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Investigating factors of self-care orientation and self-medication use in a Greek rural area

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ABSTRACT

Introduction: Self-care oriented people are more likely to undertake self-care activities in order to treat lay self-diagnosed symptoms and restore their own health without professional assistance. One of these activities is self-medication, which refers to the use of medications without medical consultation. The absence of permanent doctors in rural Greece encourages self-medication practices. The main objectives of this article were to detect factors that determine self-care orientation and to predict the use of prescription medications without a doctor's prescription as well as to study the impact of self-care orientation in using medical care in a Greek rural area.

Methods: A cross-sectional study was designed and 150 face-to-face interviews were randomly conducted during January and February 2011, by using a research instrument with 46 questions. These included information about self-rated health, existence of chronic disease, self-medication behavior, use of prescription and non-prescription drugs and sociodemographic characteristics of the respondents. Logistic regression as well as Fisher's exact test were used to analyze the results.

Results: The majority of the respondents (80%) were found to be self-care oriented and 54.7% had used prescription medications without a doctor's prescription. The orientation to self-care seems to be determined by gender ($p<0.05$), the existence of chronic disease ($p<0.05$) and educational level ($p<0.05$). More specifically, factors found to predict self-care orientation by using a medication and consequently self-medication were female gender (odds ratio (OR): 3.44, 95% confidence interval (CI): 1.37–8.66), the absence of chronic disease (OR: 0.30, 95% CI: 0.098–0.92) and higher educational level (OR: 1.64, 95% CI: 1.05–2.58). However, self-care orientation was not found to affect the use of medical services (p(Fisher's exact test)>0.05). The likelihood of using prescription medications without a doctor's prescription is defined by self-care orientation ($p<0.001$) and self-rated health status ($p<0.05$). So, individuals who practice self-medication with prescription drugs are self-care oriented (OR: 6.16, 95% CI: 2.38–15.89) and they probably have lower self-rated health status (OR: 0.65, 95% CI: 0.42–0.99).

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Conclusions: The high percentages of self-care orientation and self-medication with prescription drugs highlight the need to educate individuals in rural areas about the safe and rightful use of medicines. Knowing what factors determine such self-medication will help in focusing and operationalizing future interventions to protect the health of the public.

Key words: medication use, non-prescription, over-the-counter drugs, rural Greece, self-care orientation, self-medication.

Introduction

Self-care is a practice recognized by WHO and it aims at the establishment and maintenance of health[1]. It is estimated that more than 80% of medical symptoms are self-recognized and treated without professional interference[2]. The most obvious and frequently used form of self-care is self-medication[3]. In 1998, WHO defined self-medication as the autonomous decision to use a medication without medical advice in order to treat self-diagnosed symptoms[1].

Self-medication mainly involves the use of non-prescription or over-the-counter (OTC) drugs[4] . These drugs are safe enough and appropriate to be used without medical supervision for minor ailments and legally sold without a medical prescription[5,6]. In one consumer survey, more than 92% of respondents had used at least one OTC drug during the past year and 55% of them had used more than one[3]. The rational use of OTC drugs is characterized as responsible self-medication, and self-care is encouraged[7].

However, the practice of self-medication includes not only the use of approved OTC drugs, but also traditional remedies and herbal medicines, non-compliance in the use of medically prescribed drugs, use of prescription medications without a prescription or use of prescribed medications that remain stored from previous use[4]. The practice of using a prescription-only medication as non-prescribed, without previous professional recommendation (prescription or suggestion)[8], is characterized as irresponsible self-medication[9]. It constitutes an undesirable behavior that exposes patients at risk as it concerns the use of substances designed to be used only under medical surveillance[10].

According to the literature, some people are willing to self-medicate whereas others are reluctant to do so[11]. Self-care orientation refers to the undertaking of self-care activities – including self-medication[12] – by an individual in order to restore and promote his/her own health without professional assistance[13,14]. Self-care orientation concerns self-care actions based on attitudes more favorable towards self-care[15], whereas self-management, a term commonly used in the literature, refers to the controlling or handling of these actions[16]. Two relevant cross-sectional surveys refer to self-care orientation. In a study by Isacson and Bingefors[17], in the general population, approximately 60% of the respondents were self-care oriented, whereas in a study by Sawalha[13] among university students, 33% were highly self-care oriented and approximately 99% of them had practiced self-medication. Self-care orientation has been found to be associated with positive attitudes towards drugs[17] as well as with certain patterns of self-medication[18] (eg the choice of medications used for self-treatment)[13].

