Assessing health literacy in rural settings: a pilot study in rural areas of Cluj County, Romania

Oana M. Pop¹, Alexandra Brînzaniuc¹, Emanuela O. Șirîncan¹, Cătălin O. Baba¹ and Răzvan M. Cherecheș¹

Abstract: Health literacy improves knowledge and builds skills to help individuals make appropriate decisions regarding their health. Over the past 20 years, several studies have described associations between health literacy and health outcomes. With respect to Romania, evidence is scarce on the level of health literacy, as well as on its determinants. Thus, the objectives of this study were to briefly screen functional health literacy levels in a sample of rural inhabitants, to assess the relationship between health literacy and reported health status, as well as to explore health literacy determinants within this population. Data were collected between September–November 2010, in four villages in Cluj County, Romania, using a cross-sectional survey. The mean age of respondents in the sample was 56 years, with roughly half of respondents being retired. The brief screening of health literacy suggested inadequate to marginal levels within the sample. Significant associations were observed between health literacy score and education, and self-perceived health status, whereas the relationship between health literacy and gender, and the presence of a chronic disease was not statistically significant. Limited health literacy has been shown to be common in people who rated their health as poor, those who attended only middle school, and individuals lacking basic information about their body. In order to minimize the adverse effects of low health literacy on health and health outcomes, efforts should be invested in identifying and addressing the health needs of adults with low and marginal health literacy, especially in underserved areas such as rural and remote settings, where access to health-related information is limited. (Global Health Promotion, 2014; 20(4): 35–43).

Keywords: Health literacy determinants, Romania, rural settings, health outcomes

Introduction

Health literacy conceptualization

Health literacy encompasses cognitive and social skills empowering people to function adequately in relation to health systems, and helping them to address health situations at work, at home, and in the community. Three categories of health literacy have been identified that parallel the categories of literacy (1): functional, interactive, and critical health literacy (2). Health literacy is closely linked to the notion of education, and the conceptualization of the three categories is made by referring to skills, abilities and competencies formed through the development of intellectual characteristics. However, while health literacy has its grounds in literacy, the two terms are not synonymous. While literacy refers to people’s ‘reading, writing and numeracy skills’ (3), health literacy is explained as the ability to apply literacy to health tasks, in order to find, understand, and interpret information to promote and maintain good health (4,2,5). Functional health literacy refers to individual’s abilities to use their literacy

1. Center for Health Policy and Public Health, Institute for Social Research, Faculty of Political, Administrative and Communication Sciences, Babeș-Bolyai University Cluj-Napoca, 7th Pandurilor St., Room 909, 400376 Cluj-Napoca, Romania.

Correspondence to: Oana M Pop, Email: oana.pop@publichealth.ro

(This manuscript was submitted on 29 December 2011. Following blind peer review, it was accepted for publication on 22 April 2013)
skills in order to read and comprehend prescriptions, medicine labels, and pamphlets, follow instructions for diagnostic tests, understand physician’s indications, and make doctor appointments (6–8). Drawing on the work of Nutbeam (2), Kickbusch (9) defines health literacy more broadly by linking this concept with the notion of empowerment, stressing that health literacy involves the ability to judge, filter and act upon the received information and it is not only focused on the compliance with the provided health-related information. People with marginal or inadequate health literacy may be literate, thus have basic skills in reading and writing, but be unable to effectively operate health concepts to make appropriate decisions regarding their health and self-manage their diseases (10,11). Furthermore, health illiterate individuals have limited health knowledge and lack basic information about their body or causes of diseases (12). Health literacy decreases with age, and is determined by education levels and ethnicity, as well as by having a chronic condition (13).

The current paper reports on health literacy data from a rural setting in Romania, and it focuses exclusively on functional health literacy. Marginal or inadequate functional health literacy refers to having difficulties in reading prescription, drug labels, naming medication and describing physician’s indications, comprehending doctor appointment schedules and informed-consent documents (7,8).

