Representative distribution of age × gender to reflect the actual situation of each region (latest census data of each region) in the sample, and (2) survey in an urban area. Quota sampling has similarity to stratified sampling, however, the selection of respondents within strata is usually non-random. In our sampling procedure, we used the official register of residents of the cities as a basis.

All four surveyed communities are located in Central Europe and share a related historic and cultural background. All four are members of the Alps Adriatic Working Community and closely situated within a small regional area. The task of the Alps Adriatic Working Community is to provide joint informative expert treatment and to co-ordinate issues in the interest of the members. Special attention is dedicated to areas such as traffic, energy, agriculture, tourism, regional development, cultural relations, scientific facilities etc. All regions are part of the EU, with Slovenia being the last to join in 2004. All regions also belonged for a long time to the Austro-Hungarian Monarchy, although Udine was only a part for more than 50 years. In Austria and Slovenia, the health systems are financed via payments from both employers and employees. These payments and the resulting insurance are compulsive. In Italy there is a national health service financed via the tax system.

The first version of the questionnaire was constructed in German, it was then translated by bilingual professional interpreters into Italian and Slovenian, and thereafter translated back into German in order to control for possible translation mistakes. A comparative discussion of the translations was undertaken within the scientific team. Monolingual people of the target languages checked that the questionnaire was comprehensible. Thereafter a pilot testing in the field in each country was performed and such refinements as were needed were included.

Data were collected by trained interviewers using the developed structured personal interview (questionnaire). The personal interview lasted 30–40 min.

Variables

Health indicators were defined by theory-based and internally consistent sets of items. Indicators were set up by summing up the single items of the scale.

Self-reported ill-health

Subjective perception of health status was assessed by a single item. Quality of life was operationalised by using the Munich Quality of Life Dimension List (MLDL) (Bullinger et al. 1991). This scale measures physical quality of life (2 items) and psychological quality of life (5 items). The twelve most frequent complaints were assessed for symptoms.

Health behaviour/lifestyle

We used the short form of the International Physical Activity Questionnaire (IPAQ) which is the most feasible instrument for measuring physical activity in populations. The so-called metabolism score was calculated (IPAQ 2005). Alcohol consumption was assessed as the number of standard drinks (wine, beer, spirits) consumed during an average day (3 items). Two or more alcoholic drinks per day were coded as high alcohol intake. Nutrition was assessed as portions of vegetables and fruit intake during an average day (18 items). Four or more portions of fruit or vegetables per day were coded as high fruit or vegetable consumption. Smoking status was inquired. The body mass index (BMI = kg/m^2) was calculated as a measure of overweight. Subjects were categorised as overweight if the body mass index was equal or greater than 25.

Personal and social resources/demands

We administered a scale consisting of seven items in order to assess worries about environmental pollution. These items were taken from the Environmental Worry Scale (Bowler & Schwarzer 1991).

The sense of coherence (SOC) is defined as a generalised conception of the world and of one's own life which is embedded in this world. Individuals with a strong sense of coherence perceive their environment as coherent and predictable and trust in the best possible outcome of events, always relating to the actual situation. We used an 8-item SOC scale (Antonovsky 1987). Our survey focused on the areas of satisfaction with social networks, consisting of the partner, relatives and friends (4 items each) (Schwarzer et al. 1994). Two single items were used for evaluation of perceived social justice and economic situation.

Socio-demographic data and social class variables

In our survey the usual socio-demographic characteristics of age, gender as well as educational level, occupational status and personal income were used. The latter three were used to generate a social class indicator.

