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RESEARCH ARTICLE

Differences in literacy, education level, and healthcare attendance in two different Roma subgroups from Transylvania, Romania

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Background: Literacy and education levels were demonstrated to be low in the Roma population. The outcomes after the implementation of different educational policies, in different countries, were not properly assessed for Roma subgroups until now. Aims: We aimed to study literacy, education level, and healthcare attendance in two well-defined Roma subgroups, compared to the majority population, in a specific Transylvanian rural region. **Material and methods**: A non-interventional, cross-sectional comparative survey was conducted in 2016-2017 between two Roma subgroups and the general population, from a rural region in Transylvania regarding their literacy, education level and healthcare attendance. **Results**: Illiteracy was 33.3%, 66.6%, and 4.2% in the Gabor, Lovari Roma, and general population ($p < 0.001$). 29.5% of the Gabors and 45.6% of the Lovari Roma did not attend any school, compared to 2.7% of the general population. Almost none of the Roma population attended school after finishing 8 classes. Healthcare service attendance was significantly lower for the Roma subgroups, and directly related to their education level. 32.7% of the Gabors, 28.3% of the Lovari Roma, comparing to 7.3% of the general population never attended the general practitioner ($p < 0.001$). **Conclusions**: Gabor Roma population had a significantly lower proportion of illiteracy and a higher school attendance than Lovari Roma group, but still illiterate by a high percentage. The Roma's healthcare attendance was far lower than the general population's, having been even worse in the Gabor group. Healthcare counseling was directly correlated with education level.

Keywords: education level, illiteracy, healthcare attendance, Gabor Roma, Lovari Roma

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Introduction

Literacy and education levels were demonstrated to be low in the Roma population, a 2012 report by the United Nations Statistics Division about literacy and education highlighted that in general, in EU member States 20% of the Roma population is illiterate, compared to non-Roma one's where this rate is 1%. Accounting for 31% of illiteracy rate of the Roma population, Romania is in third place after Greece and Portugal [1]. The outcomes after the implementation of different educational policies by the Romanian government were not assessed for separate Roma subgroups, however, the differences regarding literacy, education level and healthcare attendance between the Roma subgroups should be taken into account [2].

Roma ethnics represent the biggest ethnic minority in Europe, 10-12 million Roma are living in Europe out of which 6 million are in the European Union (EU) [3]. 3.29% of Romania's population is made up of this underprivileged population, but it is assumed that their real percentage is higher [4]. In general, they are characterized as being marginalized, poor, and less educated [1], with a high unemployment rate [5]. However, in recent years, the Roma population experienced a fundamental change in their lifestyle, from a mainly migratory life to a more settled one, and from a little income, to an acceptable earning in certain groups. Traditionally, they are not landowners, their income is mainly from trading and not farming, even in rural settings [6]. On the other hand, originating from northern India, they are still a group with distinct genetic and socio-cultural features, which impacts their phenotype [7,8].

Although studies examined the health consequences of their isolation as a minority, they did not consider the heterogeneity of this ethnic group [9]. A recent study described the main sleeping patterns of these two Roma subgroups (sleep quality and quantity), compared to the general population living in the same area. Moreover, the consequences of sleep deprivation on metabolic health, including obesity were also highlighted as significant [10].

There are several Roma subgroups in Romania like the Gabor, Caldarasi, Lovari, Vlahi, Baiesi, etc. These subgroups reflect partly the ancient Indian caste system, but more probably, they are defined by regional variances resulting in different mixing, and different occupations (of-

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ten the names of subgroups are derived from traditional past occupations) [11].

In many respects, the contrast between the Gabor Roma population and the domestic gypsies is striking. Gabor Roma is a gypsy subgroup living mainly in Transylvania, with an archaic and strong community structure. They are relatively prosperous and affiliated with a neo-protestant church. Men are traveling to other counties or abroad between March and November for trading [12]. They get married early, boys usually between 16 and 20 years old and girls between 15 and 18 years old. A legal marriage usually follows the birth of the first child, after the girl has reached 16 years. A woman's daily duties consist of preparing food, managing household, raising children, and possibly exchanging products grown on their own farm. Because the schooling period is short, farming is often the job of children and wives left at home. The traditional profession is tin smithing, the secrets of the craft are passed down from generation to generation, working with minimal work equipment. They do also woodworking, auto tinning, or work in construction [13]. The Lovari Roma, are an average poor population, less well organized, more marginalized, without strong social structures, and less tradition-keeping [14].