**Health literacy and health outcomes**

There is a growing body of literature supporting the impact of limited health literacy on health outcomes (14), health literacy being described as ‘a stronger predictor of a person’s health than age, income, employment status, educational level, and race’ (4). Previous research indicates an association between self-perceived health status and health literacy, patients with marginal or inadequate health literacy being more likely than patients with adequate health literacy to report their health status as poor (7,15).

A growing body of research demonstrates that poor health literacy is associated with chronic diseases such as diabetes (13,16), asthma (17), hypertension (16), and arthritis (18). Patients with limited health literacy were found to have low knowledge of chronic disease prevention and management (19,20). Several studies reported positive associations between poor health literacy and intense use of medical services (18,21). In addition, Baker et al. found that “inadequate health literacy is an independent risk factor for hospital admission” (21).

Links between health literacy and health risk behaviors are still unclear. A survey of Medicare patients (22) found no independent relationship between the two, while recent findings suggest some degree of association (23).

**Health literacy and health policy**

As the interest in health literacy increased throughout the 1990s, advancing health literacy has been defined as a global challenge for the 21st century. Health literacy policies and programs are seen as important strategies in reducing health inequalities, reducing health care costs, increasing patient safety and patient involvement in health-related decisions (24). As a result, health literacy was stated as a fundamental aspect of health promotion and an essential policy issue (24). Thus, public policy initiatives to support the increase of health literacy levels among individuals with inadequate or marginal health literacy have been assumed as health objectives by the governments of the USA, the UK and Australia (25). Guidelines to influence EU policy to foster an increase in health literacy have been recommended as a part of the European Health Literacy Survey project (HLS-EU) (26). In Romania, policies concerning health literacy have yet to be developed. Hence, policy efforts should begin by identifying and addressing the health needs of adults with low and marginal health literacy, especially in underserved areas such as rural and remote settings.

**Study aims**

This paper intends to briefly screen functional health literacy in a sample of rural inhabitants in Romania, assess the relationship between health literacy and reported health status, explore individual-level determinants of health literacy, and ultimately discuss implications for future research and intervention development. This study is a part of a three-year research project assessing the access to health information in rural and remote areas of Transylvania, Romania.
Methods

Study settings and population

This study used a dataset from the ‘An Evaluation of the Access of Rural Populations to Medical Information in Transylvania, Romania’ project. Data were collected between September–November 2010, in four villages in Cluj County, Romania ($n = 406$) by trained operators, through face to face interviews. A subset of the original data, which provided information on all the variables of interest was included in the present analysis ($n = 331$). Participants were 18 years or older and their verbal consent was attained before the administration of the questionnaire.

Measures

This study used a cross-sectional design, with a quantitative strategy of inquiry. A questionnaire was designed to collect information on a set of socio-demographic variables, chronic diseases and health risk behaviors, self-perceived health status, and health service utilization, in order to test their impact on the individuals’ health literacy level using multivariate models.

Socio-demographic variables

Age, ethnicity, highest level of completed education, employment status, and estimated monthly family income were assessed. The question evaluating respondent’s educational level was formulated to be relevant to the Romanian social context and provided five possible answers: primary school (1st–4th grade), middle school (5th–8th grade), high school (9th–12th grade), graduate (Bachelor and Masters studies), and post-graduate (doctoral) studies.

Self-perceived health status

Self-reported health status is widely used as an indicator of general state of health (27). It is most often assessed using a single-item question with a five-point Likert scale answer format, having the following labels: ‘poor’, ‘fair’, ‘good’, ‘very good’ and ‘excellent’ (28,29). Thus, for the purpose of assessing respondent’s health status, this measurement was employed.

Chronic disease presence and health risk behaviors

A dichotomous question evaluated the respondents’ status regarding their medical condition in terms of chronic disease. Health risk behaviors were measured by assessing the subjects’ smoking status.

Healthcare system utilization

The participants’ healthcare system utilization was assessed in terms of family doctor visits in the previous year. The frequency of family doctor appointments was operationalized as ‘less than five times’, ‘five to nine times’, and ‘ten times or more’.