Descriptive statistics and multiple logistic regression analyses were calculated by use of SPSS 11.5 for Windows. Adjustment in a backward logistic regression model is made by selecting covariates from the full model. The backward stepwise

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Table 1 Description of the study populations (in %)

	Udine (n = 201)	Gleisdorf (n = 201)	Domžale (n = 200)	Bolzano (n = 200)
Socio-demographic data				
Gender: female/male	51/49	51/49	50/50	49/51
Age: 18–39 years	56	57	57	55
40–59 years	16	20	21	17
60 years and more	28	23	22	28
Social class: low	41	10	41	39
middle	43	63	54	44
high	16	27	5	18
Ill - health				
State of health: bad/good	50/50	26/74	73/27	34/66
Psychological quality of life: low/high	18/82	4/96	28/72	16/84
Physical QoL: low/high	15/85	7/93	41/59	14/86
Symptoms: rarely/frequently	60/40	69/31	50/50	67/33
Health behaviour				
Physical activity score: insufficient/sufficient	46/54	44/56	40/60	53/47
Body mass index: Normal weight/overweight	62/38	56/44	66/34	56/44
Alcohol intake per day: low/high	65/35	79/21	66/34	68/32
Consumption of fruit and vegetables per day : low/high	34/66	71/29	90/10	33/67
No smoking/smoking	71/29	71/29	69/31	69/31
Resources				
Environmental worries: low/high	54/46	61/39	83/17	50/50
Sense of coherence (SOC): low/high	41/59	3/97	40/60	31/69
Partner support: low/high	32/68	28/72	47/53	35/65
Relatives support: low/high	41/59	52/48	34/66	50/50
Friends support: low/high	50/50	48/52	33/67	56/44
Economic situation: insufficient/sufficient	9/91	8/92	59/41	13/87
Perception of social justice: unsatisfied/satisfied	42/58	27/73	71/29	35/65

logistic regression method utilises the likelihood ratio test (chi-square difference) to determine automatically which variables to add or drop from the model. Backward selection starts with all variables and deletes one at a time, in the order of their worst suitability as criterion (PIN (.05) POUT (.10)). The final model is the last step model, where dropping or adding another variable would not improve the model significantly.

Results

Age is equally distributed (chi = 4.92, p = .56) in the three formed categories, with only small deviations across the four samples. Gender is also equally distributed. When considered from the social class perspective, Gleisdorf strikingly accounts for the lowest percentage of low social class, while its proportion of middle and high social classes is the highest compared with the other communities. Domžale has a remarkable low percentage within the category of high social class.

Gleisdorf has the best value for subjective state of health, followed by Italian communities, while in Domžale evaluations are by far the worst. Psychological and physical quality of life was rated highest in Gleisdorf, followed by Bolzano, Udine and Domžale. Domžale and Udine account for the highest frequency of symptoms.

Physical exercise is the most insufficient in Italian communities, closely followed by Gleisdorf, while Domžale has by far the best value. When summing up overweight and obesity, Bolzano's and Gleisdorf's deviation from the norm is 44 %. Udine and Domžale do much better in this respect, while Domžale clearly has the lowest percentage of overweight. Udine, Domžale and Bolzano have a comparable alcohol consumption, while Gleisdorf indicates a very low score. Fruit and vegetable consumption is strikingly high in Udine and in Bolzano, low in Gleisdorf, and very low in Domžale. The rate of current smokers is approx. 30 % in all four communities.

The highest worries about pollution were found in Bolzano, followed by Udine and Gleisdorf, while the rating of Domžale

Table 2 Stepwise backward logistic regression analyses for health status

Corvariates	Udine (n = 201)	Gleisdorf (n = 201)	Domžale (n = 200)	Bolzano (n = 200)	Total sample (N = 802)
Socio-demographic data	OR* (95 % CI)	OR* (95 % CI)	OR* (95 % CI)	OR* (95 % CI)	OR* (95 % CI)
Gender			2.50 (.96 to 6.45)		
Age	.38 (.19 to .76)	.21 (.09 to .48)	.16 (.06 to .45)	.25 (.12 to .51)	.29 (.20 to .41)
Social class	1.95 (1.02 to 3.70)				1.62 (1.11 to 2.35)
Health behaviour					
Physical activity score			.31 (.12 to .81)		
Body mass index					
Alcohol intake per day	.54 (.28 to 1.04)				.69 (.48 to 1.00)
Consumption of fruit and vegetables per day	2.31 (1.16 to 4.59)	3.66 (1.45 to 9.27)	11.65 (2.90 to 46.77)		2.48 (1.71 to 3.58)
Smoking		2.43 (.90 to 6.57)			1.70 (1.15 to 2.52)
Resources					
Environmental worries		.49 (.23 to 1.00)	3.39 (1.02 to 11.29)		
Sense of coherence (SOC)	2.35 (1.25 to 4.44)			2.24 (1.04 to 4.85)	2.31 (1.57 to 3.40)
Partner support		2.70 (1.22 to 5.98)			2.01 (1.40 to 2.89)
Relatives support			.48 (.20 to 1.15)		.69 (.48 to .98)
Friends support				1.97 (.93 to 4.16)	
Economic situation		3.48 (.89 to 13.56)	2.16 (.89 to 5.23)		2.17 (1.38 to 3.41)
Perception of social justice					1.58 (1.10 to 2.26)