The vast majority of the Roma population has no vocational qualifications. 79.4% have no professions (58% of men and 88.8% of women), only 16.1% have qualifications for modern professions and 3.9% have traditional occupations [15]. The job market requires professional qualifications and illiteracy is increasingly pushing this minority to the margins, so the number of unemployed Roma is extremely high. A quarter of men who support a family are unemployed and the unemployment rate among women reaches 70% [16].

One of the most pressing problems of this ethnic group is the high birth rate. The more traditional the lifestyle of a Roma family, the more children they have, which makes the family's financial situation even more difficult. An average Roma family consists of 6.6 people, while the national average is 3.1 people/family. Their demographic growth is exacerbating their situation, this population is moving towards isolation, and their integration is problematic [15].

The survey conducted and published by the European Union Agency for Fundamental Rights (FRA) in 2016 regarding minorities, highlights the fact that about 80% of the Roma population in the nine EU Member States with the largest Roma population live below their country's poverty level. More than a third of them live in homes without running water and a similar percentage of Roma children live in households where at least one person has suffered from hunger at least once in the previous month [17]. Half of Roma between the ages of 6 and 24 do not attend any form of education. This trend is unfortunately confirmed in the 2019 EU Fundamental Rights Agency survey on Roma and nomads, which suggested also that almost half of Roma and nomads (45%) of the six EU Member States felt discriminated against in at least one of the "areas of life" covered by the survey in the last year [18]. Based on these findings, we can conclude that the Roma population is discriminated against and did not have equal access to public services [17]. In accordance with these, in the first decade of this century across Eastern Europe, including also in Romania, a number of national and international policies were developed focusing on education, employment, housing, and healthcare which EU Member States were invited to adopt. These included that all Roma children complete primary school, in order to close the gap between the Roma and the rest of the population in terms of employment, and eliminate the gaps in terms of healthcare, housing, and public utilities (running water, electricity) [19].

As a European Union (EU) member state following the EU Framework for National Roma Integration Strategies [20], Romania developed its own Roma Inclusion Strategy for 2012–2020 (NRIS) in 2011 [21]. Romania is also a signatory of the Roma Decade, a regional initiative to increase the social inclusion of the Roma. However, the situation did not improve, at least not in the entire Roma population [20,22].

We think, that differentiated subgroup characteristics screening can better help to identify the problem and find more specific solutions. Our hypothesis was that different Roma subgroups with different lifestyles and culture/habits have different education levels, literacy, and healthcare attending rates, with an impact on their health status.

Material and methods

Our non-interventional, cross-sectional survey, was focused on segregated colonies of two Roma subgroups (Gabor and Lovari) living in the same rural environment, in the Niraj Valley, Mureș County, Romania. Colonies with more than 100, thus 5 villages (Crăciunești, Cornești, Foi, Glodeni, Ungheni) were chosen, where the two subgroups cohabitate, in highly segregated colonies. As a control group, we used the Romanian population of the given area.

The communities were approached through individuals in whom the Roma population generally places confidence: the general practitioner, and local community leaders. All individuals, residing in the area, from 18 years on, were invited to participate in the survey. The assessment took place in rural, predefined settings, mainly between December 2016 and March 2017, the period when men are at home. Medical staff and students were trained for the correct conduction of the face-to-face questionnaires, given the literacy issues in the studied population. All who came for the survey and were willing to sign the informed consent were included. Our intention was to involve in our survey at least 10% of the community, however, most of the Roma refused to participate. The population size of the 5 villages in 2011 was 12,165 individuals (1,914 Roma individuals), the number of Roma

individuals approached was 812, and the response rate was 42.11%, which means 231 Gabor Roma, 111 Lovari Roma, and 183 individuals from the general population of the same area were included. The groups were age and sex-matched.

The 42-item (lifestyle and socioeconomically related) questionnaire was completed by the the involved medical staff based on the participant's oral answers, including literacy, education, number of languages spoken, relation with the healthcare system, financial status, relation with the neighbours, eating habits, physical activity, etc. Education level was assessed according to the following categories: no education, 1-4 classes, 5-8 classes, 8-12 classes, and tertiary education. Due to the fact, that only 1% of Gabor Roma were present in the last two categories, these two groups were represented together. Healthcare attending categories were: regularly more than once a year, once a year, never attending, and attending if necessary.

The study was approved by the Ethics Committee of the George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Târgu-Mureș.