A number of factors make an individual more likely to self-medicate[14]. According to existing studies some of these factors are sociodemographic[10,19-26]; others include the existence of chronic disease[27,28], perception of health[27,29,30], healthcare variables[20,24] and beliefs about symptoms[22] and self-medication[11].

According to predictors of irresponsible self-medication with prescription medicines, a few relevant studies show that this unwanted practice is related mainly to sociodemographic factors[10,28,31,32]. This practice is reinforced by pill sharing among family members and by accumulating previously prescribed drugs in home pharmacies, increasing the risk of accidents or adverse effects[9,33,34].

The evaluation of self-care specifically in rural healthcare settings has been very limited, although self-care is a significant component of healthcare systems[29] and research has shown that residents of rural areas rely on, or sometimes even prefer, informal to professional treatment[35]. The various problems associated with living in rural areas, such as economic restraints, problems of delivery and distribution of care, problems of access and use of health care[36], as well as personal knowledge and habits[37], may affect healthcare decisions. Because self-care orientation is an important personal factor related to the concept of self-medication[13], it could be used to evaluate self-medication practices in rural areas. Also, there is little information about differences in self-care orientation between various population groups or users of various types of drugs[13,17].

Therefore, a cross-sectional study design was used to evaluate self-medication practices in a rural community of northern Greece (Imathia). This community is a particularly interesting one in which to explore predictors of self-care and self-medication; the population is served by a visiting general practitioner once a week and the nearest permanent doctor is 5 km away. In Greece, health personnel are unequally distributed throughout the country[38]. The fragmented national healthcare system is often unable to provide enough healthcare professionals to attend to the population of rural areas, thus people in these areas have fewer options of health care[39]. However, in this rural area there is a community pharmacy reporting a high percentage of non-prescription medication use. The lack of relevant studies in Greece increases the interest of the results. The main objectives were to: (1) detect factors that determine the likelihood of self-care orientation, (2) study the impact of self-care orientation in the likelihood of using medical care and (3) detect factors that predict the likelihood of using prescription drugs without a doctor's prescription. The secondary objectives were to define the target population to provide appropriate information and education in order to correct misuse and promote rational use of medicines[23,40].

Methods

Study design

The cross-sectional survey 'Study of attitudes and beliefs on self-medication and the use of over-the-counter drugs in a rural community of Imathia, Greece' was designed to evaluate the prevalence of self-care orientation and self-medication in this small rural area.

Setting and sample selection

The survey data collection phase was implemented during January and February 2011. Random sampling was used to identify study subjects among the 800 adult members of the community. The adult population consisted of 409 men and 391 women. The age distribution was as follows: 18–34 years (269 individuals, 33.6%), 35–59 years (314 individuals, 39.3%) and ≥60 years (217 individuals, 27.1%). All adult subjects (≥18 years) who were residents of this rural community were eligible to participate: the single community pharmacy reported that OTC drug use was approaching 90% during the month prior to survey implementation (December 2010). There were no exclusion criteria. Sample size calculation was based on the formula of simple random sampling:

$$n > \frac{p(1-p)z^2_{\frac{a}{2}}}{d^2}$$

where a=0.05, d=5%, and p(self-medication)=90%. The sample size was calculated at n=119 adult individuals (≥18 years) and additional adults were identified to account for non-participation. Final participation exceeded estimates, with 150 adults providing data.

Instrument

Face-to-face interviews were conducted in the community pharmacy by using a research instrument with 46 questions.

The basis for constructing the questionnaire was found in the international literature[10,11,17,23,40,41] and included questions about self-rated health and the existence of chronic disease, self-medication behavior, use of prescription and non-prescription drugs and the sociodemographic characteristics[42] of the respondents. The questions were selected and culturally adapted to a well-known rural population. Specific characteristics of the population were taken into account such as educational background and socioeconomic status. Finally, the questions were translated into Greek by a bilingual healthcare professional and then back-translated into the source language (English) by another healthcare professional. Appropriate corrections were also made[43].

In this research, self-medication was measured by self-care orientation. The question was: 'In which of the following situations would you self-treat by using a medication without medical prescription (hypothetically)?' Self-care orientation was the basic question (variable) of the survey and was defined by the number of conditions that an individual reports that he/she would self-treat hypothetically by using a medicine (prescription or OTC drug) without a doctor's prescription or consultation. A self-care oriented individual would accept to self-treat in at least four of the following 13 conditions: headache; constipation or diarrhea; shortness of breath while at rest; skin rashes; back pain; persistent cough; sore throat; loss of weight without diet; dyspepsia or stomach upset; dizziness; common cold; problems of sleep; and fatigue[17]. Self-care orientation has been used in relevant surveys in the USA, Sweden[12,17] and Israel[13]. In the final statistical analysis, the variable was dichotomized as 'no orientation' (0–3 conditions) or 'positive self-care orientation' (4–11 conditions).