Abbreviations: OR, odds ratio; CI, confidence interval;
OR* Adjusted for other presented variables in the model.

was very low. The sense of coherence was rated strongest in Gleisdorf, followed by Bolzano, the other two communities reveal a comparable distribution in this respect. The highest social support through the partner was found in Gleisdorf, while support through relatives and friends was rated highest in Domžale. The self-rated economic situation is at least sufficient for 92 % in Gleisdorf, while the same is true only for 41 % in Domžale. As regards social justice, 71 % of Slovenians are unsatisfied while in the Austrian sample, only 27 % share this dissatisfaction (Table 1).

We used self-rated health status as a dependent variable in the community-related multiple logistic regression analyses; all variables cited in Table 1 except the level of ill-health were used as covariates. Social class and age were dichotomized. The variables were backward stepwise processed to search for a model of good fit (Table 2). The interrelations of all covariates which remained in the models were interpreted.

For the Udine model, the variables of age, social class, alcohol, fruit and vegetables consumption and SOC are relevant. High age and high alcohol consumption correlate negatively with the state of health, while a higher social class, a higher fruit and vegetable intake and a higher SOC yield positive health results.

For Gleisdorf/Graz the variables of age, fruit and vegetables consumption, smoking, worries about pollution, social support through the partner and economic situation remain in the model. State of health correlates negatively with higher age and a high level of worries about pollution. Positive correlations with health are found for higher fruit and vegetables consumption, no smoking, good social support through the partner, and well perceived economic situation.

For the regression model of Domžale/Ljubljana, the variables of age, gender, physical activity, consumption of fruit and vegetables, worries about pollution, support through relatives and economic situation remain in the model. Higher age, higher physical activity and higher support through relatives correlate negatively with health. Being male, much worry about pollution, high consumption of fruit and vegetables and a well perceived economic situation are related to a good state of health.

The Bolzano model relied on the variables of age, SOC and friends support. Here higher age shows a negative association with the state of health, while a higher SOC and good friends support are associated positively.

For the model of the total sample, positive health status correlates with low age, high social class, low alcohol intake, high fruit and vegetables consumption, no smoking, a high SOC, high level of partner support, a low relatives support, an adequate economic situation, and in terms of social justice, the conviction of receiving one's fair share.

Discussion

The descriptive results of the four samples concerning the level ill-health show that Gleisdorf does best, followed by Bolzano and Udine. Domžale shows comparatively bad results. As regards the level of health behaviour, Domžale has the best physical activity score and the lowest frequency of over-

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weight, coupled with a very low fruit and vegetable intake. In the context of individual and social resources, worry about the environment is comparatively low in Domžale, while the SOC in Gleisdorf is remarkably high. In addition, the Slovenian population shows a very negative estimation of its individual economic situation and has a negative experience of social justice, accompanied by a high frequency of individuals in lower social classes.

The regression models showed age as a predictor of health in all four samples. Otherwise, predictors with significant associations vary from sample to sample. Only one predictor, i. e. consumption of fruit and vegetables is positively associated with the state of health in three communities.