Health literacy

The health literacy construct was measured using a battery of eight questions adapted from Chew et al.’s Health Literacy Screening Brief questions (30). The eight items were rated on a five-point frequency scale, from 1 (Always) to 5 (Never), as follows:

1. ‘How often do you... feel that the drug prescriptions are written in an easy to read and understandable manner?’
2. ‘...encounter difficulties in understanding written indications received from the physician and/or the pharmacist?’
3. ‘...encounter difficulties in understanding verbal indications received from the physician and/or the pharmacist?’
4. ‘...have problems in finding out more information on your health issues (e.g. from books, brochures, etc.) due to difficulties in understanding written information?’
5. ‘...are unsure whether you are taking your medication correctly due to difficulties in understanding medication prospectuses?’
6. ‘...are unsure whether you are taking your medication correctly due to difficulties in understanding the physician’s and/or the pharmacist’s indications?’
7. ‘...medication prospectuses are written in an easy to read and understandable manner?’
8. ‘...the informational materials offered to you as a patient are written in an easy to read and understand manner?’
Data analysis

Data were analyzed using SPSS Statistical Software version 13.0 (SPSS Inc., Chicago, Illinois, USA). We first evaluated socio-demographic characteristics, with particular attention to age, employment status, educational level, and estimated monthly family income. The consistency of the health literacy scale was measured using a principal component analysis, obtaining a Kaiser-Meyer-Oklin value of 0.780, reaching statistical significance. The Principal Component Analysis (PCA) revealed the presence of a component with an eigenvalue of 3.5, explaining 43.8% of the variance; factor loadings in the component matrix ranged from 0.468–0.798. The scale’s Cronbach Alpha was 0.809, indicating good internal reliability. Given the statistical significance of the findings, the health literacy scale was included as a dependent variable in the regression models. A health literacy score was computed, and quartiles were considered cut-off points in establishing the health literacy levels for every subject (with the lowest quartile determining the lowest health literacy scores). Kendall’s Tau coefficient and the contingency coefficient were employed in order to determine strength of the relations and associations between variables. For the factors associated with health literacy, we proposed several ordinal regression models explaining the relationship between health literacy and variables such as gender, age, education, ethnicity, employment status, monthly family wage, frequency of healthcare system utilization, presence of chronic diseases, self-perceived health status and health-risk behaviors.

Results

Sample description

Socio-demographic variables

The sample’s mean age was 56 years, describing an aging population. More than half of the respondents were retired (53.9%) and 20.9% of them declared that they practice subsistence farming and agriculture. As regards the level of attained education, 18.2% of respondents reported they have completed primary school, whereas 41.4% graduated high-school and 3.5% attained graduate or postgraduate studies. No statistically significant association was found between health literacy score and gender (c = 0.076; p>0.05). However, significant associations (at the 0.01 and 0.05 level, respectively) were reported in the relationship between health literacy score and education (τ = 0.221) and monthly family wage (τ = 0.163). For more information on sample’s description, refer to Table 1.

Health status

More than one-quarter (28.1%) of respondents rated their health status as poor, while only 3.7% of them evaluated their health status as very good or excellent. A significant negative correlation at the 0.01 level was found between health literacy score and self-perceived health status (τ= –0.198).

Chronic diseases

As regards the presence of chronic diseases within the sample, 61% of respondents reported they are chronically ill and suffer from at least one long-lasting or recurrent disease. No statistically significant association was found between health literacy levels and the presence of chronic diseases within the sample (c=0.101; p>0.05). However, having at least one chronic disease was positively associated with a high frequency of healthcare system utilization (c=0.320; p=0.00).

Healthcare system utilization

In terms of family doctor visits, 70.8% of subjects reported they had less than five appointments with their family doctor, whereas 21.9% declared they visited their physician ten times or more in the previous year.

Health risk behaviors

Approximately one-quarter of the subjects (23%) were smokers.