The rational and irrational self-medication practice was estimated with the following open statement: 'Mention the medicine or medicines you have taken during the 3 last months for one or more symptoms of minor ailments (description) and if it was/they were taken with a doctor's prescription/suggestion or not'[40]. Undesirable self-medication was a secondary dependent binary variable (yes–no) defined as use of at least one prescription medication (based on the current *Catalog of Prescription Medications in Greece*) without a doctor's prescription for the period under study.

Per capita visits, which are one of the key variables of the present study, correspond to a recall period of 3 months according to Jones[44] and O'Donnell and Van Doorslaer[45].

Data analysis

Logistic regression was used to analyze the results. Binary logistic regression is a type of regression analysis used for predicting the outcome of a dichotomous variable based on one or more explanatory variables. The study of the effect of self-care orientation on the likelihood of medical care use was based on Fisher's exact test. The χ^2 test for independence evaluates the relationship between two variables. It is a nonparametric test that is performed on categorical data. Independent variables in the analysis were: age, gender, education, income, existence of chronic disease, self-rated health, marital status and occupation. Variable categories are shown in Table 1. Dummy variables were created to handle the multiple nominal categories of the variables 'marital status' and 'occupation'.

Models were evaluated for their goodness of fit using the Hosmer–Lemeshow test, and additional information for their appropriateness was checked with the link test. The explanatory value of the statistically significant variables was evaluated based on a receiver operating characteristic (ROC) curve. Finally, normality of deviance residuals and homoscedasticity of standardized deviance residuals were checked.

Statistical analysis was carried out using the STATA 9 statistical software package (StataCorp, http://www.stata.com).

Ethics approval

The study was approved by the Ethics Committee of the Hellenic Open University (#535, 09/24/2010).

Results

Descriptive statistics

Sociodemographic, self-rated health and behavioral characteristics for the sample appear in Table 1. The mean age of the respondents was 48.3±15.9 years and the percentages of men and women were 36.7% and 63.3% respectively. The majority of respondents were married (79.3%), having primary or secondary education (82%), low income (48.2% reported income between 501 and 1000 €) and employed (48.7%). An interesting contradictory finding was that 58.7% of this population group reported the existence of a chronic disease but also the majority (54.7%) reported a good or very good self-rated health status. Finally, 80% of the respondents were oriented towards self-care, 90% used OTC drugs, 54.7% used prescription medications without a prescription and 75.3% reported using some kind of medical service during the previous 3 months.

Self-care orientation predictors

The orientation to self-care seems to be determined by gender, the existence of chronic disease and educational level (Table 2).

As shown in Table 2, women as well as more highly educated individuals are more likely to be oriented to self-care: the odds ratio (OR) is 3.44 times higher for women than men (OR: 3.44, 95% confidence interval (CI): 1.37–8.66) and 1.64 times higher for those of higher educational level than the less literate (OR: 1.64, 95% CI: 1.05–2.58). By contrast, individuals that have a chronic disease are less likely to be self-care oriented: odds ratios are 0.30 compared to those with no chronic disease (OR: 0.30, 95% CI: 0.09–0.92).

This specific model has an accepted goodness of fit of $x^2_{H\text{-}L}$=4.17, degrees of freedom (df)=7, p=0.76. Also, the link test gave satisfactory results: hat is statistically significant (p<0.05) and hat^2 is non-statistically significant (p>0.05), which means that there is no specification error.

Additionally, the skewness and kurtosis test indicates that deviance residuals follow a normal distribution as p>0.05, whereas standardized deviance residuals according to the Brown–Forsythe test are homoscedastic, given that p>0.05.

The area under the ROC curve is 0.76, a relatively high explanatory value for the statistically significant values of the model (Fig1).

Medical care use

Regarding the use of medical care, 75.3% (n=113) of the sample had visited a doctor during the 3 months before the survey. However, self-care orientation was not found to affect the use of medical services: p(Fisher's exact test)>0.05.

Irrational self-medication predictors

With regard to using prescription medications without a doctor's prescription, the analysis revealed that a quite high percentage (54.7%, n=82) of the respondents used prescription medications without the prerequisite of prescription. The likelihood of this specific use is defined by self-care orientation and the self-rated health status (Table 3).