Some results in the regression models seem to be particularly worth mentioning: a high physical activity score – usually seen in positive relation with the state of health – shows a negative correlation in the Slovenian population. This finding allows for interesting conclusions. Since the item structure of the IPAQ does not differentiate between physical work and intentional leisure sport activity for calculating the metabolism score, societies which generally have a higher level of manual work show a higher physical activity score. A higher score due to heavy bodily work obviously must correlate negatively with diverse variables of health. This illustrates a significant problem of internationally applied health indicators. This clearly is not only a critical example of comparisons of societies with different social structures but can itself have different, if not contradictory, implications for different social classes. Health and health behaviour obviously vary with prevailing socio-structural conditions (Rásky et al. 1996; Stronegger et al. 1997; Cavelaars et al. 1998; van Lenthe et al 2004; Kunst et al. 2005). The example of the IPAQ also seems highly relevant in this context since this instrument is also being used for the EUROHIS project. The second remarkable aspect concerns environmental worries. While in the Austrian study population a high degree of worry correlates with a lower state of health, the contrary is the case in Slovenia. This could be interpreted in a sense that the Austrian population is indeed confronted with unpleasant environmental burdens, while in Slovenia, a high worry about the environment could be the expression of a good health awareness and perhaps also of a good economic situation where people do not only have to care about basic aspects of life but also have the (material) freedom to reflect on their own health. In the Slovenian sample a high relative support is associated with a bad health status, this might express a high dependency upon other individuals.

Basic problems when it comes to finding cross-cultural health indicators are 1) the question of which constructs could be relevant and 2) the question about their operationalisability and their interpretation (Hunt & Bhopal 2004; Robine 2003). Current attempts to build international health indicators, such as those of the European Community Household Panel (ECHP), the European Labour Force Surveys (LFS), the European health interview survey (EUROHIS) project or the SANCO project of the European Public Health Alliance, each of which includes a great number of countries, all meet with one difficulty in the surveying of personal and social health resources: they exclude constructs of social capital, such as social support and networks, social cohesion, sense of coherence, anomia, social justice, whereas health problems, disabilities and behaviours are surveyed in all detail.

Approaches to and evaluations of subjective health and illness can be very strongly culture-related: Anthropologist critics generally question the possibility of building cross-cultural health indicators (Johnson 1996). Given the great multitude of variables and the different and varying understanding of these variables, they consider this an impossible thing to do, both theoretically and methodologically.

Another aspect to be borne in mind is of sociological relevance. Cross-cultural health surveys can generate normative guidelines in a society. If e. g. health indicators would be applied in benchmarking, this might lead to a medicalisation of social and social-behavioural fields of society, which in different cultures are laden with completely different values and meanings. The achievement of targets and the duty to lead a pre-defined healthy life could essentially affect culturally anchored lifestyles. Countries with a less developed social structure would be discriminated from the beginning. The existing tendency to globalisation has an impact on human health throughout the world. The international comparison of health makes health itself the object of globalisation. Strongly normative tendencies could be fostered and supported (Crawford 1980).

We would finally like to discuss the limitations of the study and possible future perspectives. Translation of the questionnaire was done carefully. Differences in translation were identified and discussed. To minimise the problem of interview bias, interviewers were trained intensively. Although the data do not indicate such a bias, it cannot be entirely excluded.

On a small scale, this study tried to describe the differences between four populations, if possible without judging them, as well as to contribute to a better understanding of health by predicting the state of health in four communities. Some of the findings enabled us to point out the problem of the choice of indicators and of interpreting them. This study has been designed as a pilot study, using small samples, and is thus of relatively limited statistical power. Due to the small sample size, there is a wide variance for the point estimate of risk in variables such as fruit and vegetable consumption, alcohol or

physical activity, regardless of the statistical significance.

Although the study was carried out in a geographically and culturally defined area of the Alpe-Adria region in Central Europe, it was able to cast a light on the necessary differentiation of the topics covered. Our goal in the future is to repeat this survey in the same geographic area on a much larger scale, by recurring to a more refined modelling process for our problem and the new aspects resulting from this study. Given the actual state of research, it would basically appear preferable to conceive cross-cultural health indicators for a small area and to shift the focus of this research problem towards a better understanding of health in different cultures, rather than creating standards for target achievement. On the whole, great efforts will be needed in the future to develop more refined indicators, which require much larger samples than in the existing survey. It is to hope that there will be room for such theory-based holistic approaches to health survey research, in addition to the rather service- and economy-oriented international survey practice, and that they will continue to be sponsored and supported, thus fostering their potential in the future.

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