Health literacy score

Score values ranged between 12 (limited level of health literacy) and 40 (adequate level of health literacy). Further, quartiles were considered as optimal cut-off points in determining the respondents’ assignment to categories corresponding
to limited, marginal and adequate levels of health literacy. Therefore, we determined what part of the sample has the lowest (first quartile: 25.5% from the sample) and the highest health literacy score (upper quartile: 23.3% from the respondents); the second and the third quartile correspond to marginal levels of health literacy: 51.6% of the sample.

### Determinants of low health literacy levels

In order to determine the characteristics of people with low health literacy within the sample, several ordinal logistic regression models were employed. After analyzing the regression models by taking into account factors with \( p < 0.05 \), Model 1 (Table 2) was computed using six independent variables – knowledge about body characteristics in terms of height, age, physician visits, self-perceived health status, level of attained education, smoking status – and controlling for gender and presence of chronic diseases. The full model containing all predictors was statistically significant, indicating that the model was able to distinguish between respondents with inadequate, marginal and adequate levels of health literacy. \( R^2 \) indices for the specified model ranged from 0.120 (Cox and Snell’s) to 0.137 (Nagelkerke’s). Model 1 shows that compared to respondents who attended high-school, middle school graduates are 1.73 times more likely \( (p = 0.033) \) to have a low level of health literacy. Furthermore, compared to people over 60, respondents under 30 are 3.65 more likely \( (p = 0.016) \) to be included in the first quartile of the health literacy score. Additionally, individuals who visited their family physician five times or less in the previous year are 1.8 times more likely \( (p = 0.043) \) to have an inadequate level of health literacy, compared to people who had more than 10 appointments with their doctor. The model also suggests that, compared to respondents that know their height, those who lack this information are 0.36 times more likely \( (p = 0.012) \) to have a low level of health literacy. Finally, the model estimates that individuals who reported good, very good and excellent health status are 0.36 times less likely \( (p = 0.005) \) to belong to the first quartile than people who rated their

<table>
<thead>
<tr>
<th>Table 1. Sample description.</th>
</tr>
</thead>
<tbody>
<tr>
<td>( n )</td>
</tr>
<tr>
<td><strong>Age group, y,</strong></td>
</tr>
<tr>
<td>Under 30</td>
</tr>
<tr>
<td>30–49</td>
</tr>
<tr>
<td>50–59</td>
</tr>
<tr>
<td>Over 60</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
</tr>
<tr>
<td>Romanian</td>
</tr>
<tr>
<td>Hungarian</td>
</tr>
<tr>
<td>Roma</td>
</tr>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td>No education</td>
</tr>
<tr>
<td>Primary school</td>
</tr>
<tr>
<td>Middle school</td>
</tr>
<tr>
<td>High school</td>
</tr>
<tr>
<td>Graduate</td>
</tr>
<tr>
<td>Postgraduate</td>
</tr>
</tbody>
</table>
Table 2. Ordinal regression model – limited health literacy determinants.