Based on the results shown in Table 3, the likelihood of using prescription drugs without a prescription is increasing in the case of individuals that are self-care oriented: the odds ratio is 6.16 times that of those who are not self-care oriented (OR: 6.16, 95% CI: 2.38–15.89). It is decreasing as the self-rated health is becoming better, having an odds ratio of 0.65 compared to those with worse health status (OR: 0.65, 95% CI: 0.42–0.99).

This specific model has accepted goodness of fit as $x^2_{H\text{-}L}$=2.49, df=4, p=0.65. Also, the link test is giving satisfactory results as hat is statistically significant (p<0.001) and hat^2 is not statistically significant (p>0.05).

Table 1: Sample characteristics

Gender	*n*	Frequency (%)
Male	55	36.7
Female	95	63.3
Marital status		
Single	19	12.7
Married	119	79.3
Divorced	2	1.3
Widowed	10	6.7
Education		
No education	8	5.3
Primary education	63	42.0
Secondary education	60	40.0
Tertiary education	19	12.7
Income (€)		
0–500	20	14.2
501–1000	68	48.2
1001–1500	30	21.3
1501–2000	14	9.9
2001–3000	6	4.3
≥3001	3	2.1
Missing values	9	6.0
Occupation		
Working	73	48.7
Retired	31	20.7
Unemployed	11	7.3
Housewife	32	21.3
Student or soldier	3	2.0
Existence of chronic disease		
No	62	41.3
Yes	88	58.7
Self-rated health		
Very bad	3	2.0
Bad	8	5.3
Moderate	57	38.0
Good	61	40.7
Very good	21	14.0
Self-care orientation		
No	30	20.0
Yes	120	80.0
Use of OTC drugs		
No	15	10.0
Yes	135	90.0
Use of prescription drugs without doctor's prescription		
No	68	45.3
Yes	82	54.7
Use of medical services		
No	37	24.7
Yes	113	75.3

OTC, over the counter.

Table 2: Results of logistic regression for self-care orientation

Variable	Odds ratio	*p* value	95% confidence interval	
Gender	3.44	>0.008	1.37	8.66
Existence of chronic disease	0.30	>0.036	0.098	0.92
Education	1.64	>0.028	1.05	2.58

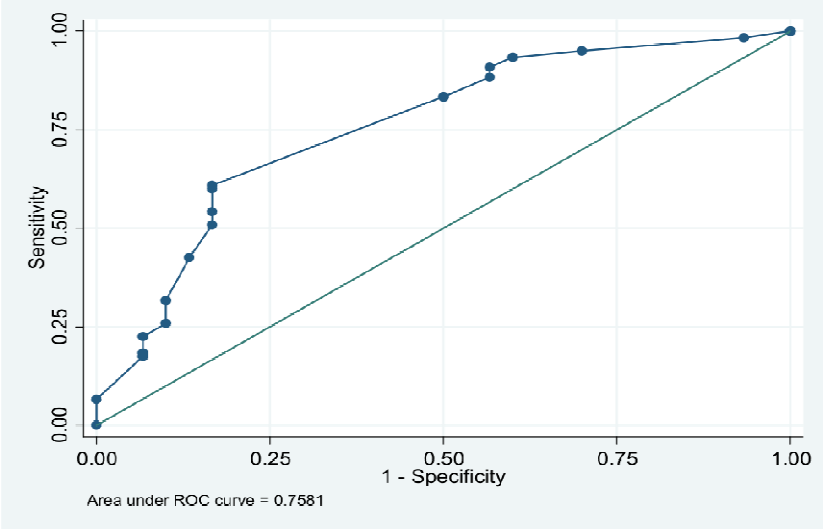

Figure 1: Receiver operating characteristic (ROC) curve for self-care orientation.

The skewness and kurtosis test indicates that deviance residuals follow a normal distribution ($p>0.05$), whereas standardized deviance residuals according to the Brown and Forsythe test are homoscedastic ($p>0.05$).

The area under the ROC curve was 0.69, a relatively high explanatory value for the statistically significant values of the model as indicated in Figure 2.

Discussion

According to the results the great majority (80%) of the respondents in this rural community are self-care oriented. Although there is a lack of similar surveys in Greece to make comparisons, the international literature shows studies with a high prevalence of self-medication among rural residents[46,47]. In rural areas health is significantly associated with ability to work[35]. This fact, combined with the financial, medical and geographical restrictions of rural areas[36], may force residents to usually self-treat their health disorders.