The results of the three groups were compared using a one-way ANOVA test for scale variables, and a Chi-square test for categorical variables. Distribution was tested with the Kolmogorov-Smirnov test. The influence of ethnic subgroups, literacy, and education level on healthcare utilization was tested with multinomial logistic regression. To measure the degree of the association between the two continuous variables Pearson's correlation was used for parametric variables and Spearman's correlation test for non-parametric variables. It was considered statistically significant if the p-value < 0.05. Statistical analysis was performed using SPSS version 18, IBM, USA.

Results

Illiteracy, education level

The highest rate of illiteracy was found among Lovari Roma, more than half of this population (66.7%), while the illiteracy rate was 33.3% in Gabor Roma, which still exceeds the rate found in the general population (4.2%). 42.6% of Lovari Roma never attended any school, which rate is lower in Gabor Roma (29.5%) and the general population (2.1%). 20% of Gabor Roma finished at least 4 classes, this rate is even lower in the Lovari Roma with 13%, and exceedingly higher in the general population (91.6%). 56.2% of the general population finished more than 8 classes, however, in the whole Roma population only 1% of them.

We found a significant correlation between the educational level of Gabor Roma women and men (Spearman's rho correlation: women -0.89 vs. men: -0.27, p<0.001). Among Gabor women, the rate of illiteracy was higher, 44.8% of them did not go to school at all or did not complete the 4th grade, in addition to only 11.8% of the men who were uneducated.

Healthcare attendance

Using multinominal logistic regression and looking at the effect of school attendance as an independent variable, on healthcare utilization as the dependent variable, we found that those with no education compared to those with more than 8 classes had an OR of 4.50, CI 5.5-4.3 for not attending health care at all. Analyzing ethnicity as a predictor, we found that those with no education had a higher OR in Gabor Roma compared to Lovari Roma (OR 4.2, CI 1.5-11.0 vs. 2.7 CI 0.9-8.1) for not attending the healthcare system. The presence of illiteracy and season-dependent income were not found to influence healthcare attendance significantly (OR 0.64, CI 0.3-1.3 and 0.97, CI 0.47-1.98).

Roma vs. non-Roma women

Statistically significant differences were observed regarding the age when women got married (Gabor Roma 14.7 years old vs. Lovari Roma 15.82 years vs. Non-Roma 20.13 years old, $p = 0.0$). Roma women (both groups) have many more children than the general population women. Gabor Roma women had an average of 3 children, Lovari Roma women had 3.5 children, and non-Roma women had an average of 2 children. Moreover, there was a significant difference comparing the age of women at first childbirth, between examined Roma and Non-Roma women ($p<0.001$). The mean age at first childbirth was 16 years in Gabor Roma, 17 years in Lovari Roma, and 21 years in non-Roma women from rural areas. Other findings for the two Roma subgroups and the general population are shown in Table 1.

Illiteracy was high among Roma people, higher in Lovari Roma. Different Roma subgroups have different educational and healthcare attendance levels, tightly associated.

Discussion

In our survey, we found that illiteracy is alarmingly high in the rural Roma population compared to the general population (Gabor Roma 33.3%, Lovari Roma 66.6% vs. general population 4.2%, $p < 0.001$), even though Romania implemented its own Roma Social Integration Strategy since 2012. These numbers are alarming because in 2011 in the Roma population in Romania, illiteracy was found to be only 14% [23]. Differences may be explained, by geographic and subpopulation variances, respectively, the above-mentioned report identified the Roma using voting lists, which underestimates largely the Roma population. The European Union Agency for Fundamental Rights survey from 2012 found an illiteracy of 33% in the general Roma population in Romania, which is closer to our observation [24].

More Lovari Roma did not attend any school compared to the Gabors (42.6% vs. 29.5% vs. 2.1%, $p < 0.001$). These numbers are also higher than those reported by Cace et al. in 2002 (which was 22.1% in the survey done in 1998), and the before-mentioned survey in 2012 of 24% [24,25]. Moreover, the majority of the Roma in both

Table 1. Literacy, education, and medical attendance rate in the three studied groups