<table>
<thead>
<tr>
<th>Misinformation about body characteristics</th>
<th>Estimate</th>
<th>Std. error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does know height</td>
<td>–1.014</td>
<td>0.405</td>
<td>6.278</td>
<td>1</td>
<td>0.012</td>
<td>0.362</td>
<td>–1.806 –0.221</td>
</tr>
<tr>
<td>Does not know height</td>
<td>0a</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Family physician visits in previous year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5 times</td>
<td>0.589</td>
<td>0.291</td>
<td>4.093</td>
<td>1</td>
<td>0.043</td>
<td>1.801</td>
<td>0.018 1.159</td>
</tr>
<tr>
<td>Between 5–9 times</td>
<td>0.540</td>
<td>0.472</td>
<td>1.309</td>
<td>1</td>
<td>0.253</td>
<td>1.716</td>
<td>–0.385 1.466</td>
</tr>
<tr>
<td>10 times or more</td>
<td>0a</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Self-perceived health status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good, very good, excellent</td>
<td>–1.011</td>
<td>0.357</td>
<td>8.003</td>
<td>1</td>
<td>0.005</td>
<td>0.363</td>
<td>–1.712 –0.311</td>
</tr>
<tr>
<td>Fair</td>
<td>–0.425</td>
<td>0.290</td>
<td>2.140</td>
<td>1</td>
<td>0.144</td>
<td>0.654</td>
<td>–0.994 0.144</td>
</tr>
<tr>
<td>Poor</td>
<td>0a</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Level of attained education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school or less</td>
<td>0.391</td>
<td>0.368</td>
<td>1.131</td>
<td>1</td>
<td>0.288</td>
<td>1.478</td>
<td>–0.330 1.112</td>
</tr>
<tr>
<td>Middle school</td>
<td>0.553</td>
<td>0.260</td>
<td>4.529</td>
<td>1</td>
<td>0.033</td>
<td>1.737</td>
<td>0.044 1.062</td>
</tr>
<tr>
<td>High-school or more</td>
<td>0a</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 30</td>
<td>1.296</td>
<td>0.536</td>
<td>5.847</td>
<td>1</td>
<td>0.016</td>
<td>3.653</td>
<td>–0.246 2.346</td>
</tr>
<tr>
<td>30–49</td>
<td>–0.454</td>
<td>0.313</td>
<td>2.100</td>
<td>1</td>
<td>0.147</td>
<td>0.635</td>
<td>–1.068 0.160</td>
</tr>
<tr>
<td>50–59</td>
<td>–0.482</td>
<td>0.313</td>
<td>2.368</td>
<td>1</td>
<td>0.124</td>
<td>0.617</td>
<td>–1.097 0.132</td>
</tr>
<tr>
<td>More than 60</td>
<td>0a</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Smoking status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-smoker</td>
<td>–0.170</td>
<td>0.284</td>
<td>0.358</td>
<td>1</td>
<td>0.550</td>
<td>0.843</td>
<td>–0.726 0.386</td>
</tr>
<tr>
<td>Smoker</td>
<td>0a</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

*aControlling for gender and presence of chronic diseases.
health as poor. To assess the model’s goodness-of-fit, Pearson Chi-square and deviance Chi-square statistics were used (Pearson $\chi^2/df = 365.78/354$, $p = 0.322$; Deviance $\chi^2/df = 382.86/354$, $p = 0.140$), suggesting a good fit of the model on the available data.

Discussion

The brief screening of health literacy suggests inadequate to marginal health literacy levels within the sample. The regression model computed helped us determine the characteristics of individuals that have a low level of health literacy and identify the population groups which need targeted programs to increase their knowledge concerning health-related topics. Therefore, compared to other respondents, people who rated their health as poor, those who attended only middle school or less, and individuals lacking basic knowledge about their body characteristics are more likely to be health illiterate.

Thus, our findings are consistent with previous studies (13) and suggest that, within this rural sample, education is a significant predictor for the likelihood of having an inadequate level of health literacy.

The existing body of literature emphasizes that the lack of health knowledge (31) and misinformation about the body (12) are a particularity of health illiterate individuals. In this respect, we found that, compared to respondents who don’t know their height, those who do are 0.36 times less likely to have a low level of health literacy. In the context of ongoing efforts to determine short and accurate screening questions for identifying patients with limited health literacy skills, our results indicate this variable as a possible predictor of poor health literacy. However, its accuracy in identifying individuals with limited health literacy in other settings should be proved and assessed in further studies.

Self-reporting health status as poor was found to be common in people with inadequate levels of health literacy (7,15). According to our results, compared to respondents who rated their health as good, very good or excellent, individuals who rated their health as poor are more likely to have a lower level of health literacy.

The lack of statistical significance for health-risk behaviors (smoking) on the levels of health literacy might be due to the specific context and characteristics of rural Romania. Smoking is still highly prevalent (32) and highly tolerated, with positive social norms towards this behavior. Furthermore, the instrument used measured functional health literacy, giving more insight on behaviors which determine the relation with the healthcare system. Our hypothesis is that if critical health literacy had been assessed, the relation between the two would have been statistically significant. In addition, evidence suggests that links between health literacy and health risk behaviors are still unclear (22,23).