The study identified three main predictors of self-care orientation by using a medication and consequently self-medication practices. The three predictors were gender, educational level and the absence of chronic disease.

Table 3: Results of logistic regression for use of prescription drugs without doctor's prescription

Variable	Odds ratio	*p* value	95% confidence interval	
Self-care orientation	6.16	>0.000	2.38	15.89
Self-rated health	0.65	>0.046	0.42	0.99

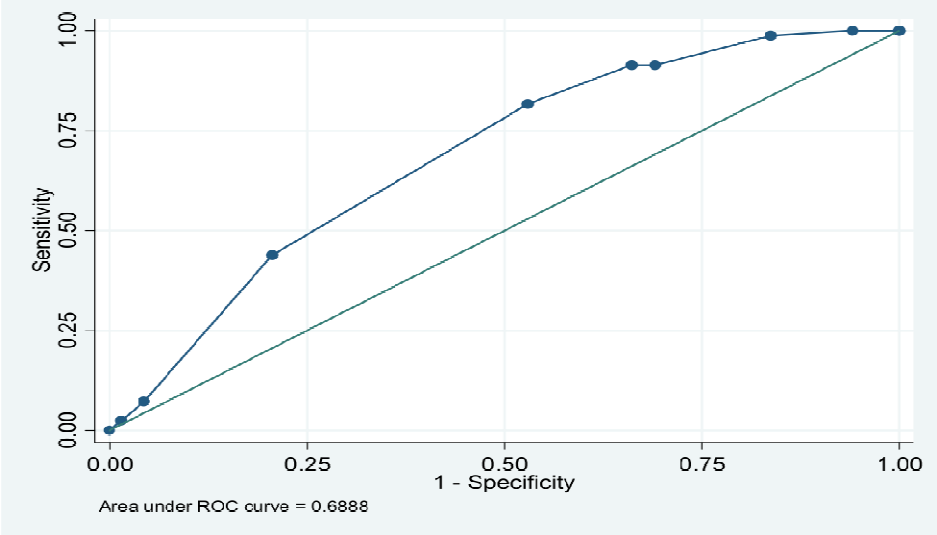

Figure 2: Receiver operating characteristic (ROC) curve for the use of prescription drugs without a doctor's prescription.

The fact that women are more likely to self-medicate has been detected in previous surveys[10,27]. Additionally, other studies show high prevalence of medication use by rural female populations[48,49]. According to the literature, gender determines health maintenance behaviors[50]. So the fact that women have more symptoms than men[51], possibly due to differences in their physiology but also in social roles[21] and in combination with their greater sensitivity to symptoms, leads women in using medications more easily than men[52] and makes them more strongly self-care oriented[14]. The latter may also be strengthened because women spend more time at home where drugs are stored[14]. Another reason for the extensive self-treatment among female residents of rural areas may be their active involvement both in agricultural and household activities. Being occupied most of the day explains why they do not have time to seek other medical care[53]. However there are contradicting articles showing that men self-medicate more often than women[19,20], or even equally[24], and also surveys indicating that women apart from their self-medicating inclination also consult a general practitioner more readily than men[51,54,55].

It was also found that the likelihood of self-medication increases with increasing educational level. This finding is in

accordance with the published literature[10,22,27]; individuals with higher education have more knowledge about medications as compared to the less educated, and may be more competent in self-medication[56]. Additionally they seem to perceive and evaluate symptoms differently[54,57]. According to Figueiras et al[10] the more educated have more self-confidence in self-diagnosis and self-medication and less trust in doctors, particularly in the presence of an acute disorder, and they are more capable of selecting appropriate medications to attend to their symptoms, whereas less educated people prefer a medical consultation to self-medication because of lack of any knowledge about pharmaceuticals.

Individuals with a chronic disease are less likely to self-medicate. It seems that these individuals have established long-term rapport and a relationship with a doctor, and they may visit their personal doctor more often due to their illness or other symptoms[28]. In a study by Farmer et al[37], rural patients had a stronger relationship with their doctors. Another explanation may be that they probably take prescription medications for their chronic disease, and due to risk of possible interactions[58] they are afraid to self-medicate. Consequently they self-medicate less.