	Gabor Roma	Lovari Roma	General population	p-value
No	231	111	183	
Age (years)	41.74±14.0	40.30±14.0	44.62±14.6	.086
Gender (%)	45.8	40.5	41.5	.451
Education (%)				
no classes	29.5	42.6	2.1	<.001
1-4 classes	50.5	44.4	6.3	
5-8 classes	19.0	13.0	35.4	
> 8 classes	1	0	56.2	
Literacy (%, illiterate)	33.3	66.7	4.2	<.001
No of spoken languages (%)				<.001
2	15.8	38.3	75.0	
3	73.7	59.6	13.2	
4 or more	7.9	2.1	6.6	
Medical consultations/check-ups (%)				<.001
Regularly more than once a year	28.7	28.3	55.2	
Once a year	14.9	7.5	10.4	
Never	32.7	28.3	7.3	
If it is necessary	23.8	35.8	27.1	
Health insurance (%, yes)	42.6	23.2	97	<.001
Season-dependent income (%, yes)	81.9	48.1	51.0	<.001

groups attended only primary school (1-4 classes) (50.5% of the Gabor and 44.4% of the Lovari Roma, compared to 6.3% in the general population, $p < 0.001$), and practically almost none of them had higher education. These poorer results could be explained by the exclusively rural population investigated, and the habits of the very traditionalist Gabor community to stop the education of girls at 10, and of boys at 14-15. Other authors, like O'Hanlon, confirm the difficulties of changing education levels in the Roma population [26].

Healthcare attendance was significantly lower in the Roma population. A high percentage of them have never looked for the healthcare system (Gabor Roma 32.7% vs. Lovari Roma 28.3% vs. general population 7.3%, $p < 0.001$). It was demonstrated that socio-financial factors influenced healthcare attendance rates in Roma groups [27]. The adult Roma population is mainly unemployed; thus, they do not have health insurance, only if they are included in a medical or social handicap category [28]. This explains the low frequency of health insurance in the two Roma subgroups (23.2% for Lovari Romas, 42.6% for the Gabors vs. 97% in the general population, $p < 0.001$). Low healthcare utilization might be explained not only by the above-mentioned problem, but also by the fact that having a disease is considered a shame in the Roma population, so they will attend the doctor only if symptoms are severe [29].

One-quarter of the Roma population never attended the general practitioner, and this percentage is higher for the Gabors, where the patriarchal family structure is strong and women would not attend the family physician's office on their own. This observation is comparable to those found in other Romania and Eastern European studies [30,31,32]. As expected, education level was associated with healthcare utilization frequency, correspondingly lower education level was a predictor of low healthcare attendance [33,34].

The situation of Roma women is particularly underprivileged due to their low level of education and early childbirth. All this rightly suggests that they need preventive procedures, the implementation of which will be a challenge for the healthcare system. In the century of individual and population-level prevention, it will be vital for this ethnic group to present and promote preventive procedures for them, that will help to adopt a healthier lifestyle. Preventive interventions should be initiated by local healthcare workers, social services, and associations. In order to achieve all this, and closer integration, educational institutions in local communities as well as representatives of the minorities will also have an important role to play in prevention.

As a study limitation, we can mention that our investigation included a relatively small number of participants, because recruiting them was difficult from multiple reasons. Generally, Roma population are hostile towards "gagio" (non-Roma) officials, even physicians; they do not want to have their diseases diagnosed, having a disease being a shame in their culture. In addition, Roma women would avoid investigations, mainly because men are present at home only 3-4 months a year [35].

It is also a limitation that data of both subgroups were self-reported. More women were included in our study, which may be explained by the fact that men are less willing to undergo health screenings (it is well known that men in the rural population pay less attention to their health than women), especially in the Roma population [36]. Moreover, Roma men did not stay in the locality, they were preoccupied with trading. The strength of our investigation was that, as far as we know, this is the first study in Romania to compare distinctive Roma subgroups with the neighboring population.

Conclusion

The Gabor Roma was significantly more literate, and better educated than Lovari Roma population, but still illit-

erate in a high percentage, with not attending school after the 8th grade. The Roma's healthcare attendance was far lower than that of the general population, being even worse in the wealthy but traditionalist Gabor group. Medical attendance was directly associated with education level and Roma women are particularly disadvantaged due to their low level of education, early childbirth, and patriarchal family structure.

Based on these outcomes, we recommend that the educational programs for a healthy lifestyle be focused more on the culture and habits of the Roma population, in collaboration with the group's leaders that will be followed by the members, and made by their own ethnic members with medical and communication background.

Author's contributions:

BV – conceptualization, data curation, formal analysis, software, visualization, writing – original draft
LM – conceptualization, data curation, formal analysis, software, visualization, writing – review & editing
AB - investigation, methodology, project administration, resources
AL - investigation, methodology, project administration, resources
TK - investigation, methodology, project administration, resources
OS - investigation, methodology, project administration, resources
MIMSZ - conceptualization, data curation, methodology, project administration, supervision, validation, visualization, writing – review & editing

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Conflict of interest

We have no conflict of interest to declare.

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