Moreover, inconsistent with previous results (13,18,21), old age and increased health system utilization were not predictors of limited health literacy skills within the studied population. Even though our results do not support a variability of health literacy scores across multiple age groups, compared to people over 60, respondents under 30 are more likely to have a low health literacy score. In our sample, from the 331 subjects, people under 30 represent 5.4% and people over 60, 44.7%. Thus, these results can be due, in part, by the low number of subjects in the under 30 age group.

Additionally, the literature suggests that low health literacy is associated with increased healthcare system utilization and costs due to a poor management of health conditions (1). However, this is inconsistent with our findings, as in our sample individuals reporting more than 10 family physician appointments in the last year presented a higher probability of having increased functional health literacy, as compared to individuals attending their family physician less than five times per year. However, these inconsistencies can be partly explained by the local healthcare system organization. In terms of healthcare system utilization, in Romania, people with chronic diseases are limited to monthly visits to their family doctor for drug prescriptions. In our sample, 61% of respondents declared having at least one chronic disease and this was positively correlated with a high frequency of healthcare system utilization ($\tau = 0.327$). This suggests that previous findings from different socio-cultural contexts cannot be applied to the local context, as in Romania, a good management of chronic conditions is associated with increased primary
care utilization, as monthly contacts are required. Additionally, as the family physician is almost always the only contact that patients in rural and remote areas have for health information, as other sources are limited, repeated medical appointments can increase health literacy levels within this population. Thus, this relationship should further be assessed as healthcare utilization is essential, especially in countries like Romania, where resources are limited.

**Limitations**

This study has two potential weaknesses. Firstly, the sample’s health literacy level was just briefly screened. However, as we aimed only to establish the characteristics of health illiterate people compared to literate ones and not to accurately and precisely determine the health literacy level for every respondent, this limitation was mitigated. Secondly, due to missing cases, the health literacy score was not calculated for all the respondents included in the study. As this study does not claim to be representative for a certain population, we have decided to remove missing cases and to generate the computed regression models by using only the health literacy scores that provided complete information.

**Conclusions**

In this study, we briefly screened the functional health literacy levels of a sample of rural inhabitants, assessed the relationship between health literacy and reported health status, and explored health literacy determinants within the sample. Findings revealed that 25.5% of respondents in the sample have a limited level of health literacy. Significant associations were observed between health literacy score and education, and self-perceived health status, whereas the relationship between health literacy and gender, and the presence of a chronic disease was not statistically significant. Furthermore, limited health literacy has been shown to be common in people who rated their health as poor, those who attended only middle school, and individuals lacking basic information about their body, in terms of height. Contrary to our expectations, we found that old age, presence of health-risk behaviors, and increased system utilization were not predictors of limited health literacy skills within the studied population.

These dissimilarities between the present study and other research papers, in terms of results, may be partially explained by the small study sample, the rural character of the sample, and last, but not least, the particular organization of the Romanian healthcare system.

To the best of our knowledge, this is the first study evaluating health literacy levels of a Romanian sample. However, the low and marginal levels of health literacy in our sample call for a further exploration, on representative samples, of health literacy. Hence, policy-makers should support a favorable environment to the development of research in the domain of health literacy, in terms of monitoring levels as well as developing easy-to-use evidence-based instruments to measure functional health literacy. Additionally, in order to minimize the adverse effects of low literacy on health and health outcomes, efforts should be invested in identifying and addressing the health needs of adults with low and marginal health literacy, especially in underserved areas such as rural and remote settings, where access to health-related information is limited.

**Ethical considerations**

Verbal consent, approved by the Institutional Review Board IRB01 of the Babeş-Bolyai University Cluj-Napoca, was attained from each participant before the questionnaire was administered.

**Conflict of interest**

None declared.

**Funding**

This research project was financed through the ‘Access to Health Information in Rural Areas’ Grant, funded by the Romanian Ministry of Education and Research, through the PNII-Idei Program, financing contract 2430/2009.

**References**