According to the results, self-care orientation does not seem to have an impact on use of medical services. People will utilize medical services even if they practice self-medication. This result is in accordance with previous findings that self-medication is not related to the frequency of medical consultation[8]. There are various possible explanations for this observation. It is possible that individuals use self-medication prior to or in addition to medical care and consult doctors to check or be reassured of their choices[59]. It is also possible that self-carers will visit a doctor if symptoms do not respond to self-medication[60] or they may choose to self-treat certain less serious symptoms only and not others[61].

In this survey, a worryingly high percentage (54.7%) of the respondents had used prescription-only medications without having been prescribed or recommended them by a doctor, in the months prior to the survey. According to the literature this undesirable practice (irrational self-medication) is a phenomenon usually present in rural areas either as use of non-prescribed antibiotics[28,33,62], or as use of previously prescribed medications[29]. Kalomenidis et al[63] found that the latter kind of drug consumption occurs more often in people insured by the Organisation of Agriculture Insurances, those who are mainly habitants in rural areas[39].

The lack of sufficient self-care support and information about rational self-medication especially among the less literate[64], in combination with the accumulation of previously prescribed medicines found in rural home pharmacies and high exchange prevalence between residents[65], may lead individuals to irrational self-medication practices. Previous experience of drug effectiveness seems also to be an important factor in the selection of a substance during self-medication[66]. Another important attribute to the use of OTC drugs with or without previously prescribed and currently stored medications at home may be related to the cost of the medications; OTC drugs are not compensated by social medical insurance plans whereas prescription medicines are. Using prior prescriptions seems to be the least expensive choice, followed by obtaining a new prescription from a doctor. This practice is strengthened by the insufficient access to doctors in rural areas[24].

Individuals with self-care orientation are more likely to use prescription medications without a prescription. A positive attitude towards self-care extends to the use of all medication categories (prescription and non-prescription)[13].

In the present study there was a statistically significant association between use of prescription medications without a prescription and low self-rated health status. The literature around this subject is mixed. Studies show that self-medication practice is more frequent among healthier people with higher health status[27-29], without however precluding the use of non-prescription medications in cases of low self-rated health[30]. According to Bartlomé et al[29], individuals with low perceived health use more medications (prescription and non-prescription). Taking into consideration that the use of prescription medications increases with the severity of a

disorder[58], the use of prescription medications without a prescription possibly takes place when the symptoms people try to self-manage are serious enough to negatively influence health status. In fact, as the severity of the symptoms increase, irrational self-medication without the required medical consultation is becoming more risky[67] and may lead to more negative influences in health status. The absence or inaccessibility of a permanent doctor may magnify the effect of this phenomenon. The degree of the severity of symptoms for which prescription medicines are used was not studied in the present study and requires future attention by healthcare services researchers.

Generally, safe practice of self-medication requires a specific level of knowledge about correct medicine usage[68]. Consequently, there is a need to educate individuals in the safe and rightful use of medicines[40], especially in rural areas where medical sources are limited. Taking into consideration the preference of rural habitants for informal networks, the building of collaborations and a support network with healthcare professionals (physicians, pharmacists, nurses) may contribute to improvements in health status[35] for the population of rural areas in Greece and elsewhere.

Strengths and limitations

The scarcity of studies regarding self-medication evaluation and non-prescription medication use in Greece and especially in rural areas makes the present study unique at the time it was conducted. However, certain limitations are acknowledged. Because the interest of the study is restricted to this specific rural community, the generalization of the results is not appropriate. However, it can orient other researchers in larger relevant studies for the extraction of safer conclusions according to self-care orientation and self-medication practices in rural areas. Undoubtedly self-medication is a common practice followed in urban areas as well, so further exploration is needed to determine predicting factors of such practices in rural areas compared to urban ones. Although many of the findings are in agreement with the international literature, comparisons are difficult because of the different methodologies and populations under study (different cultures, different environments)[24]. Besides, there is a lack of similar studies in Greece. Finally the impact of attitudes and beliefs towards medicines in general and OTC drugs specifically was not studied, although they are proven to be important in self-care orientation and self-medication inclination[11,17].

Conclusions

According to this research, 80% of the residents of a rural community in Imathia, Greece, were self-care oriented. Factors that predict self-care orientation and consequently self-medication were female gender, the absence of chronic disease and higher educational level. Self-care orientation was not associated with the likelihood of using medical services. Finally, individuals who practice self-medication with prescription drugs are self-care oriented and they probably have lower self-rated health status. Future research is required in larger samples of rural and urban communities to understand specific patterns of self-medication either with OTC or prescription drugs. Research is also needed to design and evaluate educational interventions aimed to increase rational self-medication and to control irrational self-use of medications.

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